ALMALAUREA

Connecting Universities, the Labour Market and Professionals

AlmaLaurea Working Papers – ISSN 2239-9453

ALMALAUREA WORKING PAPERS no. 34

September 2011

Gender issues and inequality in higher education outcomes under post-communism

by

Annamária Gáti, Péter Róbert

TÁRKI

The **AlmaLaurea working paper series** is designed to make available to a wide readership selected works by AlmaLaurea staff or by outside, generally available in English or Italian. The series focuses on the study of the relationship between educational systems, society and economy, the quality of educational process, the demand and supply of education, the human capital accumulation, the structure and working of the labour markets, the assessment of educational policies.
Comments on this series are welcome and should be sent to pubblicazioni@almalaurea.it.

AlmaLaurea is a public consortium of Italian universities which, with the support of the Ministry of Education, meets the information needs of graduates, universities and the business community. AlmaLaurea has been set up in 1994 following an initiative of the Statistical Observatory of the University of Bologna. It supplies reliable and timely data on the effectiveness and efficiency of the higher education system to member universities' governing bodies, assessment units and committees responsible for teaching activities and career guidance.

AlmaLaurea:

- facilitates and improves the hiring of young graduates in the labour markets both at the national and international level;
- simplifies companies' search for personnel, reducing the gap between the demand for and supply of qualified labour (www.almalaurea.it/en/aziende/);
- makes available online more than 1.5 million curricula (in Italian and English) of graduates, including those with a pluriannual work experience (www.almalaurea.it/en/);
- ensures the optimization of human resources utilization through a steady updating of data on the careers of students holding a degree (www.almalaurea.it/en/lau/).

Each year AlmaLaurea plans two main conferences (www.almalaurea.it/en/informa/news) in which the results of the annual surveys on Graduates' Employment Conditions and Graduates' Profile are presented.

AlmaLaurea Inter-University Consortium | viale Masini 36 | 40126 Bologna (Italy)
Website: www.almalaurea.it | E-mail: pubblicazioni@almalaurea.it

---

International Conference on
"Human Capital and Employment in the European and Mediterranean Area"
Bologna, 10-11 March 2011

Gender issues and inequality in higher education outcomes under post-communism

by

Annamária Gáti*, Péter Róbert**

Abstract
The paper intends to increase the information and knowledge on graduates' labour market entry and early career under post-communism. The specific purpose of the analysis is to examine gender differences with respect to two particular research questions: the length of time graduates need to enter the labour force and find a first job; the odds for becoming unemployed during the first five years spent in labour force.
Data from the recent HEGESCO project (*www.hegesco.org*) are employed in the paper. The data collection has occurred in 2008 / 2009 and refers to those diploma holders who completed their studies five years earlier in 2002 / 2003. The project involved five nations: Hungary, Lithuania, Poland, Slovenia and Turkey. The present study deals with three former communist countries: Hungary (N=1533), Poland (N=1200) and Slovenia (N=2923). The paper provides background information on these three countries in terms of their institutional features related to the school system and the labour market. Both descriptive (bivariate) and causal (multivariate) techniques are applied in the study. The Kaplan-Meier survival analysis is used to examine gender differences in labour market entry in the three countries. For investigating the determinants of possible unemployment experience (did it occur or not), the logistic regression method is applied. In addition to gender variation, data offer a large variety of predictors and control variables informing about various characteristics of the study program (field of study, BA/MA, full-time / part-time, first degree gained) as well as about the respondent's involvement during studies (voluntary / student organization activity, internship, work experience). It is also possible to control for social origin (parental education). Results reveal that gender difference for the length of time to find a first job is significantly present only in Slovenia. For unemployment, at observed level women are definitely disadvantaged and experienced unemployment in all three countries more frequently as compared to men. On the ground of the multivariate analysis, however, the female disadvantage to have a significantly bigger chance to become unemployed in comparison to males turns out to be present only in Poland. As taking into account the large variation in the compositional effects, the paper elaborates on how these features bring advantages or disadvantages for males and females to avoid unemployment. On this ground it is impossible to conclude about a better or worse situation regarding the rank order of the three countries.

* TÁRKI-TUDOK; e-mail:annamaria.gati@tarki-tudok.hu
** TÁRKI, e-mail: robert@tarki.hu

1. Introduction

Studying returns to education is one of the focal topics in social sciences. In accordance with the seminal work by Becker (1964) and Mincer (1974), analyzing investments into human capital and chiefly the wage returns to these investments is one of the most frequent research topics in the economic literature. Nevertheless, there is a growing interest in this theme among sociologists as well and these days there is an increasing overlap in the research questions and analytical approaches in economics and sociology in investigating educational inequalities, labour market outcomes or social mobility (Morgan 2006). Within the relatively broad topic of returns to human capital investments, there is a growing interest among social scientists in studying returns to higher education. This is closely related to the educational expansion, an important feature of schooling that characterize all of the modern societies and call for repeated analyses of returns to education (e.g. Becker and Hadjar 2009).

Since expansion in schooling was particularly strong in higher education in the last decades, returns to diplomas and the labour market situation of the graduate labour force is a particularly relevant research topic. The new EU-member states embody perhaps even more interesting cases in this regard. Previously graduates formed a small group in their labour force in comparison to the developed market economies but the expansion of tertiary education was much more explosive in these countries in the last decades. After the collapse of communism, the enrolment to higher education resembled to a similar increase in the new EU-member states as the one in Western Europe or the US some decades ago (Kogan, Gebel and Nolke 2008).

Despite of the existing studies with a focus on separate countries, so far relatively few evidence is available on the returns to higher education from a large scale comparative perspective. This is chiefly due to the fact that few comparative data sources are reachable to study the topic. The well-known data-sources being available for social scientists (e.g. European Social Survey or EU-SILC) are usually based on relatively small sample size per country. Thus, the problem regarding the low number of cases of degree holders in the data is hardly possible to overcome. Nevertheless, still few data-sources exist that serve the purpose of studying the graduate labour force, particularly in the new EU-member states. The forerunners of the related data collections and projects are probably the CHEERS and the CATEWE but the widest source is the REFLEX data with about a dozen of nations (Allen and Velden 2007) and more recently the HEGESCO data aiming to analyze chiefly new EU-member states. These data sources provide increasing possibilities to carry out policy relevant research in line with the growing relevance of the European area of higher education (Gornitzka et al. 2007. Tomusk 2007. World Bank 2002.)

The paper tries to diminish the lack of knowledge on graduate employment under post-communism. Three countries will be investigated with this aim: Hungary, Poland and Slovenia. Within the broad topic and the wide analytical possibilities of these recent data sources, the purpose of the present analysis will be to examine the transition from school to the labor market, particularly the length of time graduates needed to find a job and enter to the labour force, as well as some features of circumstances of early work career, particularly the incidence of unemployment. Furthermore the paper puts a focus on gender differences.

The first section discusses the background of the study from the viewpoint of the institutional features regarding the school system and the labour market. This is followed by a section on the data, variables and methods. The results are presented first in a descriptive, bivariate and then in a multivariate manner. The paper ends with the discussion of the findings.

2. Institutional background and the country cases

Based on the existing literature on school to work transition, two mechanisms can be applied for the analytical framework in this study: the connection between the educational system and the labour

market as well as the employment protection legislation. Regarding the first mechanism, scholars have traditionally contrasted internal labour markets (ILM) with occupational labour markets (OLM) or production approach vs. training approach (Marsden 1999), based on differences in the signalling functions of the schooling system (Spence 1974). Alternate terms for the same distinction are the organizational vs. qualificational mobility spaces (Maurice et al. 1986. Müller and Shavit 1998). Under the conditions of OLM, labour market entry is assumed to be faster (Allmendinger 1989).

It is important to keep in mind that previous research on school to work transition has dealt with a broader population of school leavers and was not restricted to graduates. Nevertheless, the issue of the variation in the degree of vocational specificity or of educational signalling holds for the higher education to some extent as well. The tertiary level of schooling in the countries with OLM involves the features of the vocational vs. academic duality, while the linear type of higher education (the Bologna system) is traditionally more characteristic for the countries with ILM.

The three countries studied here (Hungary, Poland and Slovenia) show quite substantial similarities in terms of the institutional characteristics regarding the links between the educational system and the labour market. The three CEE countries used to have a school structure with quite strong links to the German school system with a strong tracking system, vocational specificity, standardisation of the curriculum and high level of educational signalling. However, the basically OLM character of the school to work transition has changed to different extent in the three countries. The OLM features remained the strongest in Slovenia, they are also characteristic for Poland and weakened a lot in Hungary. Hungary used to be a country with strong vocational specificity but the educational signalling declined and the labour market moved from qualificational to organizational mobility space. Though the tracking system of the school structure is still present to some extent, the Bologna system in the higher education has been introduced in the shortest time in Hungary. Nevertheless, the graduates analyzed in this paper come from a pre-Bologna higher education system in all of the three countries.

Unfortunately, the cross-sectional character of the data does not allow studying much the institutional changes for the school to work transitions in these societies. Nevertheless, one of the few examples on analyzing a post-communist society (Russia) from the perspective of changes over time failed to find confirmation for the expected effects of institutional changes regarding vocational specificity or educational signalling (Gerber 2003). In a better reference for the present analysis, Kogan and Unt (2005) investigated school to work transition in Hungary, Slovenia and Estonia, and found quite substantial differences among them. But the results referred to job entrants generally and not only to the graduates.

The second mechanism, the employment protection legislation (EPL) is expected to affect labour market uncertainties. Similar terms for the same phenomenon are closed and open labour market positions or systems (Sorensen and Kallberg 1981). The usual assumption is that stricter legislation or closed labour market systems are associated with lower level of labour market moves. As employment protection favours the insiders in the labour market, it decreases the vacancies and the availability of new jobs for new entrants. Higher degree of EPL decreases the unfavourable risks for unemployment as well.

Again, this concept has previously been applied for analysing broader circles of labour market entrants but can be relevant for the specific group of graduates. Most of the related earlier research refers to the market economies. E.g. Gangl (2003) found that the labour market is weakly regulated in the Anglo-Saxon and the Scandinavian countries and stricter EPL is more characteristic for the corporatist and the Southern European societies.

Regarding this mechanism for school to work transition, a decline in employment protection is a basic experience in post-communist transition. E.g. unemployment was virtually non-existent under socialism, while employees have to face a high risk of unemployment from 1990 onwards, particularly if they worked in deteriorating economic sectors and/or had low level of education. The

situation for graduates is more favourable in this regard. But labour relations became more flexible for them and the growing expansion of tertiary education in the last 10-15 years created special risks and increasing competition for them as well.
Apparently, there is a variation within the new EU-member states with respect to employment protection. Accordingly, out of the three countries studied here, Hungary has the most flexible labour legislation but the situation is only a bit better in Poland. Slovenia, however, has the most restrictive labour regulations out of the post-communist societies. E.g. trade union density or spending on labour market policies is also higher in Slovenia than in most of the former socialist countries (Saar, Unt and Kogan 2008). Nevertheless, a special feature of these countries is that the legislation may reflect less to the real situation as informal practices beyond legal regulations are widespread. In reality labour market flexibility is higher because employers simply do not follow the regulations even if these facts may characterize somewhat less the specific graduate labour market. The next overview summarizes the main features of the schooling system and the labour market in the three societies.

	Hungary	Poland	Slovenia
Labour market	more ILM	more OLM	OLM
Vocational specificity	Weak	Strong	Strong
Signalling function	Low	High	High
EPL	Weak	Weak	Strict

The following statements can be made on the ground of the institutional characteristics in the three countries described above.
Hungary: ILM, weak vocational specificity and low signalling function of education can make longer the time graduates needed to find a first job. Weak EPL can increase the odds for unemployment.
Poland: OLM, strong vocational specificity and high signalling function of education increase the possibility to find a first job for graduates. The impact of weak EPL is a higher chance of unemployment.
Slovenia: OLM with its high level of educational signalling improves the odds for a faster labour market entry. Strong vocational specificity affects into the same direction. The strict EPL decreases the probability of unemployment.
Before going to the micro data analysis itself it is worth to looking at some macroeconomic indicators that describe the situation in the countries analyzed when the respondents gained their qualifications and when they were actually surveyed.
Slovenia can be labelled as an outlier among the post-socialist countries. At the time of the respondents' graduation and still today it has a GDP per capita being substantially higher than that of the other two economies. Its economy is described as being highly dependent on foreign trade and having a very low level of foreign direct investment compared to other EU member states. Hungary also has a substantial dependency on foreign trade but foreign investment is more widespread. Poland takes a position with lower dependency on foreign trade and foreign investments are of similar amount like in Hungary.
The structure of the economy being observed in the light of the GDP composition by sectors shows characteristic changes over time. Although in 2003 Slovenia's industrial sector accounted for 40 percent of its GDP which was about 10 percent more than in Poland and Hungary, by 2008 the role of this sector decreased and the economic structure of the examined countries became more similar.

GDP composition

Hungary

2003: Services: 62%; Industry: 33%; Agriculture: 3%

2008: Services: 66%; Industry: 31%; Agriculture: 3%

Poland

2003: Services: 66%; Industry: 31%; Agriculture: 3%

2008: Services: 64%; Industry: 32%; Agriculture: 4%

Slovenia

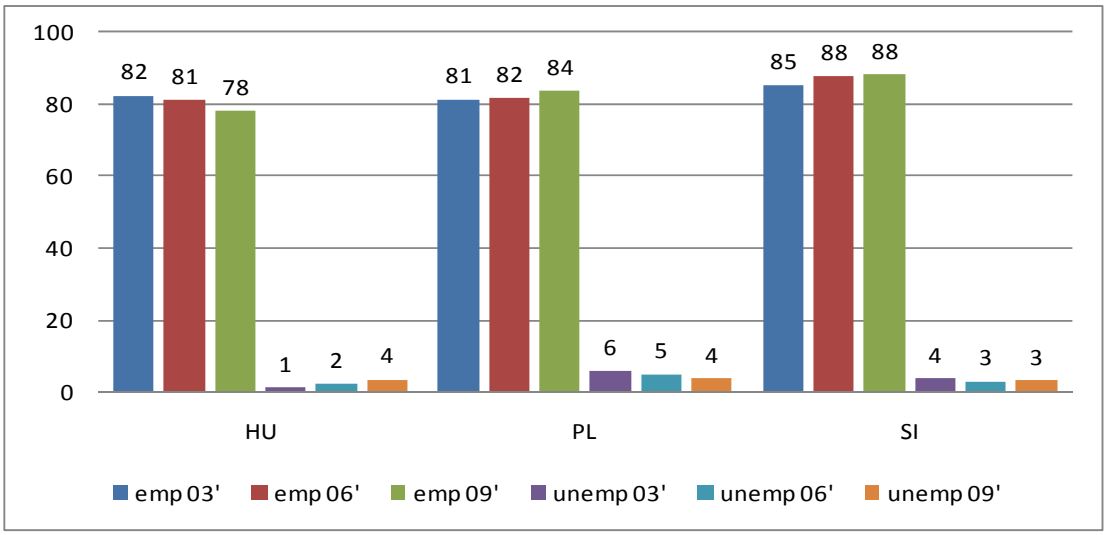
2003: Services: 57%; Industry: 40%; Agriculture: 3%

2008: Services: 64%; Industry: 34%; Agriculture: 2%

Source: IMF

Changes in employment and unemployment rates are displayed in Figure 1. Unemployment is traditionally lower among highly educated people as compared to the less educated. Around the time of the respondents' graduation tertiary educated people had the lowest unemployment rate in Hungary (only 1 percent). Both Poland and Slovenia had higher rates of unemployment (6 and 4 percent) at this time. However, by the time of the data collection in 2009, unemployment of the highly qualified somewhat decreased in these two countries and became the lowest in Slovenia. At the same time, Hungary faced with a growing unemployment rates of the well educated.

Figure 1. Employment/unemployment rate, by highest level of education attained; tertiary education (ISCED5 and 6) (%)

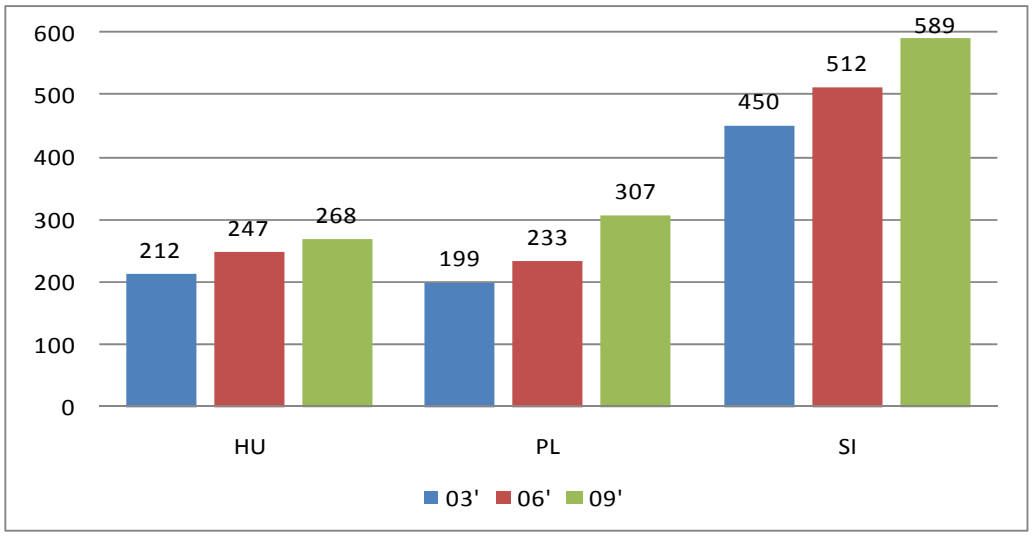


Source: Eurostat

Minimum wage has an effect on the competition being present in the labour market. High levels of minimum wages can make the less skilled more attractive to employers and may be substitutes of the high skilled when the work to be done in certain jobs require no special skills or high qualification. Minimum wages were in effect in all the countries, although the rates are different, as shown in Figure 2. Minimum wages were similarly low in Hungary and Poland, about half of the wages reported in Slovenia. In all countries data show the growth of minimum wages across the years considered suggesting a more intense competition for the high skilled as well.

These macro level indicators may allow a general statement regarding the three countries in terms of their economic situation. Probably in every respect, Slovenia is in the best situation, while Hungary and Poland lag behind in the transition to a developed market economy. There seems to be enough reason to assume that this general situation has an influence on the graduate labor market as well. Moreover, when the world experienced an economic crisis in the last years, countries with a better economic standing might have suffered less than those where the economic conditions are at poor level anyway.

Figure 2. Minimum wage (Euro)



Source: Eurostat

3. Data, measures, methods

The paper utilizes the data from the HEGESCO project (*www.hegesco.org*). The data collection has occurred in 2008 / 2009 and refers to those diploma holders who completed their studies five years earlier in 2002 / 2003. The project was a follow-up of the previous REFLEX project and used the same questionnaire. The HEGESCO project involved five nations: Hungary, Lithuania, Poland, Slovenia and Turkey. The present study deals with three former communist countries. Regarding the number of cases, it is 1533 in Hungary, 1200 in Poland, and 2923 in Slovenia. The file is weighted to 2000 cases in order to give an equal weight to the data in each country. The weighting coefficient used also to correct for over- or under-representation of certain levels or fields of higher education compared to population figures. Graduates who never entered the labour force were excluded from the analysis.

The analysis has a dual focus: length of time required for labour market entry and unemployment experience. The first dependent variable is measured in month. Part of the respondents started to work already before graduation; they are coded as 0 on this variable. The same holds for those who started to work without any (reported) search time. The second dependent variable is a dichotomous one and indicates whether the graduate has been unemployed or not during the time between labour market entry and data collection.

Labour market entry is basically analyzed in bivariate manner, only gender of the graduate is considered. The Kaplan-Meier survival analysis is used to investigate and display the process.

A much wider range of independent and control variables are included in the analysis on the odds of unemployment. Here the logistic regression method was used to estimate the chances of males and

females for experiencing unemployment. The analysis was done separately for the three countries and gender interaction terms were included in order to establish the differences between males and females. Further variables represent attributes of the graduates such as their age, the features of the program they graduated in (level, field, form etc.). Variables indicating whether the respondents had professional experience and participated in internships / voluntary / student organizations were also included. Unfortunately the data did not allow to controlling extensively for the respondents' social background as the only variable for this purpose was the education of parents. A full list of the explanatory variables (with references) will be given in section 5.

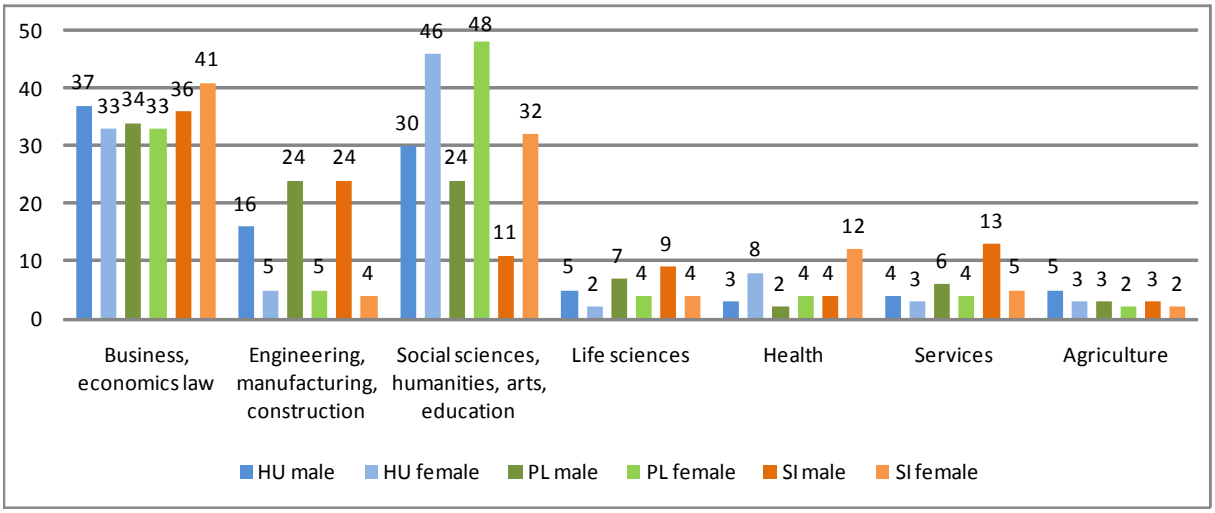
4. Gender differences at descriptive level – the bivariate perpspective

In this section gender differences are displayed at a descriptive level taking into account the main features of studies, which will pay a role as independent and control variables in the multivariate part of the analysis. Moreover, labour market entry and unemployment experiences are investigated in a biavariate perspective.

4.1. The main features of studies

Figure 3 displays the gender distribution of the graduates by field of study. In each country women are overrepresented in the field of social sciences and health and, with the exception of Poland, in business, economics and law as well. Life sciences, engineering, manufacturing and construction on the other hand show a higher proportion of males.

Figure 3. Field of education in three countries by gender



Further characteristics connected to learning activities are displayed in Table 1. In all three countries women are more likely than man to study at a level that is not giving a straight route to a doctoral degree. In most countries there is no gender difference considering the form of studies. A similar percent of women and men attended full time and part time programs. The only difference is for Poland where more male students studied part time than women. In the countries where significant differences were found (Slovenia and Hungary) males did hold positions in voluntary / student organizations rather than females during their studies. In every country a higher percentage of females did participate in internship programs during their studies as compared to males. In Poland and Hungary significantly more males compared to females did gain study related work

experience during their studies. Significant differences regarding whether the degree gained in 2003 was the first one ever gained were found only in Poland where females were more likely to have another degree already at the time of graduation in 2003.

Table 1. The main features of the study: percentages (with the N of cases in brackets)

		1. Study leading to doctorate	2. Full time student	3. Held position in student / voluntary organization	4. Participated in internship	5. Had study related work experience during higher education	6. Not the first degree
HU	M	51 (633)	89 (644)	19 (629)	82 (630)	36 (637)	16 (468)
	F	36 (1288)	91 (1279)	15 (1247)	87 (1250)	30 (1242)	18 (885)
PL	M	69 (690)	58 (675)	21 (690)	71 (690)	31 (690)	7 (532)
	F	64 (1304)	64 (1282)	19 (1303)	80 (1302)	26 (1302)	11 (1008)
SI	M	10 (717)	60 (715)	18 (715)	50 (713)	60 (700)	2 (544)
	F	6 (1275)	64 (1270)	12 (1269)	57 (1266)	60 (1208)	2 (1015)

Feature 1: Phi values and significance levels: HU: 0,144 (0,000); PL: 0,050 (0,024); SI: 0,067 (0,003)
Feature 2: Phi values and significance levels: HU: 0,021 (0,354); PL: 0,052 (0,021); SI: 0,037 (0,102)
Feature 3: Phi values and significance levels: HU: 0,047 (0,041); PL: 0,026 (0,243); SI: 0,08 (0,000)
Feature 4: Phi values and significance levels: HU 0,072 (0,002); PL: 0,099 (0,000); SI: 0,066 (0,004)
Feature 5: Phi values and significance levels: HU: 0,057 (0,014); PL: 0,048 (0,033); SI: 0,006 (0,797)
Feature 6: Phi values and significance levels: HU 0,002 (0,927); PL: 0,070 (0,006); SI: 0,016 (0,552)

4.2. Transition to the labour market

Table 2 displays three option for graduates' labour market entry: getting a job without any search, entry into the labour force before graduation, and search for a job. Regarding these three options for graduates' transition to the labour market, significant differences were found only in Hungary where more males did start to work before graduation and more females had to look for a job after receiving their diploma.

Table 2. Transition to the labour market after graduation

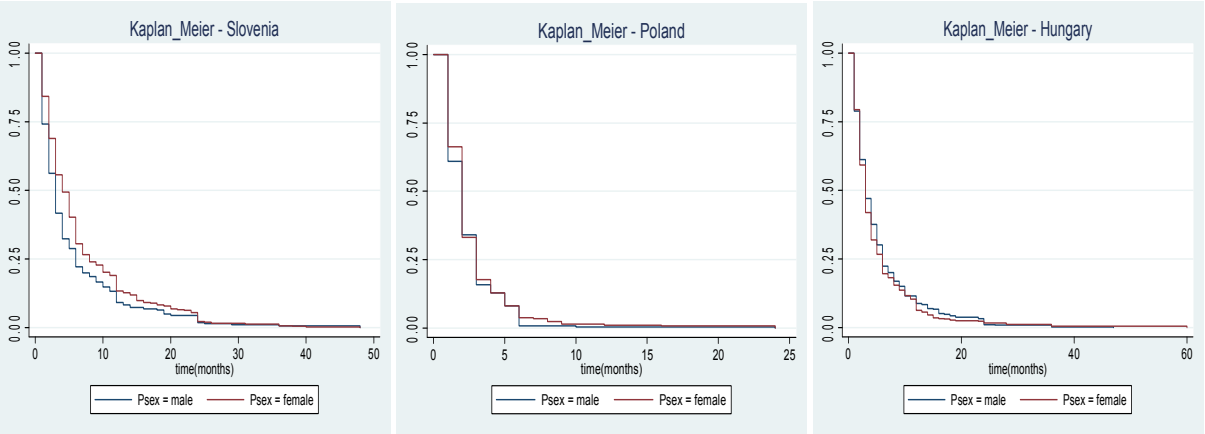
		Got a job without search	Started to work before graduation	Had to search for a job after graduation	N
SI	Male	11	56	33	643
	Female	9	56	36	1124
PL	Male	8	27	65	538
	Female	7	29	65	1025
HU	Male	8	20	72	574
	female	8	14	79	1137

Phi values and significance levels: HU: 0,081 (0,004); PL: 0,036 (0,373); SI: 0,040 (0,250)

Labour market entry was further investigated by the method of the Kaplan-Meier survival analysis. Results are displayed in Figure 4. It was only Slovenia where male graduates entered the labour market faster than female graduates. The gender differences were not significant in Poland and Hungary. This result is strengthened further when looking at the survival rates for males and females in the countries. While in Poland and Hungary the median searching time was between 1-2

months and 2-3 months respectively for both males and females, in Slovenia for males it was 2-3 months and for females 3-4 months.

Figure 4. Survival curves for labour market entry in three countries by males and females



Slovenia: chi2(1) = 5.53, Pr>chi2 = 0.0186; Poland: chi2(1) = 0.77, Pr>chi2 = 0.3795; Hungary: chi2(1) = 1.06, Pr>chi2 = 0.3043

4.3. Experience of unemployment

As it was indicated at the beginning of the paper graduates were surveyed five years after the graduation which means that during this time they could have well experienced one or more, shorter or longer period(s) of unemployment. More precisely, the risk period for becoming unemployed involves the time between labour force entry and the data collection, i.e. this could have been shorter than five years for quite many respondents, depending on the time they required to find a first job. The basic descriptive information on unemployment occurrence, in terms of 'yes or no', is displayed in Figure 5. According to our data in all of the countries more females were hit by unemployment than males at this observed level.

As mentioned in the data section, several predictors and control variables will be used for a more detailed investigation of gender differences in unemployment occurrence. Out of these, it is particularly interesting to look at the fields of study. This is presented in Table 3 in form of a simple cross-classification of the data where basically the unemployment by gender relationship is controlled for the fields of study. Data reveal that no significant gender differences appear for the category of social sciences, humanities, arts, education. In all three countries gender differences were significant and indicated a disadvantage for women in the case of graduation in services. Additionally, females were more likely to experience unemployment as compared to men for business, economics and law in Poland and in Hungary; for engineering, manufacturing and construction in Hungary; and for life sciences, engineering, manufacturing and construction and agriculture in Slovenia.

Figure 5. Experience of unemployment in three countries by gender

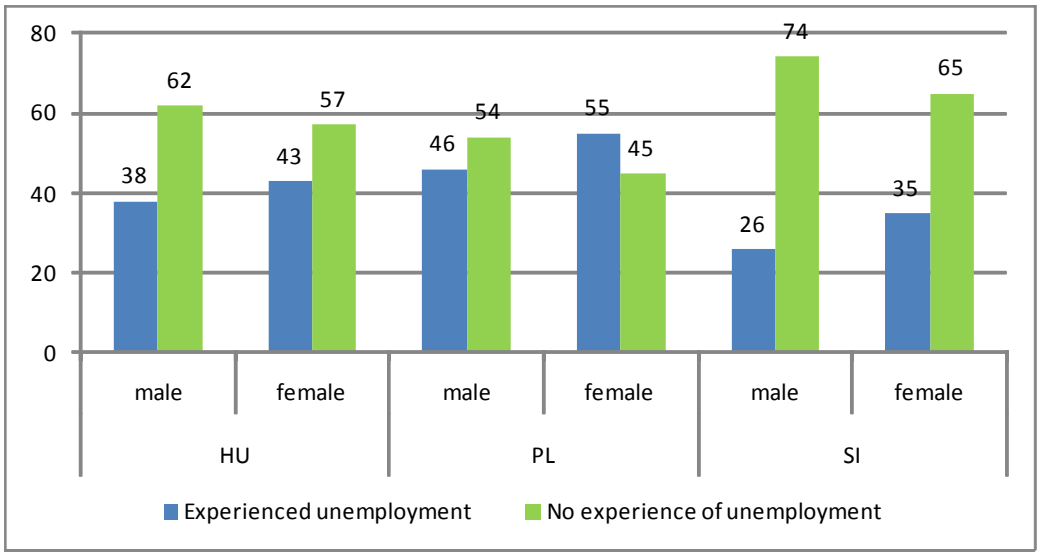


Table 3. Cross-classification of unemployment occurrence by field of study and gender in three countries

Field of study / unemployment occurrence		Slovenia			Poland			Hungary		
		never unempl	experienced unempl	N	never unempl	experienced unempl	N	never unempl	experienced unempl	N
Social sciences, humanities, arts, education	M	62	38	76	42	58	165	47	53	195
	F	59	41	409	39	61	620	50	50	601
Business, economics law	M	68	32	257	**56**	**44**	230	**56**	**44**	239
	F	67	33	516	**47**	**53**	431	**49**	**51**	428
Life sciences	M	**75**	**25**	68	40	60	47	61	39	33
	F	**55**	**45**	53	54	46	57	54	46	26
Engineering, manufacturing construction	M	**83**	**17**	169	49	51	166	**57**	**43**	103
	F	**58**	**42**	50	39	61	62	**43**	**57**	65
Agriculture	M	**71**	**29**	24	14	86	21	52	48	31
	F	**41**	**59**	22	8	92	25	36	64	39
Health	M	87	13	31	25	75	12	82	18	22
	F	83	17	157	30	70	46	69	31	100
Services	M	**74**	**26**	91	**52**	**48**	44	**56**	**44**	25
	F	**45**	**55**	64	**33**	**67**	48	**21**	**79**	39

Cramer's V:
Slovenia: life sciences 0,213 (0,019); engineering etc 0,248 (0,000); agriculture 0,302 (0,41); services 0,287 (0,000)
Poland: business 0,081 (0,36); services 0,191 (0,066)
Hungary: business 0,073 (0,058); engineering 0,138 (0,073); services 0,365 (0,004)

5. Experience of unemployment – the multivariate perspective

This section deals with the multivariate analysis of unemployment occurrence. The method is logistic regression. The variables included in the analysis were as follows: female (reference: male); older than 25 (reference: younger); studied in a program leading to a doctorate (reference: studied in a program not leading to a doctorate); studied full time (reference: part time); participated in internship (reference: not); had study related work experience during higher education (ref: not); had a position in voluntary / student organization (ref: not); qualification gained is not the 1st one (ref: 1st one); studied business, economics and law; studied life sciences; studied engineering. Manufacturing, construction; studied agriculture; studied health; studied services (reference for all: social sciences, humanities, arts, education); parent's education is ISCED3+4; parent's education is ISCED5+6 (reference for both: ISCED1+2); had a job already before graduation (reference: no). In order to explore the relationship between gender and these indicators, the interaction of these variables with the female variable was also added to the model.
Before going into details of the findings, it worth to provide an overview on the possible patterns for the significance or insignificance of the effects based on the explanatory variables above. Here the chances to become unemployed are compared for men and women and a hypothetical interpretation is offered for two fields of education: science vs. humanities.

Male	Female	Interpretation (comparing hypothetically science vs. humanities)
no diff	no diff	neither males nor females benefit from having a science degree rather than a humanities
no diff	-	females chances are lower when they have science degree rather than humanities; but males do not benefit
no diff	+	females chances are higher when they have science degree rather than humanities; but for males there is no difference
-	no diff	males benefit from having a science degree rather than a humanities degree, for women there is no difference
+	no diff	males have a disadvantage when they have a science degree but there is no difference for women
-	-	males and females also benefit from having a science degree rather than a humanities degree
+	+	it is a disadvantage for both males and females to have a science degree rather than a humanities degree
-	+	males benefit from a science degree, but for females it means a disadvantage
+	-	females benefit from a science degree, but for males it is a disadvantage

The details of the estimates, the log odds rates are presented in Table 4. The significant estimates are highlighted in the table. First of all, when comparing males and females, significant difference is found only in Poland. Precisely in terms of the references, the chances of a female respondent who was younger than 25; studied in a program not leading to a doctorate; studied part time; did not participate in internship; did not have any study related work experience; did not have a position in any voluntary / student organization; the qualification she gained is was the first one; studied social sciences, humanities, arts or education; the highest educational level of her parent(s) was ISCED 1+2; and did not have a job at the time of graduation was 5.6 times higher to experience unemployment than a male respondent with the same attributes. Neither in Slovenia, nor in Hungary was a similar difference detected according to our model.
Taking a look at the significance levels of the interaction terms there is a possibility to investigate whether differences across a number of characteristics among females are different from those observed among males.
It was Poland where such differences turned out to be present in most of the cases when finding four of the gender interactions significant. In Hungary and Slovenia only three of the interaction terms were significant indicating that the differences in the examined characteristics have in many

cases the same magnitude among males and females. There was no variable with significant effect in the three countries simultaneously.

Participating in internships was associated with a higher chance to experience unemployment for males in both Hungary and Poland. Although the size of the difference was comparable for females as well in these two countries, it turned out that internship among females in Hungary makes no difference while it reduces the chance to experience unemployment among Polish females.

For males, study related work experience was associated with a lower chance to experience unemployment in Hungary and Poland as well. The significant interaction terms suggest that the difference in the case of females is significantly different from that observed among males. However, for females study related work experience is not associated with a lower chance to experience unemployment.

The same pattern can be observed in Hungary and Slovenia when looking at respondents having a degree in engineering, manufacturing, construction. Males benefit from earning such a degree rather than one in social sciences, humanities, arts, education but females do not.

Having a job at the time of graduation was associated with a smaller chance to experience unemployment in Slovenia and Poland and as the interaction term turned out to be non-significant a comparable difference is present among women. Women in these countries also have a lower chance to experience unemployment if they had no gap between their studies and their first job. In Hungary the advantage was only present for women and no difference was observed among men.

In addition to what has just been said, studying in a program that leads to doctorate in Hungary was associated with a limited chance of having unemployment experience among males but not for females. Having a degree in services rather than in social sciences, humanities, arts, education went together with a higher chance to experience unemployment only among women. While holding a position in a voluntary/student organization did not make a difference among males, for females it somewhat increased the chance to experience unemployment. Studying health was a benefit only among women. In Slovenia a qualification in the field of life sciences, health, services rather than in social sciences, humanities, arts, education was associated with a lower chance to experience unemployment if the respondent was a male. For females a degree in life sciences made no difference, a degree in health was related to a lower chance and a service degree was associated with a higher chance to experience unemployment compared to someone who studies social sciences, humanities, arts education. Even though the data indicate that having a degree in agriculture rather than in social sciences, humanities arts, education made a bigger difference among females, the coefficients for women are not significant. Therefore a degree in agriculture is coupled with neither a higher nor a lower chance to experience unemployment in the case female graduates. When controlling for other variables studying full time did increase the chance for women to experience unemployment. In Poland a position in voluntary / student organization was associated more with a higher chance to experience unemployment among men but significantly less associated among women. Actually voluntary participation does even have a favourable effect on women's chances and make the voluntary participants less likely to experience unemployment.

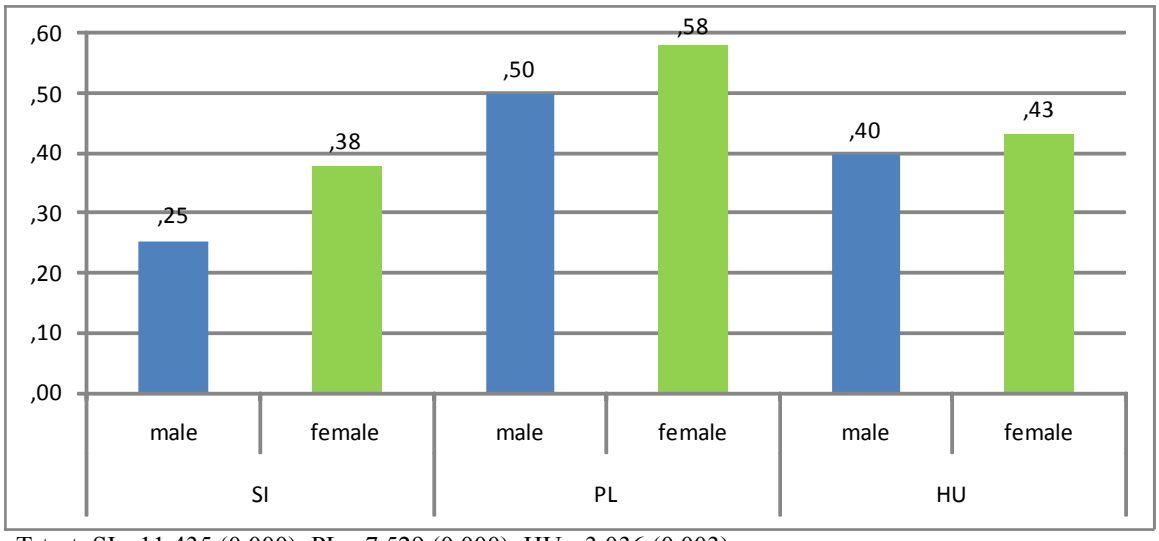
While for males, if the degree obtained in 2003 was not the first one for the respondent, it meant much less chance to experience unemployment, the opposite was true in the case of females. Among females, having a degree in agriculture was associated with a higher chance to experience unemployment. Having a science degree rather than a qualification in social sciences, humanities, arts, education was associated with a lower chance to experience unemployment only among women. Studying business, economics, law went together with a lower chance to experience unemployment among females only. The effect of parents' education could not be confirmed in most cases, the only exception was Poland where a slight advantage for graduates of secondary educated parents' was observed. As an overview for the advantages and disadvantages among males and females regarding the odds for unemployment, the results from the multivariate models can be summarized as follows.

	Hungary		Slovenia		Poland	
	Males	Females	Males	Females	Males	Females
older than 25 (ref: younger)	no diff	no diff	no diff	no diff	no diff	no diff
studied in a program leading to a doctorate (ref: studied in a program not leading to a doctorate)	-	no diff	no diff	no diff	no diff	no diff
studied full time (ref: part time)	no diff	no diff	no diff	+	no diff	no diff
participated in internship (ref: not)	+	no diff	no diff	no diff	+	-
had study related work experience during higher education (ref: not)	-	no diff	no diff	no diff	-	no diff
had a position in voluntary / student organization (ref: not)	no diff	+	no diff	no diff	+	-
qualification gained is not the 1st one (ref: 1st one)	no diff	no diff	no diff	no diff	-	+
studied business (ref: humanities)	no diff	no diff	no diff	no diff	no diff	-
studied science (ref: humanities)	no diff	no diff	-	no diff	no diff	-
studied engineering (ref: humanities)	-	no diff	-	no diff	no diff	no diff
studied agriculture (ref: humanities)	no diff	no diff	no diff	no diff	+	+
studied health (ref: humanities)	no diff	-	-	-	no diff	no diff
studied services (ref: humanities)	no diff	+	-	+	no diff	no diff
education of parents 2 (ref: 1)	no diff	no diff	no diff	no diff	no diff	-
education of parents 3 (ref: 1)	no diff	no diff	no diff	no diff	no diff	no diff
had a job already before graduation (ref: no)	no diff	-	-	-	-	-

-: the chances to experience unemployment decrease (good)
+: the chances to experience unemployment increase (bad)

When comparing the computed probabilities to experience unemployment between males and females in the three countries, significant differences emerge showing that women everywhere have a higher probability to experience unemployment compared to men. These probabilities are shown in Figure 6.

Figure 6. Probability to experience unemployment by gender in three countries (mean)



T-test: SI: -11,435 (0,000); PL: -7,529 (0,000); HU: -3,036 (0,003)

6. Discussion of the results

This analysis investigated labour market entry and early career for graduates in three post-communist countries, Hungary, Poland and Slovenia with a chief emphasis on gender differences. As the data referred to respondents who left university in 2002 / 2003 and covered their early career in the next five years, the consequences of the recent economic crisis could only partly be targeted and investigated. Nevertheless, the paper still examines countries and the specific post-communist transitional labour markets that are not much analyzed so far and particularly not from the perspective of the graduates who represent a recently expanding group in these societies.

Results were presented at a descriptive bivariate and a multivariate level. Regarding the main focus of the study, the gender difference, the Kaplan-Meier survival curves revealed significant inequalities and disadvantage for women only in Slovenia in terms of job search time. The multivariate analysis of labour market entry (not included in the paper) also led to a similar conclusion: no particular gender inequalities are present in these three countries in this regard. Despite of the institutional features regarding the OLM vs. ILM distinction for the link between the school system and the labour market, the descriptive results did not seem to show any country variation for graduates' labour market entry – though this was not tested formerly.

An indicator of the early career of young graduates, namely unemployment experience, showed much more marked gender differences. Furthermore, the risk of unemployment during the times the data cover between 2002 / 2003 and 2008 / 2009, may be stronger linked to the economic crisis which hit the post-communist countries as well. In fact, the economic crisis might affect Hungary at the strongest and Slovenia at the weakest, while Poland takes a position in the middle.

From the viewpoint of the unemployment experience, the descriptive results showed that women have significantly higher risk for unemployment in all three countries. The observed disadvantage seemed to be bigger in Slovenia and Poland, while the smallest in Hungary. A possible interpretation of this finding can be that the economic crisis hit Hungarian male graduates as well. At the same time, the largest observed percentages for experiencing unemployment appear for Poland and the smallest figures emerge for Slovenia. This is in line with stronger employment protection being characteristic for the Slovenian labour market.

Table 4. Results from logistic regression analysis predicting the odds for becoming unemployed– Exp(B) coefficients

	SI	PL	HU	Interpretation
female (ref: male)	0,751	**5,624**	0,288	In PL when c.f.o.v. females have a 5.6 times higher chance to experience unemployment than males
older than 25 (ref: younger)	1,455	1,177	0,736	
studied in a program leading to a doctorate (ref: studied in a program not leading to a doctorate)	0,933	0,856	**0,574**	in HU when c.f.o.v. male respondents who studied in a program leading to a doctorate have half of the chance than males who studied in a program that is not leading to a doctorate to experience unemployment
studied full time (ref: part time)	1,515	1,104	1,841	
participated in internship (ref: not)	1,371	**1,623**	**2**	in both PL and HU when c.f.o.v. the chance for experiencing unemployment for a male respondents who participated in internship was almost 2 times higher than the chance of those who did not do any internship during their studies
had study related work experience during higher education (ref: not)	0,912	**0,372**	**0,463**	c.f.o.v. in HU and PL males who had study related work experience had 0.5 and 0.4 times less chance to experience unemployment than those who did not have such work experience
had a position in voluntary / student organization (ref: not)	0,903	**2,032**	0,977	in PL c.f.o.v. males who did have a position in student/voluntary organizations had 2 times higher chance to experience unemployment than those who did not
qualification gained is not the 1st one (ref: 1st one)	0,422	**0,238**	1,086	in PL c.f.o.v. those males for whom the qualification gained in 2003 was not the first one had 5 times less chance to experience unemployment than those whose qualification in 2003 was the first one
studied business/law (ref: humanities)	0,839	0,793	0,696	
studied science (ref: humanities)	**0,423**	1,025	0,485	in SI c.f.o.v. males who studies science had almost 0.5 times less chance to experience unemployment compared to those who studied humanities
studied engineering (ref: humanities)	**0,325**	0,908	**0,375**	In HU and PL c.f.o.v. males who graduated in engineering had 0.4 and 0.3 times less chance to experience unemployment compared to those who studied humanities
studied agriculture (ref: humanities)	0,417	**6,205**	0,809	in PL c.f.o.v. males who completed agricultural studies had 6 times more chance to experience unemployment compared to those who studied humanities

studied health (ref: humanities)	**0,127**	1,095	0,474	in SI c.f.o.v. males who studied health had 0.1 times less chance to experience unemployment compared to those who studied humanities
studied services (ref: humanities)	**0,443**	1,023	0,356	in SI c.f.o.v. males who studied services had 0.4 times less chance to experience unemployment compared to those who studied humanities
parent's education ISCED 3+4 (ref: ISCED 1+2)	1,068	1,156	0,483	
parent's education ISCED 5+6 (ref: ISCED 1+2)	0,975	1,342	0,504	
had a job already before graduation (ref: no)	**0,236**	**0,359**	0,59	In SI and PL c.f.o.v. those males who already had a job at the time of graduation had 0.2 and 0.5 times less chance to experience unemployment compared to those who had no job at the time they completed their studies
INTERACTION TERMS				**Interactions**
older than 25*female	0,83	0,85	1,237	
studied in a program leading to a doctorate*female	0,887	0,98	1,521	
studied full time*female	1,839	1,003	0,767	
participated in internship*female	0,953	**0,357**	0,716	in PL c.f.o.v. the difference in chance to experience unemployment between those females who did internship during their studies and those who did not was 0.4 times less than observed among men; so the difference in the case of women is 0.357*1.623=0.579 (**sign.**)
had study related work experience during higher education*female	0,862	**2,78**	**2,092**	in HU c.f.o.v. the difference in chance to experience unemployment between those females who had study related work experience and those who did not was 2 times higher than observed among men; so the difference in the case of women is 0.463*2.092=0.96 (**not sign.**); in PL c.f.o.v. the difference in chance to experience unemployment between those females who had study related work experience and those who did not was 2.8 times higher than observed among men; so the difference in the case of women is 2.78*0.37=1.034 (not sign.)
had a position in voluntary / student organization*female	1,018	**0,192**	1,618	in PL c.f.o.v. the difference in chance to experience unemployment between those females who had position in voluntary/student organization and those who did not was 0.2 times less than observed among men; so the difference in the case of women is 0.192*2.032=0.39 (**sign.**)

qualification gained is not the 1st one*female	3,013	**8,512**	0,766	in PL c.f.o.v. the difference in chance to experience unemployment between those females whose degree gained in 2003 was not the first one and those whose degree was the first one was almost 9 times higher than observed among men; so the difference in the case of women is 8.512*0.238=2.02 (**sign.**)
studied business/law*female	1,21	0,657	1,305	
studied science*female	1,684	**0,258**	1,244	in PL c.f.o.v. the difference in chance to experience unemployment between those females who studied science and those who studied humanities was almost 3 times less than observed among men; so the difference in the case of women is 0.258*1.025=0.26 (**sign.**)
studied engineering*female	**2,995**	0,974	**3,818**	in HU and SI c.f.o.v. the difference in chance to experience unemployment between those females who studied engineering and those who studied humanities was almost 4 and 3 times higher than observed among men; so the difference in the case of women is 8.818*0,0.375=1.431 (**not sign.**) in HU and 2.995*0.325=0.973 (**not sign.**) in SI
studied agriculture*female	**5,71**	1,242	0,575	in SI c.f.o.v. the difference in chance to experience unemployment between those females who studied agriculture and those who studied humanities was almost 6 times higher than observed among men; so the difference in the case of women is 5.71*0.417=2.38 (**not sign.**)
studied health*female	2,203	0,998	0,593	
studied services*female	**4,836**	0,779	**12,669**	in HU and SI c.f.o.v. the difference in chance to experience unemployment between those females who studied services and those who studied humanities was almost 13 and 5 times higher than observed among men; so the difference in the case of women is 12.669*0.356=4.51 (**sign.**) in HU and 4.836*0.443=2.14 (**sign.**) in SI
parent's education ISCED 3+4*female	1,112	0,567	3,37	
parent's education ISCED 5+6*female	1,225	0,714	2,109	
had a job already before graduation*female	0,881	0,612	0,989	
Constant	0,623	0,981	1,252	

In order to get a deeper insight into the gender effects, several compositional differences have been taken into account. First of all, data reveal that field of education takes an important role. On the one hand, females are chiefly overrepresented in the field of social sciences, humanities, arts and education. (This holds the less for Hungary.) Women are also overrepresented in health. On the other hand, the descriptive results reveal that the female-dominated fields of study like mentioned above do not show particularly high risk for unemployment either generally or for women. In fact, experiencing unemployment is more frequent for women when they graduated in male dominated study fields: engineering in Slovenia and Hungary, life sciences in Slovenia or business and economics in Poland and Hungary.

In a multivariate perspective, it seems that males and females do not benefit in the same way from their studies according to the characteristics included in the analysis. While almost all degrees provide safer jobs than those from social sciences, humanities, arts, education (with the exception of agriculture in Poland), in some cases what was indifferent or advantageous among men turned out to be disadvantageous or indifferent among females. In Hungary and Slovenia graduating in engineering, manufacturing, construction, life science or services (rather than in social sciences, humanities, art, education) may be mentioned as an example. Since not enough is issued of them, engineering, manufacturing, construction degrees are valued in the labour market more than most degree from social sciences, humanities, art, education. Degrees in services may prevent from unemployment because graduates of this field have language skills that are welcomed by the employers, especially at multinational companies. The relative advantage of women having life science or business, economics, law degree rather than social sciences, humanities, art education one was observed in Poland and in the field of health among Hungarian women.

In addition to the field of study, participating in education leading to doctorate level was expected a factor decreasing the odds of unemployment. This holds only for Hungary. While women are usually underrepresented in this higher form of tertiary schooling, no particular gender differences are present according to the interaction terms.

Accumulation of work experience during studies was another aspect considered in the analysis, assuming that this might decrease the odds of unemployment later. It holds for Hungary and Poland but only for males. Internship, however, increases the chances for unemployment among males, while females with internship experience are winning only in Poland. A third form of work experience, voluntary work is not helpful for avoiding unemployment, particularly not in Poland. However, voluntary work seems to be advantageous among Polish women.

The composition of internship takers follows the trends of study fields. Males who participated in internships did study business, economics, law, or engineering, manufacturing, construction, or social sciences, humanities, arts, education in both Hungary and Poland. Unfortunately no data were present about the dates of unemployment, but seemingly a high share of those taking internships studied subjects that were most vulnerable when the last economic crisis started in 2008.

As a second explanation, business, economics and law degrees may be more diversely used in the labour market and those holding such qualifications may be able to leave and find jobs with high flexibility even allowing for short terms of unemployment. Social sciences, humanities, arts, education on the other hand may couple with a higher chance to experience unemployment when the subject of the study is not much valued by the employers.

Thirdly, as internships in most cases mean ‘staff for free’, companies use these positions as a tool to distribute work more efficiently and probably give the easiest and less professional assignments to students. This may cause that internships do not help the participants to develop and practice skills that are relevant for professional success later on.

A bigger stock of human capital, having another tertiary degree decreases the odds for unemployment only in Poland. This creates however further inequality for Polish females because male graduates benefit more from this fact. According to the data, mostly men with business, economics, law degree held other qualifications (46 percent) but among women this was mostly

true for respondents with a degree in social sciences, humanities, arts, education (52 percent). Among males most had other qualification in business economics law (49 percent), and most women had other qualification in social sciences, humanities, arts, education (45 percent).
Due to the low number of cases the available information does not allow to test the pattern of qualifications, therefore only hypothetical explanations may be given at this point. Additional qualifications either deepen already existing knowledge or introduce people to new subject areas and give them more flexibility in the future. It may be possible that males were more likely to choose a second qualification that gives more flexibility and prevents from unemployment. On the other hand it is also possible that males who actually chose qualifications from the same broad field managed to accumulate a stock of expertise in their field that makes it easier for them to have a stable job.
We took into account social origin as well. Higher level of parental education turned out to be insignificant for the odds of unemployment and no gender differences were present in this respect either in most cases.
Based on the macro-level indicators, the Slovenian economic situation seemed to be better than the one in Poland and particularly Hungary. On the ground of the institutional characteristics for the school system and the labour market, Slovenia could have been expected to have some advantage as well. However, in terms of gender inequalities, the bivariate and multivariate analyses provided somewhat ambiguous results. We cannot produce a rank order of the three countries; there are plusses and minuses in each society for the (dis)advantage of the graduated women.
In Slovenia, a significant gender difference appeared for the labour market entry. Unlike in the two other nations, the male graduates found a first job much faster than the female ones. Moreover, for the unemployment experiences, women are particularly disadvantaged in the male dominated graduate jobs (based on the field of study). In fact, males gain an advantage in certain fields like engineering, manufacturing, construction, or life science or services (in contrast to social sciences, humanities, arts, education), but this does not hold for females. At the same time, the number of significant estimates in the multivariate analysis is not many; we found no gender effects in 10 out of 16 indicators.
In Hungary, the female disadvantage in the male dominated fields e.g. engineering or business (at least at bivariate level) is also characteristic. It is visible in Hungary that attributes which are associated with an advantage for males (e.g. accumulating work experience during studies, studying in a program leading to a doctorate) are not beneficial for women. On the other hand, Hungarian women have even an advantage for lower odds of unemployment when they graduated in health or had a job at the time of graduation. Moreover, in case of half of the indicators for gender differences (8 predictors out of 16) no significant gender differences were found.
Finally in Poland, beyond the strong disadvantage of women confirmed by the main gender effect, the female graduates are able to compensate the difficulties more successfully than males. E.g. their chances for unemployment were lower when they received a degree in business, economic, law or life sciences rather than in social sciences, humanities, art, education or when they participated in internship programs. At the same time, men benefit more from the study related work experience than women for avoiding unemployment.

References

Allen, J. and van der Velden, R. (2001) Educational Mismatches versus Skill Mismatches: Effects on Wages, Job Satisfaction, and On-the-job Search, *Oxford Economic Papers*, 3, 434-452.

Allmendinger, J. (1989) Educational Systems and Labour Market Outcomes. *European Sociological Review* 5: 231-250

Becker, G. S. (1964) *Human Capital. A Theoretical and Empirical Analysis with Special Reference to Education*, New York: Columbia University Press.

Becker, R. and Hadjar, A. (eds.) (2009) *Expected and Unexpected Consequences of Educational Expansion in Europe and the US. Theoretical approaches and empirical findings in comparative perspectives*. Bern: Haupt

Gangl, M. (2003) The Only Way is Up? Employment Protection and Job Mobility among Recent Entrants to European Labour Market. *European Sociological Review,* 19: 429-449

Gerber, T. P. (2003) Loosening Links? School-to-Work Transitions and Institutional Change in Russia since 1970. *Social Forces* 82(1):241–76

Gornitzka, A. Kogan, M. and Amaral, A. (eds.) (2007) *Reform and change in higher education: analysing policy implementation.* Dordrecht: Springer

Kogan, I. and Unt, M. (2005) Transition from to school work in transition societies. *European Societies,* 7, 2: 219-253.

Kogan, I, Gebel, M. and Nolke, C. (eds.) (2008) *Europe Enlarged. A handbook of education, labour and welfare regimes in Central and Eastern Europe*. Abingdon: The Policy Press

Marsden, D. (1999) *A Theory of Employment Systems. Micro-Foundations of Societal Diversity.* Oxford: Oxford University Press.

Maurice, M., Sellier, F. and Silvestre, J-J. (1986) *The Social Foundations of Industrial Power: A Comparison of France and Germany*. Cambridge, Mass.: MIT Press.

Mincer, J. (1974) *Schooling, Experience and Earnings*, New York, NBER and Columbia University Press

Morgan, S. L. (2006) Past themes and future prospects for research on social and economic mobility. In: S. L. Morgan, D. B. Grusky and G. S. Fields (eds.) *Mobility and Inequality: Frontiers of Research from Sociology and Economics.* Stanford, Stanford University Press. Pp. 3-20.

Müller, W. and Shavit, Y. (1998) The institutional embeddedness of the stratification process: a comparative study of qualifications and occupations in thirteen countries. In: Y. Shavit and W. Müller (eds.), *From School to Work. A Comparative Study of Educational Qualifications and Occupational Destinations*, Oxford: Clarendon Press. Pp. 1–48.

Tomusk, V. (2007) *Creating the European area of higher education: voices from the periphery.* Dordrecht, London: Springer

Saar, E., M. Unt, and I. Kogan. 2008. Transition from educational system to labour market in the European Union: A comparison between new and old members. *International*

Sorensen, A. B. and A. L. Kalleberg. 1981. An Outline of a Theory of the Matching of Persons to Jobs. In: I. Berg (ed.) *Sociological Perspectives on Labor Markets*. New York: Academic. Pp. 49-74.

Spence, M. A. 1974. *Market Signaling: Informational Transfer in Hiring and Related Screening Processes*. Cambridge: Harvard University Press.

World Bank (2002) *Constructing Knowledge Societies: New Challenges for Tertiary Education.* A World Bank Report, Washington, DC: The World Bank