



NATIONAL SCIENTIFIC RESEARCH INSTITUTE FOR LABOUR  
AND SOCIAL PROTECTION



# School-to-Work Transition of Higher Education Graduates in Four Eastern European Countries

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# Outline

- Introduction, Scope and Specific Objectives
- Theoretical background
  - Outcomes of school-to-work transition
  - Factors influencing success in transition
- Data and Methodology
- Results
- Conclusions

# Introduction, Scope, Objectives - 1

- Education is one of the most important factors of allocation and matching on the labor market (Wolbers, Maarten H.J., 2003),
- School-to-work transition as a rather recently developed concept and it is associated with change and uncertainty,
- School leavers are more vulnerable to employment as they have to compete with more experienced workers, employers anticipate higher training costs for them, some skills acquired are not in accordance with job requirements,

# Introduction, Scope, Objectives - 2

- There is a reach literature on school-to-work transition in Western European Countries, but a gap of knowledge for the Eastern ones,
- Scope: to explore the patterns of labor market entry of higher education graduates in four Eastern (post-communist) European Countries: Poland, Hungary, Lithuania and Slovenia,

# Introduction, Scope, Objectives - 3

- We aim at assessing the quality of school-to-work transition by using 3 indicators:
  - Speed of labor market entry (duration to the first job),
  - Stability of insertion (duration of first employment spell),
  - Adequacy of insertion (education-job mismatch at the first job).
- We study cross-country differences for the above-mentioned indicators as well as their relation with individual, structural and institutional variables, including economic conditions, employment protection legislation index (OECD), mechanisms of finding employment, features of the education system, etc.

# Theoretical background - 1

- Outcomes of transition process can be analyzed both at macro and micro level,
- Macro: in relation with economic growth, income distribution, meeting skill needs, productivity, innovation, etc.
  - Neoclassic: ed. increases labor productivity (Mankiw, Romer, Weil, 1992),
  - Ed. increases innovative capacity and growth (Lucas, 1992),
  - Ed. increases the process of technology and knowledge diffusion (Nelson, Phelps, 1996, Benhabib, Spiegel, 1994).

# Theoretical background - 2

- Micro: in relation with occupational status, education-job mismatch, wage, wage growth, security of employment, job and career mobility, participation to training, job satisfaction.
  - Lower the education, lower employment rates,
  - Lower the education, higher the trap of unemployment and inactivity (Quintini et al., 2007)
  - Longer the graduates had to wait before entering labor market, lower their occupational status at the first job (Wolbers, 2007),
  - A better matching between acquired and required skills means a higher productivity and higher wages (Sattinger, 1993)

# Theoretical background - 3

- Factors influencing success in transition:
  - Socio-demographic factors: gender, social origins,
  - National context: production systems, labor market structure and institution (l.m. (de)regulations, l.m. programs, vocational specificity, etc.),
  - Economic cycle,
  - Features of the educational system,
  - Dimension of the youth cohort (Gangl, 2002)



# Data

- Large scale survey conducted in 5 countries (Slovenia, Turkey, Lithuania, Poland and Hungary) on a representative sample drawn of graduates from ISCED 5A who got their diploma in the academic year 2002/2003,
- The survey is part of HEGESCO Project (Higher Education as a Generator of Strategic Competences),
- Data were collected in 2008 via mail questionnaire,
- Turkey was excluded from the study and the analyze was focused on the 4 former communist countries,
- Total number of respondents from those 4 countries: 6580

# Methods - 1

- Kaplan-Meier estimator to determine the speed of entry and the stability in the first job,
- Multivariate Cox regression model to study the effects of several covariates on the speed of entry and stability in the first job,
- Logistic regression to quantify factors that influence adequacy of the insertion.

# Methods - 2

- surviving function  $S(t) = \Pr(T > t)$

*the probability of an individual to survive  $t$  points in time (months) from the beginning of the study until the event happens,  $T$  is a random variable called survival time or lifetime,*

- Hazard function

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr[(t \leq T < t + \Delta t) | T \geq t]}{\Delta t} = \frac{p(t)}{S(t)}$$

$p(t) = \frac{dP(t)}{dt}$  is the probability density function

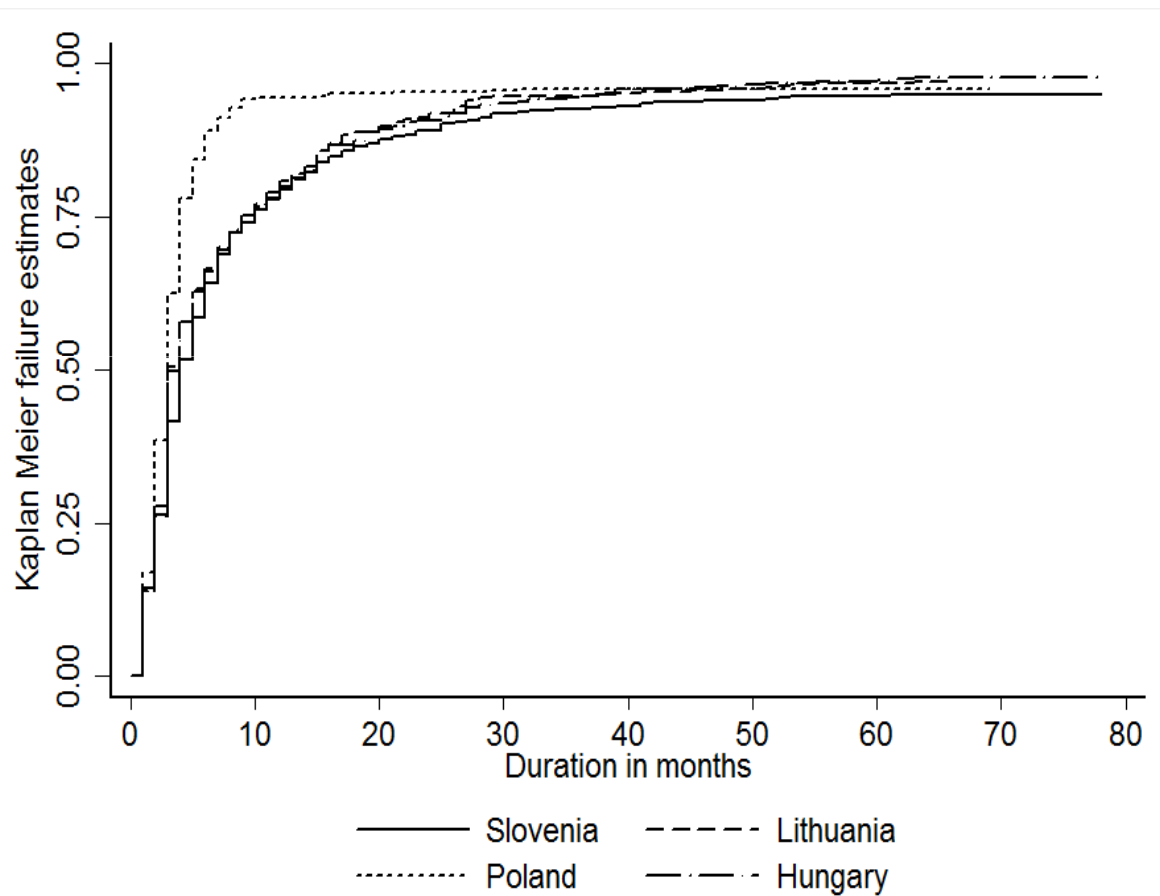
- Cox proportional hazard model (Cox, 1972),

$$\log h_i(t) = \alpha(t) + \beta_1 x_{i1} + \beta_2 x_{ik} + \dots + \beta_k x_{ik}$$

- Logistic equation

$$\Pr[Y = 1 | X] = \frac{e^{X' \beta_\alpha}}{1 + e^{X' \beta_\alpha}}$$

# Speed of labor market entry



- Same pattern for Slovenia, Lithuania and Hungary, where 3/4 of graduates enter the first job in 10-12 months from graduation,
- Poland: higher speed of labor market entry, 3/4 of graduates entered in their 1<sup>st</sup> job in less than 6 months and 90% in less than 12 months

Cumulative failure functions of the higher education graduates that ever entered a first job

# Factors influencing speed of labor market entry (M1)

- Model 1 analyses the country effects and that of field of study on the speed of entry into first job,
- Poland performs best, the rate of labour market entry of higher education graduates is 56% larger than in Slovenia. Second and faster is also in Hungary (by 8%), while Lithuania does not show a statistically significant relative risk.
- Graduates of *Science, Mathematics and Computers* have the quickest labour market entry. Graduates from all fields are more likely to enter the first job than those who graduated *Humanities and Arts*, except *Social Sciences* and *Health, Welfare and Services*;

VARIABLES	M1
Country (ref. Slovenia)	
<i>Lithuania</i>	0.083
<i>Poland</i>	0.446***
<i>Hungary</i>	0.079*
Field of study and training (ref. Humanities and Arts)	
<i>Education</i>	0.206***
<i>Social sciences</i>	0.108
<i>Business and Law</i>	0.193**
<i>Science, Mathematics and Computing</i>	0.289***
<i>Engineering, Manufacturing and Construction</i>	0.048*
<i>Agriculture and Veterinary</i>	0.206***
<i>Health, Welfare and Services</i>	-0.035
Model Chi <sup>2</sup>	112.05***
Degree of freedom	10
Number of cases	3186
Number of events	3066
*p<0.1; **p<0.05; ***p<0.01	

# Factors influencing speed of labor market entry (M2)

- Each additional year of education exceeding four delays labor market entry of higher educated,
- Students that ranked themselves as being better than the average have a quicker transition from school-to-work,
- An additional hour devoted to study increases the speed of entry by 0.2%,
- If index of interactive teaching methods is increasing, the labor market entry is quicker,
- Those that values social networks in getting a job have a quicker entry into the first job

VARIABLES	M2
Years of higher education previous to the first job (ref. 4 years and less)	
<i>5 years</i>	-0.067*
<i>6 years and more</i>	-0.221**
Personal grade compared to other students (ref. Lower than average)	
<i>Higher than average</i>	0.081**
Weekly hours spent on study	0.002**
Index1	-0.015**
Index2	0.008**
Importance of social network in obtaining work (ref. Low importance)	
<i>High importance</i>	0.073**
Model Chi <sup>2</sup>	27.07***
Degree of freedom	7
Number of cases	3140
Number of events	3020

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

# Factors influencing speed of labor market entry (M3)

- Model 3 analyses some country specific variable: public expenditure on labor market policies (%GDP), employment rate for those aged 25-64 and with tertiary education,
- If there is an increase of 1% in the public spending for labor market policies (% GDP) then the school-to-work transition is almost twice quicker,
- Where the employment rate for those 25-64 aged and with tertiary education is higher, then the likelihood to enter the first job is higher.

VARIABLES	M3
Field of study and training (ref. Humanities and Arts)	
<i>Education</i>	0.200***
<i>Social sciences</i>	0.100
<i>Business and Law</i>	0.192**
<i>Science, Mathematics and Computing</i>	0.282***
<i>Engineering, Manufacturing and Construction</i>	0.035
<i>Agriculture and Veterinary</i>	0.397***
<i>Health, Welfare and Services</i>	-0.049
Public expenditure on labour market policies (% of GDP)	0.712***
Employment rate for population aged 25-64 years with tertiary education	0.074**
Model Chi <sup>2</sup>	110.24***
Degree of freedom	9
Number of cases	3186
Number of events	3066
*p<0.1; **p<0.05; ***p<0.01	

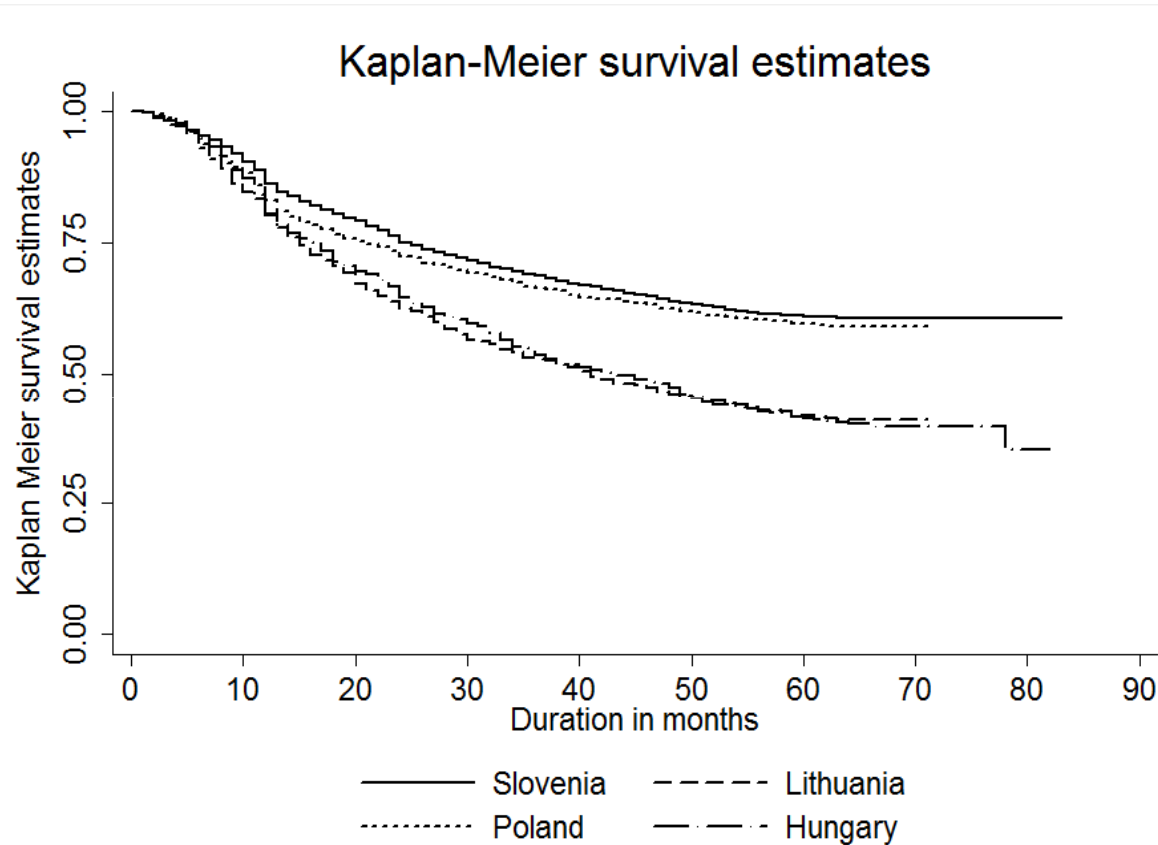
# Factors influencing speed of labor market entry (M4)

- In countries where the labor market is highly regulated, the entry of higher education graduates is delayed

VARIABLES	M4†
Field of study and training (ref. Humanities and Arts)	
<i>Education</i>	0.246***
<i>Social sciences</i>	0.133*
<i>Business and Law</i>	0.325***
<i>Science, Mathematics and Computing</i>	0.328***
<i>Engineering, Manufacturing and Construction</i>	0.097
<i>Agriculture and Veterinary</i>	0.418***
<i>Health, Welfare and Services</i>	0.047
Employment protection legislation (EPL)	-0.279***
Model Chi <sup>2</sup>	58.31***
Degree of freedom	8
Number of cases	2763
Number of events	2656
*p<0.1; **p<0.05; ***p<0.01	
† without Lithuania	



# Stability of insertion



2 patterns: Poland and Slovenia, and, on the other hand Lithuania and Hungary,  
In Poland and Slovenia 70% of graduates stay in the first job up to 3 years,  
In Hungary and Lithuania aprox. 50% of graduates stay in the first job up to 3 years.

Cumulative survival functions of the higher education graduates that left their first job by country

# Factors influencing stability in the 1<sup>st</sup> job

- Tertiary educated that perform medium skilled jobs are more likely to leave their 1<sup>st</sup> job,
- No. of months searching for empl. has a small but negative influence,
- Those that find 1<sup>st</sup> job via informal mechanisms have a higher rate to leave the job,
- Higher age and a period of training have a positive influence.

VARIABLES	COEFFICIENTS
Country (ref. Slovenia)	
<i>Lithuania</i>	0.307***
<i>Poland</i>	-0.023
<i>Hungary</i>	0.253***
Field of study and training (ref. Humanities and Arts)	
<i>Education</i>	-0.135
<i>Social sciences</i>	0.009
<i>Business and Law</i>	-0.194*
<i>Science, Mathematics and Computing</i>	0.010
<i>Engineering, Manufacturing and Construction</i>	0.120
<i>Agriculture and Veterinary</i>	-0.225**
<i>Health, Welfare and Services</i>	-0.076
Occupation (ref. Medium skilled)	
<i>Low skilled</i>	-1.116***
<i>High skilled</i>	-0.102**
Type of education most appropriate for the first job (ref. Lower than higher education)	
<i>Higher education</i>	-0.197***
Number of months searching for a job before the graduation	0.024***
Number of months searching for a job after the graduation	0.022***
Method of finding the first job (ref. Formal mechanisms)	
<i>Informal mechanisms</i>	0.264***
Formal initial training period (ref. No)	
<i>Yes</i>	-0.197***
Age	-0.040***
Model Chi <sup>2</sup>	684.33***
Degree of freedom	18
Number of cases	5139
Number of events	2358

# Adequacy of insertion

- Slovenia display the best education-job match,
- 5 years of education are associated with the best link between education and job,
- Usage of interactive methods conduce to a better ed-job match,
- Unlimited and full time contracts – better the adeq.,
- Higher the unempl. for < 25 years, lower the odds to have a match,
- Higher the Im regulation, lower the ed-job adequacy

VARIABLES	COEFFICIENTS		
	M1	M2	M3†
Country (ref. Slovenia)			
<i>Lithuania</i>	0.001		
<i>Poland</i>	-1.128***		
<i>Hungary</i>	-0.302***		
Field of study and training (ref. Humanities and Arts)			
<i>Education</i>	0.589***	0.589***	0.591***
<i>Social sciences</i>	-0.145	-0.145	-0.271**
<i>Business and Law</i>	-0.105	-0.105	-0.160
<i>Science, Mathematics and Computing</i>	-0.116	-0.116	-0.151
<i>Engineering, Manufacturing and Construction</i>	-0.432**	-0.432**	-0.531***
<i>Agriculture and Veterinary</i>	0.250*	0.250*	0.191
<i>Health, Welfare and Services</i>	-0.336**	-0.336**	-0.39688
Years of higher education previous to the first job (ref. 4 years and less)			
<i>5 years</i>	0.460***	0.460***	0.586***
<i>6 years and more</i>	-0.793***	-0.793***	-0.411**
Index2	0.017***	0.017***	0.016***
Age	-0.010***	-0.019***	-0.023***
Type of contract (ref. Fixed term or temporary contract)			
<i>Unlimited term</i>	0.245***	0.245***	0.222***
Number of contract hours (ref. Part-time)			
<i>Full-time</i>	0.930***	0.930***	0.951***
Employment rate for population aged 25-64 years with tertiary education			0.601***
Unemployment rate (less than 25 years)		-0.069***	
Business investments (% of GDP)		0.188***	
Real GDP growth rate		0.058***	
Employment protection legislation (EPL)			-2.292***
Constant	-0.322	-3.135***	-46.558***
Model Chi <sup>2</sup>	721.78***	721.78***	652.84***
Degree of freedom	16	16	15
Number of cases	5668	5668	4816

# Conclusions - 1

- Slovenia seems to have the best school-to-work transition: high levels of stability and adequacy at the 1<sup>st</sup> job,
- In Poland, the transition is fast, the stability of the 1<sup>st</sup> job is high but the adequacy is poor,
- Hungary and Lithuania: slow transition, low stability and poor adequacy at the 1<sup>st</sup> job,
- Fastest insertion: Science, mathematics and computing,
- Greater stability: Business and Law,
- Best adequacy: Education,
- Graduates with 4 or less years of education have a quick transition,
- Optimal number of years of school for adequacy is 5,

# Conclusions - 2

- Usage of interactive teaching methods improves both speed and adequacy of transition,
- Is faster to find a job via informal mechanisms, but also the leaving is faster,
- Those that assess their job as being in accordance with their level of education have the most stable jobs,
- Low skilled occupations trap higher education graduates in their 1<sup>st</sup> job,
- Contractual flexibility leads to lower adequacy between job and education,
- Favorable economic conditions speed up transition from school-to-work,
- 1% increase (as GDP share) in the public spending for labour market policies leads to approximately twice quicker school-to-work transition.
- In countries where the labour market is highly regulated, the entry of a higher education graduate is delayed and negatively affected in terms of first job's adequacy.

**THANK YOU VERY MUCH!**