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ANALYSIS OF THE DEVELOPMENT AND PREDICTION OF THE RATE OF UNEMPLOYMENT IN SELECTED COUNTRIES WITH MARKET AND TRANSITIVE ECONOMY

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Abstract

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The paper is aimed at the presentation of findings achieved in the study of the dynamics and trends of the rate of unemployment in selected countries with market and transitive economy in the reference period 1995–2001. In addition to the description of developmental trends of analysed time series by means of trend functions of linear, quadratic, exponential, logarithmic, power and inverse types their informative ability was verified as a starting base for the realization of point prediction of investigated events for 2005. With given 95% probability, minimum and maximum values are determined of the evaluated macroeconomic indicator for a defined time horizon.

european countries, market and transitive economy, rate of unemployment, dynamics, development trends, point and interval prediction

If we start from an aspect that structural and frictional unemployment as so-called natural rates of this event belong to accompanying features of market economy which together with price stability, economic growth and extra-economic balance form the integral part of social policy of every country with developed economy then it cannot acquire a zero value. In addition to the mobility of manpower, its adequate level ensures shifts between spheres both from geographical and sector levels. On the other hand, if it becomes a mass event it causes serious problems both to individuals and whole economics.

If we rate inflation and the rate of the output growth among global indicators of macroeconomic efficiency it is not possible to omit the level of the rate of unemployment quantifying the proportion of unemployed persons actively seeking a job in relation to active population. According to Dornbusch and Fischer, its rate exceeding a 10% limit belongs to serious social problems. In addition to a decreased living standard people suffer from psychic stress and often also impaired chance of a work. On the occasion of the EU conference of top-level politicians held in Barcelona in 2000, the politicians came to a conclusion that for the sake of a marked decrease of this undesirable event it was inevitable to strengthen a number of social measures. Thus, not only enterprise and business should be supported but also the removal of barriers for the free movement of manpower including its trouble-free accommodation.

At present, the employment policy occupies an important place in government policy of all member countries of EU. Their interest is, therefore, orientated to a question how the new EU countries deal with the problem. In this context it is necessary to stress that in a number of EU countries, unemployment benefits

are immediately conditioned by frequent visits of employment agencies and impossibility to refuse every offered job. Though problems of unemployment and their solution are primarily the matter of particular countries structural funds can help to governments of the member countries of EU. As for the Czech Republic, there is a possibility to use an operational programme for the development of human resources and an operational programme for industry and business. These programmes are focussed on persons which can be employed only with difficulties, financing selected retraining programmes aimed at the adaptation of heavily employable workers for new working conditions.

The main objective of the paper is to present findings obtained in the analysis of the average level, variability, dynamics and trends and short-term extrapolation point and interval prediction of the rate of unemployment of selected countries with market economy and economy in transition.

LITERATURE SURVEY

A paper presented by LEITNEROVÁ (1997) aimed at the study of changes in the structure of employment in EU countries belongs to important literature sources answering to the objective of the actual analytical activity. According to the findings of the author, from 1986 to 1995 the grouping of countries under evaluation was characterized by the decreased number of jobs first in agriculture and then in manufacturing industry on the one hand and by an increase in the sector of services as a consequence of the changed structure of demand and specialization of production and trade on the other hand.

BOHÁČKOVÁ and SVATOŠOVÁ (1999) dealt with problems of the exact evaluation of achieved unemployment and measures for their stabilization and reduction. An effort for their realization is conditioned by a balanced and adequate economic growth as the integral part of a social policy of every developed country. Measures to reduce unemployment and its impacts on society are also discussed in the paper. TIMÁR (1995) paid attention to historical roots of unemployment and its changes in the period of recession in developed market economies and in post-socialist countries, to the sectoral structure of employment in agriculture, industry, building and services in European countries of OECD[1)] in 1989 and 1992 as well as to changes in priorities in the policy of employment.

According to the author's opinion, the policy of employment cannot fundamentally affect demand for manpower because it is affected by the general economic policy of a country. The solution of a long-term unemployment showing two basic sources is considered to be no less difficult. There are considerable regional differences in the demand for manpower and also handicapped groups of population occur. For the sake of increasing the employment market flexibility it will be necessary to modify not only labour legislation but also the system of social benefits including the tax system. The system of unemployment benefits should stimulate unemployed persons to seek jobs.

DUFEK (2000) dealt with the definition of unemployment rate trends in selected territorial units. Through the application of factor analysis and step regression he demonstrated the effect of endogenous factors in the unemployment rate formation. A paper of KLÍMA and MACA (2002) is aimed at the development of unemployment under conditions of the economic transformation in the Czech Republic in the period 1990–1999. The study includes findings obtained in assessing the unemployment rate trends in relation to the total number of available manpower, the number of unposted job applicants and free jobs as well as findings obtained in the analysis of the dynamics and trends of the rate of unemployment differentiated according to regions, sex, age structure and the highest education achieved.

MACA and BODEČKOVÁ (2002) dealt with the evaluation of unemployment according to higher self-governing territorial units (VÚSC-NUTS 3) in the Czech Republic in the period 1995–2000 and with quantification of the percentage of primary, secondary and tertiary sphere in the unemployment rate formation. By means of applied models of pair and multiple linear correlation and regression they demonstrated an important and statistically significant effect of the proportion of the given variables in relation to the total number of employees in the formation of the of unemployment rate level in studied territorial units.

A paper presented by BODEČKOVÁ and MACA (2002) is aimed at the study of dynamics and trends of employment and unemployment in national economy and their structure according to the highest education achieved in the transformation period of the Czech Republic. The authors demonstrated a marked differentiated effect of the achieved highest education and sex in the formation of employment and unemployment.

MATERIAL AND METHODS

Factual data inevitable to realize the given plan of research accept an information basis of the Czech Statistical Office obtained from the following sources: Yearbook of Labour Statistic-IL0, 2002 (ILO Data base on Labour Statistics: Laborsta 2003); Eurostat, Statistics in Focus, Theme 3-10/2001, 3-17 2002, 3-19/2002, 3-15/2003, 3-16/2003, 9-1/2003; Quarterly Labour Force Statistics - OECD, 4/02 and National Statistical Offices.

The statistical processing of empirical data and their analysis are based on methodical procedures

described in papers of CYHELSKÝ, KAŇOKOVÁ and NOVÁK (1979), HINDLS, KAŇOKOVÁ and NOVÁK (197 9) and MINAŘÍK (2000).

In the description of events under assessment from the one-dimensional aspect arithmetic means ($\bar{y}$) and values of variation coefficients (V_y) were used.

Analysis of the trend of assessed time series is based on the application of models of developmental tendencies of the following type:

$$y' = a_{yt} + b_{yt} \cdot t \quad (1)$$

$$y' = a_{yt} + b_{yt} \cdot t + c_{yt} \cdot t \quad (2)$$

$$y' = a_{yt} \cdot e^{b_{yt}} \cdot t \quad (3)$$

$$y' = a_{yt} + b_{yt} \cdot \ln t \quad (4)$$

$$y' = a_{yt} \cdot t^{b_{yt}} \quad (5)$$

$$y' = a_{yt} + b_{yt} \cdot \frac{1}{t} \quad (6)$$

Informative abilities and accuracy of applied analytical functions were tested by means of correlation indices I_{yt}.

The statistical significance of correlation indices was tested on the significance level P = 0.05 and P = 0.01.

Determination of the confidence belt for extrapolation point estimates of the future level of studied events is based on the following relation:

$$y'_i \pm t_\alpha \cdot s_{y \cdot t},$$

where: t_α is a normed quantity of Student's distribution for the number of degrees of freedom n–1 and for determined probability, $s_{y \cdot t}$ standard error.

RESULTS AND DISCUSSION

Statistics presented in Tab. I form a starting basis for the exact evaluation of empirical data on the registered rate of unemployment from the one-dimensional aspect in selected countries and defined time interval. On the basis of the statistics, it is possible to note marked differentiation between the achieved average level of a studied event, viz. between both groupings of countries and within assessed territorial units. A diagram (Fig. 1) provides a good view of descending values of the average level with a possibility to determine their order. It is not also possible to omit considerable differences between particular countries in the interpretation of fluctuation characteristics of the evaluated unemployment indicator ranging from 5.68 (in Greece) to 36.11% (in the Netherlands) in market economy countries and from 19.99 (in Poland) to 34.06% (in the Czech Republic) in countries with economy in transition. Findings obtained in evaluating the development of the rate of registered unemployment through values of the average rate of increase or decrease can be rated among important findings. Based on the comparison of the statistics, the most marked decrease is evident in the course of the period under evaluation in the Netherlands (–14.88%). In the following descending order, it is Spain (–9.24%), the United Kingdom (–8.34%), Finland (–8.20%), Denmark (–6.10%), Germany (–3.41%), Italy (–2.87%), Luxembourg (–1.74%) and Austria (–0.40%). A positive value of the average rate of growth in selected countries with market economy showed only Greece (2.0%).

In selected countries with economy in transition, the highest rate of growth of the registered rate of unemployment was achieved in the Czech Republic (12.48%) followed by Slovakia (6.67%) and Poland (5.37%).

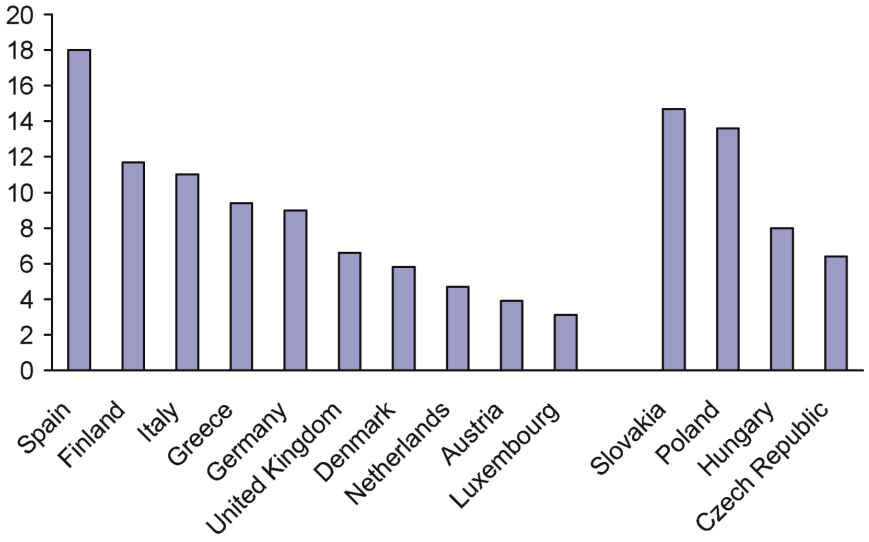
After correction of the presented order of the average rate of increase or decrease of the registered rate of unemployment for the time interval under evaluation taking into account the achieved average level of the assessed event the descending order corresponds to the following values:

Netherlands	United Kingdom	Denmark	Finland	Luxembourg	Spain	Germany	Italy	Austria
–3.14	–1.25	–1.05	–0.69	–0.58	–0.50	–0.37	–0.25	–0.15

Based on the comparison of percentage values of the average rate of decreases it is possible to note the same order only in the Netherlands (1), Finland (4) and Austria (9) in countries of market economy on the one hand and the unambiguous correspondence of the order of countries with economy in transition on the other hand. Corrected values reached in Hungary –1.11%, in the Czech Republic +1.95%, in Slovakia +0.45% and in Poland 0.39%.

The dynamics description of a studied event in spheres under evaluation is made possible by index series with a fixed and changing basis the values of

which are summarized in Tab. II. On the basis of the series it is possible to note the highest reduction in the rate of unemployment in the final year (2001) as against the basic period (1995) in the Netherlands (–71.83%) and the lowest one in Austria (–2.70%). As for countries with market economy, the only increase by 2.0% occurred in Greece. In selected countries with economy in transition, enormous increase occurred in the Czech Republic (102.5%), Slovakia (47.33%) and Poland (36.84%). A decrease occurred only in Hungary, viz. –43.14% as against the basic period.



1: *Means of rates of unemployment in selected countries with market and transitive economy in the period 1995–2001*

In comparing changes in studied events between particular years, the highest decrease occurred in Germany (–12.87%) in 1996, in Finland (–13.20%) in 1997, in Luxembourg (–9.10%) in 1998 and in the United Kingdom (–14.09%), the Netherlands (–20.46%), Austria (–9.52%) and Spain (–20.21%) in 1999, in Denmark (–17.86%) in 2000 and in Italy (–9.53%) and Greece (–8.11%) in 2001.

In countries with economy in transition involved in the analysis, the highest increase between particular years occurred in the Czech Republic in 1998 (35.41%), in Poland (32.38%) and Slovakia (31.20 %) in 1999. A positively continual decrease in the changes occurred in Hungary in 1997. A deeper view of the development of the registered rate of unemployment within the evaluated time interval with differentiation according to selected countries and their groupings give statistics of applied models of developmental trends with a possibility to use them in the prognostic sphere of the methodical use of extrapolation point and interval prediction.

Results of the stage of analysis are presented in Tab. III. In addition to parameters of applied trend functions the table also includes derived values of determination indices in a percentage expression including their statistical significance. Based on derived values quantifying the degree of dependence of the assessed endogenous variable on the time variable "t" as an endogenous quantity in selected countries in a defined time interval, it is possible to conclude that the quadratic type of regression appears to be optimal from a series of applied models of developmental trends for all countries with the exception of Hungary and Finland (with exponential regression) and for extrapolation point and interval prediction.

I: *Unemployment rate in selected countries with market economy and economy in transition in the reference period 1995–2001*

Country	Variation domain of a variable		Characteristics		Mean rate of an increment
	y_{max}	y_{min}	of a mean level	variability	$\bar{t}$(%)
	(%)		$\bar{y}$ (%)	v_y (%)	
Denmark	7.0	4.6	5.78	16.25	–6.10
	1995	1999			
Finland	15.2	9.1	11.76	20.14	–8.20
	1995	2001			
Italy	11.7	9.5	11.02	6.99	–2.85
	1998	2001			
Luxembourg	3.3	2.7	3.0	8.38	–1.74
	1996	2000			
	1997	2001			
Germany	10.1	8.1	9.04	9.00	–3.41
	1995	2000			
Netherlands	7.1	2.7	4.73	36.11	–14.88
	1995	2001			
Austria	4.2	3.6	3.88	7.04	–0.46
	1997	2000			
	1998	2001			
Greece	11.7	10.0	10.63	5.68	2.00
	1999	1995			
United Kingdom	8.6	5.1	6.63	20.64	–8.34
	1995	2001			
Spain	22.9	12.8	18.14	22.46	–9.24
	1995	2001			
EU–15	10.8	7.3	9.51	14.35	–6.18
	1996	2001			
Czech Republic[1)]	8.8	4.0	6.40	34.06	12.48
	2000	1995			
Hungary	10.2	5.8	8.00	20.97	–8.90
	1995	2001			
Poland	18.2	10.5	13.64	19.99	5.37
	2001	1998			
Slovakia[2)]	19.3	11.3	14.74	22.87	6.67
	2001	1996			

[1)] in 1995–1997 excluding persons drawing maternity leave actively seeking a job

[2)] excluding persons drawing maternity leave

II: *Unemployment rate dynamics in selected countries with market economy and economy in transition in the period 1995–2001 (1995 = 100)*

Country	Indices	1996	1997	1998	1999	2000	2001
Denmark	i_b	98.57	87.14	78.57	80.00	65.71	68.57
	i_{ch}		88.40	90.16	101.81	82.14	104.35
Finland	i_b	94.74	82.24	74.34	66.45	63.81	59.87
	i_{ch}		86.80	90.40	89.38	96.04	93.81
Italy	i_b	100.88	101.77	103.53	100.00	92.92	87.07
	i_{ch}		100.88	101.74	96.58	92.92	90.47
Luxembourg	i_b	110.00	110.00	103.33	96.66	90.00	90.00
	i_{ch}		100.00	90.90	93.55	93.10	100.00
Germany	i_b	87.13	97.03	96.04	85.14	80.20	81.19
	i_{ch}		112.00	98.98	88.66	94.19	101.23
Netherlands	i_b	85.90	77.46	61.97	49.29	46.48	28.17
	i_{ch}		83.33	80.00	79.54	94.28	81.82
Austria	i_b	110.81	113.51	113.51	102.70	97.30	97.30
	i_{ch}		102.44	100.00	90.48	94.74	100.00
Greece	i_b	103.00	103.00	108.00	117.00	111.00	102.00
	i_{ch}		100.00	104.85	108.33	94.87	91.89
United Kingdom	i_b	95.34	82.56	70.93	68.60	62.79	59.30
	i_{ch}		86.58	85.91	96.72	91.52	94.44
Spain	i_b	96.94	90.83	82.09	68.12	60.69	55.89
	i_{ch}		93.69	90.38	79.79	89.10	92.09
EU-15	i_b	100.93	99.06	92.52	85.04	76.63	68.22
	i_{ch}		98.15	93.39	91.92	90.11	89.02
Czech Republic	i_b	97.50	120.00	162.50	217.50	220.00	202.50
	i_{ch}		123.07	135.41	133.85	101.15	92.04
Hungary	i_b	97.05	85.29	78.00	69.60	63.72	56.86
	i_{ch}		87.88	89.65	91.02	91.55	89.23
Poland	i_b	92.48	84.21	78.95	104.51	121.05	136.84
	i_{ch}		91.06	93.75	132.38	115.83	113.04
Slovakia	i_b	86.26	90.08	95.42	125.19	143.51	147.33
	i_{ch}		104.42	105.93	131.20	114.63	102.66

i_b - basic indices, i_{ch} - chain indices

Results of the extrapolation prediction of values of assessed data for countries of selected groupings as of 31 December 2005 are given in Tab. IV. In addition to the point estimates point quantities present also the definition of limits for actual values with 95% probability in particular countries. Their percentage width in increasing order reaches following values: 4.35 in Italy, 7.50 in the Netherlands, l0.00 in the United Kingdom, 12.50 in Finland, 12.97 in Poland, 15.15 in Hungary, 15.49 in Greece, 17.95 in Denmark, 22.77 in Spain, 25.00 in Germany, 30.00 in Luxembourg, 30.93 in the Czech Republic and 33.33 in Austria.

III: *Models of development trends of the rate of employment in selected countries with market economy and economy in transition in the period 1995–2001*

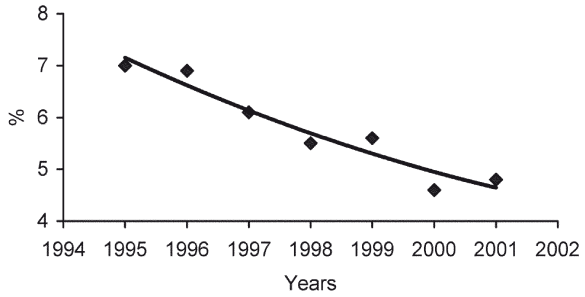
Country	Model type	Model parameters			I_{yt}^2
		a_{yt}	b_{yt}	c_{yt}	(%)
Denmark	1	7.457142857	–0.41785714	-	92.10^{++}
	2	7.728571429	–0.59880952	0.022619047	92.89^{++}
	3	7.642684407	–0.07244053	-	91.64^{++}
	4	7.352495049	–1.28648184	-	87.22^{++}
	5	7.479622210	–0.22021503	-	85.12^{++}
	6	4.825614603	2.59200465	-	68.77^{++}
Finland	1	16.157142860	–1.07500000	-	96.20^{++}
	2	17.271428570	–1.88452381	0.101190476	97.51^{++}
	3	16.620484610	–0.09080217	-	97.77^{++}
	4	15.830702090	–3.29787478	-	95.23^{++}
	5	19.297345100	–0.28059614	-	93.84^{++}
	6	9.174987001	6.97110947	-	79.65^{++}
Italy	1	12.085714290	–0.26428571	-	54.71
	2	10.485714290	0.80238095	0.133333333	96.49^{++}
	3	12.165754590	–0.02509119	-	54.80
	4	11.798343950	–0.63205931	-	31.45
	5	11.840707960	–0.060172727	-	31.67
	6	10.672549890	0.96116008	-	14.25
Luxembourg	1	3.357142857	–0.08928571	-	58.74^{+}
	2	3.000000000	0.14880952	–0.029761904	78.32^{++}
	3	3.375453736	–0.030236920	-	60.17^{+}
	4	3.262324745	–0.215394540	-	34.35
	5	3.270270866	–0.073316662	-	35.36
	6	2.891075368	0.294066499	-	12.54
Germany	1	10.228571430	–0.296428571	-	61.86^{+}
	2	9.871428571	–0.058333333	–0.029761904	63.73^{+}
	3	10.279377500	–0.032914261	-	62.55^{+}
	4	10.110955440	–0.877014256	-	54.42
	5	10.138403040	–0.096743931	-	54.31
	6	8.380306560	1.788704063	-	44.35
Netherlands	1	7.814285714	–0.764285714	-	96.45^{++}
	2	8.471428571	–1.197619048	0.052380952	98.33^{++}
	3	8.786183221	–0.169243161	-	98.36^{++}
	4	7.669649124	–2.414915448	-	93.80^{++}
	5	8.299159587	–0.509037345	-	89.43^{++}
	6	2.909025095	4.912273847	-	76.05^{++}
Austria	1	4.128571429	–0.060714285	-	23.01
	2	3.514285714	0.348809523	–0.051190476	72.08^{+}
	3	4.130473437	–0.015795220	-	23.68
	4	4.005325441	–0.098212579	-	6.05
	5	4.001748278	–0.025895315	-	6.39
	6	3.886262679	–0.001480510	-	0.00

Greece	1	10.11428571	0.128571428	-	21.09
	2	8.94285714	0.909523380	–0.09761904	57.58^{+}
	3	10.11608256	0.012016259	-	20.66
	4	10.02953046	0.491871839	-	31.02
	5	10.03472480	0.046096462	-	31.91
	6	11.05037732	–1.138759720	-	32.58
United Kingdom	1	9.10000000	–0.617857142	-	95.14^{++}
	2	9.82857142	–1.103571429	0.06071428	97.89^{++}
	3	9.42431260	–0.092434922	-	96.94^{++}
	4	8.99779474	–1.945366481	-	94.79^{++}
	5	9.22553440	–0.286088904	-	93.31^{++}
	6	5.14171707	4.014097167	-	79.08^{++}
Spain	1	25.58571429	–1.860714286	-	97.34^{++}
	2	24.74285714	–1.298809524	–0.07023809	97.75^{++}
	3	27.10415078	–0.106041578	-	96.37^{++}
	4	24.82948974	–5.490386185	-	85.15^{++}
	5	25.79649045	–0.307680416	-	81.52^{++}
	6	14.20840895	10.621926250	-	62.46^{+}

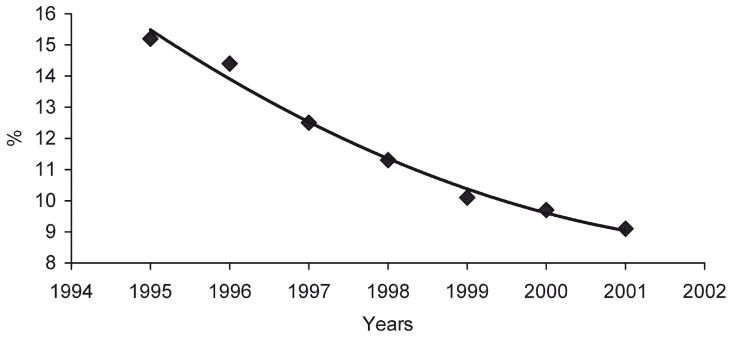
Czech Republic	1	2.68571428	0.928571428	-	84.64^{++}
	2	1.82857142	1.500000000	–0.07142857	86.15^{++}
	3	3.26306160	1.154963090	-	86.17^{++}
	4	2.95566249	2.828141487	-	78.90^{++}
	5	3.39036224	0.477535877	-	82.25^{++}
	6	8.45261351	–5.541491027	-	59.37^{+}
Hungary	1	11.08571429	–0.771428571	-	98.70^{++}
	2	11.285714429	–0.904761904	0.016666666	98.84^{++}
	3	11.60558797	–0.097795881	-	99.06^{++}
	4	10.86021990	–2.348523208	-	91.93^{++}
	5	11.20174241	–0.292118957	-	88.81^{++}
	6	6.26072474	4.695564048	-	72.01^{+}
Poland	1	10.07142857	0.892857142	-	49.99
	2	15.81428571	–2.935714286	0.478571428	93.10^{++}
	3	10.53270204	0.060549562	-	45.06
	4	11.17027088	2.030237680	-	25.97
	5	11.39897038	0.133970578	-	22.16
	6	14.65208373	–2.724633765	-	9.17
Slovakia	1	9.28571428	1.364285714	-	76.39^{++}
	2	13.20000000	–1.245238095	0.326190476	89.49^{++}
	3	10.07833680	0.089634596	-	74.70^{+}
	4	10.38198776	3.380704736	-	52.88
	5	10.84252940	0.234382926	-	51.32
	6	16.92434310	–5.889411115		27.34

Type of the function: (1) – linear, (2) – quadratic, (3) – exponential, (4) – logarithmic, (5) – power, (6) – inverse
Determination index I_{yt}^2 significant on the level: + $\alpha = 0.05$
++ $\alpha = 0.01$

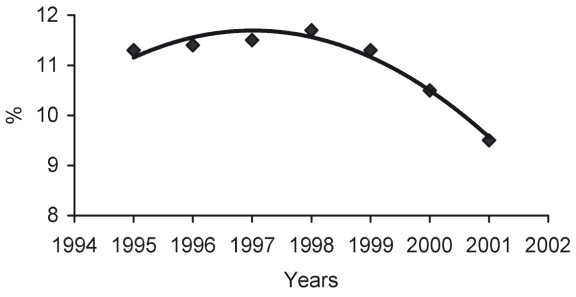
Figures 2–15 gives a good idea on the development of empirical and fitted values of the registered rate of unemployment within the assessed time interval and selected countries.



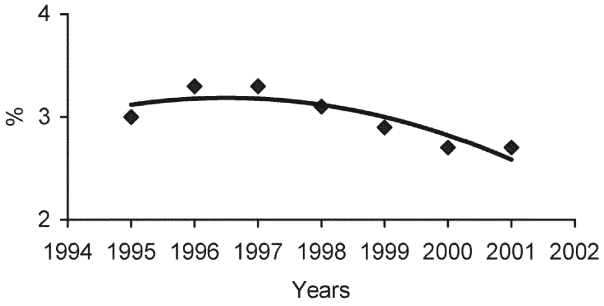
2: *Rates of unemployment in Denmark*



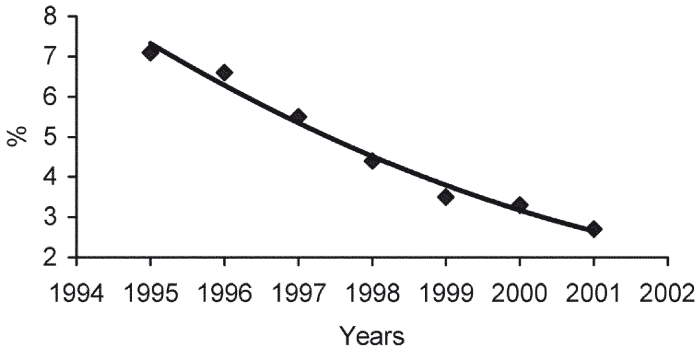
3: *Rates of unemployment in Finland*



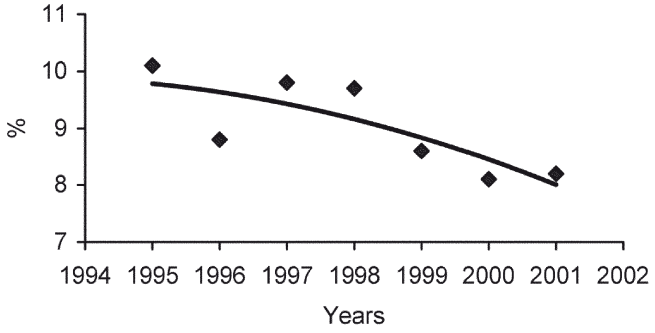
4: *Rates of unemployment in Italy*



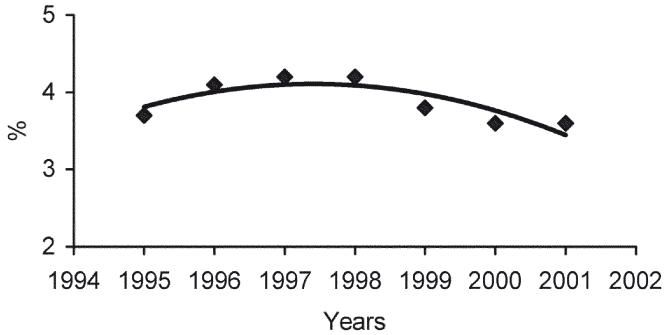
5: *Rates of unemployment in Luxembourg*



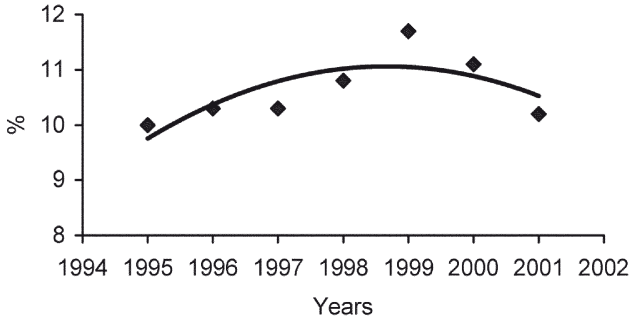
6: *Rates of unemployment in Netherlands*



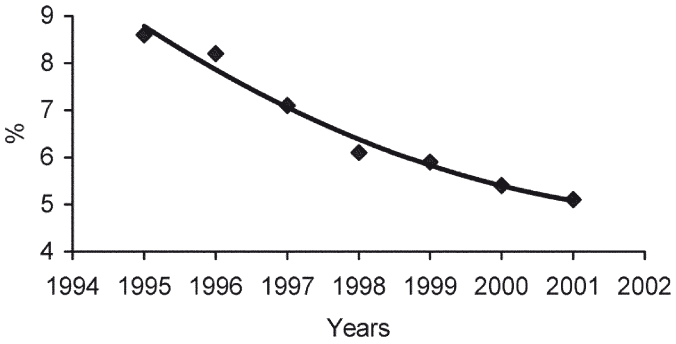
7: *Rates of unemployment in Germany*



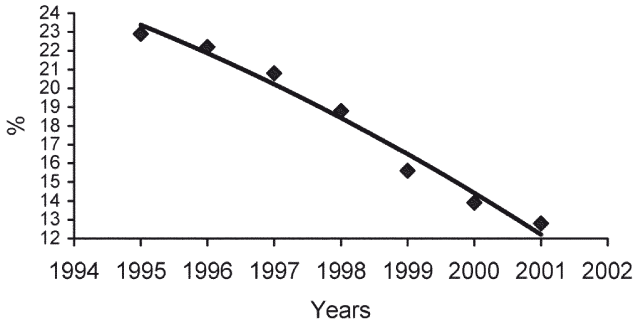
8: *Rates of unemployment in Austria*



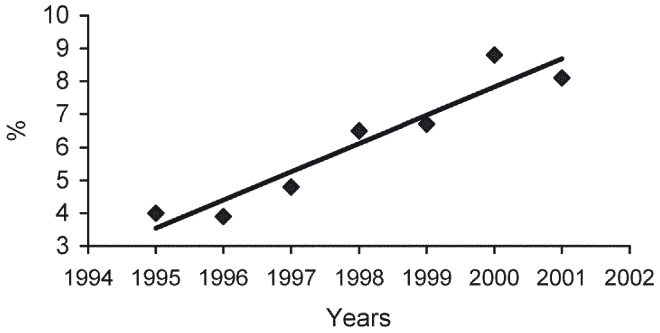
9: *Rates of unemployment in Greece*



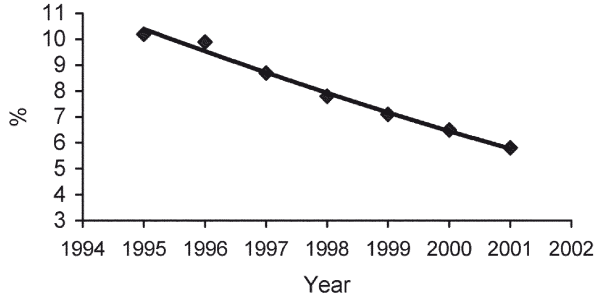
10: *Rates of unemployment in the United Kingdom*



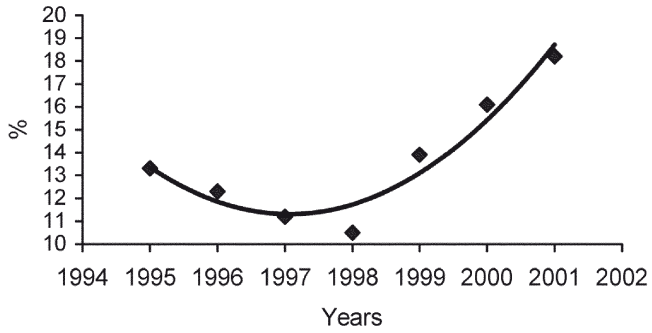
11: *Rates of unemployment in Spain*



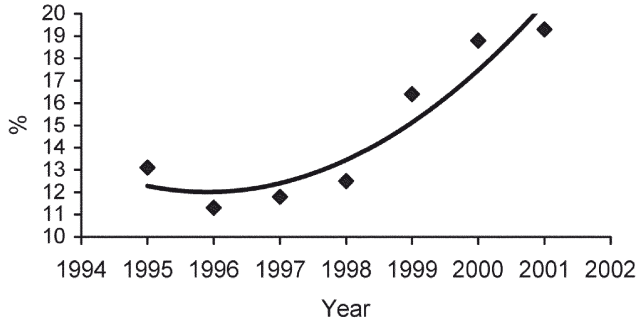
12: *Rates of unemployment in the Czech Republic*



13: *Rates of unemployment in Hungary*



14: *Rates of unemployment in Poland*



15: *Rates of unemployment in Slovakia*

IV: *Estimation of the unemployment rate level in selected countries with market economy and economy in transition as of 31 December 2005*

Country	Extrapolation prediction for 2005			Estimation of EC
	Point estimation	Limit definition for a real value with 95% probability		
		y'_{min}	y'_{max}	
Denmark	3.9	3.2	4.6	4.9
Finland	8.8	7.7	9.9	9.1
Italy	9.2	8.8	9.6	8.7
Luxembourg	1.0	0.7	1.3	6.1
Germany	5.6	4.2	7.0	9.5
Netherlands	1.6	4.0	2.2	6.1
Austria	1.2	0.8	1.6	4.1
Greece	7.1	6.0	8.2	9.0
United Kingdom	5.0	4.5	5.5	4.9
Spain	7.4	5.7	9.1	10.4
Czech Republic	9.7	6.7	12.7	9.8
Hungary	3.3	2.8	3.8	.
Poland	21.4	20.4	22.4	.
Slovakia	23.9	20.8	27.0	.

SUMMARY

The paper is aimed at the description of findings obtained in the study of the level, variability, dynamics and developmental trends of time series of the rate of unemployment in selected countries with market and transitive economy in the period 1995 to 2001. Results are also presented of point and interval prediction of an assessed event up to the year 2005. Marked differences were demonstrated both between groupings of countries and between territorial units. While in countries with market economy the rate of unemployment ranged from 18.1 (Spain) to 3.0% (Luxembourg), in countries with economy in transition the rate of unemployment ranged from 6.4 (Czech Republic) to 14.7% (Slovakia). An average rate of the unemployment rate decrease in the assessed reference period reached in the descending order –14.88 in Netherlands, –9.24% in Spain, –8.90% in Hungary, –8.34% in the United Kingdom, –8.20% in Finland, –6.18% in the EU-15 countries, –6.10% in Denmark, –3.41% in Germany, –2.85% in Italy, –1.74% in Luxembourg and –0.46% in Austria. In the ascending order of arranged values, an average rate of the assessed indicator growth was reached in Greece (2.00%), Poland (5.37%), Slovakia (6.67%) and the Czech Republic (12.48%). The percentage decrease or increase in the rate of unemployment in the final year of the assessed time interval as against the basic period (1995) is quantified by the following values: the Netherlands (–71.83%), Spain (–44.11%), Hungary (–43.14%), the UK (–40.70%), Finland (–40.13%), Denmark (–31.43%), Germany (–18.81%, Italy (–15.93%), Luxembourg (–10.00%) and Austria (–2.70%). On the other hand, enormous increase occurred in the Czech Republic (102.50%), in Slovakia by 47.33%, in Poland by 36.84% and in Greece by 2.00%. From trend functions derived point and interval extrapolation estimates of the rate of unemployment with the highest informative ability in countries under evaluation for 2005, it is possible to expect with 95% probability its decrease as against the overage of years 1995 to 2001 in Denmark by 2.4 to 44.6 %, in Finland from 15.8 to 34.5%, in Italy by 12.9 to 20.1%, in Luxembourg by 56.7 to 76.7%, in Germany by 22.6 to 53.5%, in the Netherlands by 53.5 to 78.9%, in Austria by 58,8 to 79.4%, in Greece by 22.9 to 43.6%, in the UK by 17.0 to 32.1%, in Spain by 50.0 to 68.7% and in Hungary by 52.5 to 65.0%. On the other hand, enormous increase can be expected in the Czech Republic, viz. by 98.4%, in Poland by 49.6 to 64.2% and in Slovakia by 41.1 to 85.2%. This increase in the Czech Republic, although being derived from the trend function is not probably realistic because the growth of unemployment stopped in 2004 and through the accession of the CR into EU conditions have changed as against the period under study.

SOUHRN

Analýza vývoje a predikce míry nezaměstnanosti ve vybraných zemích s tržní a tranzitivní ekonomikou

Příspěvek je zaměřen na deskripci poznatků získaných při studiu úrovně, variability, dynamiky a vývojových tendencí časových řad míry nezaměstnanosti ve vybraných zemích s tržní a tranzitivní ekonomikou v období let 1995 až 2001. Prezentovány jsou i výsledky bodové a intervalové predikce posuzovaného jevu do roku 2005. Prokázány byly výrazné diference jak mezi seskupeními zemí, tak i územními celky. Tak zatímco v zemích s tržní ekonomikou se míra nezaměstnanosti pohybovala v rozpětí od 18,1 % (ve Španělsku) do 3,0 % (v Lucembursku), v zemích s tranzitivní ekonomikou ve variačním oboru od 6,4 % (v České republice) do 14,7 % (na Slovensku). Průměrné tempo poklesu míry nezaměstnanosti v posuzovaném referenčním období dosáhlo v sestupném pořadí -14,88 % v Nizozemsku, -9,24 % ve Španělsku, -8,90 % v Maďarsku, -8,34 % ve Spojeném království, -8,20 % ve Finsku, -6,18 % v zemích EU - 15, -6,10 % v Dánsku, -3,41 % v Německu, -2,85 % v Itálii, -1,74 % v Lucembursku, -1,74 % a -0,46 % v Rakousku. Ve vzestupném pořadí uspořádaných hodnot průměrného tempa přírůstku posuzovaného indikátoru bylo dosaženo v Řecku (2,00 %), v Polsku (5,37 %) na Slovensku (6,67 %) a v České republice (12,48 %). Procentuální pokles, resp. nárůst míry nezaměstnanosti ve finálním roce posuzovaného časového intervalu proti bazickému období (roku 1995) kvantifikují hodnoty: Nizozemsko (-71,83 %), Španělsko (-44,11 %), Maďarsko (-43,14 %), Spojené království (-40,70 %), Finsko (-40,13 %), Dánsko (-31,43 %), Německo (-18,81 %, Itálie (-15,93 %), Lucembursko (-10,00 %), a Rakousko (-2,70 %). K enormnímu zvýšení došlo naproti tomu v České republice (102,50 %). V následném sestupném pořadí na Slovensku o 47,33 %, v Polsku o 36,84 % a v Řecku o 2,00 %. Z trendových funkcí s nejvyšší vypovídající schopností odvozené bodové a intervalové extrapolační odhady míry nezaměstnanosti v hodnocených zemích pro rok 2005 lze s 95% pravděpodob-

ností očekávat její snížení proti průměru let 1995 až 2001 v Dánsku o 2,4 až 44,6 %, ve Finsku od 15,8 do 34,5 %, v Itálii o 12,9 až 20,1 %, v Lucembursku o 56,7 až 76,7 %, v Německu o 22,6 až 53,5 %, v Nizozemsku o 53,5 až 78,9 %, v Rakousku o 58,8 až 79,4 %, v Řecku o 22,9 až 43,6 %, ve Spojeném království o 17,0 až 32,1 %, ve Španělsku o 50,0 až 68,7 % a v Maďarsku a 52,5 až 65,0 %. Enormní zvýšení lze naproti tomu očekávat v České republice, a to až o 98,4 %, v Polsku o 49,6 až 64,2 % a na Slovensku o 41,1 až 85,2 %. Toto zvýšení v České republice, i když je odvozeno z trendové funkce je pravděpodobně nereálné, protože se růst nezaměstnanosti v roce 2004 zastavil a vstupem ČR do EU se mění podmínky proti hodnocenému období.

evropské země s tržní a tranzitivní ekonomikou, míra nezaměstnanosti, dynamika, vývojové tendence, krátkodobá bodová a intervalová predikce

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