Czech Labour Market Flows from 1993 to 1999

Jaromír Gottvald[*]

[*]) Faculty of Economics, Technical University of Ostrava, Sokolská 33, CZ-736 01 Ostrava 1.
**) I am deeply grateful to Ivo Makalouš from Czech Statistical Office for his decisive computational assistance and valuable comments.

1. Introduction

In the following paper, the author is focusing on the structural changes and adjustments on the Czech labour market during the transition process. After short period of origin increase of unemployment the Czech Republic has reached extremely the low level of unemployment fluctuating around 3 percent of labour force up to 1996/97. During the last two years the rate of unemployment sharply increased and in the beginning of the year 2000 targeted 10 per-cent. Many papers explained the unemployment dynamics that were made during steady state (between 1993 and 1996/97). These papers tried to analyse many different factors influencing the low unemployment level and conclusions were widely ranked between the two sides of extreme meanings. The first part is characterised as „The Czech way of transition process“ with the long run low unemployment level given by several unique and specific rather macro-economic factors. The second part of the task argued by the imperfect restructuring process on micro-economic level which means among others over-employment, preserved old structure of employment, etc. and presented a result of the low level of unemployment.

An economy in transition means an economy on move. This means on a labour market any displacement of workers in industries and their absorption either in the same industry or in the different one. Transitional process should be dynamically urged by hard market conditions. To analyse structural changes and their development together with possible influencing factors we need such data which enable us to make inflow-outflow analysis.

2. Data and Methods

There are generally three different sources of data in the Czech Republic. First, labour office data. Their advantage consists of good accessibility, data are monthly reviewed and they are available since 1991. These data do not involve unemployed people seeking jobs by means of alternative ways than labour office or job-to-job changes. Structure of collected data is not adapted for flow analysis (and also other analyses), therefore, the data must be adjusted before. Nevertheless in some studies were used successfully, for example micro-data studies (Gottvald at al. 1999, Ham at al. 1994 and 1996). Boeri (1995) used limited data on unemployment from the labour offices.

The second possibility are retrospective sociological surveys or special sociological surveys. If there are set together a representative sample of population (labour force, employed, unemployed...) and there are eliminated errors growing up from false answers it would be optimal but expansive source of data. Such survey is mostly completed on selected district, sometimes covers macro-economic level (e.g. in Estonia in 1995, covered the years from 1989 to 1995 to eliminate the gap without any data, see Eamets et al, 1997). Second International Adult Literacy Survey (SIALS) has been provided in the Czech Republic in 1998 as stratified a three-stage probability data selection based on the Czech Statistical Office selection staff. Survey contained also additional questions concerning to changes of employer, change of occupation, etc. and contributed to the information mosaic about labour flows during 1992 and 1997.

The third source uses data from labour force survey (LFS) initiated regularly at the first quarter of the year 1993[1] by the Czech statistical office (CSU). This source has been used also in this paper. Only a few studies have used LFS data to examine the Czech labour market flows. Terrell and Šorm (1996) analysed two sets of cohorts of the working age population over the four quarters of the years 1994 and 1995 and compared their flows in and out of three different states (employment, unemployment and out-of-labour force). They also calculated gross probabilities and estimated exits out of unemployment in the same years by multinomial logit analysis. Huitfeldt (1996) examined flows in the Czech Republic and used individual data from LFS (in 1994 and 1995). Both these above mentioned papers use similar panel data for individuals in 1995 but the first paper plus 1994, multinomial logit regressions are included too. Kux and Makalouš (1996 and 1997) describing possibilities how to measure the labour market flows by means of LFS in the Czech Republic. Their methodological approach is achieved and was very useful for this paper.

Many authors (Šorm, Eamets, Huitfeldt and others) assuming that movements among states are governed by a Markov's process. Markov chain model is probabilistic analysis showing how each state in evolutionary process produces the next state in a finite chain (see Rutherford (1992)). It can be applied to labour market that probability of transition among labour market states depends on the state formerly occupied. There are three major states: employment (E), unemployment (U) and out of labour force or inactive (N). There are nine potential transitions which can be represented by P_i matrix:

$$\mathbf{P_i} = \begin{array}{|ccc|} \hline EE & EU & EN \\ UE & UU & UN \\ NE & NU & NN \\ \hline \end{array}$$

where e.g. UE_i represents the probability that an individual is observed employed at time **t+1** conditional upon being unemployed at time **t**. The gross transition probability that an individual is unemployed at time t is employed at time t+1 is given by $P_{ue} = UE_{t+1}/U_t$, and generally given by $P_{ij} = \frac{F_{ij}}{S_i}$, i, j = E, U, N

where F_{ij} is the number of individuals in state **i** at time **t** which moved to state **j** at time **t+1**, S_i is the initial stock of individuals in this state at time **t**.

The probability of an individual to move from an initial state to destination state during the sampling interval is given by the following equation:

$$\Pr\left[Y_i = j\right] = \frac{\exp(B_j^{'} X_i)}{\sum_k \exp(B_k^{'} X_i)} \qquad j, k = 1,....,9$$

where X is a vector of personal characteristics and nine choices expressing maximum possible transitions among states.

3. Flows Across Labour Market States

The flows throughout the all five years showed that the Czech labour market was fairly stagnant. The probability that a person remains employed both one quarter and one year given that one was employed in the initial state was relatively high. More specifically, the probability, P_{ee}, for status 4 quarters later moved in between 93.0% (I/93 -I/94) and 95.3% (I/96-I/97). These results are comparable more in West countries than in other CEE economies. For example, Gora and Lehman (1995) find that in Poland the P_{ee} = 88.4 % (V/93) and P_{ee} = 89.7 % (V/94). Gora, Lehman (1995) assuming data for same probability in Britain during the slump of early 1980s which are rather similar on the Czech labour market, P_{ee} = 93.0 % (compared also later).

[1] In the LFS a quarter is shifted one month backwards, it means, that for example the first quarter of 1996 year consists of December 1995, January 1996 and February 1996, this shifts were changed to ordinary regular quarters ranks (January, February, March as 1. quarter, etc.) from 1998 year.

Other two possibilities which characterise outflows from the employment status are P_{eu} and $P_{eo.}$ Someone who employed in the first quarter (or other quarter) of monitored years, the probability that a person would exit employment in the next four quarters to unemployment or out of labour force draws between 4.7 % and 7 % (see table in Appendix I). In all 18 „shifted" quarters, the probability that an employed person exits the labour force is higher (nearly 2-3 times) than the probability he/she exits unemployment. Probability, P_{eu} , moved from 1.1 % (4/94 - 4/95) to 1.9 % (2/97 - 2/98) and P_{eo} lies in range of 3.3 % (3/96 - 3/97) to 5.6 % (2/95 - 2/96). These numbers are significantly lower than the comparable results in Poland where the probability to exit employment during the next four quarters was 10.3 % (5/93 - 5/94) (see Gora, Lehman, 1995).

The highest difference in status can be seen in the pool of unemployed. For probability, P_{ue}, which characterise flexibility of new jobs creation, together with P_{oe}, valids that it was very high at the beginning of our sample, P_{ue} = 61.2 % (3/93 - 3/94) and decreased continuously to 37.9 % (2/97 - 2/98). P_{oe} moved from 2.7 % (3/96 - 3/97) to 5.1 % at the beginning of our LFS survey (1/93 - 1/94). It means in absolute terms nearly double amount of newly employed from the stock of out-of-labour force. It is one half of amount at the end of 1997 in comparison with the beginning of 1993.

A remarkable difference occurred for probability, P_{uu}, to be unemployed during all periods of survey. P_{uu} started at very low level, 27 % (3/93 - 3/94) but slowly increased up to 52.6 % (2/97 - 2/98). All probabilities below 40 % are treated as very positive and speaks for short average completed duration of unemployment in the Czech Republic between 1993 and 1996. Relatively stagnant and low level seems to be probability, P_{ou} , to enter labour market but to be unemployed without any experience with employment as is typical the some of graduates. P_{ou} reached maximally 1.3 % (4/93 - 4/94), minimum was 0.5 % (1/95 - 1/96). P_{ou} , for example in Poland (5/93 - 5/94) was 4.3 % which is rather a big difference in the Czech Republic (see Gora, Lehman 1995).

Table (Appendix I) shows the different labour market experience for men and women. We again discuss the same period of LFS (1/93 - 2/98). Probability, P_{ee}, to stay at employment status is about 4 % higher for men than for women. Probability for men, P_{ee}, was moving between 94.5 % (2/95-2/96) and 97.2 % (1/96-1/97) what shows very stagnant labour market.

For women the probability, P_{ee}, were significantly lower and moved between 90.1 % (1/93-1/94) and 93.5 % (3/96-3/97). Surprisingly, probability, P_{uu} , to be unemployed for a year is nearly the same but P_{ue}, for men were 41.7 % (2/97 - 2/98) for women rather lower 34.1 % at the same period. Another significant difference we can see the probability to leave employment out of the labour force, P_{eo}, which is higher for women (between 4.6 - 7.6 %) than for men (between 1.8 - 4.6 %). Other differences or vice versa see table 1 (tables for man and woman are disposable of author).

Table 1
Czech Labour Market Transition Probabilities, 1993 - 1999

	For economic status 4 quarters later								
	P_{ee}	P_{eu}	P_{eo}	P_{ue}	P_{uu}	P_{uo}	P_{oe}	P_{ou}	P_{oo}
1993q1	93,0	1,9	5,1	46,5	38,1	15,5	5,1	0,9	93,9
1993q2	93,1	1,8	5,1	55,8	32,3	11,9	5,1	1,0	93,9
1993q3	93,6	1,6	4,8	61,2	27,0	11,9	4,2	1,2	94,6
1993q4	94,3	1,4	4,2	55,1	31,8	13,1	4,0	1,3	94,8
1994q1	94,7	1,2	4,1	53,2	33,7	13,1	4,0	0,8	95,2
1994q2	94,7	1,4	3,9	50,0	34,8	15,2	4,0	0,6	95,4
1994q3	95,1	1,3	3,6	51,9	30,2	17,9	3,9	0,9	95,2
1994q4	95,1	1,1	3,9	53,7	31,8	14,5	3,8	0,6	95,6
1995q1	93,5	1,2	5,2	52,3	33,0	14,7	3,7	0,5	95,8
1995q2	93,2	1,2	5,6	46,4	37,5	16,2	3,5	0,6	95,9
1995q3	93,6	1,2	5,2	47,9	35,2	16,9	3,1	0,8	96,1
1995q4	95,0	1,3	3,7	48,9	39,3	11,7	3,1	0,6	96,3
1996q1	95,3	1,2	3,5	45,5	44,3	10,1	2,9	0,6	96,5
1996q2	95,1	1,5	3,4	47,3	43,6	9,1	2,9	0,6	96,6
1996q3	95,2	1,5	3,3	49,6	42,4	8,1	2,7	0,9	96,5
1996q4	95,0	1,6	3,3	47,8	43,4	8,7	3,0	1,1	96,0
1997q1	94,4	1,7	3,8	40,7	47,6	11,7	3,5	1,1	95,4
1997q2	94,2	1,9	3,9	37,9	52,6	9,5	3,9	1,1	95,0

Source: LFS 1993 - 1999.

The above analysed probabilities do not explain all extension of flows from one state to another. There are three states (P_{ee}, P_{uu}, P_{oo}) explaining rigidity of each status in sample. We can, therefore, assume the higher probability of P_{ee}, P_{uu}, P_{oo}, the smaller moves are registered among other states. This is valid only if there are not any „round tripping“ within states namely in state P_{ee}. Furthermore, this is important to see whether round tripping causes substantial upwardly biased probability of „staying“ in a state. Our above-presented cohorts over five years capture movements that happened to a person who is in the beginning and the end point of surveyed period. Now we capture one move over the four quarters if the state ***j*** is different from the state ***i***, but if a person moved to another state and turned back to the original state we wouldn’t be able to observe these basic surveys.

As for economy in transition like the Czech economy the round tripping (and also more times) could be very important and expected phenomenon. Namely job-to-job flows should be expected high and high probability of P_{ee} could be explained by high proportion of job-to-job flows as the most important part of round tripping. For example, in Poland (see Gora, Lehman 1995) for the states of employment and out of labour force the figures are small 3.8 %, resp. 3.8 %. The picture shows different for the unemployed, 23.8 % of people unemployed in May 1992 were engaged in round tripping over the year. Terrell, Šorm (1996) show that surprisingly few people changed jobs moving from one job to another one without passing through unemployment or leaving labour market (referred by authors as „churners“) in the Czech Republic, the probability was only 2.5 % in 1994 and 6 % in 1995. Huitfeldt (1997) calculated transition probabilities for job-to-job mobility 2.4 % for the first two quarters of 1995 in the Czech Republic. The above-presented figures are surprisingly low and they reflect only a short period in one year. Flek (1999) presents slightly contrary results based on SIALS database and job-to-job movements considers as dominant movements of employees on the Czech labour market between 1992 and 1997. Nearly 40 % of labour force had moved voluntarily to another employer and 12,8 % to self-employment or private business activity.

Therefore, the probability of job change within employment status E $\rightarrow$ E has been additionally calculated. Data resulting from LFS questionnaire where respondents were interviewed for „how long their job continue without interruption“, with answers: up to one month, more than one month and less than 3 months, and somehow more than 3 months. From these data were further counted probabilities of job change within each quarter of the year. Results show (see table 1) that probability of job-to-job flows are between 0.6 % and 3.0% and generally reflect data presented by Terrell, Huitfeldt etc..

Table 2
Job-to-Job Flows 1993 - 1999 (per cent of employed)

	Status 3 months later : Employed				
	Total duration of the job	up to 1 month	1 - 3 month	∑ 0 - 3 months	Other
Status - base period	Percentages				
Employment					
1993q1	100,0	0,2	0,4	0.6	99,4
1993q2	100,0	0,2	0,4	0.6	99,4
1993q3	100,0	0,2	0,4	0.6	99,4
1993q4	100,0	0,3	0,6	0.9	99,1
1994q1	100,0	0,4	0,8	1.2	98,8
1994q2	100,0	0,3	0,6	0.9	99,0
1994q3	100,0	0,4	0,7	1.1	98,9
1994q4	100,0	1,2	1,8	3.0	97,0
1995q1	100,0	0,7	1,8	2.5	97,5

1995q2	100,0	0,7	1,4	2.1	97,9
1995q3	100,0	0,8	1,7	2.5	97,5
1995q4	100,0	0,8	1,5	2.3	97,7
1996q1	100,0	0,7	1,6	2.2	97,8
1996q2	100,0	0,6	1,3	1.9	98,1
1996q3	100,0	0,7	1,4	2.1	97,9
1996q4	100,0	0,6	1,1	1.7	98,2
1997q1	100,0	0,6	1,3	1.9	98,1
1997q2	100,0	0,4	0,9	1.3	98,7
1997q3	100,0	0,6	1,3	1.9	98,1
1997q4	100,0	0,5	1,1	1.6	98,5
1998q1	100,0	0,5	0,8	1.3	98,7
1998q2	100,0	0,3	0,8	1.1	98,8
1998q3	100,0	0,3	0,8	1.1	98,9
1998q4	100,0	0,3	0,8	1.1	98,9

Source: LFS, Czech Statistical Office

Indirect information can be also obtained in comparison with 1 quarter survey to 4 quarters survey which was done from LFS by CSU. The percent of total status changes (EU, EO, UE, UO, OE, OU) divided by a total number of working age population[2] was 12.4 % in 1993 and had tendency to a slow decrease for instance: 8.2 % in 1996. In Poland, similar indicator[3] was higher, 15.5 % for 5/92 - 5/93 and 14.3 % for period 5/93 - 5/94 (own calculation from Gora, Lehman 1995). A very representative results is given by LFS (retrospective) made in Estonia (Eamets et al, 1997) in 1995 between 1989 and 1994. Percent of a total status changes together with round tripping (but without EE status) divided by the total number of sample size[4] (representative sample of Estonia labour market) was 19.7 %[5] in 1994 and together with EE status (job-to-job flows) percent increased to 28.7 % of total sample size. Huitfeldt (1997) does not clearly indicate that there are large flows between different jobs on the Czech labour market in 1995.

Mobility of employees is, by no means, very high in West Europe. In Sweden, Norway and Finland have been counted mobility rates[6] from Nordic registered data in 1994/95. The level of mobility rate for the all three countries is shown on table 2. Comparisons of these figures to figures in Czech economy show rather rigid Czech labour market during culmination of (namely voucher) privatization process and in the all period, as well, while it

[2] Total number of population minus children under 15 year of age and pensioners (working pensioners are included)

[3] In denominator there are excluded children under 15 year but there is not upper age limit, therefore percentage could be higher because pensioners constitute approximately 1/5 of population. Indicator could reach in this case 17 - 19%.

[4] Which represents working age (15 - 69) population

[5] Own calculation from tables data

Table 3

Mobility Rates for Nordic Countries in per cent for 1994/95

Type of employees	Type of mobility rate	Sweden[1]	Norway	Finland
All employees	Wide	24.0	20.1	23.3
All employees	Narrow	16.2	12.4	11.5

1) 1995/96
Wide: including persons leaving active work force. Narrow: Excluding those leaving active work force.
Source: STEP Report R-06/1998, page 44, www.sol.no/step.

could be expected higher flows among all possible statuses because of the deep structural changes within privatized firms, bankruptcies etc..

4. Transitions between Industries

Transitional probabilities between different states do not explain if it concerns a transition to another job in the same firm or another one at the same industrial branch or in a different industry. There were made many ordinary descriptions of employment by industries but not a closer look to flows between industries together with unemployment and out-of-labour force statuses for five years. In the following we try to focus into these processes.

First of all, the data of LFS make it possible to distinguish 17 industrial branches by NACE (sectoral) classification. In addition, it is possible to recognize transitions only between industrial branches, job-to-job moves and intraindustry flows are not detected.

Table 1 (Appendix II) shows structural changes between industries from LFS quarterly data. Over the observed time period total employment oscilated around 4.9 mil. of persons. Using industries, changes in employment can be grouped as follows:

– The first group includes agriculture, mining, health and social insurance,, electricity, gas, manufacturing and education, industries which have experienced a constant decrease in employment. The greatest decrease were in mining and agriculture industries in which can be considered as the natural process of transition. It can be said also for manufacturing and electricity and gas. Relatively sizeable decrease for 10.4 % we see in health and social insurance and 5.4 % in education what can be seen as unexpected development. The Czech Republic is only one transitional country with such development. The reason could be seen at privatisation process of general practitioners, specialists and dentists for health sector

[6] Mobility rate measure includes only movement from employment in one establishment to employment in another establishment, excluding (or not) movements out of labour force or/and unemployment.

and slow continual declining process of students at primary and secondary schools during 90's in education sector with resulting impact to employment.

- The second group involves industries in which employment is roughly stagnant. There are mix of industries like transport, storage, fishing and forestry, other services and private households with employed persons.
- The third group includes industries with constant increase of employment. Construction, only one productive industry, hotels, restaurant and real estate industries can be characterised by moderate increase up to 15 %. Very high increase in employment at public administration witnesses about reform of public services but also about growing bureaucracy. The most intensive growth were in trade, cars and financial sectors which have been strongly underdeveloped before transition.

Table 4
Employment by Industrial Sectors in 1993 - 1999

NACE	1993 I	1993 II	1993 III	1993 IV	1994 I	1994 II	1994 III	1994 IV	1995 I	1995 II	1995 III	1995 IV	1996 I	1996 II	1996 III	1996 IV	1997 I	1997 II	1997 III	1997 IV	1998 I
A- agriculture, hunting	6,8	6,6	6,4	6,0	5,9	6,0	5,8	5,5	5,3	5,2	5,3	5,3	5,1	5,0	4,9	4,6	4,6	4,7	4,6	4,5	4,5
B- fishing, forestry	1,1	1,1	1,1	1,0	1,0	1,1	1,1	1,1	1,2	1,2	1,2	1,2	1,1	1,0	1,0	1,0	1,0	1,1	1,1	1,0	1,0
C- mining and quarring	2,8	2,6	2,4	2,1	2,0	2,0	1,9	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,8	1,7	1,8	1,8	1,8	1,8	1,8
D- manufacturing	30,2	30,3	30,4	30,5	29,9	29,5	29,4	29,1	29,1	29,1	28,8	28,7	28,6	28,6	28,6	28,5	28,1	27,9	27,5	27,4	27,6
E- electricity, gas and water supply	2,1	2,0	1,9	2,0	2,0	2,0	2,0	2,0	2,1	2,1	2,0	2,0	1,9	2,0	2,0	2,0	1,8	1,7	1,8	2,0	2,5
F- construction	8,3	8,5	8,7	8,8	9,0	9,0	9,1	9,0	8,8	8,9	9,2	9,1	9,1	9,1	9,2	9,2	9,2	9,4	9,7	9,9	9,7
G- trade,cars & house hold goods repair.	10,4	10,6	10,8	11,1	11,6	12,2	12,6	12,8	12,5	12,4	12,5	12,7	12,9	13,0	13,0	13,4	13,6	13,6	13,4	13,1	13,0
H- hotels and restaurants	3,0	3,2	3,2	3,1	3,0	2,9	2,9	2,9	3,0	3,1	2,9	2,9	3,0	3,1	3,2	3,2	3,2	3,2	3,4	3,6	3,5
I- transport, storage and communication	8,1	8,1	7,9	7,7	7,6	7,5	7,6	7,8	7,8	7,7	7,6	7,7	7,7	7,8	7,9	7,8	7,7	7,7	7,7	7,8	7,7
J - financial intermediation	1,4	1,5	1,6	1,6	1,6	1,7	1,7	1,7	1,8	1,9	1,9	1,9	1,9	1,9	1,9	1,9	2,0	2,0	2,0	2,0	2,0
K- real estate,renting and business act.	4,5	4,5	4,6	4,7	4,8	5,0	5,0	5,0	4,9	4,9	4,9	4,9	5,0	5,1	5,2	5,2	5,1	5,1	5,0	5,1	5,2
L- public administr ation and defence	5,1	5,2	5,4	5,5	5,6	5,7	5,7	5,6	5,7	6,0	6,0	6,0	6,0	6,1	6,3	6,4	6,4	6,5	6,5	6,4	6,4
M- education	6,7	6,5	6,5	6,6	6,7	6,3	6,2	6,4	6,4	6,3	6,4	6,4	6,4	6,3	6,2	6,4	6,5	6,3	6,3	6,3	6,2
N- health and social work	6,2	6,0	5,9	5,9	5,9	5,9	5,9	5,8	5,8	6,0	6,0	6,0	5,8	5,7	5,6	5,5	5,7	5,7	5,8	5,7	5,5
O- other commun.soc. & personal serv. act	3,3	3,3	3,4	3,4	3,4	3,3	3,2	3,2	3,4	3,4	3,4	3,4	3,4	3,3	3,2	3,2	3,2	3,2	3,3	3,5	3,5
P- private households with employed pers.	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Q- extra-teritorial org. and bodies .	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Source: LFS, ČSÚ

In order to measure the relative growth of different age groups or industries, Relative Employment Growth Index is used here[7]. REGI is measured by the employment growth of industry (or age group) in relation to employment growth in an economy as a whole. We have used REGI indexes in comparisons and joint of industries in Tables 4 - 8.

Table 5

Relative employment growth index for period 1/93 - 1/97

Industry (NACE)	REGI index
Mining and quarrying	-0,3398
Agricultural, hunting	-0,3136
Helth and social ins.	-0,1042
Electricity, gas	-0,0767
Manufacturing	-0,0737
Education	-0,0538
Transport, storage	-0,0357
Other communal services	-0,0198
Fishing,forestry	-0,0099
Private housholds	0,0011
Hotels and restaurants	0,0734
Construction	0,1418
Real estate, rent	0,1420
Public administration	0,2509
Trade, car services	0,2608
Financial intermediation	0,4758
Extra-teritorial organizasions	2,0033

Sourcee: CSO, own calculations

Table 3 (Appendix II) shows (as an example) transitions between industries to see where employed people that changed status or did not change status finally were placed. The table shows the stock of employed at original state in each industry and the destination state after four quarters. We can see the greatest flows in and out are in manufacturing employing about 30 % of all employment but share in flows is only 22 %. It reflects also situation that these moves participate only 5 % in the total employment of manufacturing. Industries with the greatest flows-in and flows-out as share of inter-industry employment are the same as industries with the highest of REGI and moves share about 10 - 12 % in total employment of particular industry.

Table
Transitions between industries in period 1/1993 - 1/1994

[7] The same type index were used by Eamets et al., 1997 (page 12) and other authors.

						FOUR QUARTERS LATER 1994Q1														
Thousands								Destination state												
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Un	In
1993q1 Origin state	4 713,1	283,7	52,8	131,7	1 478,3	88,9	384,8	477,1	142,6	363,5	72,5	223,9	254,1	308,7	303,5	145,9	0,7	0,4	97,9	378,9
A-agriculture, hunting	308,9	273,4	2,2	-	15,5	0,8	4,9	3,6	0,7	0,6	0,8	0,5	1,0	0,4	3,5	1,0	-	-	9,0	29,4
B-fishing, forestry	52,0	-	49,3	-	1,3	-	0,5	0,5	-	-	-	0,1	-	0,2	-	-	-	-	0,5	2,9
C-mining and quarring	139,8	0,7	-	129,6	2,1	-	2,6	2,5	-	0,9	-	0,4	1,0	-	-	-	-	-	2,0	5,3
D-manufacturing	1 494,9	2,4	1,1	0,9	1 410,6	1,9	9,4	24,4	6,2	4,1	5,1	7,8	7,1	5,3	3,9	4,7	-	-	33,6	135,3
E-electricity, gas and water supply	90,0	1,0	-	-	3,6	80,7	1,5	0,5	0,6	-	-	0,7	0,6	-	-	0,7	-	-	0,3	3,9
F-construction	382,8	2,1	0,2	-	6,5	0,5	352,7	6,2	0,8	2,1	0,6	4,8	1,4	-	-	4,8	-	-	11,6	10,9
G-trade,cars & house hold goods repair.	439,6	0,5	-	0,5	12,1	0,8	2,9	405,6	3,2	3,6	2,9	2,7	1,1	0,7	2,4	0,8	-	-	14,9	47,6
H-hotels and restaurants	141,6	1,0	-	-	3,4	1,4	0,2	7,0	124,4	1,3	-	1,7	0,3	-	0,3	0,7	-	-	5,1	12,0
I-transport, storage and communication	366,8	0,2	-	-	5,2	0,9	1,9	4,6	1,4	348,1	0,3	1,9	1,7	-	-	0,2	-	0,4	5,2	19,3
J-financial intermediation	62,6	-	-	-	-	-	-	2,6	-	-	59,9	-	-	-	-	-	-	-	1,3	5,0
K-real estate,renting and business act.	215,2	0,6	-	-	8,2	1,5	2,3	2,5	-	0,4	1,2	192,2	1,8	1,4	1,9	1,2	-	-	2,3	10,7
L-public administr ation and defence	254,1	0,3	-	0,7	3,5	0,4	1,0	5,7	0,8	1,0	1,4	4,4	233,7	0,4	0,9	-	-	-	1,5	12,0
M-education	316,0	0,8	-	0,1	2,7	-	1,8	3,2	2,2	0,2	-	1,2	2,1	297,5	2,7	1,6	-	-	2,5	32,2
N-health and social work	297,8	-	-	-	1,3	-	0,1	5,5	0,8	0,5	-	1,9	0,7	0,5	286,3	-	-	-	5,0	35,6
O-other commun.soc. & personal serv. act	150,4	0,7	-	-	2,3	-	3,0	2,6	1,5	0,6	0,4	3,6	1,6	2,3	1,7	130,1	-	-	2,9	16,4
P-private households with employed pers.	0,7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,7	-	-	-
Q-extra-teritorial org. and bodies .	0,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,2
Un -Unemployment	103,7	1,3	3,0	1,5	29,3	0,6	10,3	20,4	6,3	6,1	1,5	6,1	1,5	1,6	4,8	9,3	-	-	84,9	34,5
In - Inactive	402,2	20,1	1,5	3,6	127,8	1,4	21,3	54,3	16,4	26,7	4,2	12,5	13,7	38,1	43,4	17,0	-	-	50,3	4 987,9

Source: LFS, Czech Statistical Office Note: (-) Indicates no transition observed.

Tables 4-8 show flows between aggregate industries according to changes in employment by REGI to three groups. There is an obvious fall about one third of the total flows in employment changes. Flows out in growing industries did not change a lot but flows-in in decreased industries changed significantly, nevertheless the net increase to employment decelerated. Flows-out in decline industries decreased nearly 50 % but flows-in fell down slowly and net change in employment also decelerated. Net change of unemployment was negative and it means tendency to decrease unemployment, but in closer look we can see different changes according to industries. In declining industries unemployment falling down only at economic growth years (1994-96). The net change in inactivity status was positive and namely in decline industries. For growing industries are net changes different for the first two years when decreased and for rest of years had rather growing tendency.

5. Transitions between occupations

Transitional probabilities between occupations are shown in outer years 1993 and 1997 in Table 4 (Appendix II). Highest probability to stay at an occupation is for professionals 96.5 % and the lowest for skilled agricultural workers, 88.4 % which correspond the industrial changes in 1993. Probability, 91 %, for elementary occupations is also one of the lowest in 1993. There is also 5.5 % of probability to leave from skill agricultural occupations just to

elementary occupations what can be explained outflows from agricultural sector. All probabilities to stay at the same occupations are higher in 1997. Skilled agricultural workers are still the lowest, 91.0 %, but the highest probability moved to clerks, 96.5 %.

Table 4

Transition probabilities between occupations for 1993 and 1997

	TOTAL	CLASS. OF OCCUPATIONS 4 QUARTERS LATER											
Transition probabilities	%	1	2	3	4	5	6	7	8	9	0	Un	In
1993q1 base period	100,0	4,6	10,1	18,9	7,0	10,5	2,3	23,0	13,2	10,2	0,1	2,1	8,0
Occupation ISCO													
1-legislators, senior officials,managers	100,0	93,2	1,0	3,5	0,6	0,9	0,1	0,2	0,4	-	-	0,8	4,4
2-professionals	100,0	0,5	96,5	2,4	0,4	0,2	-	0,1	-	-	-	1,5	6,8
3-technicians and ass. professional	100,0	0,4	1,3	95,3	1,5	0,4	0,1	0,7	0,4	-	-	1,0	8,0
4-clerks	100,0	0,1	0,2	4,0	92,9	1,1	0,3	0,2	0,8	0,4	-	2,7	11,8
5-service workers,shop-market sales wor.	100,0	0,5	0,1	1,2	0,9	93,6	0,1	1,2	1,0	1,4	-	3,1	11,8
6-skilled agricultural & fishery workers	100,0	0,9	-	0,5	-	0,3	88,4	2,6	1,7	5,5	-	3,6	10,3
7-craft and related trades workers	100,0	0,2	0,2	0,8	0,2	1,4	0,1	94,5	1,2	1,5	-	1,7	5,4
8-plant & machine opera tors & assemblers	100,0	0,1	-	0,6	0,5	1,0	0,4	2,5	93,2	1,6	-	2,1	5,8
9-elementary occupations	100,0	-	0,3	1,0	1,6	2,1	0,6	2,1	1,4	91,0	-	4,2	13,2
0-not identified	100,0	-	-	-	10,0	-	-	-	5,5	4,5	80,1	-	10,2
Unemployment	100,0	0,3	4,3	6,6	8,2	20,7	2,7	20,4	8,7	25,3	2,7	81,9	33,3
Inactive	100,0	1,3	9,2	15,7	9,7	18,4	2,5	23,0	6,5	13,6	0,2	12,5	1240,2
1997q1 base period	100,0	6,9	9,8	18,1	8,3	11,7	2,2	21,4	12,5	8,2	0,8	1,9	6,6
Occupation ISCO													
1-legislators, senior officials,managers	100,0	94,7	1,4	1,5	0,4	1,1	0,1	0,6	-	0,3	-	1,1	1,9
2-professionals	100,0	0,8	97,0	0,7	0,8	0,2	-	0,2	0,2	0,0	-	0,7	6,5
3-technicians and ass. professional	100,0	0,6	0,8	96,5	0,7	0,7	-	0,3	0,2	0,2	0,1	0,9	6,8
4-clerks	100,0	0,3	0,0	0,8	96,5	0,8	-	1,0	0,1	0,6	-	2,7	9,4
5-service workers,shop-market sales wor.	100,0	0,6	0,1	0,9	0,9	94,2	0,1	0,8	1,1	0,9	0,4	2,5	8,8
6-skilled agricultural & fishery workers	100,0	-	-	0,7	-	0,9	91,0	2,6	2,1	2,4	0,3	2,7	10,5
7-craft and related trades workers	100,0	0,1	-	0,5	0,2	0,7	0,1	95,7	1,4	0,6	0,6	1,6	5,3
8-plant & machine opera tors & assemblers	100,0	0,1	-	0,3	0,1	0,8	0,2	1,6	95,4	1,2	0,2	1,9	5,7
9-elementary occupations	100,0	-	-	0,6	1,0	1,1	0,2	1,1	1,2	94,4	0,2	4,8	9,0
0-not identified	100,0	-	-	6,1	1,4	6,0	2,6	14,0	7,8	7,1	55,0	8,6	1,8
Unemployment	100,0	3,0	3,9	10,4	4,9	20,8	1,5	21,9	10,9	19,5	3,3	116,9	28,7
Inactive	100,0	3,0	10,9	14,4	15,1	17,3	1,4	14,8	4,9	12,0	6,1	31,3	2698,6

Source: LFS, Czech Statistical Office Note: (-) Indicates no transition observed.

Structural changes between several occupations were not very significant. The greatest relative increase were at 1-legislators.. and 4-clerks occupations. On the other side, the greatest decrease were at 9-elementary and 7-craft. occupations.

Flows between occupations aggregated to white collar, blue collar workers and elementary occupations[8] are shown in Tables 9-13. There is small but stable growth of employment for white collar workers and opposite trend for blue collar workers. Net change

[8] Elementary occupations comes generally under blue collar workers but we wanted to split this group also according to a basic difference in education.

of employment for elementary occupations does not correspond the total employment change. The greatest relative employment flows were in elementary occupations, 9.7 % in 1993, but decreased to 7.1 % in 1997. Intensity of flows fell down continuously for all groups during the years and reflected the same tendencies as flows between industries. In net change of unemployment prevails the decline of unemployment in the all categories and in the net change of inactivity prevails the increase of inactivity namely between 1995 and 1997.

Tables 4-8: Flows between industries

Table 4: Flows between industries and statuses from **1/1993 to 1/1994**, thousands

Industries[1] at which employment	**decreased (flow out)**	**Change of employment stayed**	**grew (flow in)**	**net change of employment**	**net change of unemployment**	**net change of inactivity**
declines*	-169.1	2478.1	+116.6	-52.5	+13.3	+7.3
stable**	-41.8	528.2	+34.8	-7.0	-9.8	-6.6
growth***	-127.3	1368.5	+186.9	+59.6	-9.4	-24.0
∑	-338.2	4374.8	+338.3			

1 NACE classification. Industries were divided to categories according to REGI index, declining below 5 % of total change during 1993 - 97 years, stable from -5 % to +5 % of total change and growth for more than 5 % of total change.

* Agriculture, mining and quarrying, manufacturing, electricity, gas, water supply, education, health and social work

** Fishing, forestry, transport, storage and communication, other communal social service activities, private households with employed persons

*** Construction, trade, cars and households repairing, hotels and restaurants, financial intemediation, real estate, renting and business activities, public administration, extra-territorial organisations

Table 5: Flows between industries and statuses from **1/1994 to 1/1995**, thousands

Industries at which employment	**decreased**	**Change of employment stayed**	**grew**	**net change of employment**	**net change of unemployment**	**net change of inactivity**
declines	-142.9	2435.3	+124.0	-18.9	-4.9	+26.4
stable	-44.5	517.9	+45.9	+1.4	-3.4	+4.8
growth	-141.9	1606.6	+159.5	+17.6	-69.9	-23.2
∑	-329.3	4559.8	+329.3			

Table 6: Flows between industries and statuses from **1/1995 to 1/1996**, thousands

Industries at which employment	**decreased**	**Change of employment stayed**	**grew**	**net change of employment**	**net change of unemployment**	**net change of inactivity**
declines	-133.2	2302.9	+108.6	-24.6	-15.1	+45.8
stable	-41.2	547.1	+40.7	-0.5	-6.0	+9.1
growth	-139.6	1608.4	+164.4	+24.8	-30.0	+26.2
∑	-314.0	4458.4	+313.7			

Table 7: Flows between industries and statuses from **1/1996 to 1/1997**, thousands

Industries at which employment	**decreased**	**Change of employment stayed**	**grew**	**net change of employment**	**net change of unemployment**	**net change of inactivity**
declines	-106.8	2345.2	+90.5	-16.3	-6.5	+42.9
stable	-30.8	573.5	+38.7	+7.9	-8.3	-3.0
growth	-124.0	1753.3	+132.7	+8.7	-17.9	-9.1

∑	-261.6	4672.0	+261.9			

Table 8: Flows between industries and statuses from **1/1997 to 1/1998**, thousands

Industries at which employment	**decreased**	**Change of employment stayed**	**grew**	**net change of employment**	**net change of unemployment**	**net change of inactivity**
declines	-90.6	2157.8	+80.0	-10.6	+2.4	+92.0
stable	-26.2	543.5	+29.8	+3.6	+2.3	+16.2
growth	-119.7	1691.6	+127.0	+7.3	-22.9	+15.0
∑	-236.5	4392.9	+236.8			

Source: Own calculations from LFS

Tables 9 - 13: Flows between occupations and statuses

Table 9: Flows between occupations and statuses from **1/1993 to 1/1994**, thousands

Occupations[1]	decreased (flow out)	Change of employment stayed	grew (flow in)	net change of employment	net change of unemployment	net change of inactivity
White collar	-95.7	1793.8	+121.3	+25.4	+6.1	+6.1
Blue collar	-147.3	2183.7	+125.0	-22.3	-3.3	-38.4
Elementary occupations	-43.6	440.7	+41.9	-1.7	-5.7	+8.9
∑	-286.6	4418.2	288.2			

1 ISCO classification of occupations. Occupations were divided to three groups. White collar: 1-legislators.., 2-professionals.., 3-technicians..., 4-clerks; Blue collar: 5-service workers..., 6-skilled agricultural.., 7-craft..., 8-plant and machine operat. ..; 9-Elementary occupations..; 10-Not identified occupations were excluded (there were relatively huge increase of not identified occupation during surveyed period which could be explained partly by wrong answers of respondents and also by new unclassified occupations).

Table 10: Flows between occupations and statuses from **1/1994 to 1/1995**, thousands

Occupations	decreased (flow out)	Change of employment stayed	grew (flow in)	net change of employment	net change of unemployment	net change of inactivity
White collar	-93.3	1884.2	+98.3	+5.0	-8.9	-2.5
Blue collar	-149.9	2315.0	+123.7	-26.2	-30.2	+1.2
Elementary occupations	-32.2	406.1	+43.5	+11.3	-12.4	-4.5
∑	-275.4	4605.3	269.5			

Table 11: Flows between occupations and statuses from **1/1995 to 1/1996**, thousands

Occupations	decreased (flow out)	Change of employment stayed	grew (flow in)	net change of employment	net change of unemployment	net change of inactivity
White collar	-114.8	1939.7	+118.5	+3.7	-5.5	+26.9
Blue collar	-160.8	2109.7	+142.8	-18.0	-22.3	+46.1
Elementary occupations	-43.6	383.4	+37.8	-5.8	-21.8	+18.7
∑	-319.2	4432.8	338.5			

Table 12 : Flows between occupations and statuses from **1/1996 to 1/1997**, thousands

Occupations	decreased (flow out)	Change of employment stayed	grew (flow in)	net change of employment	net change of unemployment	net change of inactivity
White collar	-84.2	2037.0	+93.8	+9.6	-2.5	+5.3
Blue collar	-134.2	2220.5	+126.9	-7.3	-20.1	+17.0
Elementary occupations	-27.7	378.7	+29.7	+2.0	-12.0	+13.4
∑	-246.1	4636.2	+250.4			

Table 13 : Flows between occupations and statuses from **1/1997 to 1/1998**, thousands

Occupations	decreased (flow out)	Change of employment stayed	grew (flow in)	net change of employment	net change of unemployment	net change of inactivity
White collar	-73.6	1922.6	+77.8	+4.2	+0.4	+48.8
Blue collar	-109.7	2105.4	+106.6	-3.1	-15.7	+73.4
Elementary occupations	-20.9	353.3	+28.4	+7.5	-3.1	+11.5
∑	-204.2	4381.3	+212.8			

Source: own calculations from LFS

6. Conclusion

As far as transitions from employment, unemployment or out-of-labour force (inactivity) in any other status concerns the results show that there is something new under the sun, say, intensity of restructuring process on the Czech labour market is lower than that was expected, and also in comparison with some other transition countries.

Very high probability to stay at employment and to leave unemployment to employment, among others, created favourable condition to keep unemployment in very low level. Transitions between industries and also occupations show rather a similar situation. Closer look to extension of these processes shows rather small flows between possible statuses in the Czech economy. We observe also job-to-job flows as a part of the total mobility of labour force which could be explained an important part of flows that unexplained between different statuses. We can conclude from direct and indirect evidences and other data that the extension of job-to-job flows (as part of round tripping) are also small in comparison to other transition economies and West countries as well. We are quite aware to make very strong and detailed conclusions about the extension of flows from such descriptive analysis of LFS data aren't proper but we can say without failing that our results are closer to positions which argue by imperfect restructuring process during 90's in the Czech economy.

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Table 2: Relative Employment Growth Index by age categories

AGE CATEGORIES	REGI MAN	REGI WOMEN	REGI TOTAL
15 - 19	-0,2380	-0,4636	-0,2695
20 - 24	0,2263	-0,0094	0,1379
25 - 29	0,0126	-0,2828	-0,1391
30 - 34	0,0740	-0,1127	-0,0099
35 - 39	-0,1873	-0,2411	-0,2059
40 - 44	-0,0702	-0,0687	-0,0616
45 - 49	0,1643	0,1147	0,1851
50 - 54	0,3189	0,3980	0,2760
55 - 59	0,1683	0,3881	0,2152
60 - 64	0,0515	0,1219	0,0418
65 and more	0,0171	-0,1326	-0,0345
Total average	0,0471	-0,0549	0,0036

Attachement for the discussion on international mobility, Luxemburg, 12th May, 2000

Issued Working Permissions for Foreigners in the Czech Republic (without Slovaks)

rom		*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*1993*	*1994*	*1995*	*1996*	*1997*	*199*
	a	20444	23682	41224	59137	49354	37926	28917	90.1	91.0	93.3	94.9	94.5	93.
Eastern	*b*	1087	1071	1094	1148	995	958	923	4.8	4.1	2.5	1.8	1.9	2.3
untries *	*c*	1151	1285	1877	2061	1858	1921	1869	5.1	4.9	4.2	3.3	3.6	4.7
	d	22682	26008	44195	62346	52207	40805	31709	100.0	100.0	100.0	100.0	100.0	100
	a	212	218	338	340	336	331	328	5.1	4.0	5.0	4.9	4.8	4.7
tries **	*b*	733	1072	1888	2017	2136	2058	1832	17.6	19.4	28.0	28.9	30.3	29.
	c	3227	4221	4511	4613	4580	4719	4766	77.3	76,6	67.0	66.2	64.9	66.
	d	4172	5511	6737	6970	7052	7108	6926	100.0	100,0	100.0	100.0	100.0	100
	a	920	815	913	1020	1163	1293	987	64.5	60.3	56.9	60.5	65.1	64.
ries	*b*	203	190	238	199	189	219	217	14.2	14.1	14.9	11.8	10.6	10.
	c	304	347	453	467	433	502	473	21.3	25.7	28.2	27.7	24.3	24.
	d	1427	1352	1604	1686	1785	2014	1677	100.0	100.0	100.0	100.0	100.0	100
	a	21576	24685	42475	60497	50853	39550	30232	76.2	75.1	80.9	85.2	83.3	79.
	b	2023	2333	3220	3364	3320	3235	2972	7.2	7.1	6.1	4.7	5.4	6.5
	c	4682	5853	6841	7141	6871	7142	7108	16.6	17.8	13.0	10.1	11.3	14.
	d	28281	32871	52536	71002	61044	49927	40312	100.0	100.0	100.0	100.0	100.0	100

a jobs for blue-collar workers
b jobs required GCE
c jobs required university degree
d total

* Poland, Bulgaria, Romania, Hungary, countries from former Yugoslavia, countries from former USSR
** OECD countries without member states from Central and Eastern Europe