

Occupational and Sectoral Mobility in the Czech Republic and its Changes during the Economic Recession¹

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Abstract

This paper reveals the scope and patterns of mobility on the labour market in the Czech Republic in between 2002 and 2013. Occupational and sectoral mobility are analysed using the data from the Labour Force Survey. The LFS data were adjusted into a form of longitudinal data enabling to follow an individual in four consecutive quarters. The frequency of mobility on the Czech labour market and its development during different phases of business cycle is studied. The level of mobility is examined in the entire population of the employed as well as among subgroups defined predominantly by socioeconomic characteristics. Patterns of labour mobility revealed by this paper are discussed in the light of similarly focused studies from abroad and theoretical approaches toward labour mobility.

Keywords

Labour market, labour mobility, occupational mobility, sectoral mobility, economic recession, human capital

JEL code

J62, J60

INTRODUCTION

As a result of social changes affecting also the labour market, the prospects of lifetime employment cease to be a common scenario nowadays. People, in the course of their professional careers, work in several jobs. Labour mobility is an important process allowing the economy as a whole to respond to structural and cyclical shifts, which are reflected, inter alia, in the disappearance of some jobs and the occurrence of new ones. In addition, labour mobility helps to level out differences among individual regions of the country.

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The objective of this study is to investigate the extent of labour mobility within the Czech labour market. Our research enquiry reads as follows – What is the proportion of workers who, in the course of one year, change from a job and economic sector? For the purpose of this study, we have developed a unique approach of work with the Labour Force Survey data which has been transformed into the panel data. We monitor the overall extent of labour mobility and its rates in individual subgroups of the population. The development of labour mobility is analysed in the scope of 11 years during the period of 2002–2013, which allows us to follow the shifts in labour mobility during different phases of the economic cycle. A substantial part of the analysis is, therefore, devoted to the evolvement of mobility patterns in the course of the pre-crisis as well as recession periods.

1 REVIEW OF THE LITERATURE

Labour mobility can be generally defined as one of the indicators of labour market flexibility. It is a mechanism contributing to a more efficient allocation of workers to jobs (Borjas, 2008). Labour mobility can be viewed from two different perspectives – geographic and structural. From the geographic viewpoint, it is related to situations when individuals change the region of their workplace, they commute to work or they change their residence because of the job. Structural mobility reflects transitions of individuals between jobs determined by different activities, different economic sectors or different positions within an organisation.

The neoclassical theory places labour mobility particularly in the context of levelling the disparities between unequally developed regions, which allows the economy to achieve the state of balance. However, it is not only about the geographic labour mobility, in terms of economic balance and dealing with structural shifts, also occupational and sectoral mobility play an important role. The level of flexibility with which the workers change their occupation or sector of employment determines, to a great extent, the ability of the economy to respond promptly to the growth and decline in demand for production in particular sectors. Thus, structural mobility can serve as part of the solution to the problem of structural unemployment.

Since the 60s, the scientific literature has been incorporating also the human capital perspective when approaching labour mobility. Many academic debates arise particularly from the question to which extent is the human capital related to a specific job and to which extent is it transferable. The beginning of these debates is marked by Becker's (1964) distinction between general human capital – beneficial to all potential employers – and specific human capital applicable at one employer only. Provided the transferability of human capital is limited and its structure is characteristic for particular jobs; any labour mobility leads to losses in human capital and therefore failed investment in the form of the time spent in a job. According to Becker, specific human capital explains why the workers' wages grow in relation to the length of their employment in the same job. The opinions of Neal (1995) and Parent (2000) represented an important contribution to this debate; they both concluded that the structure of human capital is subject to individual sectors of the economy. Kambourov and Manovskii (2004) responded to this debate with an article stating that skills applicable on the labour market are transferable within the performance of an occupation; therefore human capital is rather occupation-specific. Occupational and sectoral labour mobility are, within this concept, associated with certain losses in human capital, wages and ultimately also prosperity.

The study of mobility on the labour market has a long tradition particularly in the area of geographic mobility of workers. The debate concerning the nature of human capital fostered also the interest of experts in the research of occupational mobility. The importance of research of geographic mobility in the Czech context increased during the 90s of the 20th century as one of the aspects of the economic transformation research (e.g. Sorm, Terrel, 2000; Fidrncuk, 2004; Erbenová, 1997). During the last decade, however, the experts' interest in this matter has, with a few exceptions (such as Horváth, 2007),

considerably weakened. Labour mobility between economic sectors and occupational mobility on the Czech labour market and their patterns represent area that has been explored to a rather limited extent. It can be assumed that the main cause of such a situation lies in the complexity of labour mobility study in terms of appropriate data. On a theoretical level, transferability of skills between occupations and economic sectors is currently being explored by the European Commission (see e.g. European Commission, 2011).

2 METHODOLOGY AND DATA

This study uses the Labour Force Survey (LFS) conducted by the Czech Statistical Office⁴ (CSO) as the main data source. It is a household survey focused on determining the economic status of the population. The survey is conducted quarterly and the sample includes about 25 thousand households, i.e. approximately 50 thousand individuals more than 15 years old. An important feature of these surveys is their panel character. Individual households participate in the surveys in five consecutive quarters of a year, which allows following an individual or a household in the course of one year. Despite the immense analytical potential of this approach, the Labour Force Surveys are only exceptionally analysed as a panel and most studies use the data in order to calculate the cross-sectional indicators.

In order to take advantage of panel character of LFS data we developed the original method of data transformation. Micro-data provided by the Czech Statistical Office for individual quarters were broken chronologically according to the date of the visit to a household and subsequently, by means of identification of unique combination of variables, joined again in order to reflect the situation of individuals in households throughout their entire participation in the panel. Data adjusted in this manner allow for monitoring the evolution of the individual's position in the labour market. The uniqueness of work with the LFS data is one of the major contributions of this study.

This article analyses data concerning the individuals who joined the survey sample between 2002 and 2012 (therefore it covers the period of 2002–2013). Data are weighted by annual weight and are representative of the population of the country. The survey sample was further modified to suit the needs of mobility analysis between different labour market statuses. That required excluding the respondents who participated in the survey for the first time between 2002 and 2012 but failed to provide data for all five quarters and dropped out from the panel prematurely. In the mobility analyses, we work solely with those respondents who were, at the time of their first and fifth participation in the panel, employed,⁵ however, this does not exclude the possibility of their unemployment or economic passivity sometime between these two periods of time. The total unweighted survey sample was 187 494 respondents in case of analysis of occupational mobility and 204 559 respondents in case of sectoral mobility. The average survey sample for each year was around 17 thousands of respondents.

Respondents participate in the survey during five consecutive quarters and are included in the panel at different times of the year. Due to that, it is very complicated to assign with precision which respondents belong to a particular calendar year. Therefore, individual respondents are assigned to the year in which they participated in the survey for the first time. This procedure creates a certain time shift in the analysis findings of this paper, however, it allows for determining the time trends within mobility development. While interpreting the findings arising from the data, we need to bear in mind that phenomena assigned to the year t , were not taking place solely in the course of that year but also in the course of the year $t+1$. This information becomes crucial particularly when determining the impact of recession, which commenced to be evident on the Czech labour market in the fourth quarter

⁴ Methodological descriptions of the indicators are available at: <http://www.czso.cz/csu/redakce.nsf/i/zam_vsps>.

⁵ We work with a definition of employment formulated by the International Labour Organisation (ILO).

of 2008 and fully developed during 2009. The impact of the recession in 2009 is therefore best observed in respondents who started to participate in the survey in 2008.

Calculation of labour mobility indicators requires several methodological decisions that impact its final measured values. Conceptualisation of mobility was determined, as in most other studies, particularly by the availability of data. The first decision to be made was choosing the length of the analysed period. It is obvious, that the longer the period between the start and the end time of the measurement, the greater probability of mobility occurrence. We need to be aware of this fact particularly when comparing various studies. The length of the monitored period may affect the measured rate of mobility also in other ways. With the length of the monitored period increases also the risk of undetected cases of mobility. For the purposes of this paper, we opted to measure labour mobility in the time scope of 1 year.

Another decision in terms of methodology is the level of detail based on which the occupational/sectoral shifts in the respondent's employment will be assessed as mobility. The level of detail is reflected in the classification of an occupation/sector with which we work. It is definitely true that the more detailed classification, the higher mobility rate. For the purposes of this paper, occupational mobility is defined as the change of the four-digit ISCO code of the respondent's occupation during their participation in the panel. Four-digit ISCO classification is the most detailed breakdown offered by the Labour Force Survey data. At the same time, it allows for finding sufficient qualitative differences in terms of occupation contents between two adjacent four-digit codes. In the case of sectoral mobility, we decided to work with the two-digit NACE code due to very subtle difference between two adjacent sectors defined by the four-digit code. These sectors are very close to each other and we can assume that the transition between them does not cause any significant devaluation of sector-specific human capital.

The authors of studies on mobility need to deal with the problem of the so-called pseudo-mobility, which arises when individual occupations or sectors are in different situations classified with a different code. This objection is of high relevance due to the fact that the coding is, to a large degree, subjective. Within the LFS data, the pseudo-mobility problem is minimized as the Czech Statistical Office uses the so-called dependent coding for the purposes of data collection – the interviewer knows the respondent's occupation code used in previous interviewing. In this situation, the interviewer first checks whether the respondent's occupation has changed compared to the last visit. Provided the respondent does not report any change of job, the interviewer uses for the classification of their occupation the same code as the last time.

More substantial problem associated with analysis of occupational mobility arises from the change of classification that took place in 2011; the CSO began to use ISCO 08 instead of former ISCO. Due to this change, the occupations of the respondents entering the panel in 2010 were, during the first visit, coded according to a different classification than during the last visit. There is no possibility to “translate” clearly the codes of the former classification into the new one. Therefore, the respondents who had entered the survey in 2010, needed to be excluded from the analysis of occupational mobility totally.

In the course of monitored decade, there was also a change in the classification of economic sectors used in the Labour Force Survey. This change occurred in 2008, when instead of the previously used NACE coding, an updated NACE classification began to be used. However, during the year of the change as well as in the course of the following year, the respondents' occupations were coded with two codes – using both classifications at a time. Therefore, in the case of sectoral mobility, no year needs to be omitted from the analysis.

As indicator of occupational mobility, we use the *occupational mobility rate*, which is, for the purposes of this paper, defined as the proportion of employed individuals reporting during their first participation a different occupation classified with the four-digit ISCO code than during their last one, in the total number of respondents participating in the survey who were employed during both the first and the last participation period. The *sectoral mobility rate* is defined as the proportion of employed

individuals reporting during their first participation a different sector of employment classified with the two-digit NACE code than during their last participation in the total number of respondents participating in the survey who were employed during both the first and the last participation period.

3 ANALYSIS OF LABOUR MARKET MOBILITY

3.1 Occupational mobility

In the Czech Republic, the occupational mobility rate recorded the average value of 4.1% in 2002–2013. During 2002–2005, it was showing a gradual decline and until 2007, the rate of occupational mobility fluctuated around 3.5%. A breakthrough was recorded in 2008, when the occupational mobility rate increased sharply by 2.4 percentage points and in values around 5.4% oscillated also in 2009. After 2010, the year for which we cannot use the LFS data to measure the occupational mobility rate, it recorded a new decline towards the values around 3.5%, which were typical prior to 2008.

Where does this value stand in international comparison? To compare occupational mobility between countries is rather problematic. Authors of similar studies work with various concepts of occupational mobility; they use different data sources, measure the mobility within different time intervals and work with unequally defined subgroups of population.

Among the studies that, in terms of methodology, can be considered relatively close to our paper belong the works by Dex, Lindley and Ward (2007), Elliott and Lindley (2006) and Lalé (2012). They all work with the standardized data from the Labour Force Survey (LFS). The study by Dex, Lindley and Ward (2007) conducted in the United Kingdom determined the occupational mobility rate in 2000 at the value of 9.8%. The changes in occupation were monitored at the level of the main ISCO class (i.e. one-digit code), which means that they related solely to major career changes. And yet, the occupational mobility rate recorded in the UK was more than twice as high as the one measured in the Czech Republic while applying the changes in the ISCO coding at four-digit level. Another British study, conducted by Elliott and Lindley (2006), makes use of questions detecting the respondents' position one year after their first participation in the panel. By means of this method, the value of the occupational mobility rate between 1985 and 2000 was established between 4% and 8% per year. The measured rate of occupational mobility was, thus, between equal to twice as high as the rate determined by us. However, these authors also worked with significantly higher level of aggregation (43 occupational categories) than us in this study (ISCO – 435 categories, NACE – 408 occupational categories). Lalé (2012) determined, in his study, the occupational mobility in France at the level of the four-digit ISCO at the value of 7.4%. The results clearly suggest that the Czech workers change their occupation less frequently than the workers in the United Kingdom or France.

In comparison with other countries, the occupational mobility in the CR can be viewed as very low. This conclusion is confirmed also by the study *Naše společnost 2003 (Our Society 2003)* conducted by the Public Opinion Research Centre (Centrum pro výzkum veřejného mínění, CVVM). Findings of this study show that 45% of the respondents performed only one occupation in the course of their professional life another quarter of them did not change their profession more than twice in their lifetime.

What factors determine the occupational mobility rate in individual countries and what might be the causes of such a low occupational mobility in the Czech Republic? The frequency with which the workers switch jobs and thus the occupation can be determined, in the first place, by the form of labour legislation, particularly the protection of employees. Provided the Labour Code takes rather the side of employees and places more emphasis on the security of employment than on the flexibility of the workforce, the economy tends to show lower staff turnover and lower mobility. Based on the indicator of employment protection against individual or collective dismissal constructed by the OECD (2013), the level of protection of employees in the Czech Republic is significantly higher than the OECD average. The indicator records the lowest values in the Anglo-Saxon countries that show, at the same

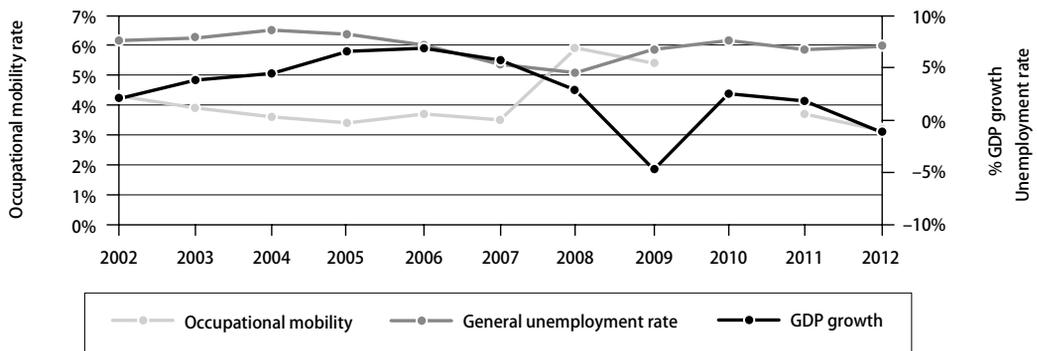
time, the highest rates of labour mobility. The French employment protection is stricter than the Czech one; however, France still records higher values of occupational mobility. Therefore, the form of labour legislation does not fully explain variability in occupational mobility across the countries.

Workers' employment values represent an important factor influencing occupational mobility in a given country. The *European Values Study 2008*, focused on examining employment values, shows that the workers in the CR greatly prefer the job security to the values associated with building a career. Conversely, workers in the old EU member states place emphasis on such values as possibility of career development or responsibilities within the job. Placing priority on job security results in decreased readiness to leave a job and embrace the risk related to potential unemployment or start in a new job.

Low rate of occupational mobility can be also related to the legislative regulation of professions, which represents significantly high costs for those interested in performing particular professions. The Czech Republic records the highest number of regulated professions (approximately 390) of all OECD member states (OECD, 2014).

Development of the proportion of workers who, in individual years, changed the occupation is illustrated in Figure 1. During 2002–2005, the occupational mobility rate was showing a gradual decline with a steady progression until 2007, it fluctuated in the region of 3.5%. The breakthrough was recorded in 2008, when the rate of occupational mobility sharply increased by 2.4 percentage points and in values around 5.5% oscillated also in 2009. After 2010, the year for which we cannot use the LFS data to measure the occupational mobility rate⁶, it recorded a new decline towards the values around 3.5%, which were typical prior to 2008.

Figure 1 Occupational mobility in relation to GDP and unemployment rate



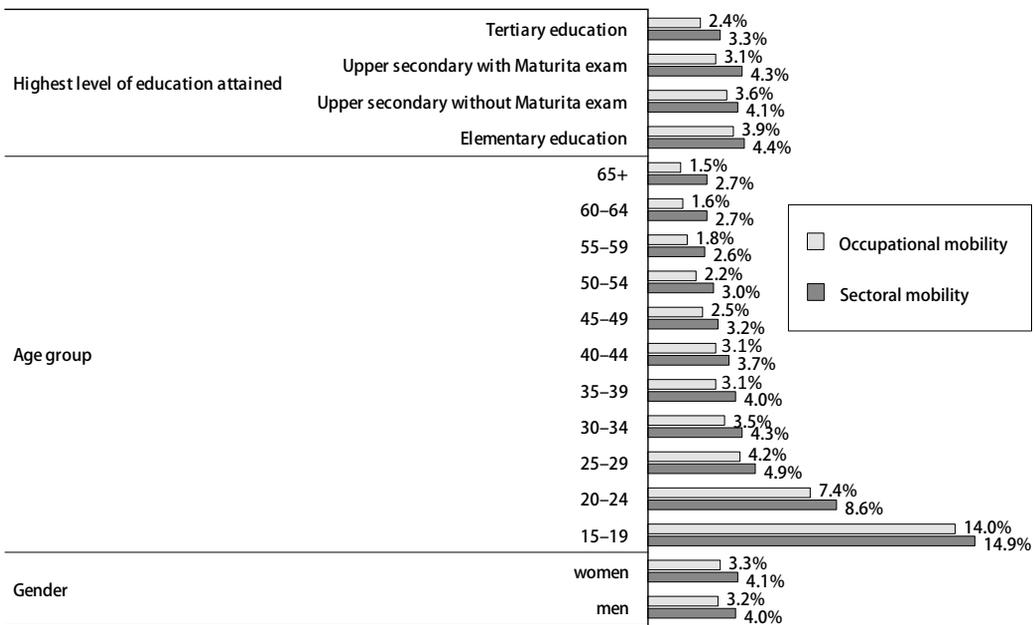
Source: Eurostat, Labour Force Survey (LFS), own calculations

Figure 1 illustrates also development of real GDP and general unemployment rate in the Czech Republic allowing us to see evolvement of these variables in relation with the occupational mobility rate. A significant increase in occupational mobility among respondents participating in the survey in 2008 coincides with the onset of economic recession in late 2008 and early 2009 associated with the growth of unemployment. From this perspective, we can conclude that the rate of occupational mobility was evolving in a rather countercyclical manner, however, without any substantial decline during the period of strong economic growth in 2005–2007. Given these developments, occupational mobility

⁶ See Chapter 2.

appears to respond rather to unexpected and significant drops in country’s economic performance than to longer-term growth. Increase in occupational mobility during the period of economic downturn remains, within the context of other studies, a rather unique phenomenon. Available analyses more often point out the fact that occupational mobility evolves in a pro-cyclical manner, i.e. it shows decline during recession (Kambourov, Manovskii (2004), Dex, Lindley, Ward (2007), Lalé (2012), Moscarini, Thomson (2007), Moscarini, Vella (2003)). A similar increase in occupational mobility during recession seen in the Czech Republic has not been detected even in the Slovak Republic (Říhová, Vavřinová, 2013); therefore, this phenomenon cannot be regarded as specific to the post-communist countries of Central Europe. Counter-cyclical evolvement of occupational mobility in the CR could indicate that people here seldom decide to change the occupation unless under negative external pressure. Under favourable economic circumstances, the vast majority of workers prefer inertia, which on one hand minimizes losses in human capital accumulated through workers’ experience while performing the occupation. On the other hand, this conservative attitude can represent an obstacle when circumstances require ability to adapt to changes related to modifying labour markets; these changes are often reflected in rapid creation of new occupations and disappearance of the old ones.

Figure 2 Occupational and sectoral mobility by age and education groups



Source: Labour Force Survey (LFS), own calculations

In general, there is no significant difference between men and women in terms of frequency of occupation changing. The same rate of occupational mobility in men and women is a feature by which the Czech Republic differs from other countries and which, at the same time, represents an interesting subject for further study. E.g. Parrado et al. (2005), Saben (1967), Moscarini and Vella (2003) as well as Lalé (2012) proved that in the USA and France, respectively, the rate of occupational mobility was higher in men across all age as well as education groups. Higher frequency of job changes in men was detected also in Slovakia (Říhová, Vavřinová, 2013).

The results indicate that the age is more important determinant in terms of occupational mobility. In the course of one year, almost 15% of workers within the age group 15–19 changed their occupation. However, within the age group 50+, this proportion did not exceed 3%. A significant milestone appears to be the age of 25 when the rate of occupational mobility stabilizes at values not too distant from the average. There are no major differences across age groups in terms of response of occupational mobility to economic cycle; the onset of economic crisis was followed by more frequent changes of occupation in all age groups.

Younger age is, also in other studies, considered one of the strongest predictors not only of change of occupation but also of any change in employment. This has been documented e.g. in the studies by Kambourov and Manovskii (2004), Lalé (2012), Parrado et al. (2005). The fact that younger workers change their profession more frequently is fully consistent with what the theory of human capital predicts in terms of occupational mobility. Provided that human capital is occupation-specific, a change of occupation results in its loss accompanied by the drop in wages. The longer period of accumulation of human capital, the more significant subsequent loss is.

When comparing occupational mobility among educational groups, higher education institutions' graduates stand out – on average, they changed occupation only in 3.3% of cases per year. Conversely, the highest rate of occupational mobility (4.4%) was recorded in workers with primary education as the highest level of education attained. The change of occupation was, therefore, during the monitored period, more frequent in less educated workers. The revelation of indirectly proportional relationship between the level of education attained and occupational mobility is consistent with the hypothesis that attributes rather involuntary nature to occupational mobility in the Czech Republic. Workers with tertiary education enjoy more favourable position on the labour market and, therefore, they are less often confronted with negative phenomena that besides unemployment, based on the results of this work, might include in the Czech Republic also the change of occupation. The theory of occupation-specific human capital predicts ambiguous conclusions in terms of the relationship between the level of education and occupational mobility. On one hand, the workers with higher level of education perform highly specialised occupations requiring longer period of training and change of occupation would lead to significant depreciation of human capital. On the other hand, the workers with higher level of education are expected to have, in addition to industry-specific skills and knowledge, also better general and transferable skills that enhance their flexibility and applicability on the labour market. Other studies on occupational mobility mostly agree with the conclusion of this paper, i.e. lower occupational mobility in workers with higher level of education (Kambourov, Manovskii (2004), partially also Parrado et al. (2005)), differences in mobility of variously educated workers are rather small and in some cases no differences were identified (Lalé, 2012).

The change of occupation was most frequent in unskilled manual workers, managers, executives and clerks. Workers in these occupations make use of skills that are relatively easily transferable between jobs and are less affected by the loss of human capital arising from mobility than workers using highly specialised skills, e.g. technicians, pedagogues and medical staff who showed, in the monitored period, the lowest rate of occupational mobility.

When focusing on the most common directions of occupational mobility we see that the vast majority of mobile workers change profession within the main occupation classes and thus select a new occupation that is as skill-intensive as the previous one. The most frequent were changes of occupation within the technicians and associate professionals (7.4% of total mobility). Transitions of science and engineering professionals into technicians and associate professionals occupations (4.8% of total mobility) and bi-directional transitions between craft occupations and machinery operator jobs (3.6 % and 3 % of total mobility respectively) were the busiest directions of mobility that included the change of main occupation class.

3.1.1 Directions of occupational mobility in the pre-crisis and crisis period

A glance at the structure and directions of occupational mobility reveals interesting differences between the pre-crisis (respondents entering the survey during 2006 and 2007) and the crisis period (respondents entering the survey during 2008 and 2009). During 2006–2007, craftsmen and skilled workers in manufacturing and machinery operators made for the largest proportion of mobile workers. These occupation groups provided for 18.8% and 15.8% respectively of all workers who changed their job in the given period. When comparing occupational mobility structure with the structure of employment (see Table 1), we see that the share of workers classified ISCO 7 and ISCO 8 on overall occupational mobility was relatively in proportion to their representation in the population. Conversely, from this perspective, the workers classified ISCO 3 are the most underrepresented.

In the period affected by the crisis, i.e. 2008–2009, the largest proportion of all mobile workers was recorded in science and engineering professionals (18%), engineering, medical and teaching staff (17%) and managers and executives (15%). The main difference between the period of relative economic expansion in 2006–2007 and the economic crisis consists in the fact that whereas, in the pre-crisis period, those changing jobs were particularly the workers in less skilled occupations, during the economic crisis, occupational mobility significantly increased in workers in skill-intensive occupations. The ISCO 2 workers were changing jobs more frequently than what would correspond to their representation within the employed population.

Pre-crisis and crisis periods differed also in terms of dominant directions of occupational mobility. In the pre-crisis period, the most frequent were the mobility flows consisting in the change

Table 1 Structure of employment and occupational mobility during pre-crisis and crisis period

ISCO	Employment Structure		Occupational Mobility Structure (initial occupations)	
	2006–2007	2008–2009	2006–2007	2008–2009
0 Armed forces	0.3%	0.3%	0.1%	0.3%
1 Legislators, senior officers and managers	6.6%	6.3%	6.6%	15.0%
2 Professionals	10.9%	11.5%	7.0%	18.1%
3 Technicians and associate professionals	22.1%	23.3%	15.0%	16.6%
4 Clerks	7.0%	7.2%	8.9%	6.5%
5 Service workers and shop and market sales workers	11.9%	11.7%	14.4%	11.4%
6 Skilled agricultural, forestry and related workers	1.5%	1.3%	1.5%	1.0%
7 Crafts and related trades workers	18.4%	18.2%	18.5%	12.1%
8 Plant and machine operators and assemblers	14.1%	13.4%	15.8%	11.1%
9 Elementary occupations	7.1%	6.8%	12.1%	7.9%

Source: Labour Force Survey (LFS), own calculations

of one-digit ISCO coding – transitions of craftsmen to occupations involving machinery operation (4% of total mobility), followed by the transitions of the services sector workers to associate professionals' occupations (3% of total mobility) and the transitions from unskilled jobs to the machinery operation occupations (2% of total mobility). In the crisis period, transitions of science and engineering professionals to associate professionals' occupations, accounting for as much as 11% of total occupation changes, dominated among the mobility flows. Other mobility directions of major significance were represented by the transfers of workers in managerial and executive jobs to associate professionals' occupations (4% of total mobility) and professionals' transitions to office worker jobs (3.4% of total mobility).

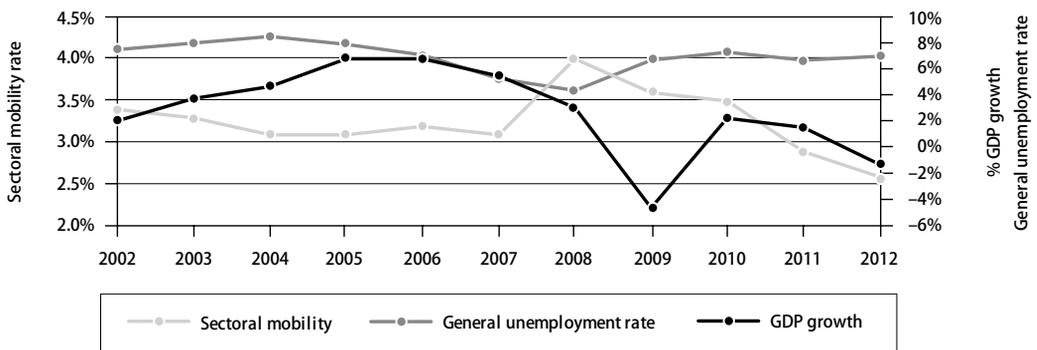
During the period of economic recession, occupational mobility, to a large extent, was related to workers in skill-intensive jobs. Given that the ISCO classification of occupations is derived from skill-intensity of occupations, where the Class 1 represents the highest intensity and the Class 9 the lowest one, we can say that, in the course of the economic crisis, the incidence of downward mobility (41.5%) was almost twice as frequent as the incidence of upward mobility (23%). During the pre-crisis boom, the ratio between the upward and downward mobility, defined in identical manner, represented 1:1.2.

3.2 Mobility among economic sectors

Growth in some economic sectors and downturn in others is a natural occurrence in market economies reflecting technological progress and social development. Changes in sectors' output are accompanied by shifts in employment. Every time more rapid changes in the labour market make the individuals respond to the structural economic shifts not only by selecting the field of study but also by changing the industry of employment in the course of their professional careers.

The sectoral mobility rate in 2002–2013 amounted to the average value of 3.2%. The development of mobility between economic sectors (Figure 3) illustrates identical countercyclical trend as occupational mobility, which might be down to partial blending of these phenomena. Only in less than one third of cases (29%), the workers who started to work in a different sector performed the same occupation as in their previous job. Changing occupation within the same sector was relatively more frequent practice and yet, considerable number of workers changing their occupations, changed also the sector of employment (56%). Therefore, the change of sector of employment and the change of occupation are very closely related and in a vast majority of cases they overlap. Due to that, the same patterns and relationships have been identified within them. Close relation between occupational and sectoral mobility is confirmed also by the British study conducted by Elliott and Lindley (2006). During 1985–2000

Figure 3 Development of sectoral mobility in the CR



Source: Eurostat, Labour Force Survey (LFS), own calculations

in the United Kingdom, the sectoral mobility was evolving in accordance with the occupational mobility; however, it was recording lower rates throughout the major part of that period.

In comparison with occupational mobility, the incidence of workers' transitions between sectors is lower. Concurrently, its evolution in time is more stable. Upon the onset of the economic recession, the workers' transitions between economic sectors became more frequent than in previous years, however, the increase was not particularly sharp and the sectoral mobility rate grew by less than 1% compared to the previous year. Due to a very limited number of available studies, it is difficult to compare the rate internationally, although, even the limited quantity of sources indicates that the rate recorded in the Czech Republic can be described as very low. In the United States, Kambourov and Manovskii (2004) measured the rate of sectoral mobility at 10% even when working with significantly higher level of aggregation of economic sectors.⁷ The study by Osberg, Gordon and Lino (1994) states, that in 1987, 19% of workers changed their sector of employment classified by two-digit code. The already mentioned Elliott and Lindley (2006) established, for the period of 1985–2000 in the United Kingdom, the rate of mobility among 10 economic sectors at the values between 4% and 6.8% per year.

Again, the countercyclical evolution of sectoral mobility in the CR is not in concordance with the results of foreign studies that usually attribute the pro-cyclical nature to it (Greenway, Upward, Wright (1999), Meriküll (2011)). The relation between sectoral mobility and the evolution of GDP once again indicates that, in the Czech Republic, the change of occupation tends to be involuntary and forced by circumstances.

In 2002–2013, 3.2% of men and 3.3% of women on average changed the sector of employment (see Figure 2). Prior to 2006, transitions between economic sectors were more frequent in men; in 2006–2009, the rates of sectoral mobility in men and women were almost identical, while after 2009, it were women who showed higher incidence of changing the sector of employment. Within the area of structural mobility of workers, the Czech Republic, in comparison with other countries, records solely subtle differences between men and women. The foreign studies tend to establish higher rates not only of occupational but also of sectoral mobility for men (e.g. Bachmann, Burda (2010), Parrado et al. (2005)).

The sectoral mobility rate varied from 1.5% up to 14% for individual age groups. Similarly as in the case of occupational mobility across all the sectors, it was the youngest workers who were changing their occupation most often. The proportion of persons moving, in the course of a year, from one economic sector to another, was declining linearly with the age. Detailed results are indicated in the Figure 2. Similar relation between the age and the incidence of mobility between sectors can be found in all the studies available (e.g. Greenway, Upward, Wright (1999), Bachmann, Burda (2010)). Based on the findings of our study as well as the results of the research conducted abroad, it appears that the age is the strongest and universally applicable predictor of any kind of labour market mobility.

Similarly as the occupation changes, also the changes of economic sector were mostly related to the less-skilled workers. Again, the relationship is linear; therefore it holds that the higher level of education, the lower the probability that an individual would change the sector of employment in the course of the year. The sectoral mobility rate varied from 3.9% for those with primary education down to 2.4% for the graduates from the tertiary professional schools and the higher education institutions.

More frequent transitions between sectors are to be expected in occupations that are not industry-specific (industry-specific occupations – e.g. teachers or miners) but which are easily applicable in various sectors of the economy (e.g. cleaning staff, clerks, accountants, IT specialists). In the Czech Republic, the lowest rate of changes in sector of employment was recorded in workers with tertiary education who mostly perform highly specialised occupations not easily transferable between sectors. However, there are exceptions to this conclusion illustrated by the example of accountants or IT specialists as occupations that

⁷ Kambourov and Manovskii worked with 33 sectors, analyses in this paper are based on 88 sectors.

are easily applicable in almost all sectors of the economy. When looking at the rate of sectoral mobility in specific occupation groups in the Czech Republic, we can see that transitions between economic sectors were most frequent in manual workers (on average 4% per year), the least frequent they appeared to be in technicians and associate professionals (on average 2% per year). This suggests that it was precisely due to the fact that in the vast number of professionals' occupations, it is not possible to find employment in a different economic sector without a complete change of qualification.

Due to the reclassification of economic industries conducted in 2008, it is more complicated to analyse sectoral mobility directions. In order to minimize these difficulties, we first define the source and the target sectors at quite a substantial aggregation level. This procedure allows us to compare, with a high degree of reliability, the periods processed according different classifications; moreover, it helps us to overcome another potential problem of this analysis – low numbers of cases in some of the transition matrix cells. Therefore, we will work with the following descriptions of economic sectors:

Table 2 Descriptions of Economic Sectors

Sector	Description	NACE rev.1	NACE rev.2
Agriculture	Agriculture, forestry, fishing	A, B	A
Manufacturing	Manufacturing, mining and quarrying, electricity, water and gas production and supply	C, D, E	B, C, D, E
Construction	Construction	F	F
Trade and service activities	Wholesale and retail trade, accommodation and food service activities, transportation and storage	G, H, I	G, H, I
IT and other information services and culture	Financial activities, IT and communication services, research and development, other professional, scientific and technical activities, culture	J, K	J, K, L, R, M, N
Non-market sector	Public administration, education, healthcare	L, M, N	O, P, Q

Source: Classification of economic activities, own construction

The sectors not listed above⁸ were due to the low numbers of cases and ambiguous description omitted from the analysis.

Analysis of sectoral mobility flows revealed that the most frequent transitions were recorded within the defined sectoral groups. The most significant share of sectoral mobility (19%) occurred within manufacturing; therefore, it was related to workers moving from one manufacturing industry to another. Other major flows of mobility were bidirectional transitions between the industry of manufacturing and the trade and service sector, while slightly more significant was the flow of workers from manufacturing to trade (8% of total mobility). In addition to the transitions of workers within the above described sectoral groups, other significant mobility flows included transitions of workers from the trade and service sector to the IT and other information services sector (3.3% of total mobility) and from the manufacturing sector to the construction (3.5%).

⁸ The sectors described as *Other service activities*, *Activities of households as employers* and *Activities of extraterritorial organizations and bodies* (categories P, Q and R in NACE rev.1 and S, T and U in NACE rev.2).

3.2.1 Sectoral mobility response to the economic recession

During the economic recession, the main difference in the sectoral mobility samples compared to the pre-crisis period was a significant outflow of workers from manufacturing industries. While the manufacturing represented the source industry for 40% of mobile workers, it absorbed solely 32% of the total mobility. The workers leaving the manufacturing industries, most often, found their new employment in the trade and service sector, but also in the construction or non-market sectors. The proportion of mobility from the manufacturing industries towards the construction in the total sectoral mobility increased in particular during the economic recession. Nevertheless, the major proportion of mobility occurred again within the manufacturing industries (21% of total sectoral mobility). Another important difference compared to the pre-crisis period was the increased frequency of mobility towards the non-market sector. Particularly within the non-market sector, the number of workers who found their new job there and met the definition of mobility exceeded the number of those who left by most. In contrast to 2006–2007, the workers employed originally in the manufacturing industries and the IT and other information service sectors were increasingly moving to the non-market sector.

Upon the onset of the economic recession in 2008, mobility between economic sectors proved to be, to some extent, a mechanism levelling out the structural shifts in the economy. The mining and quarrying together with manufacturing industries were the most affected by the recession, according to the CSO data, in 2007–2009, their production decreased by 15% and 13% respectively. Following the onset of the economic crisis, manufacturing industries recorded higher number of workers leaving than arriving. Conversely, increased numbers of workers were absorbed by the industries described as predominantly non-market sector (public administration, education and healthcare). These industries experienced only limited impact of the economic recession and their production increased by 3% in 2007–2009.

CONCLUSION

The aim of this study was to report on the mobility of the Czech labour market in 2002–2013. It provides information on the incidence of structural mobility and its patterns and regularities predominantly on microeconomic level. For the purposes of mobility measuring, we have created an original methodology suitable for working with the Labour Force Survey data processed into panel data.

Significant methodological contribution of this study is in the unique approach to Labour Force Survey data itself. From the research perspective the transformation of LFS data into panel data provides highly valuable information and offers immense potential for further analysis and therefore it is rather surprising that similar approach remains, in the Czech Republic, rather an exception.

Findings of the study show that every year during 2002–2013, on average 4.1% of workers changed their occupation, the change in industry of employment was relatively less frequent and concerned, on average, 3.2% of workers per year. International comparison revealed that the labour market mobility in the Czech Republic is very low. Our study identifies several causes of this situation. The first one is the legislative anchoring of employment relationship in the Czech Labour Code that, within all the OECD countries, belongs to those placing most emphasis on protecting workers from dismissal. Secondly, the low mobility might be also down to the employment values of the Czech workers, vast majority of whom, according to the European Values Study, appears to prefer security of employment to career advancement. The high number of regulated professions might be another explanation for the low labour market mobility.

While analysing mobility within individual subgroups of the population, we have found out that changes of occupation were more often related to the young and less-educated workers; and that the workers in low-skill manual occupations and clerks were more likely to change the sector of employment or the occupation than the rest.

The conflicting view of theoretical approaches makes it more difficult to assess whether the low level of labour market mobility represents a problem. The theory of human capital places the change

of occupation in relation to losses of investments in human capital, which is by various theoreticians considered to be job-, profession- or sector-specific. In such a perspective, the low level of mobility is desirable, since the economy thus records only small losses in human capital. Conversely, the neoclassical theory assumes that the low labour market mobility may represent an obstacle for an efficient allocation of productive resources and ultimately lead to higher unemployment and less flexible responses to economic cycles and technological changes.

This study demonstrated rather countercyclical development of occupational and sectoral mobility in the Czech Republic reflected by a particularly sharp increase in mobility incidence during the recession starting in 2008. Given that, we can conclude that transitions between occupations, on the Czech labour market, are predominantly involuntary. The hypothesis suggesting that the increase in mobility during the recession was mainly caused by involuntary job changes is confirmed by the analysis of mobility in individual subgroups of the population. In the period following 2008, there was a significant change in directions of occupational and sectoral mobility and the major part of it can be described as downward mobility. Change of occupation, during the period of crisis, became more frequent than before in workers performing skilled professions. That can be explained by the fact that the less qualified workers had, in the event of losing the job, difficulties to find a new employment and stayed unemployed for a longer period of time while the workers with higher qualifications had better chance to find a job, although, most likely less attractive than the previous one. All these contexts lead to the conclusion that if workers, in the Czech Republic, decide to change the job, it is very often due to external pressure rather than their efforts to build a career.

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