

Understanding Long-Term Unemployment in the Czech Republic*

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1. Introduction

Long-term unemployment (LTU) sharply affects both individual citizens and public budgets. For unemployed workers, extended periods of joblessness result in a loss of attachment to the labor force, degrading human capital and health, and increasing likelihood of poverty. Public budgets suffer because of the loss of tax revenue and increasing expenditures on unemployment insurance, welfare, and health care.

LTU is also potentially important (as opposed to short-term unemployment) because it features as the culprit in the “unemployment-hysteresis” hypotheses. According to one such theory, described in, e. g., Layard et al. (1991), short-lived decreases in aggregate demand may persistently raise unemployment because the long-term unemployed tend to be discouraged from seeking work and therefore do not exert sufficient downward pressure on wages. In the absence of a wage reduction, firms are not induced to hire more labor and LTU supports higher unemployment.¹ Alternatively, the mechanism of a permanent effect of LTU on unemployment may work through the loss of skills of unemployed workers as in Pissarides (1992).

Understanding the strength of such mechanisms is an important task for the countries hoping to join the European Union (EU). First, high LTU is among the distinctive features of many EU labor markets.² Second, the labor reallocation induced by EU accession may lead to a rise in LTU and, hence, to a persistent increase in unemployment. Third, LTU inci-

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¹ The evidence on this issue is weak, which Machin and Manning (1999) explain by lack of identification: The data does not allow a separate estimation of the effects of unemployment duration structure and unemployment dynamics.

² This is often blamed on employment protection policies; see, e. g., (Blanchard – Portugal, 2001).

dence rose rapidly in many transition economies at the end of the first transition decade (OECD, 1999). Yet, to-date, little information is available on the nature of LTU in pre-accession countries.³

In this paper we explore the mechanism of LTU rise in a pre-EU-accession economy, namely in the Czech Republic. In particular, we provide descriptive evidence on the recent increase in LTU experienced in the Czech Republic in the aftermath of its 1997 recession. First, we look at the aggregate evolution of Czech long-term unemployment from 1994 to 2001, place the findings in an international perspective, and contrast the evolution of the usual LTU definition with broader concepts. Second, we inquire about the accounting sources of LTU in terms of inflows, outflows, and duration structure, and ask about the persistence of the LTU rise. We also study the demographic, industrial, and regional composition of LTU. Finally, we focus on the role of welfare benefits as one of the potentially important policy variables related to LTU.

2. Data

The Czech Republic is no exception in offering two sources of information on unemployment and its duration structure: the Labor Force Survey collected by the Czech Statistical Office and the state-administered Unemployment Registry (UR).

The UR is a collection of data reports from District Labor Offices (DLOs), which contain data both on the district labor force and on the quarterly number of registered unemployed. It is important to note here that unemployment registration is a necessary condition not only for receiving unemployment benefits, but also for collecting social benefits. The UR data also provides information on LTU incidence, unemployment inflows and outflows (the number of unemployed in each duration group), and reported vacancies. This data is collected by the labor market administration, which also uses the UR data to track unemployment. However, the DLOs report LTU figures broken down only by gender, ignoring other important features of the long-term unemployed. Hence, we also use the individual-level information from the Labor Force Survey (LFS).

The Czech LFS (*Výběrové šetření pracovních sil*) is a large rotating household sample providing the internationally comparable ILO (International Labour Organization) definition of unemployment. While it is not representative at the level of 77 districts, it allows one to study LTU on an individual basis. There are about 26,500 households with over 70,000 individuals surveyed every quarter, representing about 0.8 % of all permanently occupied dwellings. One's ILO unemployment status (not working, not self-employed, searching for a job, and ready to start working) is identified by answering questions about individual work and job-search activities performed in a reference week.

³ One exception is (Gora – Schmidt, 1997), who provide a detailed breakdown of Polish unemployment in the mid-1990s. See also (Klugman et al., 2002) for recent work on poverty in transition.

TABLE 1 Real GDP growth and ILO unemployment rate in the CR

	1994	1995	1996	1997	1998	1999	2000	2001
Unemployment rate	4.4	4.1	3.9	4.8	6.5	8.8	8.9	8.2
GDP growth (rate)	2.2	5.9	4.8	-1.0	-2.2	-0.2	3.1	3.6

Source: OECD Main Indicators

Most importantly for our analysis, the duration of unemployment in the UR data is measured from the time of registration (which may be different than the time of job loss). In LFS, unemployment duration is identified in response to the question “For how long are you seeking a job?”⁴

The two data sources are complementary in many respects and we rely on both of them. The only problem would be if measured unemployment rates were much different in the two data sets. Fortunately, this was not the case. In the period we studied, the two measures of unemployment evolved in close tandem in the Czech Republic.⁵

3. Macroeconomic Background

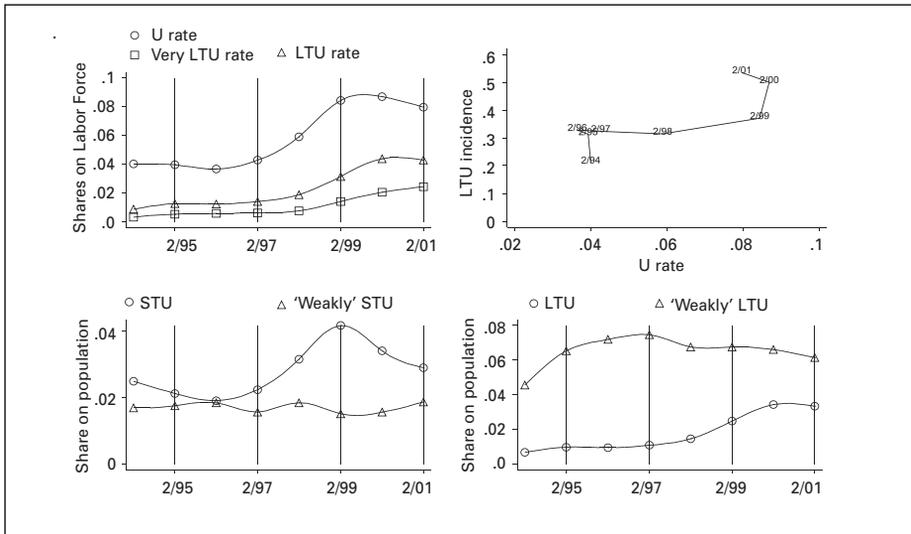
The Czech Republic has gained the respect of many observers among transition economies since within three years of the “velvet revolution”, which brought down the communist government in 1989, the government had liberalized nearly all prices, privatized much of the economy, decentralized wages, and opened the country to world trade while maintaining a relatively balanced budget, low inflation, and low unemployment (below 4 % until 1995). In sharp contrast, other new post-soviet democracies were severely traumatized by double-digit unemployment in the early stages of transition. However, while the level of unemployment in many other EU-candidate countries exhibited a declining trend in the late 1990s, unemployment in the Czech Republic rose rapidly during the 1997 recession.

This evolution is shown in *Table 1*, which also shows domestic GDP growth, with its rather sharp downturn in 1997 and 1998 following rapid growth in 1995–1996. While GDP declined little in 1999, the recession was deep at the beginning of that year, with industrial production dropping by 11.3 % year-on-year in January and with a dramatic slowdown of inflation. The most important labor-market-related cause of the 1997 recession was an unsustainable growth of wages which surpassed pro-

⁴ In following the ILO definition, we do not use the alternative question of: “When did you finish your last employment?” Alternatively, one could determine duration by tracking unemployed individuals over time (quarters). However, each individual is surveyed for only five consecutive quarters. As a result, there would be many left and right censored spells of unemployment.

⁵ There is, however, a large discrepancy in LTU incidence, which we discuss in Section 4.3.

FIGURE 1



ductivity growth. Yet the recession was also demand driven, making it similar to cyclical recessions in developed economies – see, e. g., (Jurajda et al., 1999).

4. Results

Two widely used measures of LTU are the LTU rate (the ratio of the number of long-term unemployed to the size of the labor force) and LTU incidence (the ratio of the number of long-term unemployed to the total number of unemployed). We rely on these definitions below and also follow the standard whereby we consider workers who have spent over one year jobless as long-term unemployed.

4.1 Aggregate LTU and Broader Definitions

Figure 1 plots the evolution of annual unemployment during 1994–2001 using the LFS data. The upper-left graph documents the rise in ILO unemployment (U) rate during the late 1990s together with the somewhat delayed rise in the LTU rate. The third series depicts the share in the labor force of those who have been unemployed for over two years (very long-term-unemployed). While the recession of 1997 led to a doubling of the overall unemployment rate, the LTU rate rose by a factor of four between 1996 and 2000. Moreover, at the end of our sample frame, over half of the long-term unemployed had been jobless for over two years. These figures testify to the dramatically increased importance of prolonged unemployment on the Czech labor market.

The upper-right graph of Figure 1 contrasts the evolution of the overall

unemployment rate with the share of LTU on all unemployed – the measure of LTU incidence. We see that LTU incidence remained fairly stable between 1995 and 1999 and increased only between 1999 and 2001.⁶ Furthermore, the share of long-term unemployed continued to rise during 2001 even as the overall unemployment rate somewhat declined.

During a recession, many workers become unemployed, many unemployed workers become long-term unemployed, and many of those facing LTU may become only marginally attached to the labor force so that they are not coded as ILO unemployed.⁷ The bottom two graphs of Figure 1 therefore compare our typical LTU measures to an alternative, broader definition of unemployment, one which aims to capture workers who may have been LTU but whose job search (and, hence, labor-force attachment) may have been weakened by prolonged joblessness. We use individual-specific information contained in the LFS to categorize as “weakly” unemployed those workers of a productive age who have no disabilities, are neither working nor searching for work, and who do not report any explicit reason why they do not work. More specifically, we consider those individuals who are usually defined as out-of-the-labor-force but who report one of the following reasons for being jobless: maternity leave of over three years, short-term illness, labor strikes, family reasons, early retirement, waiting before a job begins, do not want/need to work, discouraged from searching for a job, or other reasons. For example, Czech workers are well known for their use of sickness leaves immediately before layoffs (Jurajda et al., 1999) and not counting these workers as unemployed may underestimate total effective unemployment. Note that the group of “weakly” unemployed does not contain those workers who report to be unemployed according to the ILO definition (jobless and searching).

The bottom-right graph of Figure 1 contrast the shares on population of workers who are long-term unemployed according to the ILO definition of unemployment and those individuals who are “weakly” long-term unemployed according to our broader unemployment concept.⁸ We use population as a denominator instead of the labor force (which itself depends on the definition of unemployment used).⁹ We see that during the aftermath of the 1997 recession the number of long-term “weakly” unemployed had actually somewhat decreased, which makes it unlikely that our LTU definition substantially underestimates the increase in Czech long-term joblessness. For completeness, we also present in the bottom left graph

⁶The stability of LTU incidence during the mid-1990s is caused by the increasing inflow of (short-term) unemployed during the recession, see Section 4.3.

⁷Furthermore, the distinction between LTU and out-of-the-labor-force may be difficult to make in transition countries, where the communist practice of full employment did away with the concept of labor-force participation and where standard labor-market institutions have developed only recently.

⁸We use the answer to the question “How long have you been jobless?” to measure the length of “weak” unemployment.

⁹We use a population sample of 15–60 years of age in case of men and 15–55 years of age in case of women, reflecting the lower statutory retirement age of women with children.

the short-term unemployment rates according to the two definitions of unemployment. (“Short term” here refers to less than 12 months.) Here, we see no substantial impact of the recession on the fraction of population that has been jobless only shortly and is marginally attached to the labor force.

This finding sheds light on two alternative mechanisms of labor-force participation during a recession. In theory, business cycles affect employment in two different ways: through the added-worker effect and through the discouraged-worker effect – see, e. g. (Borjas, 1996). According to the added-worker hypothesis, workers enter the labor market during recessions. This is a group of previously “weakly” unemployed individuals whose household partners become unemployed or face wage cuts during a recession. As household income declines, “weakly” unemployed members tend to actively search or find work to make up for household income losses. This hypothesis may be relevant for mothers on extended maternity leaves, for youth, etc. On the other hand, the discouraged-worker effect concerns unemployed workers who have lost hope of finding a job during a recession. Rather than incur job searches, workers simply wait for economic recovery. The bottom-right graph of Figure 1 therefore suggests the presence of a weak added-worker effect on the Czech labor market.

4.2 International Comparison

In 2001, the number of unemployed Czech workers stood at around 8.2 % of the labor force and over half of these workers had been jobless for over one year. How large are these values in terms of international comparisons? The top panel of *Table 2* displays recent values of unemployment and LTU in a set of transition economies, while the bottom panel lists time averages of unemployment and LTU from selected Western economies. As documented in *Table 2*, overall Czech unemployment remains low compared to that of other post-communist countries in the region, with the notable exception of Hungary. However, the recent Czech LTU rate is similar to that of Germany or France, which ranks it high compared with many EU countries.

The comparisons provided in *Table 2* are not fully valid because LTU is a function of the business cycle and different countries are at different stages of the cycle in a given year. During an economic slump, the incidence of LTU typically first decreases due to a strong inflow of short-term unemployed, but then rises as the large inflow cohorts find it difficult to leave the pool of unemployed. One should therefore perform comparisons of LTU levels whilst controlling for similar business cycle episodes or using long-term averages. (Hence the use of time averages of LTU for Western economies in *Table 2*.) Unfortunately, LTU averages are not useful for transition economies, where LTU evolution during the early 1990s reflected initial transition recessions and is not necessarily informative about the current working of the labor markets. Further, the comparison offered by *Table 2* may be quantitatively misleading in that it does not condition on the size of the recession (GDP decline). LTU levels in other countries

TABLE 2 Unemployment and LTU rate in selected countries

	U rate	LTU rate
Czech Republic	8.2	4.3
Hungary	5.8	2.7
Poland	18.2	7.8
Slovak Republic	18.6	10.2
Lithuania	12.6	3.5
Denmark	6.7	1.7
Finland	12.8	3.4
France	11.2	4.5
Germany	8.2	3.9
Portugal	5.6	2.6
Spain	19.3	10.1
Sweden	7.9	1.7
United Kingdom	7.7	2.9
United States	5.4	0.5

Notes: Transition data from 2001, except Slovakia from 2000. Western figures are averages over 1991–2001.

Source: OECD in Figures, OECD Employment Outlook, OECD Main Indicators, Lietuvos darbo rinka skaičiai, 1991–2000.

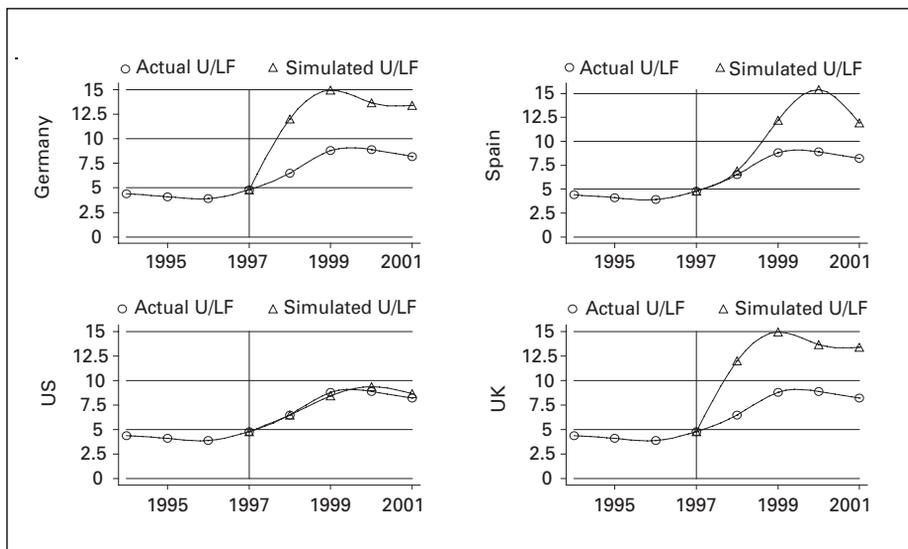
might have been higher had they been facing a recession as severe as the one experienced by the Czech economy in the late 1990s.

To generate a more insightful cross-country comparison, we simulate the behavior of Western economies given Czech conditions of the 1990s and with a simulated similar decline in GDP. This was performed by estimating a VAR (vector auto-regression) system with an unemployment rate, a long-term unemployment rate and GDP growth for a Western economy, where a sufficiently long time series of LTU is available, and then imposing the Czech values for the three variables as of 1997 and Czech GDP development of the late 1990s. The predicted evolution of unemployment and LTU rates can then be compared to the actual Czech data to obtain a more meaningful quantitative comparison of the LTU increase related to a given GDP shock.¹⁰

We perform the simulations in four cases, using Germany, the UK, the US, and Spain. We choose the UK and Spain in order to contrast two European countries with high and low labor-market flexibility, respectively. We select the US as an example of a very flexible labor market and Ger-

¹⁰ There are many complex channels linking output growth with unemployment indicators. The VAR method does not differentiate between these macroeconomic effects, but rather provides a “black box” with an accurate fit of time-series data (Sims, 1980). The validity of our cross-country comparisons depends on a correct specification of the VAR system and on the assumption of the similar evolution of other relevant variables, such as labor-force participation. Yet, we feel that it serves as a useful first step in developing a simple way of comparing LTU levels which is free of the effect of the current stage of the business cycle.

FIGURE 2



many because of its proximity to the Czech Republic. The data used in the estimates are annual time series from 1981 to 2001.¹¹

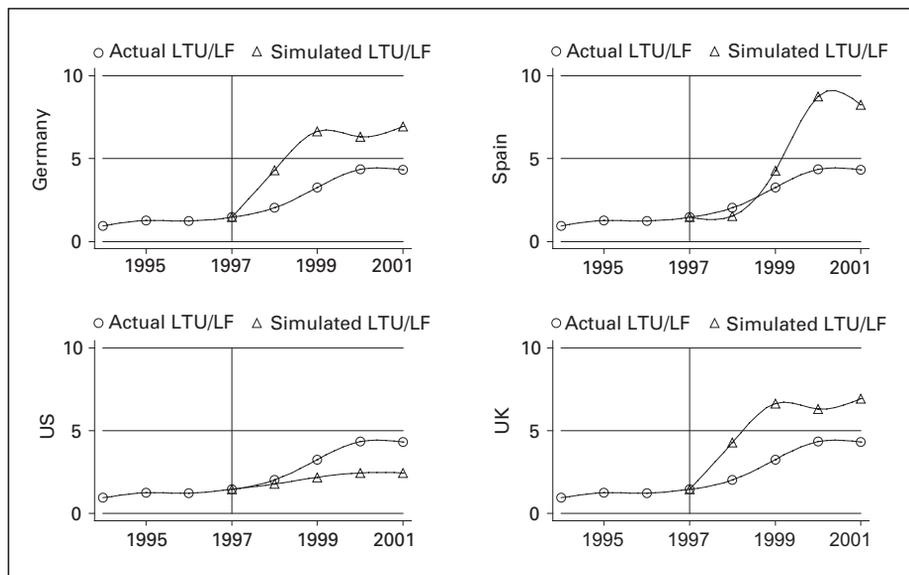
Figures 2 and 3 present the results of our simulations. Figure 2 focuses on the simulated evolution of overall unemployment, while Figure 3 displays the predicted LTU rates. Each graph of each figure then contrasts the Czech actual evolution of unemployment during the late 1990s with the model prediction for Western countries under the Czech GDP scenario. For example, focusing on the upper-right graphs, the simulations suggest that if Spain had experienced the Czech recession of 1997, both its unemployment and LTU rates would have increased almost twice as high as the corresponding Czech rates.¹² On the other hand, the US is predicted to experience a similar rise in unemployment accompanied by a much lower increase in LTU. The Czech labor market also appears somewhat inferior to that of the UK in its ability to avoid unemployment and LTU in reaction to a severe GDP slump.¹³

¹¹ The data comes from the OECD Compendium and Employment Outlooks. GDP is modeled as annual growth rate while the other two labor-market indicators are entered in first differences. We use the AIC criterion to identify the optimal lag structure as three lags. The model passes the omnibus normality test of residual autocorrelation.

¹² Our findings on Spain are in line with those of Castillo et al. (1998), who find long-lasting aggregate demand shocks on unemployment. The authors refer to differences in the Spanish unemployment-insurance system, the only notable institutional difference, to explain the differences in labor-market reaction to aggregate shocks.

¹³ The estimated VAR models can be described using the impulse response to a 1% negative exogenous drop in GDP. These are available upon request. Both the UK and US display small impacts on unemployment and especially LTU, while the responsiveness of Spanish unemployment to GDP shocks is high, and Germany ranks somewhere between the UK and Spain.

FIGURE 3



In sum, we find that Czech LTU levels are similar to those of EU member states, but that the rise in Czech LTU experienced during the recent recession seems to compare favorably to what one would expect given a similar recession in, e. g., Germany.

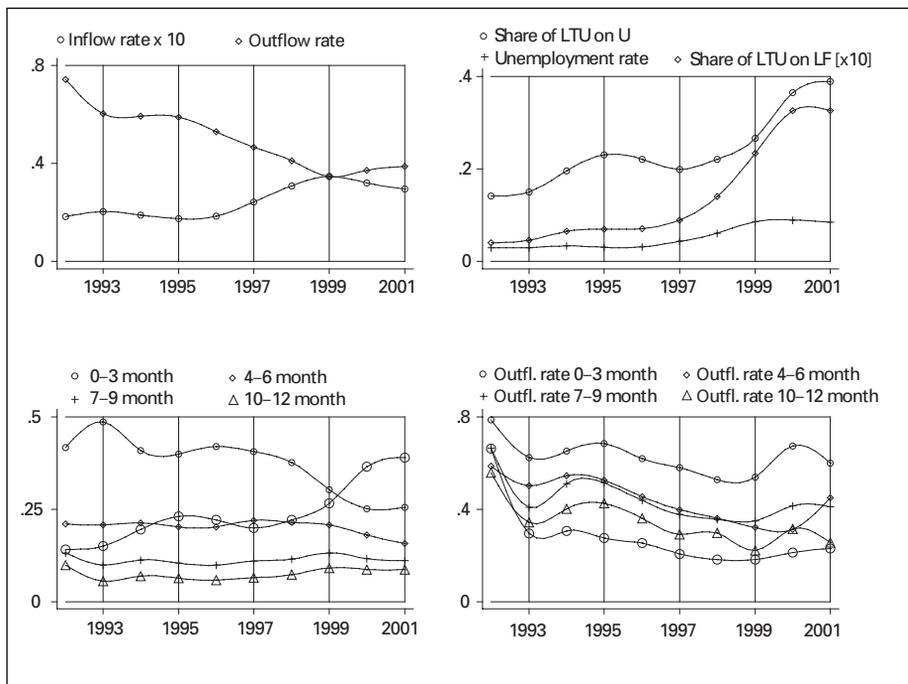
4.3 Duration Structure

Now that we have marshaled evidence about the size and evolution of Czech LTU, we analyze its structure to understand its sources. The focus of this paper is on LTU – we do not ask what drives unemployment, but rather we inquire into the determinants of the duration structure of unemployment. There are three underlying ingredients determining the duration structure of unemployment, three “accounting” sources of LTU: (1) average outflow rate (averaged over all durations), (2) inflow rate, and (3) duration dependence (the dependence of outflow probability on time spent in unemployment).

To study the duration structure of unemployment in the Czech Republic we rely on the Unemployment Registry (UR) data. The UR data is well suited for the study of duration structure¹⁴ because it contains consistently defined time series of inflows and outflows at different durations based on a census of registered unemployed. Also note that analyzing the evolution of long-term registered unemployment is important because only

¹⁴ See (Munich, 2001) and (Jurajda – Munich, 2001) for detailed analysis based on registered unemployment duration data.

FIGURE 4



the registered unemployed are eligible for social benefits; hence, the UR LTU is the relevant variable in terms of welfare expenditures.¹⁵

The upper right quadrant of *Figure 4* plots the overall unemployment rate, LTU rate and LTU incidence, all based on the UR data. The overall unemployment rate based on the LFS data evolved in perfect parallel with the registered unemployment rate during our sample frame. However, over time there is a substantial difference in the incidence of LTU in the two data sources: in 2001, the UR LTU incidence is 15 percentage points lower.¹⁶ Still, we see a rapid rise in UR/LTU incidence from 20 % to 40 % between 1997 and 2001.

The upper left panel of *Figure 4* shows the underlying annual unemployment inflow and outflow rates.¹⁷ We see a rapid decline in the outflow rate starting already in 1996, one year before the official start of the recession, while the inflow rate rose during the late 1990s. Fortunately, both

¹⁵ Aggregate hazard rates could be also computed from LFS data, but their accuracy is limited by the low number of observations available. LFS is a rotating panel with one quarter of households being replaced each quarter. One can track the unemployed who became jobless in the same quarter when added to the survey. Although the overall sample size is large, the number of sampled individuals who can be tracked to compute hazards is small.

¹⁶ Given that the overall unemployment rate is similar, the difference is likely due to different ways of measuring unemployment length in the two data sets due, for example, to a delay in registering at the labor offices after loss of employment – see (Ham et al., 1998).

trends were reversed starting in 1999. The drop in outflow was to a great extent due to a drop in aggregate demand represented by a lower number of available vacancies. The post-recession outflow is also in part lower because more unemployed are now long-term unemployed and longer unemployment discourages job seekers through genuine duration dependence.¹⁸

We already know that UR LTU incidence doubled as a consequence of the recession. The bottom-left graph of Figure 4 shows how the duration structure of the pool of registered unemployed has changed at durations shorter than one year. We see that at the start of the recession the increase in unemployment inflow balanced the drop in outflow and kept the duration structure fairly stable. However, starting in 1998, there is a large drop in the share of very short-term unemployed (0–3 months) on all unemployed corresponding to the rapid rise in the share of LTU – those who entered unemployment early in the recession in 1997 did not leave the registers. (The large-circle series replicates the share of LTU and is not to be confused with the small-circle series on short-term unemployment share.)

Finally, the bottom-right graph of Figure 4 shows the outflow rates for different duration groups. We see that during the recession aggregate hazards were declining at a similar rate at all durations. This evidence is consistent with little change in duration dependence and implies that the rise in LTU is due to the drop in overall unemployment outflow and the rise in inflow. In other words, there are more long-term unemployed at the end of the recession only because the chances of all unemployed (long term as well as short term) have been equally reduced by the recession. Long-term unemployed were not worse off in 1999 compared to the short-term unemployed than they were in 1995.

Moreover, in the last two years we see a mild but sustained rise in the outflow rate of long-term unemployed. It appears that the recent economic recovery has not left the long-term unemployed behind. If this trend continues, both in terms of increasing overall outflow and in terms of similar patterns of outflow rates for short- and long-term unemployed, the share of LTU on all unemployed would gradually decrease.

4.4 Demographic, Regional and Industry Structure

The aggregate outflow rates we analyzed above declined with the duration of unemployment. A natural interpretation of this is that the long-term unemployed have a lower chance of finding a job due to, e. g., loss

¹⁷ The inflow and outflow rates are defined, respectively, as the number of workers who enter the unemployment registry in a given period divided by the total size of the labor force, and the number of workers leaving the registry divided by the number of unemployed. We present annualized averages of quarterly rates.

¹⁸ Term genuine duration dependence reflects that the long-term unemployed have a lower chance of finding a job due to, e. g., loss of human capital, discouragement, stigma, etc.

of human capital, discouragement, stigma, i. e. through true (genuine) duration dependence. But there is an alternative and equally natural explanation which attributes the falling aggregate outflow rate to the heterogeneity of the pool of unemployed – see, e. g., (Machin – Manning, 1999). Moreover, the two hypotheses lead to different policy implications: In the presence of significant heterogeneity one should favor retraining programs, while policies preventing inflow into unemployment would be cost efficient if true duration dependence was quantitatively more important. To distinguish between the two forces behind the observed negative duration dependence, one must estimate micro-econometric models of unemployment duration allowing for both observed and unobserved heterogeneity – see, e.g., (Jurajda, 2002). Estimation of such models is beyond the scope of the present paper. Instead, we provide a first descriptive look at the importance of observable worker characteristics in driving Czech LTU.

Figure 5 compares the unemployment and LTU rates for basic demographic groups. It is perhaps not surprising to see higher unemployment as well as LTU among women compared to men. Of course this comparison is affected by the higher probability of women to drop out of the labor force. The second pair of graphs compares the unemployment rates of different age groups. While the youngest workers (under 30) are more likely to be unemployed, their chances of being LTU were similar to those of other groups until 1999. Finally, the third pair of graphs presents unemployment according to education level. There is a large difference, about 13 %, in both unemployment and LTU rates between workers with only primary education and their more educated colleagues. Finally, college-educated workers (represented by the line with no plotting symbols) enjoy almost zero chances of LTU.¹⁹

Next, *Figure 6* plots differences in LTU rates by industry as regards workers' previous employment. The highest LTU rate is among workers formerly employed in mining, peaking at about 9 % in 2000. The LTU rate is similar in all other industries, with the exception of public services, where both the unemployment and LTU rates are exceptionally low.

In *Figure 7* we turn to the reason for termination of previous employment. Specifically, we compare the short-term and long-term shares on each group of unemployed based on the type of job lost. Consider the example of those who lost job because of firm closure. The upper-left graph shows that their share on all on unemployment is similar to their share on LTU. The same holds for other groups, with the exception of workers leaving employment on health grounds, who are somewhat over-represented in the pool of LTU, suggesting higher chances of prolonged jobless spells. Overall, there are apparently no significant differences in the duration structure of unemployment based on the reason for termination of employment.

¹⁹ Here it is also relevant to note that the share of recent school graduates on all registered unemployed has oscillated around 10 % until recently, when it grew to 14 %. Recent school graduates form a similar fraction (12 %) of all long-term unemployed. The situation of school graduates calls for future research.

FIGURE 5

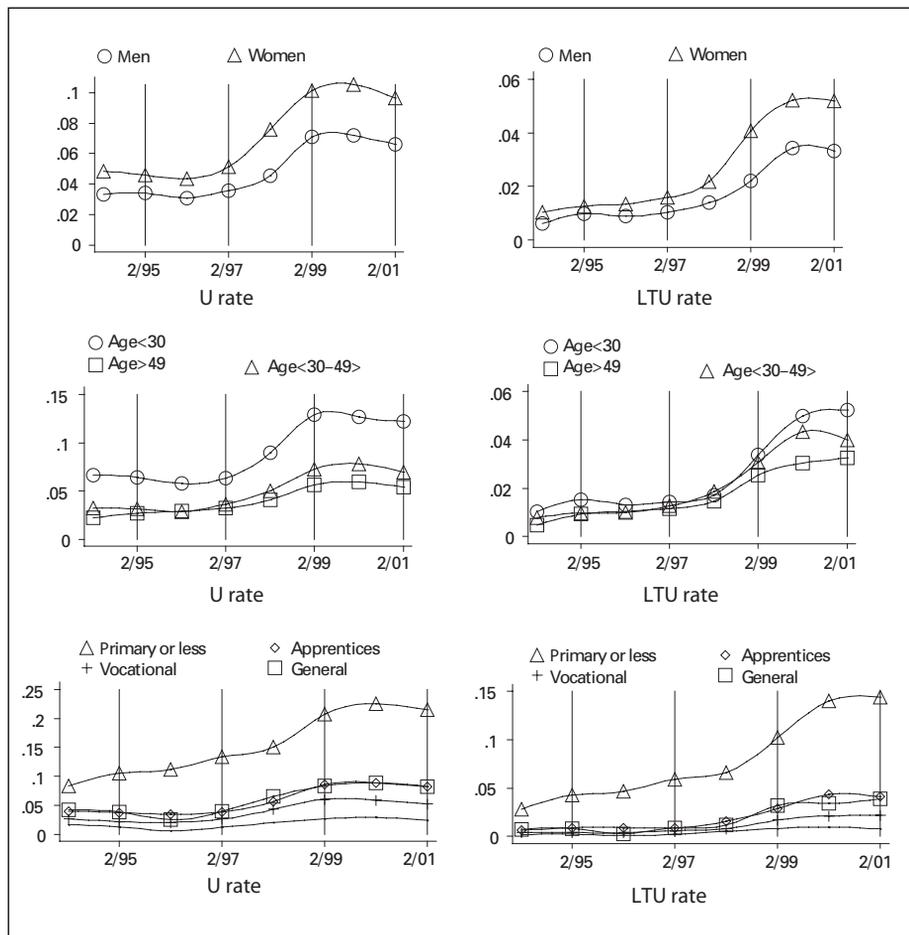


Figure 8 completes the search for worker characteristics related to LTU and explores the LTU differences by previous occupation. As one would expect, given our findings of high LTU for low-educated workers, the LTU rates among machine operators, for example, and workers in elementary occupations are an order of magnitude higher compared to professionals.

In sum, our exploration of the demographic structure of LTU points to low-educated and young workers together with former workers of mining firms as the first important target for retraining and other labor-market assistance programs.

Finally, we also looked into the district differences in the level of LTU and its persistence. Both are illustrated in Figure 9, which compares the district level of overall unemployment before and after the 1997 recession. Each circle corresponds to one district pair of observations, with the size of the circle reflecting the level of LTU incidence within districts

FIGURE 6

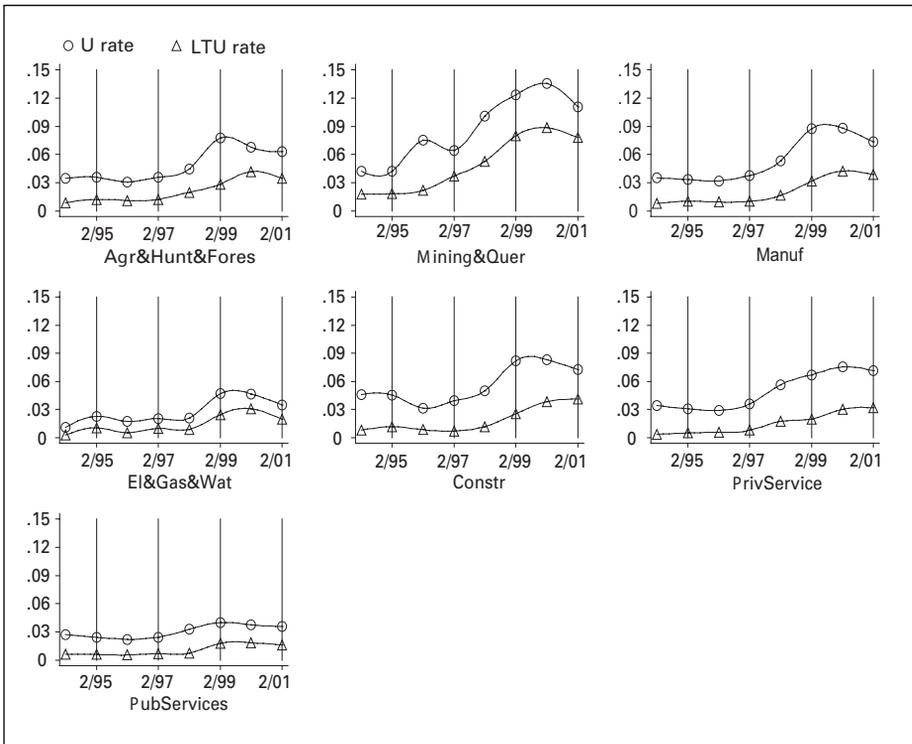


FIGURE 7

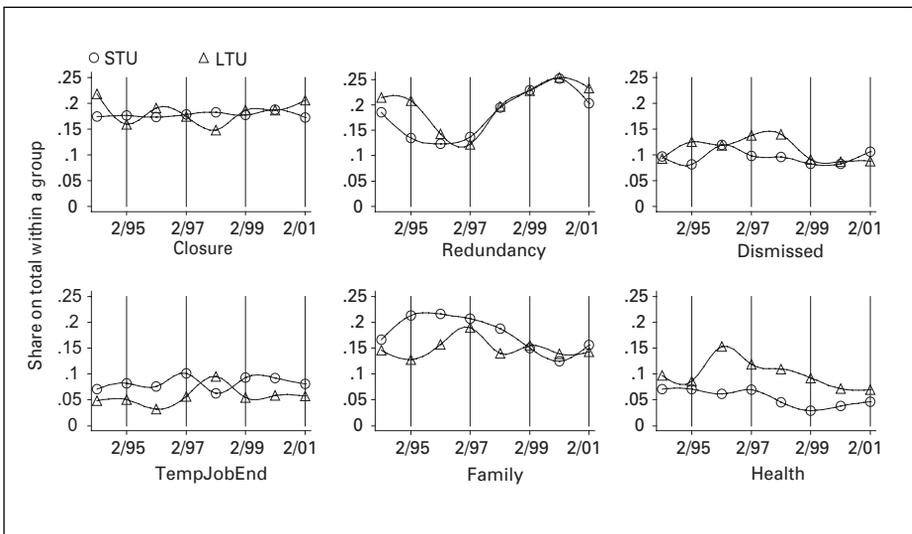


FIGURE 8

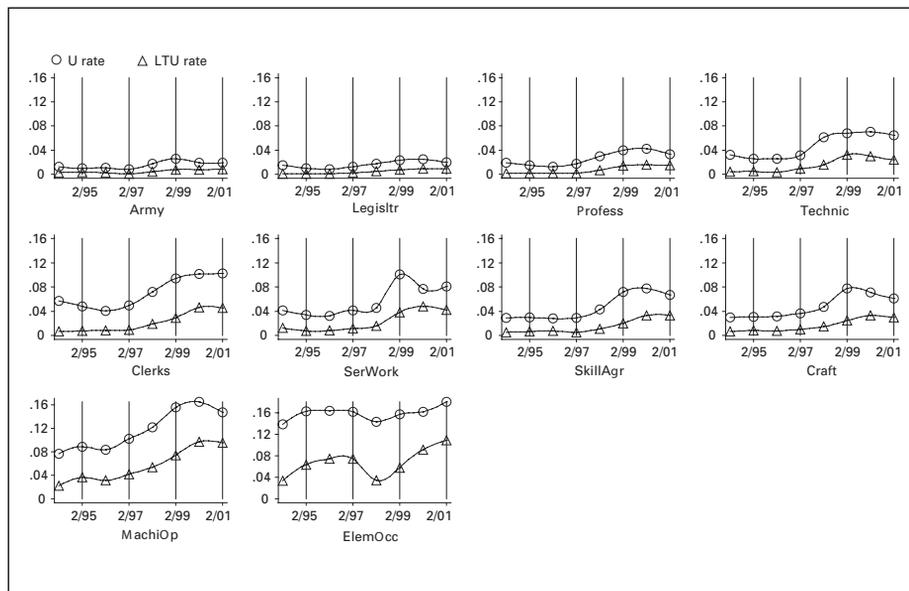
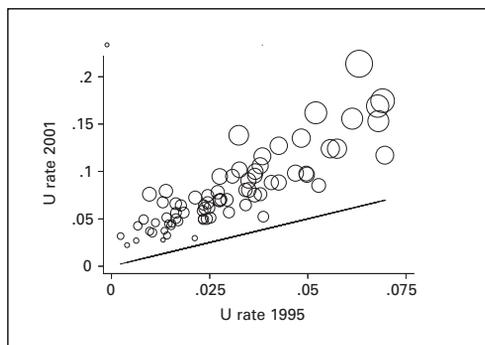


FIGURE 9



in 2001. The overall unemployment rate ranges from around 3 % to well over 15 % in a significant number of districts. Comparing the position of the circles against the 45-degree line in Figure 9, we see that during the recession the number of unemployed increased more in districts that were already facing relatively high unemployment. Furthermore, as one would expect, we see much higher LTU incidence in districts with higher levels of unemployment and with higher increases in unemployment (greater distance from the 45-degree line). This feature of Czech LTU is particularly important given the low territorial mobility of the labor force – see, e.g., (Fidrmuc – Huber, 2002).

4.5 Links to Welfare

A proper understanding of LTU can only be gained when set against the institutional background of a particular labor market. In this final section of the paper we focus on the role of the Czech welfare system in that regard. (The potential disincentive effects of welfare benefits were identified as one of the crucial features of the Czech labor market in our recent survey – see (Jurajda et al., 1999.)) To briefly highlight the main features of the Czech social-assistance scheme we note that it is based on a two-income family model, and, as a consequence, the level of the legal minimum living standard for a family with two or more children is similar to the nation-wide individual average wage. Social benefits are subject to registration at the labor office, but do not expire.

Our goal is to suggest to what extent the generosity of the Czech welfare system can be linked to LTU. The answer would be ideally found using micro-econometric estimations of welfare-system participation of family members. Such exercises are very complex – see, e.g., (Meyer – Rosenbaum, 2001) for references, or (Card – Robins, 1998) for experimental evidence) – and below we will perform only very simplified forms of analysis.

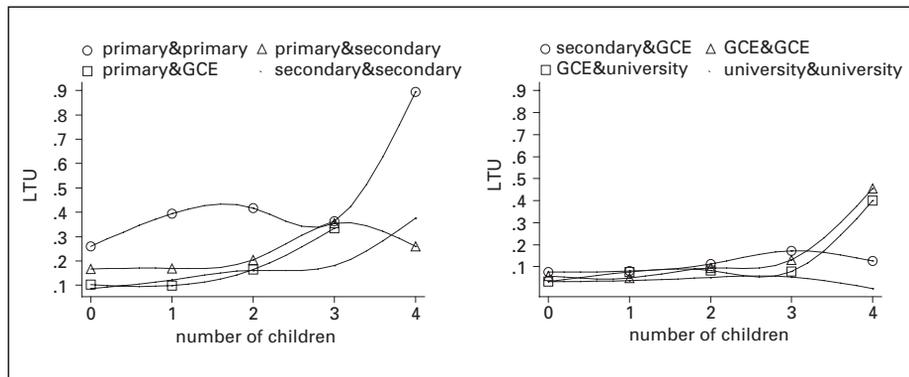
To analyze the impact of welfare generosity within any type of a model, one needs variation in the explanatory variable. There is little available time variation in the nationally-set level of social benefits, other than inflation adjustments. On the other hand, welfare benefits vary significantly (at the family level) depending mainly on number of children, while wages do not; we therefore use this variation to get at our question: We aim to explain welfare participation and LTU using the difference between potential labor-market earnings and potential welfare benefits at the family level.

We do not have available administrative micro data on the collection of social benefits, but rather use detailed information on family composition included in the LFS data to impute the available social benefits using the welfare formulas and assuming that families apply for and receive social benefits when eligible. Unfortunately, the LFS does not contain information on wages either. Therefore, to impute potential labor-market earnings, we estimate Mincerian wage regressions using 1996 Microcensus individual-level data, use the estimated coefficients to predict the wages of all individuals in the LFS sample, and adjust the predicted wages for inflation between 1996 and 2001.²⁰ The Microcensus data represents the most recent large household survey sample available; like the LFS, they are collected by the Czech Statistical Office. To simplify our analysis, we limit the sample to two-adult families.

In *Figure 10*, we start with a crude approximation based on the LFS data alone. The two graphs of *Figure 10* plot the share of families with at least one long-term unemployed family member for each family type given by

²⁰ Filer et al. (1999) suggest that the Czech wage structure stabilized in the late 1990s. The wage regressions are estimated separately for men and women, control for education degree and a quadratic in age, and are not corrected for sample selection into employment.

FIGURE 10



the highest education of parents and the number of children. There is a striking increase in LTU propensity in low-educated families when the number of children increases from three to four. While we observed the high LTU propensity among workers with elementary (primary) education in Section 4.4, Figure 10 implies that 90 % of families with four children where both parents have only primary education includes at least one long-term unemployed family member. The LTU propensity is also high, at about 40 %, for 4-children families where parents have secondary education.²¹

Next, we use the imputed wage information to contrast the available welfare receipt at the family level with the market earnings of individual family members. *Table 3* presents the percentage share of four demographic groups in employment (E), long-term unemployment (LTU), and out-of-labor-force (OLF), depending on whether the worker's predicted wage is above or below the welfare benefits level the family would be eligible for if none of its members were working. The table suggests that the LTU probability of a man whose spouse is not working is 7 % higher if his potential wage is above the available family welfare benefits. Similarly, the chance a woman whose spouse is jobless is long-term unemployed is 14 % higher if her potential wages are below the available social benefits.²²

The above comparisons are imprecise in that they contrast individual-level wages with family-level welfare benefits. We therefore next use as an explanatory variable the ratio between the available family welfare and the sum of predicted wages for all adult family members. We use this ratio to explain the family LTU status defined, for the sake of simplicity, as 1

²¹ GCE refers to the Czech "maturita" exam, roughly corresponding to the General Certificate of Education in the UK.

²² Considering only men who are long-term unemployed and whose spouses are not working, the available welfare is on average 2,225 Czech crowns (CZK) higher than the predicted wage. For women, the corresponding gap is 4,799 CZK.

TABLE 3 Individual employment status and potential welfare-wage differences

Percent of Group in	Welfare > Wage			Welfare < Wage			Difference		
	E	LTU	OLF	E	LTU	OLF	E	LTU	OLF
Men, spouse working	96	2	2	97	1	2	1	-1	-1
Men, spouse not working	88	9	3	96	2	2	8	-7	-1
Women, spouse working	75	10	15	86	4	10	10	-6	-5
Women, spouse not working	55	26	18	80	12	8	25	-14	-11

Source: Own computations based on 2001 LFS and 1996 Microcensus data adjusted for inflation.

TABLE 4 Probit estimates of welfare/wage effect on family LTU

	$\frac{dF}{dX}$	Std.Err.	P	$\hat{P}(X)$	$\frac{dF}{dX}$	$\hat{P}(X)$
Welfare/Wages	0.30	0.015	0.111	0.104	0.371	0.136
ln(Welfare)	0.110	0.015	0.110	0.102	0.146	0.152
ln(Wages)	-0.249	0.019			-0.330	

if at least one of the adults is LTU and defined as 0 otherwise. The probit probability derivatives calculated at the mean value of the explanatory variable are presented in the left panel of *Table 4*, together with observed and predicted LTU probabilities, for two alternative specifications. First, we use the ratio of welfare to wages as defined above in levels. Second, we use a log specification and allow the denominator to have a different coefficient from the numerator.

The estimates suggest welfare benefits have a small effect on the LTU chances of an average family (with sufficiently high education levels and earnings). In the right panel of *Table 4*, we therefore evaluate the probability derivatives for low-education (low-income) families. Specifically, we calculate the effect for all families in which no one has attained more than an apprenticeship degree. The estimated coefficients imply that a 10% increase in minimum welfare standard does affect the LTU chances of such Czech two-adult families by increasing its chances of LTU by 1.4 %. The log specification suggests a similar overall impact.

5. Conclusion

We find a relatively large and growing incidence of LTU as over 50 % of Czech unemployed in 2001 were jobless for longer than a year (using the ILO definition). Looking at this figure in an international perspective, we observe comparability problems in using contemporaneous values of LTU across countries. To avoid some of these problems we use VAR-based simulations and find that the increase in Czech LTU during the recent recession appears small compared to the simulated response of the inflexible Spanish labor market. On the other hand, using a similar

comparison, the Czech labor market seems somewhat inferior to that of the UK.

To understand the sources of LTU we consider its “accounting” inputs. We find that during the recent recession aggregate hazards were declining at all durations. Conditional on no change in the heterogeneity of the pool of unemployed during the recession, this evidence implies little change in the structure of duration dependence and allows us to attribute the rise in LTU solely to the lower overall outflow and higher inflow. Moreover, it appears that during 2000 and 2001 the economic upturn not only increased outflow rates at short durations, but also somewhat lifted the outflow rate for the long-term unemployed, signaling a (mild) potential for decreasing LTU in near future.

Our descriptive analysis also searches for specific groups of workers who are most likely affected by LTU. We find several factors increasing the incidence of long-term unemployment, most importantly low educational levels. We also note that there are other factors which do not seem to be strong determinants of LTU, such as the reason for loss of previous employment. Finally, we hint at a significant LTU effect of welfare generosity on families with more than three children and low-educated parents.

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SUMMARY

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Understanding Long-Term Unemployment in the CR

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One potential negative impact of the EU accession of Central European economies could be unemployment hysteresis working through long-term unemployment (LTU). In this paper we explore the mechanisms of LTU by providing a detailed description of the recent rise in Czech LTU following a domestic recession in 1997. We place the Czech data in an international context using VAR-based simulations and examine the role of welfare benefits in driving LTU.