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Abstract

This paper addresses the issue whether the differences in national unemployment rates between the Czech and Slovak Republics are in part associated with different responses of regional labor markets. We attempt to assess the relative importance of regional and national shocks in explaining regional unemployment rates in the two countries, by applying a simple VAR model on monthly unemployment rate data. We find that in average Czech regional labor markets are subject to smaller region specific shocks than Slovak regional labor markets. In particular over the period of one year region specific shocks are significantly less important in the Czech Republic than in the Slovak Republic. In Czech regions national shocks tend to be more persistent, while in the Slovak Republic regional shocks have higher persistence. These findings seem to suggest that due to the geography of the country labor markets in the Slovak Republic are regionally more segregated than in the Czech Republic.

Non-Technical Summary

Czech and Slovak unemployment have responded very differently to transition. While unemployment in the Czech republic still remains far below EU average, Slovakia has experienced a rapid rise towards two-digit rates. Our a-priori assumption was that this different experience might also be related to a different economic geography of the two countries. We investigate the dynamics of Czech and Slovak unemployment rates between January 1992 and December 1995 on the district level. The results demonstrate that district specific labour market shocks are more persistent in Slovakia than in the Czech Republic. The more widespread mono-enterprise communities in Slovakia with little regional networking could therefore contribute to the inferior labour market performance in Slovakia.

0. Introduction

During transition unemployment rates have varied substantially across countries and regions. Probably the most impressive example of the differences in unemployment rates is presented by the Czech Republic and Slovakia. Since the start of reforms the Czech Republic has exhibited extremely low unemployment rates (ranging from 4.4% in January 1992 to 2.5% in November 1992). The Slovak Republic in contrast has experienced unemployment rates well beyond this level: The maximum unemployment rate in the period from 1992 to 1995 was 15.2% in January 1995; the minimum was 10.3% in November 1992. At the same time regional variation in unemployment rates has been high throughout the transition period: The average coefficient of variation of unemployment rates across regions between 1992 and 1995 was 0.89 in the Czech Republic and 1.53 in Slovakia.

This paper addresses the issue whether the differences in national unemployment rates are in part associated with different responses of regional labor markets. We attempt to assess the relative importance of local (regional) and global (national) shocks in explaining monthly regional unemployment rates reaching from January 1992 to December 1995 in the two countries, by applying a simple VAR model to the 38 Slovak and 76 Czech districts (okres). This model allows us to estimate region specific and nation wide shocks.

The evidence we present indicates that the significant difference between the two countries is that regional shocks are more persistent in Slovakia and national shocks are more persistent in the Czech Republic. Although regional shocks are also slightly more important in explaining the development of short term (one month) regional unemployment rates in Slovakia, and although Czech districts follow national shocks more closely than Slovak districts, these differences remain insignificant. Regional shocks, however, are significantly more important in explaining the longer term (12 month) dynamics of regional unemployment rates in Slovakia. Furthermore impulse response functions indicate persistence of national shocks in the regions is higher that in the Czech Republic, while in the Slovak Republic persistence of regional shocks is higher

This pattern implies that Czech regional labor markets are more strongly linked, while in the Slovak Republic they tend to be more segregated. This hypothesis is also supported by our findings that geographically grouped regional labor markets show a significantly different behavior only in the Slovak Republic, while no significant differences can be found in the Czech Republic. Industrial specialization in contrast has a significant impact on regional unemployment rates in a special sense in both countries. More perspective regions follow the national shocks more closely than others.

The paper proceeds by explaining the methodology we use in Chapter one. The second chapter summarizes some results of comparative work on the Czech and Slovak labor

markets and presents some features of the data, which indicate that regional labor markets have indeed evolved differently in the two countries. In chapter three we present the results of model estimation. After discussing model specification issues, we proceed in three steps. First, we look at how closely regions follow national developments and the importance of region specific shocks relative to the national shock in explaining regional labor market dynamics. Second, we turn to issues of persistence of shocks by analyzing impulse responses and finally, we consider two possible explanations for the differences found. Conclusions are presented in the fourth chapter.

1. Methodology

The main interest of this paper is to assess the relative importance of global and local sources of changes in the unemployment rates during transition. The interrelation of regional and national labor markets has been tackled in a number of ways by other authors: Blanchard and Katz (1992) as well as Decressin and Fatas (1995) run regressions of regional unemployment rates on a constant and the national unemployment rate for U.S. and European regions. They find that the national unemployment rate in average explains 66% of the variation in regional unemployment rates in the U.S. while in the European Union this figure is only 20%.

One drawback of this method is that it does not allow to make further inferences about the global and local interactions in the unemployment rate. The questions we would like to address in this paper are: How strongly are local changes in the unemployment rate associated to innovations in the regional unemployment rates and how persistent are local and global shocks? These questions can be addressed by VAR modeling.[1]

We use a model applied by Watzdorf and Wörgötter (1990) and Hofer and Wörgötter (1997) for characterizing regional growth differences in Austria. This model assumes a one - way interaction between the national aggregate unemployment rate u and the regional unemployment rate u^j by postulating the following moving average representation.

(1) $$u_t = A(L)\mu_t$$

and

(2) $$u_t^j = B(L)\mu_t + C(L)\xi_t^j$$

where A(L), B(L) and C(L) are reversible lag polynomials, μ as well as ξ are serially uncorrelated shocks, j is an index for the regions running from 1 to N (the number of regions in the country) and t is the index for the time period. The assumptions on the shocks are that

[1] VAR models have been applied to regional data sets recently by Shoesmith (1992) and Racette and Raynauld (1994).

$Cov(\mu_t,\xi^j_t) = Cov(\xi^j_t, \xi^j_{t-i}) = Cov(\mu_t, \mu_{t-i})=0$ as long as i is not equal to zero. Furthermore it is assumed that the individual region is small relative to the aggregate, so that the regional unemployment rate has no impact on the national unemployment rate.

Given invertibility the system can be rewritten as:

(3) $$u_t = D(L)u_{t-1} + \mu_t$$

(4) $$u^j_t = E(L)u_{t-1} + F(L)u^j_{t-1} + \psi^j_t$$

with

(5) $$\psi^j_t = c^r\mu_t + \xi^j_t$$

here c^r, which is estimated by $Cov(\mu_t,\xi^j_t)/Var(\mu_t)$, is a parameter that measures how strongly national shocks influence regional unemployment. The higher c^r, the stronger is the influence of national shocks. In particular if $c^r>1$ national shocks tend to be amplified in the region and if $0<c^r<1$ national shocks are dampened, finally, if c^r is negative national shocks are reversed in the region under consideration.

This model thus allows us to estimate (under the assumption that each region is small) to what degree individual regions are affected by national shocks. Furthermore we can estimate what percentage of prediction errors is due to regional and national shocks in a region.

2. Data and Previous Findings

The data we use are monthly, seasonally unadjusted unemployment rates[2] for the time period January 1992 to December 1995 published by the statistical offices of the respective countries.

Similar data has been used in a number of comparative studies on the Czech and Slovak labor markets. For instance Svejnar, Terell and Munich (1995) estimate cross section inflow and outflow equations, which lead them to the conclusion that active labor market policies (ALMP) have been more effective in the Czech Republic, but also suggest that the Czech labor market has profited substantially from its proximity to western states, inflow rates being

[2] The use of seasonally unadjusted data for this kind of application has been suggested by Racette and Raynauld (1994). This has a number of reasons, first to the degree that all regions share the same seasonal pattern this has to be interpreted as a "national" shock in this instance deseasonalizing the data would overestimate the share of the local shock while if the reverse occurred, i.e. seasonal patterns among regions differ widely, regional shocks would be underestimated. (Indeed preliminary experimentation with the data for Czech districts suggests that they follow the national seasonal pattern relatively closely.) Secondly, and related to this, seasonal filtering, through the application to short time series, may induce a common pattern to the time series that results from the filtering method rather than from the data itself. Finally, from a practical point of view filtering, irrespective of the method will reduce the degrees of freedom in an already short time series.

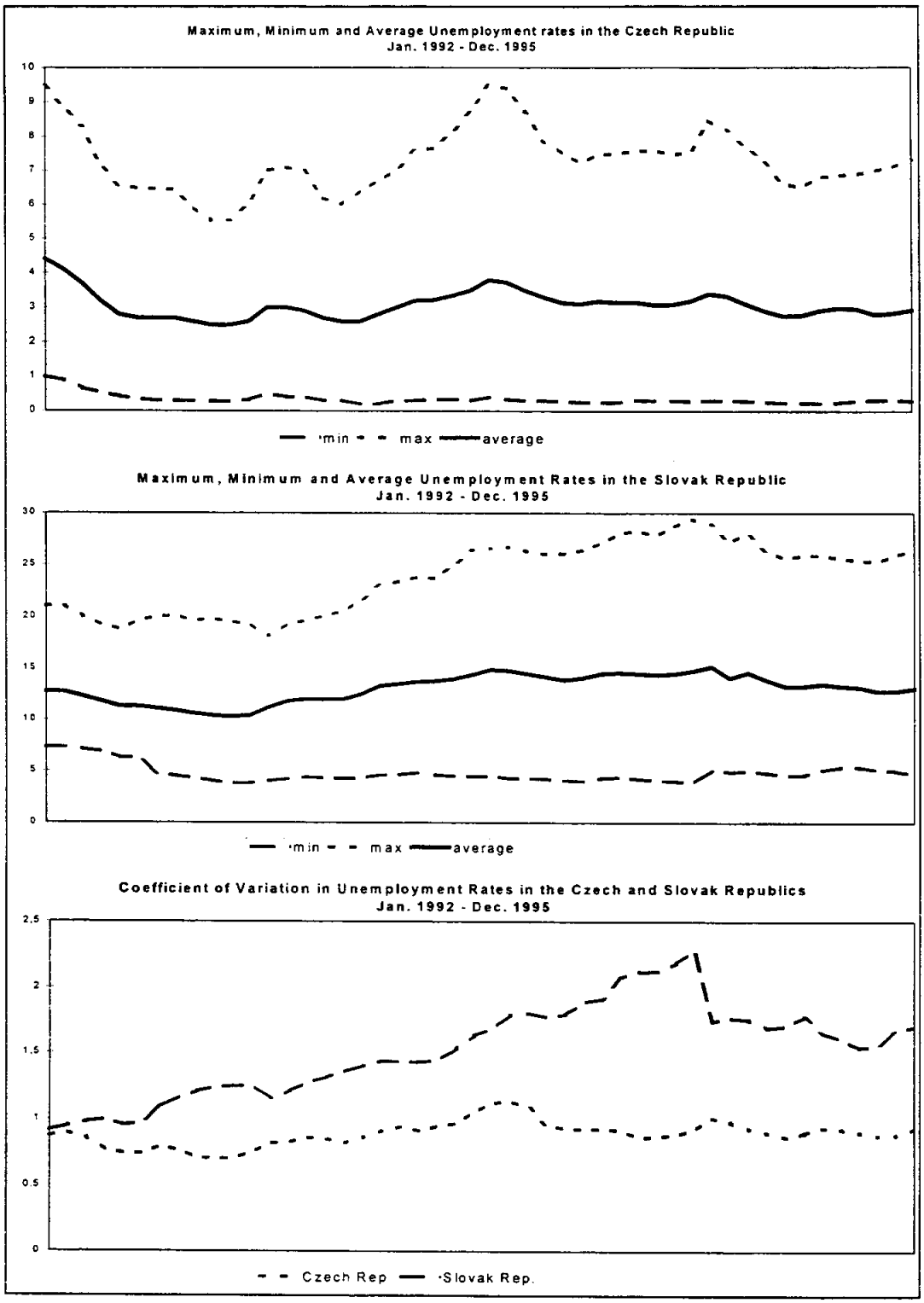
substantially lower near the border. Furthermore the low inflow rates into unemployment are due to the fact that in the Czech Republic industrial districts experience much lower inflow rates than those of the Slovak Republic. This suggests that active labor market policies, less restructuring and vicinity to the west are important in explaining the differences the labor markets.

In contrast, Burda and Lubyova (1995) using the same data set to estimate matching functions find that differences in industrial mix and demographic factors can account for only half of the difference in unemployment rates, furthermore they find that active labor market policies have only little impact in reducing the unemployment rates in the Slovak Republic.[3] Finally, Svejnar, Terell and Munich (1995a) address the issue what role mismatch plays in the Czech Labor market using quarterly data from the Czech Regional Labor Offices. They find that in the Czech Republic mismatch (occupational - for the highly educated groups, as well as regional - for all groups) plays a significant role in explaining unemployment rates, while in the Slovak Republic mismatch plays a smaller role.

These findings thus suggest that differences in the unemployment rates between the Czech and Slovak Republics cannot be explained easily by either differences in the regional conditions or policy variables. There are, however, also more subtle differences between the two republics, which may induce differences in regional labor market behavior. These differences apply to the pattern of industrialization, the countries' geography and infrastructure development in the two countries: The Slovak Republic was industrialized much later than the Czech Republic and was characterized by a larger role of military industry as well as more mono-enterprise towns (Huber and Ochotnicky (1996)). At the same time from a geographical viewpoint the Slovak Republic is a country characterized by two centers (Bratislava and Kosice), that are separated by mountainous territory. In consequence mobility is hampered by geography. These geographical differences have also contributed to the relatively worse development of infrastructure. Thus there are some reasons that would lead one to expect differences in the behavior of regional labor markets. In particular one would expect that labor mobility is lower in the Slovak Republic (see: Burda and Profit, 1996), which would lead to region specific shocks being more important and persistent in the Slovak Republic.

[3] There are significant differences concerning the labor policy mix between the two Republics. The Slovak Republic typically spends more on passive labor market policy, while in the Czech Republic active labor market policies play a more significant role.

Figure 1: Development of Maximum, Minimum, National Unemployment Rates and the Coefficient of Variation in the Czech Republic and Slovakia



Our data suggests a number of further "latent" features in the development of regional unemployment rates in the Czech and Slovak Republics. These arise when looking at a)

issues of convergence or divergence in unemployment rates, b) the distribution of unemployment rates and c) changes in rank (i.e. intra - distribution churning) in regional unemployment rates over time.

Figure one displays the development of the maximum and minimum unemployment rates among the districts of the Czech and the Slovak Republic, the national unemployment rate and the coefficient of variation of regional unemployment rates in the two countries. It provides some evidence, that aside from the differences in the level of unemployment rates, also changes in the dispersion differ between the two countries. Regional unemployment rate disparities have remained relatively unchanged in the Czech Republic in the four years under consideration. In the Slovak Republic in contrast there has been a tendency for regional unemployment rates to diverge.

At the same time the Figure points to the major caveat of using administrative data of district unemployment rates. Official data reflects to a large degree changes in administrative definitions of both unemployment and labor force participation. For instance in January 1995 the Slovak government changed labor force definition. In response to this (as Figure 1 clearly shows) the variance of district unemployment rates dropped from 34.73 in December 1994 to 27.15 in January 1995. Interestingly this change had a significant impact on the variance of unemployment rates in the districts but not on either the national or the district levels in the unemployment rates,[4] although in general changes in unemployment rate levels are somewhat higher in this month on the district level.

Figure 2, following a suggestion made by Quah (1996 and 1997), that issues of convergence and divergence should be addressed by looking at the evolution of complete distributions across regions over time, shifts the focus on the shapes of the distribution of unemployment rates across the regions. Profit (1997) has shown that in the Czech Republic unemployment rates tend towards a bimodal distribution, a phenomenon referred to as "twin peaks". Our plots of the distribution of unemployment rates across districts indicate that this "twin peaks" phenomenon is even more pronounced in the Slovak Republic than in the Czech Republic. Members of the two modal classes of the distribution for the Slovak Republic in Figure two seem to have a spatial pattern. The low unemployment peak recruits its membership mainly from Central Slovakian districts, while the high unemployment peak is mainly drawn from East Slovakian districts.[5]

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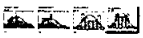
[4] This observation is based on visual inspection of the data. Two districts, however, have to be excepted from this observation: Cadca and Vranov n. Toplou experienced jumps in unemployment rates of over 4 percentage points.

[5] In 1992 the lower modal group which comprise districts with unemployment rates from 7% to 10% was composed of 3 West Slovakian, 5 Central Slovakian and 1 East Slovakian district. The higher modal group (15% - 18%) was composed of 1 West Slovakian, 2 Central Slovakian and 5 East Slovakian districts. In 1995 the ratios were 2:6:1 in the lower modal group and 1:2:6 in the upper modal group.

Figure 2: The Distribution of Unemployment Rates Across Districts in the Czech Republic and Slovakia in December 1992 and December 1995



Tables 1 and 2 finally provide some evidence on the extent of intra - distribution churning in Slovakia and the Czech Republic, respectively. In this table we form quintiles according to the rank of the unemployment rate in the respective country for 1992 and 1995. The numbers in the table can thus be interpreted as percentages of quintile members in December 1992 that moved to the respective quintile in December 1995. (For instance the first row in table 1 states that from the quintile of districts with the lowest unemployment rate in Slovakia in December 1992, 57,1% were also in the quintile with the lowest unemployment rate in December 1995 while 42,9% moved to the quintile with the second lowest unemployment rates.)

In general the two tables provide weak evidence for the hypothesis that intra .- distribution churning has differed in two respects in the two countries. First when considering the trace[6] of the two matrices shown in tables 1 and 2, which can be used as an indicator of the tendency to persist in the respective group, the Czech Republic's districts have a higher tendency to remain in their group. In the Slovak Republic the trace is (239,28) and in the Czech Republic (262,47). Second, if moving from their groups, however, Czech districts have a higher chance of moving a large distance than in the Slovak Republic, where changes in rank occur mainly between "neighboring" quintiles.

Table 1: Changes in Quintile Membership 1992 - 1995 in the Slovak Republic (in %)

	quintile*	1	2	3	4	5	
				1995			members' 92
	1	57,14	42,86	0,00	0,00	0,00	7
1	2	37,50	50,00	12,50	0,00	0,00	8
9	3	0,00	12,50	50,00	37,50	0,00	8
9	4	0,00	0,00	25,00	25,00	50,00	8
2	5	0,00	0,00	14,29	28,57	57,14	7
	members'95	7	8	8	8	7	

*from lowest to highest

Table 2: Changes in Quintile Membership 1992 - 1995 in the Czech Republic (in %)

[6] I.e. the sum of the main diagonal elements of the matrices.

	quintile*	1	2	3	4	5	
				1995			members' 92
	1	60,00	26,67	0,00	13,33	0,00	15
1	2	6,67	53,33	20,00	13,33	6,67	15
9	3	13,33	20,00	46,67	6,67	13,33	15
9	4	6,67	0,00	20,00	40,00	33,33	15
2	5	12,50	0,00	6,25	18,75	62,50	16
	members'95	15	15	15	15	16	

*from lowest to highest

3. Results

In consequence differences in the development of regional labor markets in the Czech and Slovak Republics are of some importance. In particular it seems that in the Slovak Republic, in contrast to the Czech Republic, there has been a more pronounced tendency for regional unemployment rates to diverge into two distinct groups of regions one with high unemployment rates and another with low unemployment rates. This leads us to hypothesize that regional labor dynamics should exhibit substantial differences between the two countries. The response to region specific and global shocks may be one facet of these differences. In particular three issues may be addressed in this context. First how important are regional shocks relative to national shocks? Second, are there differences in the persistence of the two shocks in the Czech and the Slovak Republics and third what could be the causes for the differences found?

3.1 Model Specification

Before addressing these issues by means of the model presented in equations (3) and (4) we exposed the regional as well as the national series to a number of stationarity tests (see appendix 1). In particular we applied Stock - Watson and Dickey - Fuller tests under constant, stochastic, and linear trend assumptions. Table 3 summarizes the results of these specification tests by reporting for what percentage of regions the null hypothesis of a unit root could be rejected at the 5% level, in dependence of the assumptions on the trend and on whether differences of the series were taken or not. In general for the levels data unit roots could not be rejected for most of the series. When moving to first differences, however, unit roots could be rejected in the majority of cases in both countries at the 5% level and in all cases at the 10% level. We interpret this as clear indication that estimation in first differences is preferable to levels.[7]

[7] An alternative interpretation of this finding is that while unemployment rates are trending upwards in most regions in both countries (but in particular in the Czech Republic) net flows to (or from) unemployment do not exhibit a trend. In consequence we estimate net labor market flows.

Since for reasons of comparability of the results, we want to avoid estimating a wide variety of different models, determining the length of the lag polynomials in equations (3) and (4) requires a compromise between different models. The log determinant[8] (which is shown in Appendix 2) suggests that a specification using three lags for D(L) and E(L) and one for F(L) is optimal for 21 of 38 models in the Slovak Republic and in 14 cases for the Czech Republic increasing the lag length of F(L) to two, these values become 5 and 27 respectively while a model with three lags in all polynomials would be best in 36 cases in total. In general, therefore, a lag length of three lags for D(L) and E(L) and two lags F(L) seems a permissible specification.[9]

Table 3: Results of Specification Tests

	Slovak Republic	Czech Republic
	% of regions rejected at 5% level	
unit root tests - levels		
df - constant trend	28.95	2,64
df - linear trend	22.37	1,32
qf - constant trend	19.74	1.32
qf - linear trend	0.00	0.00
unit root tests - first differences		
df - constant trend	100.00	98,68
df - linear trend	98.68	94,74
qf - constant trend	100.00	100.00
qf - linear trend	90.79	100.00

Legend: qf - stands for stock Watson tests, df- stands for Dickey fuller tests. The null hypothesis of all variants of the tests is that unemployment rates (or their first differences, respectively) follow a random walk. Detailed test statistics for individual regions and national series are presented in the Appendix

3.2 The Relative Importance of Shocks

As explained in the previous chapter there are two indicators concerning the differences in relative importance of region specific shocks in the Czech and Slovak Republics in our model. First, there is the parameter c^r, which measures the strength of the contemporary association of global innovations to unemployment rates on a regional level, second shares in the i-step ahead prediction errors can be used as indicators explaining how much of the variance of shocks is due to region specific and global shocks.

[8] The log-determinant criterion is a multivariate extension of the widely applied Akaike information criterion. It is based on the determinant of the variance - covariance matrix of the estimated system minus two times the ratio of the number of estimated coefficients to the number of observations. (see: Nickelsburg (1985))

[9] To check the stability of our results we estimated models with three lags for D(L) and E(L) and one as well as three lags for F(L), which could seem other possible specifications, respectively. These perturbations to the model do not change the results significantly.

Tables 4 and 5 show the estimates of c^r for the Czech and Slovak Republics respectively. Table 6 reports the results of ANOVA - tests for differences in the country means concerning these indicators. Differences among the countries seem to be rather small: In both countries, in all regions except for Prague in the Czech Republic aggregate innovations to unemployment rates are dampened. (That is the estimate of c^r is smaller than one) and none of the estimates is negative. The average estimate of c^r across regions is slightly smaller in the Slovak than in the Czech Republic (0.3754 for the Slovak Republic and 0.4199 for the Czech Republic). The variance in estimates across regions is slightly higher in the Czech Republic than in Slovakia (0.0470 versus 0.0321). Although this supports the hypothesis that Czech Regions in general are more strongly affected by nation wide shocks, the results of Anova - tests for the differences in means between the Slovak and Czech districts presented in table 6 are insignificant in a statistical sense and thus the evidence for these differences is weak only.

Table 4: Estimates of c^r for the Slovak Republic

Region	c^r	Region	c^r	Region	c^r	Region	c^r
Banska Bystrica	0,45	Kosice-mesto	0,06	Povazska Bystrica	0,63	Topolcany	0,43
Bardejov	0,20	Kosice-vidiek	0,00	Presov	0,39	Trebisov	0,18
Bratislava,hl.m.SR	0,38	Levice	0,40	Prievidza	0,61	Trencin	0,80
Bratislava-vidiek	0,23	Liptovsky Mikulas	0,53	Rimavska Sobota	0,41	Trnava	0,66
Cadca	0,14	Lucenec	0,30	Roznava	0,30	Velky Krtis	0,30
Dolny Kubin	0,36	Martin	0,51	Senica	0,54	Vranov nad Toplou	0,13
Dunajska Streda	0,07	Michalovce	0,45	Spisska Nova Ves	0,24	Zvolen	0,45
Galanta	0,30	Nitra	0,38	Stara Lubovna	0,20	Ziar nad Hronom	0,52
Humenne	0,40	Nove Zamky	0,51	Svidnik	0,35	Zilina	0,65
Komarno	0,30	Poprad	0,50				

Table 5: Estimates of cr for the Czech Republic

Region	c^r	Region	c^r	Region	c^r	Region	c^r
Benesov	0,46	Jablonec	0,42	Nymburk	0,47	Rychnov n. K.	0,68
Beroun	0,59	Jicin	0,62	Olomouc	0,43	Semliy	0,48
Blansko	0,34	Jihlava	0,26	Opava	0,23	Sokolov	0,57
Brno-mesto	0,28	J. Hradec	0,44	Ostrava	0,24	Strakonice	0,62
Brno-venkov	0,46	Karlovy Vary	0,80	Pardubice	0,90	Svitavy	0,34
Bruntal	0,23	Karvina	0,36	Pelhrimov	0,46	Sumperk	0,29
Breclav	0,19	Kladno	0,43	Pisek	0,50	Tabor	0,48
Ceska Lipa	0,51	Klatovy	0,46	Plzen-jih	0,34	Tachov	0,27
Ceske Budejovice	0,79	Kolin	0,50	Plzen-mesto	0,47	Tepilce	0,40
Cesky Krumlov	0,28	Kromeriz	0,43	Plzen-sever	0,27	Trutnov	0,79
Cheb	0,37	Kutna Hora	0,39	Prachatice	0,39	Trebic	0,03
Chomutov	0,36	Liberec	0,62	Praha-hl. M.	1,45	Uherske Hradiste	0,10
Chrudim	0,52	Litomerice	0,28	Praha-vychod	0,48	Usti n. L.	0,41
Decin	0,47	Louny	0,25	Praha-zapad	0,19	Usti n. O.	0,40
Domazlice	0,66	Melnik	0,58	Prostejov	0,24	Vsetin	0,30
Frydek	0,39	Mlada Boleslav	0,87	Prerov	0,23	Vyskov	0,08
Havlickuv Brod	0,48	Most	0,57	Pribram	0,42	Zlin	0,07
Hodonin	0,20	Nachod	0,08	Rakovnik	0,33	Znojmo	0,18
Hradec Kralove	0,47	Novy Jicin	0,23	Rokycany	0,37	Zdar	0,37

Table 6: Means and Standard Deviation of the One and Twelve Step Ahead Prediction Error as well as c^r and Results of Anova Tests for Differences in Means Across Countries

	c^r	lag1	lag2
Mean Slovak Republic	0,375	0,643	0,661
Std. Dev. Slovak Republic	0,182	0,213	0,190
Mean Czech Republic	0,420	0,624	0,517
Std. Dev. Slovak Republic	0,206	0,187	0,189
Anova Test (P - value	0,281	0,602	0,000

Interregional variation in the estimates of c^r in both countries is high, however. In both countries some regions' unemployment rates seem to develop almost independently of national shocks, while others are closely connected to the national unemployment rate innovations. The two most extreme cases of regions that are independent of the national unemployment rate innovations are Kosice - vidiek (the district surrounding the town of Kosice) in the Slovak Republic and Zlin in the Czech Republic. For these districts c^r was estimated at 0.00 and 0.07 respectively. The opposite extreme examples are Prague[10] (the capital city of the Czech Republic) and Trencin (Slovak Republic). In these districts shocks to

[10] It should be noted here that Prague was in a somewhat special situation throughout the transition, since its unemployment rate was always extremely low. Furthermore in the case of Prague (and to a lesser degree Bratislava) it may well be, that the smallness assumption that we employ in the model is violated, since these regions are large relative to the size of their country.

the national unemployment rates are closely transmitted to the regional level and in the case of Prague even amplified. The estimated coefficients are 1.45 and 0.80, respectively.

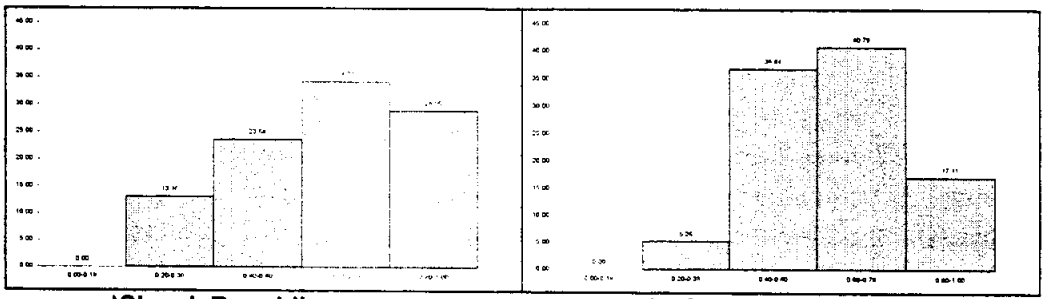
As a second indicator concerning the behavior of regional unemployment rates we employ the share of the variance of total prediction error for the regional unemployment rates explained by the regional component. These shares estimate how much of the i-step-ahead prediction error can be attributed to the current and past local shocks.[11] Figure 3 and 4 show the distribution of these shares for the one step and twelve step ahead prediction error across regions in the Czech and the Slovak Republic. In this Figure - in order to present results within a tolerable amount of space - the regions have been grouped into five intervals according to the percentage of the total prediction error explained by the region specific shock: Thus if for one country the mass of the distribution shown in the diagram is further to the right then region specific shocks are more important in explaining the one or twelve step ahead prediction error in this country. The numeric results have been relegated to Appendix A1.

The evidence provided both by the figure and the Anova - Statistics in table six suggests that results concerning the one step ahead prediction error are similar to those of the estimates of c^r: In the Slovak Republic, in average, region specific shocks explain more of the one step ahead prediction error than in the Czech Republic. In the Czech Republic the average share of regional shocks in the one step ahead prediction error is 62.36%. In the Slovak Republic it amounts to 64.32%. These differences, however, remain insignificant, thus they present weak evidence of a higher importance of region specific shocks in the Slovak Republic, only.

The higher importance of region specific shocks in the Slovak Republic becomes significant when the twelve step ahead (that is one year ahead) prediction error is considered as in Figure 4. Here the Slovak Republic has a distribution that has its mode in the interval from 60% to 80% where 39% of the regions are located, while in the Czech Republic the shares of regional contributions to the total twelve step ahead prediction error have their mode in the interval from 40% to 60% with over 40% of the regions. In average the regional share in the twelve step ahead prediction error is significantly smaller in the Czech Republic with 51,69% than in the Slovak Republic (66.07%).

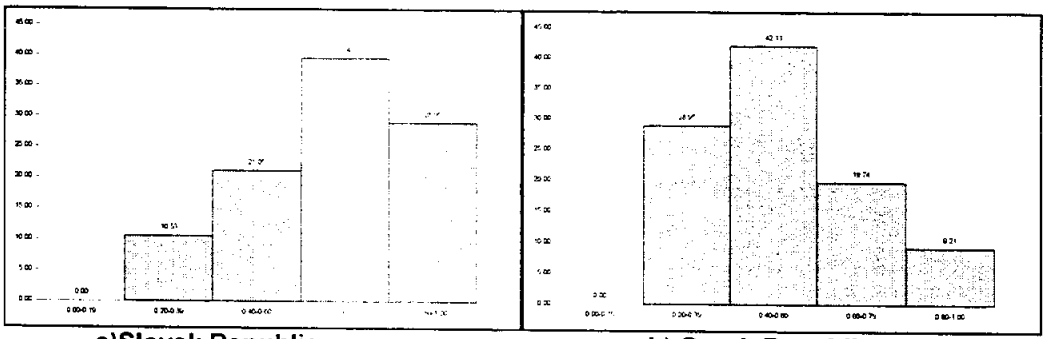
[11] Alternatively the share of the national shock is given by one minus the share of the regional shock.

Figure 3. Distribution of the Share of Variance of the one step ahead Prediction Error Explained by Region Specific Shocks for the Czech and Slovak Republics



a)Slovak Republic b) Czech Republic

Figure 4: Distribution of the Share of Variance of the twelve steps ahead Prediction Error Explained by Region Specific Shocks for the Czech and Slovak Republics

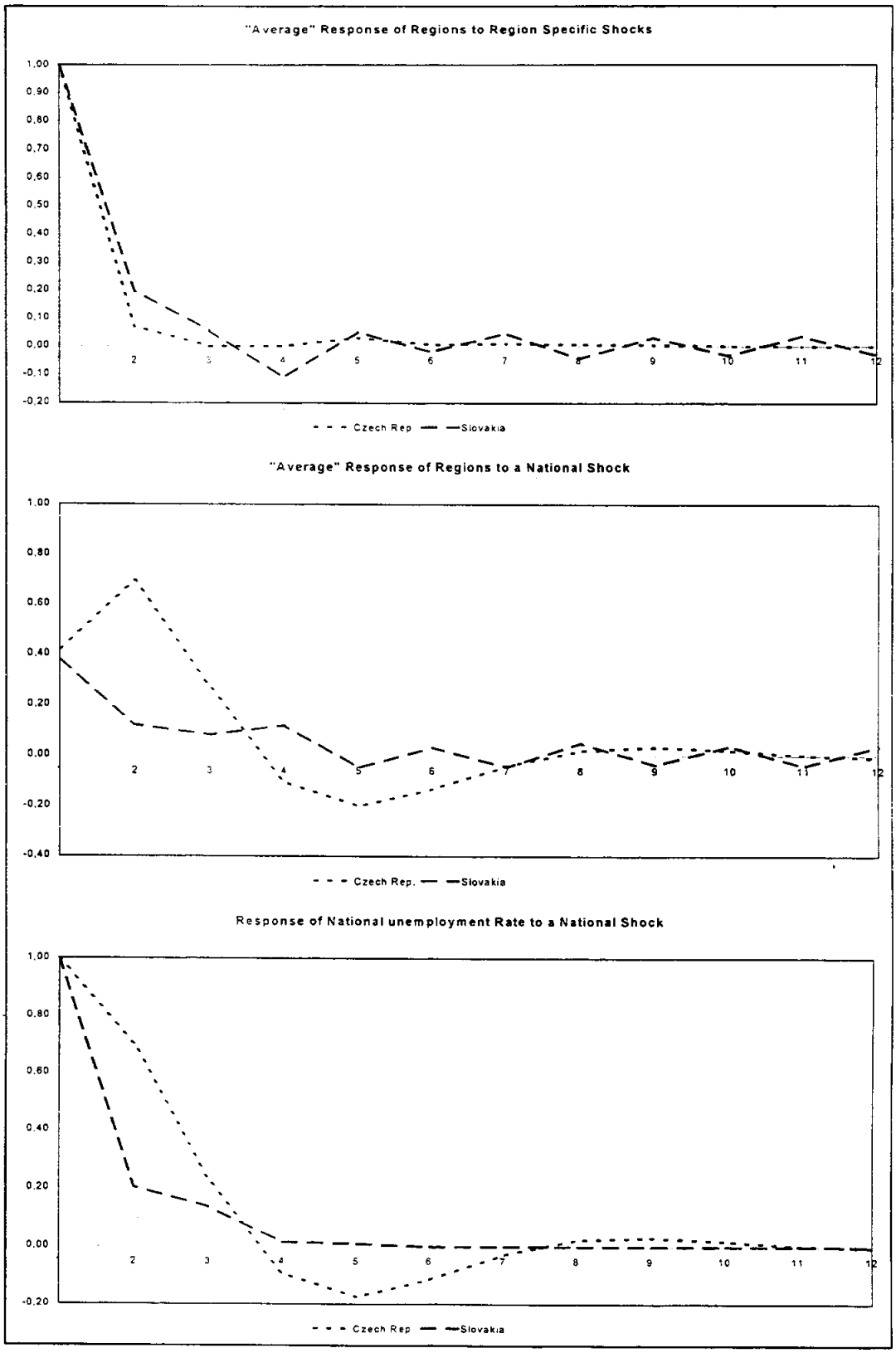


a)Slovak Republic b) Czech Republic

3.3 Persistence

These findings are evidence that region specific shocks are important in understanding the evolution of regional unemployment rates in the Czech and Slovak Republics. Over half of both the one-step and twelve-step ahead prediction error in regional unemployment rates are due to local shocks. However, the differences in the importance of local shocks raise some issues, since they indicate that the short run importance of regional shocks is rather similar in the two countries, but the long run implications of the shocks differ significantly. One reason for this difference in behavior, could be that in the Slovak Republic region specific shocks ebb out much more slowly than in the Czech Republic, a fact which seems to be in accordance with much of our earlier hypothesizing on the more segregated nature of Slovak regional labor markets.

Figure 5: "Average" Impulse Response Functions for the Czech and Slovak Republics



To address this issue impulse response functions are the natural method within our approach. Given the large number of regions in our data set, however, reporting all impulse response functions in the main text would be excessive.[12] In consequence Figure 4 compares the "average" response of a Czech and a Slovak region to a unit region specific shock and a unit national shock while impulse response functions for the separate regions are reported in Appendices A2 and A3. These "average" impulse response functions are derived by taking the average across the 76 Czech and 38 Slovak districts of the remaining response (to the unit impulse in time period one) at the relevant time interval.

Figure 5 which plots these "average" impulse response functions shows that our finding is due to two countervailing tendencies, which differ between the two countries. First, districts in the Slovak Republic react more slowly to regional shocks, with the impact of a unit shock reducing to about 0.2 one month later (in comparison in the Czech Republic this is 0,08) and then fading off causing some oscillations throughout the remainder of the year. In the Czech Republic in contrast region specific shocks have lower persistence and their impact uniformly reduces until in the ninth month their impact is practically zero (0.006). In the Slovak Republic in contrast after the same time period their impact is still 0.031.

Second, national shocks phase out much faster on the regional level in the Slovak Republic than in the Czech Republic. In the Czech Republic the response of an "average" region attains a maximum one month after the impact with 69.24% of its level and then declines causing a contraction of inflows from the fourth to the seventh month. In the "average" Slovak region the response quickly decays during the first month (to 12% of the original shock), then remains relatively unchanged, until after the fourth month it causes fluctuations, which exactly countervail the regional fluctuations in their signs.

The reason for this behavior can be seen in the third panel of the figure. Shocks to national unemployment have a much higher persistence in national unemployment rates in the Czech Republic than in Slovakia. They ebb of only very slowly becoming negative in the fourth month and practically reach zero only after a period of a year (-0.005). This implies that in the first period the regions only experience a share of the shock equal to c' which reflects the closeness to national national development. As the second period comes along, as can be seen from equation 4, the lagged development of the national shock becomes important, and so the response to the original impulse increases. In Slovakia, on the other hand, national shocks have very little persistence on national unemployment rates - after five months their impact on national unemployment rates becomes negligible (0.009).

This pattern supports the interpretation we have given to the results, indicating more segregated Slovak regional labor markets. Yet, it adds an additional insight with some policy

[12] Given there are 114 regions and two shocks to be considered we would have to plot 230 (including responses of national series to national shocks) impulse response functions.

implications to the differences in the local labor market development. In the Czech Republic the relatively higher persistence of national shocks to regional unemployment rates is the major problem, while in the Slovak Republic the lacking responsiveness of regional labor markets is more important. Suggesting that reductions in unemployment rates could result from increasing regional labor market's responsiveness (for instance through increased mobility) in Slovakia only.

3.4 Industrial versus Geographical Explanations

A further finding that can be derived from our results is that the reaction of regional labor markets both to national and region specific shocks differs widely even within countries. This applies both to the relative importance of region specific shocks as well as to the degree to which national shocks are followed by individual regions.[13] In the Czech Republic the share of the one step ahead prediction error varies between 98.9% (in Most) and 31.0% (in Liberec) the standard deviation across the regions of the Czech Republic of the one step ahead prediction error is 0.17. In the Slovak Republic the range is between 100% (in Kosice - vicinity) and 27.3% (in Svidnik) and the standard deviation is 0.21. Similar differences in results can be found concerning the share of the twelve steps ahead prediction error; it is distributed in the range from 97.4% (Trebic) to 26.8% (Zdar nad Sazavou) in the Czech Republic and between 99.4% (Kosice - vicinity) and 26.8% (Zilina) in the Slovak Republic.

These differences open the question, whether the behavior of regions follows common patterns. Two such common patterns could be hypothesized: First, differences could be associated with geographical factors; regions close to one another should follow similar patterns. Second, differences could be caused by specialization patterns. In particular agricultural and industrial regions as well as large urban agglomerations may differ substantially from each other. To differentiate between these two explanations we use two groupings of regions:

1. The first is a geographical grouping, taking the macro regions (kraij) of the Czech and the Slovak Republic as the grouping variable. Altogether in the two republics there are 12 such macro regions (see list in Appendix A6) with between 8 and 14 smaller regions (okres) in each

[13] In consequence also impulse responses show some heterogeneity among regions (see Appendix).

Table 7: P-Values of ANOVA Tests for Group Independence

	CR	SR	Overall
ANOVA on Regional Groups			
C^r	0.00**	0.04**	0.00**
Lag1	0.39	0.01**	0.04**
Lag12	0.19	0.03**	0.00**
ANOVA on Specialization Groups			
C^r	0.01**	0.01**	0.01**
Lag1	0.91	0.15	0.30
Lag12	0.96	0.32	0.47

* signifies significance at 10%; ** significant at 5% level

Table 8: Average Estimates of c^r and shares of Prediction Errors by Specialization Groups*

	Czech Republic			Slovakia			Group Total		
	c^r	1-Strep Error	12-Step Error	c^r	1-Step Error	12-Step Error	c^r	1-Strep Error	12-Step Error
Agricultural perspective	0,44	0,62	0,53	0,40	0,62	0,66	0,42	0,62	0,59
Agricultural	0,36	0,63	0,54	0,24	0,72	0,72	0,32	0,66	0,60
Industrial perspective	0,45	0,60	0,50	0,59	0,47	0,52	0,48	0,58	0,50
Industrial	0,37	0,64	0,50	0,42	0,58	0,63	0,39	0,61	0,56
Diverse perspective	0,72	0,69	0,54	0,22	0,91	0,85	0,60	0,74	0,61
Diverse	0,37	0,60	0,49	0,45	0,61	0,61	0,39	0,60	0,53
Total	0,42	0,62	0,52	0,38	0,64	0,66	0,41	0,63	0,56

*Groups were formed according to Scarpetta and Huber (1995)

Table 9: Average Estimates of c^r and shares of Prediction Errors by Geographical Groups

	c^r	1-Step Error	12-Step Error
Bratislava	0.38	0,87	0,78
West Slovakia	0,42	0,64	0,64
Central Slovakia	0.45	0,51	0,56
East Slovakia	0.26	0,76	0,77
Prague	1.45	0,65	0,58
Central Bohemia	0.48	0,61	0,52
South Bohemia	0.50	0,57	0,45
West Bohemia	0.46	0,69	0,55
North Bohemia	0.43	0,59	0,45
East Bohemia	0.52	0,57	0,48
South Moravia	0,23	0,71	0,62
North Moravia	0,29	0,59	0,48

2. The second is a typology developed by Scarpetta and Huber (1995) which divides the Czech and Slovak Regions into six groups on the basis of their specialization. (These six groups are industrial perspective, industrial others, agricultural perspective, agricultural others, diverse perspective and diverse others (see list in Appendix A6))[14].

To test whether these two alternative groupings can partially explain the differences in behavior of the regions we use one way ANOVA tests for equal group means shown in Table 7. Tables 8 and 9 show the averages for the estimates of c^r and the one- as well as twelve - step ahead prediction error. The results indicate that while there are significant differences among the regions in terms of regional groups in the Slovak Republic, specialization groups only differ with respect to the estimate in c^r in both countries.

The main difference concerning the estimates of c^r across specialization groups seem to be that perspective regions, that is regions that are more diverse in their industrial structure, have a more highly qualified workforce and provide substantial alternative employment opportunities outside their main specialization[15] follow national shocks more closely (have a higher c^r) than other regions. In contrast agricultural, industrial and urban regions seem to be relatively more homogeneous once these factors are accounted for. Thus more prospective regions follow national innovations in unemployment more closely than less prospective regions. This may be attributed to their higher diversity.

Concerning regional groupings, regions are much more distinct in the Slovak Republic than in the Czech Republic, which in turn is indication of lower mobility in the there. The differences within Slovakia are indicative of the by-polar structure of the country. Bratislava and East Slovakia (where Kosice is located) are characterized by relatively high shares of region specific components in the one-step ahead and twelve-step ahead prediction errors and are associated only weakly to national shocks (i.e. have a low c^r). West and Central Slovakia which lie between the two centers of the country in contrast have relatively low shares of region specific components in the one-step ahead and twelve-step ahead prediction errors but are strongly associated to national shocks.

5. Conclusions

This paper has been concerned with the differences between the Czech and the Slovak regional labor markets. Although many of our findings call for further research, we are able to demonstrate at the example of the Czech Republic and Slovakia that aside from national differences, regional labor markets may evolve very differently during transition. This poses

[14] A seventh residual group was neglected since it provided for only one observation in the Czech Republic and two observations in the Slovak Republic.

[15] These are essentially the defining characteristics of perspective regions according to Scarpetta and Huber (1995).

the question how regional and national factors interact to form the widely differing outcomes during transition.

In our econometric application we make a first step towards answering this question by estimating the importance of regional shocks relative to national shocks in transition. Here our results indicate that in average Czech regional labor markets, region specific shocks are slightly less important than in Slovak regional labor markets. Czech regions are more affected by national shocks. These differences are, however, statistically insignificant. The significant difference between the two countries seems to lie in the longer run (over the period of one year) adjustment to region specific shocks. Region specific shocks are significantly less important in the long run in the Czech Republic than in the Slovak Republic in explaining the twelve step ahead prediction error.

These findings indicate that labor markets in the Slovak Republic are regionally more segregated, due to the by-polar structure of the country, its pattern of industrialization and worse infrastructure development, than in the Czech Republic. Further evidence for this hypothesis is provided by impulse response functions - region specific shocks are more persistent in the "average" Slovak region and national shocks are more persistent in the "average" Czech region - and from a more disaggregate analysis. Regional labor markets grouped by geographic factors show significantly different behaviors in the Slovak Republic, while in the Czech Republic such distinct behavior cannot be found.

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Table A1: Share of Regional Shocks in One Step and Twelve Step Ahead Prediction Errors by Regions

Region	lag 1	lag 12	Region	lag 1	lag 12	Region	lag 1	lag 12
Prague	0,646	0,582	Most	0,989	0,854	Banska Bystrica	0,501	0,496
Benesov	0,470	0,439	Teplice	0,642	0,449	Bardejov	0,752	0,786
Beroun	0,477	0,389	Usti n. Labem	0,801	0,670	Bratislava,hl.m.SR	0,874	0,776
Kladno	0,635	0,621	Havlickuv Brod	0,485	0,413	Bratislava-vidiek	0,841	0,812
Kolin	0,437	0,379	Hradec Kralove	0,605	0,568	Cadca	0,866	0,828
Kutna Hora	0,742	0,602	Chrudim	0,411	0,316	Dolny Kubin	0,401	0,460
Melnik	0,534	0,399	Jicin	0,491	0,332	Dunajska Streda	0,988	0,854
Mlada Boleslav	0,627	0,499	Nachod	0,580	0,346	Galanta	0,726	0,720
Nymburk	0,376	0,277	Pardubice	0,368	0,307	Humenne	0,632	0,677
Praha vychod	0,954	0.825	Rychnov n.K.	0,374	0,381	Komarno	0,694	0,672
Praha zapad	0,966	0,908	Semily	0,811	0,766	Kosice-mesto	0,956	0,931
Pribram	0,381	0,318	Svitavy	0,689	0,608	Kosice-vidiek	1,000	0,994
Rakovnik	0,701	0,561	Trutnov	0,414	0,276	Levice	0,600	0,766
Ceske Budejovice	0,642	0,418	Usti n.O.	0,631	0,450	Liptovsky Mikulas	0,669	0,691
Cesky Krumlov	0,673	0,535	Blansko	0,768	0,640	Lucenec	0,787	0,818
Jindrichuv Hr.	0,552	0,575	Brno-mesto	0,755	0,591	Martin	0,632	0,630
Pelhrimov	0,524	0,402	Brno-venkov	0,727	0,636	Michalovce	0,668	0,683
Pisek	0,497	0,394	Breclav	0,661	0,558	Nitra	0,816	0,686
Prachatice	0,629	0,465	Zlin	0,893	0,856	Nove Zamky	0,453	0,515
Strakonice	0,529	0,409	Hodonin	0,710	0,655	Poprad	0,644	0,635
Tabor	0,494	0,419	Jihlava	0,732	0,593	Povazska Bystrica	0,504	0,752
Domazlice	0,649	0,564	Kromeriz	0,406	0,298	Presov	0,745	0,663
Cheb	0,923	0,703	Prostejov	0,639	0,488	Prievidza	0,345	0,338
Karlovy Vary	0,671	0,525	Trebic	0,982	0,974	Rimavska Sobota	0,463	0,494
Klatovy	0,351	0,317	Uherske Hradiste	0,861	0,810	Roznava	0,811	0,849
Plzen-mesto	0,838	0,720	Vyskov	0,923	0,843	Senica	0,558	0,572
Plzen-jih	0,767	0,581	Znojmo	0,576	0,525	Spisska Nova Ves	0,787	0,813
Plzen-sever	0,693	0,600	Zdar n. S.	0,314	0,268	Stara Lubovna	0,842	0,872
Rokycany	0,716	0,541	Bruntal	0,622	0,650	Svidnik	0,276	0,329
Sokolov	0,501	0,433	Frydek-Mistek	0,362	0,299	Topolcany	0,612	0,651
Tachov	0,770	0,567	Karvina	0,420	0,307	Trebisov	0,916	0,923
Ceska Lipa	0,434	0,314	Novy Jicin	0,615	0,467	Trencin	0,318	0,344
Decin	0,466	0,428	Olomouc	0,571	0,420	Trnava	0,427	0,402
Chomutov	0,434	0,326	Opava	0,513	0,390	Velky Krtis	0,406	0,405
Jablonec n.N.	0,878	0,669	Ostrava-mesto	0,770	0,700	Vranov nad Toplou	0,855	0,854
Liberec	0,310	0,268	Prerov	0,720	0,541	Zvolen	0,530	0,714
Litomerice	0,825	0,663	Sumperk	0,683	0,541	Ziar nad Hronom	0,276	0,426
Louny	0,499	0,369	Vsetin	0,665	0,493	Zilina	0,273	0,276

Legend: lag1 - one step ahead prediction error; lag12 - twelve step ahead prediction error

Appendices

The Appendices to this paper present impulse response functions at the individual district level (Appendix A2 and A3, the results of a number of random walk tests (Appendix A4) and of the log determinant criterion of the estimated models (Appendix A5).

In Appendix A4 Stock Watson test statistics are abbreviated by qf, Dickey - Fuller tests are referred to by df. The abbreviations mu, tau and tausq indicate that a constant, a linear and a quadratic (deterministic) trend have been assuned. A z in bracketts finally indicates to absolute levels (i.e. the unemployment rate), a dz in brackets indicates that the test has been applied after taking first differences have been taken. Finally the four lines below the DF-test statistics present t-statistics of the constant and the trend variable.

In Appendix A5 the log determinant statistic is displayed. This was calculated by the formula:

(A1) ldc = Det {Varcovmat(αt ,Γt)} + 2*(Number of Estimated Coefficients/Number of Observations)

The values in the columns marked D(L), E(L) and F(L) give the number of lags in the lag polynomials defined in equations 3 and 4 in the main text. To save Space in we abbreviate names of the regions. the meanings of these abbreviations and the association of the micro regions (okres) used to macro regions (kraij) are listed in appendix A6.

Table A2: Impulse Response Functions to Region Specific Shocks

Entry	PRAHAC	BEN	BER	KLAD	KOL	KUT	MEL	MLA	NYM	PRAE	PRAWE	PRI	RAK	CESBV
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	-0,24600	0,06064	-0,03013	0,20750	-0,14016	-0,24086	0,25378	-0,20962	0,36109	-0,21131	0,14280	0,16525	-0,07436	0,02635
3	0,11542	0,02127	0,22292	-0,58765	0,00412	-0,40092	-0,22406	-0,24224	-0,25805	-0,04067	0,29478	-0,09277	0,00188	0,28794
4	-0,04190	0,00236	-0,01341	-0,25281	0,00160	0,20710	-0,13007	0,11077	-0,23344	0,02662	0,08127	-0,03517	0,00013	0,01516
5	0,01664	0,00052	0,04989	0,31818	-0,00029	0,13412	0,03163	0,04610	0,01594	-0,00216	0,09249	0,00533	-0,00002	0,08311
6	-0,00639	0,00007	-0,00448	0,22547	0,00002	-0,12735	0,04555	-0,04136	0,09643	-0,00182	0,03551	0,00510	0,00000	0,00654
7	0,00249	0,00001	0,01121	-0,15389	0,00000	-0,03088	0,00244	-0,00452	0,02863	0,00057	0,03045	0,00020	0,00000	0,02404
8	-0,00096	0,00000	-0,00133	-0,17414	0,00000	0,06588	-0,01252	0,01279	-0,02712	0,00003	0,01409	-0,00058	0,00000	0,00251
9	0,00037	0,00000	0,00253	0,06093	0,00000	-0,00170	-0,00388	-0,00139	-0,02091	-0,00006	0,01037	-0,00012	0,00000	0,00697
10	-0,00014	0,00000	-0,00037	0,12247	0,00000	-0,02983	0,00263	-0,00337	0,00298	0,00001	0,00535	0,00005	0,00000	0,00091
11	0,00006	0,00000	0,00057	-0,01301	0,00000	0,00796	0,00179	0,00110	0,00920	0,00000	0,00361	0,00002	0,00000	0,00203
12	-0,00002	0,00000	-0,00010	-0,07994	0,00000	0,01177	-0,00030	0,00073	0,00216	0,00000	0,00198	0,00000	0,00000	0,00031

Entry	CESKR	JIN	PELH	PIS	PRACH	STRAK	TAB	DOM	CHEB	KARVAR	KLAT	PLZENT	PLZENS
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	0,60991	0,56591	-0,10024	-0,37188	0,35395	0,25025	0,21333	0,07118	0,28853	0,21395	-0,42573	-0,08898	-0,21491
3	0,06408	0,42586	-0,07597	0,17263	0,01960	0,38553	0,10026	0,28056	0,27191	-0,01990	0,06656	-0,19184	-0,27809
4	-0,14872	0,30076	0,01624	-0,07697	-0,03047	0,17728	0,03307	0,03958	0,13289	-0,01831	0,02049	0,03484	0,12945
5	-0,11044	0,21517	0,00491	0,03455	-0,01286	0,16885	0,01254	0,08011	0,08964	-0,00261	-0,01636	0,03522	0,06236
6	-0,02156	0,15353	-0,00189	-0,01549	-0,00133	0,09950	0,00449	0,01661	0,05093	0,00064	0,00461	-0,01009	-0,05538
7	0,02085	0,10961	-0,00023	0,00695	0,00089	0,07942	0,00164	0,02325	0,03161	0,00031	-0,00009	-0,00614	-0,00832
8	0,01936	0,07824	0,00019	-0,00312	0,00045	0,05200	0,00060	0,00623	0,01873	0,00002	-0,00049	0,00256	0,01975
9	0,00539	0,05585	0,00000	0,00140	0,00007	0,03866	0,00022	0,00685	0,01137	-0,00002	0,00022	0,00100	-0,00155
10	-0,00268	0,03987	-0,00002	-0,00063	-0,00002	0,02647	0,00008	0,00220	0,00681	0,00000	-0,00004	-0,00060	-0,00607
11	-0,00329	0,02846	0,00000	0,00028	-0,00002	0,01911	0,00003	0,00204	0,00411	0,00000	-0,00001	-0,00015	0,00181
12	-0,00118	0,02032	0,00000	-0,00013	0,00000	0,01333	0,00001	0,00075	0,00247	0,00000	0,00001	0,00013	0,00158

Entry	PLZENN	ROK	SOK	TACH	CESLI	DEC	CHOM	JABL	LIBER	LITO	LOUN	MOST	TEPL
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	0,18278	0,23238	-0,18994	0,62388	0,18218	-0,31423	-0,12508	0,21556	0,29810	-0,09465	0,06821	0,12872	-0,25300
3	-0,08794	-0,21483	0,15833	0,17391	-0,14177	-0,18251	-0,14943	0,02538	0,19106	0,33059	0,08284	-0,09282	0,12784
4	-0,03825	-0,11239	-0,05330	-0,02584	-0,05770	0,14573	0,03934	0,00093	0,08742	-0,06173	0,01098	-0,02603	-0,04849
5	0,00368	0,03164	0,02948	-0,05356	0,01429	0,00554	0,01975	-0,00034	0,04558	0,11217	0,00723	0,00680	0,02043
6	0,00531	0,03757	-0,01212	-0,02786	0,01270	-0,04273	-0,00896	-0,00009	0,02252	-0,03047	0,00135	0,00372	-0,00826
7	0,00052	0,00022	0,00591	-0,00584	-0,00019	0,01187	-0,00214	-0,00001	0,01137	0,03896	0,00066	-0,00026	0,00339
8	-0,00055	-0,01005	-0,00260	0,00235	-0,00226	0,00829	0,00175	0,00000	0,00569	-0,01349	0,00015	-0,00044	-0,00139
9	-0,00016	-0,00240	0,00122	0,00273	-0,00038	-0,00594	0,00013	0,00000	0,00286	0,01381	0,00006	-0,00003	0,00057
10	0,00004	0,00214	-0,00055	0,00119	0,00033	-0,00046	-0,00031	0,00000	0,00143	-0,00564	0,00002	0,00004	-0,00023
11	0,00003	0,00114	0,00025	0,00016	0,00013	0,00182	0,00002	0,00000	0,00072	0,00498	0,00001	0,00001	0,00009

12	0,00000	-0,00031	-0,00012	-0,00016	-0,00003	-0,00044	0,00005	0,00000	0,00036	-0,00229	0,00000	0,00000	-0,00004

Table A2 continued

Entry	USTNL	HAVBR	HRADKR	CHRU	JICI	NACH	PARD	RYCHN	SEM	SVIT	TRUT	USTNO	BLANS
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	-0,42269	-0,04276	-0,29991	0,16791	0,12372	0,20737	-0,15511	0,48468	0,15087	0,68604	0,03968	0,40881	-0,12972
3	0,26749	-0,26060	0,31440	-0,35588	0,10489	-0,04291	-0,13039	0,44576	0,19114	0,13571	-0,31436	-0,03894	0,04435
4	-0,15061	0,02236	-0,16161	-0,12424	0,02406	-0,02671	0,04418	0,31825	0,05424	-0,13668	-0,02501	-0,10016	-0,00932
5	0,08742	0,06743	0,11904	0,11582	0,01237	-0,00185	0,01329	0,24824	0,04037	-0,13922	0,09833	-0,03292	0,00243
6	-0,05033	-0,00875	-0,07197	0,06717	0,00369	0,00191	-0,00888	0,18742	0,01522	-0,04973	0,01180	0,00718	-0,00057
7	0,02904	-0,01732	0,04830	-0,03321	0,00156	0,00056	-0,00067	0,14318	0,00909	0,01251	-0,03060	0,00972	0,00014
8	-0,01675	0,00304	-0,03064	-0,03137	0,00052	-0,00005	0,00148	0,10891	0,00393	0,02524	-0,00494	0,00249	-0,00003
9	0,00966	0,00442	0,02003	0,00749	0,00020	-0,00006	-0,00012	0,08298	0,00212	0,01313	0,00947	-0,00098	0,00001
10	-0,00557	-0,00099	-0,01289	0,01331	0,00007	-0,00001	-0,00021	0,06318	0,00098	0,00055	0,00194	-0,00092	0,00000
11	0,00321	-0,00112	0,00836	-0,00064	0,00003	0,00000	0,00005	0,04812	0,00051	-0,00402	-0,00292	-0,00017	0,00000
12	-0,00185	0,00031	-0,00540	-0,00522	0,00001	0,00000	0,00002	0,03664	0,00024	-0,00294	-0,00073	0,00012	0,00000

Entry	BRNOC	BRNOL	BREC	ZLIN	HODO	JIHL	KROM	PROST	TREB	UHHRAD	VYSK	ZNOJ	ZDARNS
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	0,12869	-0,22049	0,16622	-0,10526	0,33805	-0,15112	0,23259	-0,01866	-0,00695	-0,23136	0,12583	0,79180	-0,46507
3	-0,00797	-0,04715	-0,05847	-0,10758	0,06549	-0,46230	0,21188	-0,19857	0,01411	-0,03700	-0,00865	0,46623	-0,06670
4	-0,00418	0,03151	-0,02403	0,02381	0,00565	0,14317	0,08598	0,00742	-0,00020	0,02950	-0,00417	0,24190	0,16264
5	-0,00034	-0,00243	0,00104	0,01026	-0,00128	0,20264	0,05343	0,03936	0,00020	-0,00348	-0,00031	0,11661	-0,05676
6	0,00006	-0,00248	0,00224	-0,00391	-0,00071	-0,10008	0,02599	-0,00221	0,00000	-0,00187	0,00006	0,05345	-0,01963
7	0,00002	0,00078	0,00028	-0,00081	-0,00018	-0,08318	0,01448	-0,00779	0,00000	0,00075	0,00002	0,02358	0,02519
8	0,00000	0,00007	-0,00015	0,00055	-0,00003	0,06112	0,00747	0,00058	0,00000	0,00000	0,00000	0,01008	-0,00616
9	0,00000	-0,00009	-0,00005	0,00004	0,00000	0,03112	0,00402	0,00154	0,00000	-0,00007	0,00000	0,00419	-0,00426
10	0,00000	0,00001	0,00000	-0,00007	0,00000	-0,03436	0,00211	-0,00015	0,00000	0,00002	0,00000	0,00170	0,00373
11	0,00000	0,00001	0,00000	0,00000	0,00000	-0,00990	0,00113	-0,00030	0,00000	0,00000	0,00000	0,00067	-0,00053
12	0,00000	0,00000	0,00000	0,00001	0,00000	0,01816	0,00060	0,00003	0,00000	0,00000	0,00000	0,00026	-0,00081

Entry	BRUN	FRYMY	KARV	NOJI	OLOM	OPAV	OSTRA	PRER	SUMP	VSET	Average
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	0,60469	0,35779	-0,01508	0,10100	-0,07056	-0,14188	-0,11216	-0,25401	0,85444	0,34890	0,00464
3	0,46523	-0,01778	0,13625	0,00588	-0,19229	-0,15586	-0,00062	-0,27823	0,04297	-0,28161	-0,06415
4	0,31925	-0,05853	-0,00410	0,00016	0,02749	0,04708	0,00155	0,15773	-0,55037	-0,23898	-0,01870
5	0,31718	-0,01835	0,01860	-0,00001	0,03599	0,02075	-0,00017	0,05530	-0,49978	0,03020	0,05653
6	0,22647	0,00197	-0,00084	0,00000	-0,00796	-0,01123	0,00000	-0,06811	-0,04887	0,10693	0,01666
7	0,14218	0,00338	0,00254	0,00000	-0,00654	-0,00206	0,00000	-0,00165	0,30164	0,02513	-0,00637
8	0,10999	0,00092	-0,00015	0,00000	0,00203	0,00227	0,00000	0,02376	0,29131	-0,03436	-0,00867
9	0,08198	-0,00016	0,00035	0,00000	0,00115	0,00004	0,00000	-0,00547	0,04165	-0,02212	0,00379
10	0,12147	-0,00019	-0,00003	0,00000	-0,00048	-0,00040	0,00000	-0,00676	-0,16457	0,00614	0,00719

11	0,04912	-0,00005	0,00005	0,00000	-0,00019	0,00005	0,00000	0,00359	-0,16923	0,01107	0,00095
12	0,03654	0,00001	0,00000	0,00000	0,00011	0,00006	0,00000	0,00140	-0,03153	0,00138	-0,00453

Table A2 continued

Entry	BanBy	Bard	Bratc	Bratv	Cadca	DoKu	DuStr	Galan	Humen	Komar	Kosim	Kosiv	Levice
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	-0,04825	0,42380	-0,03578	0,32384	0,12067	0,52742	-0,02006	0,21933	0,29804	-0,02066	-0,58722	-0,24737	-0,61172
3	0,14623	-0,35403	0,24426	-0,15948	-0,43353	0,03661	-0,02672	-0,29816	-0,34048	0,15544	0,25022	-0,08987	0,77117
4	-0,01400	-0,37619	-0,01743	-0,13726	-0,10639	-0,10810	0,00108	-0,14134	-0,22943	-0,00641	-0,09138	0,05960	-0,71457
5	0,02172	0,02949	0,05997	-0,00229	0,18142	-0,06586	0,00070	0,07224	0,07779	0,02423	0,02999	-0,00117	0,74325
6	-0,00306	0,21325	-0,00638	0,03554	0,06956	-0,00862	-0,00004	0,06479	0,12168	-0,00149	-0,00896	-0,00871	-0,73833
7	0,00327	0,07464	0,01480	0,01212	-0,07290	0,01136	-0,00002	-0,01080	0,00287	0,00379	0,00243	0,00233	0,74670
8	-0,00060	-0,08216	-0,00208	-0,00547	-0,03997	0,00808	0,00000	-0,02480	-0,05138	-0,00031	-0,00058	0,00074	-0,74987
9	0,00050	-0,07465	0,00367	-0,00498	0,02784	0,00151	0,00000	-0,00170	-0,01655	0,00059	0,00011	-0,00054	0,75513
10	-0,00011	0,01221	-0,00064	-0,00016	0,02127	-0,00115	0,00000	0,00822	0,01713	-0,00006	-0,00001	0,00002	-0,75960
11	0,00008	0,04501	0,00091	0,00126	-0,00991	-0,00097	0,00000	0,00239	0,01221	0,00009	0,00000	0,00008	0,76443
12	-0,00002	0,01256	-0,00019	0,00045	-0,01073	-0,00024	0,00000	-0,00232	-0,00371	-0,00001	0,00000	-0,00002	-0,76916

Entry	LipMik	Lucen	Martin	Michal	Nitra	N.Zamk	Popr	PovBy	Preso	Priev	RimSo	Rozn	Senica
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	0,51555	0,57483	-0,00806	0,41299	0,07669	0,57773	0,43604	1,15187	0,10131	0,23728	0,42738	0,49171	0,40411
3	-0,17324	0,03055	-0,19000	-0,08043	0,22787	0,05514	0,36267	0,83551	-0,30023	-0,18035	-0,30360	-0,11365	-0,01493
4	-0,31565	-0,15482	0,00306	-0,13688	0,03450	-0,12911	0,23337	0,39650	-0,06187	-0,09895	-0,33756	-0,23065	-0,07806
5	-0,08668	-0,09816	0,03609	-0,03634	0,05323	-0,08996	0,16433	0,04623	0,08695	0,01920	0,00336	-0,07302	-0,02888
6	0,09390	-0,01000	-0,00087	0,01935	0,01174	-0,01600	0,11192	-0,14154	0,02802	0,02797	0,16557	0,04607	0,00224
7	0,08646	0,02369	-0,00685	0,01711	0,01272	0,01582	0,07716	-0,18575	-0,02416	0,00209	0,06913	0,04861	0,00605
8	0,00335	0,01661	0,00022	0,00221	0,00358	0,01360	0,05295	-0,14442	-0,01115	-0,00612	-0,05097	0,00753	0,00205
9	-0,03623	0,00245	0,00130	-0,00338	0,00310	0,00345	0,03640	-0,07510	0,00637	-0,00195	-0,05540	-0,01358	-0,00025
10	-0,02015	-0,00358	-0,00005	-0,00195	0,00103	-0,00180	0,02501	-0,01555	0,00411	0,00099	0,00111	-0,00935	-0,00047
11	0,00552	-0,00279	-0,00025	0,00004	0,00077	-0,00200	0,01719	0,01898	-0,00156	0,00070	0,02741	0,00023	-0,00014
12	0,01169	-0,00053	0,00001	0,00051	0,00029	-0,00065	0,01181	0,02951	-0,00143	-0,00007	0,01118	0,00344	0,00003

Entry	SpNVes	StLub	Svid	Topol	Trebi	Trenci	Trnava	VelKrt	VnTep	Zvolen	ZiarnH	ZILINA	average
1	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000	1,00000
2	0,58571	0,60293	0,51336	0,42768	0,25783	0,36917	0,01690	-0,14923	0,29168	-0,53094	-0,40576	-0,20514	0,02631
3	0,06171	0,06813	-0,01411	0,05195	0,21525	0,00946	0,02062	0,07774	0,03339	0,67087	0,53859	0,25346	-0,00756
4	-0,12864	-0,13703	-0,14978	-0,03379	0,09386	-0,04333	0,00069	-0,01988	-0,00534	-0,56271	-0,37027	-0,09535	-0,14476
5	-0,09271	-0,10274	-0,07297	-0,02125	0,05622	-0,01720	0,00043	0,00728	-0,00328	0,55972	0,35164	0,07314	0,09011
6	-0,01811	-0,02147	0,00412	-0,00467	0,02846	-0,00085	0,00002	-0,00219	-0,00068	-0,51606	-0,28114	-0,03516	-0,02083
7	0,01548	0,01741	0,02238	0,00079	0,01570	0,00187	0,00001	0,00073	-0,00003	0,49171	0,24557	0,02267	0,06081
8	0,01416	0,01684	0,01034	0,00095	0,00828	0,00080	0,00000	-0,00023	0,00003	-0,46180	-0,20478	-0,01208	-0,07295
9	0,00394	0,00501	-0,00090	0,00030	0,00447	0,00006	0,00000	0,00007	0,00001	0,43645	0,17492	0,00727	0,05315

10	-0,00168	-0,00195	-0,00334	0,00001	0,00239	-0,00008	0,00000	-0,00002	0,00000	-0,41136	-0,14755	-0,00405	-0,05407
11	-0,00209	-0,00266	-0,00146	-0,00004	0,00128	-0,00004	0,00000	0,00001	0,00000	0,38817	0,12528	0,00237	0,06274
12	-0,00075	-0,00103	0,00018	-0,00002	0,00068	0,00000	0,00000	0,00000	0,00000	-0,36610	-0,10601	-0,00134	-0,05949

Table A3: Impulse - Response Function of a National Shock

	NAT	PRAHAC	BEN	BER	KLAD	KOL	KUT	MEL	MLA	NYM	PRAE	PRAWE	PRI	RAK
1	1,00000	1,44646	0,45547	0,58667	0,43122	0,50440	0,38801	0,57841	0,86592	0,47417	0,48457	0,18733	0,41513	0,33344
2	0,70238	-0,24333	0,34972	0,58187	0,58045	0,64192	0,79125	0,62177	0,19782	0,85004	-0,05423	0,16823	0,59910	0,67141
3	0,23127	0,28141	0,04268	0,14393	0,52104	0,14275	0,06363	0,39558	0,14415	0,29760	0,15387	0,19983	0,09287	0,46454
4	-0,09220	-0,03669	-0,12038	-0,05905	0,08445	-0,08507	-0,39700	0,05507	0,05375	-0,29177	0,04391	0,00230	-0,31500	0,21850
5	-0,17493	0,01153	-0,12349	-0,14592	-0,28149	-0,14232	-0,12232	-0,14555	-0,09413	-0,36317	-0,02353	-0,03827	-0,29360	-0,02276
6	-0,11502	-0,03600	-0,05886	-0,08891	-0,22807	-0,08805	0,05345	-0,14840	-0,09230	-0,11194	-0,03135	-0,06027	-0,10788	-0,10583
7	-0,02844	-0,01224	-0,00058	-0,02598	0,01653	-0,01850	-0,01709	-0,06036	-0,02061	0,07667	-0,01902	-0,02845	0,02778	-0,08378
8	0,02251	-0,00515	0,02372	0,01736	0,09585	0,02012	-0,00802	0,01031	0,01201	0,08903	-0,00411	-0,00604	0,06654	-0,02950
9	0,03138	0,00414	0,02096	0,02389	0,01134	0,02519	0,04546	0,03166	0,01458	0,02784	0,00445	0,00792	0,04622	0,00870
10	0,01815	0,00434	0,00855	0,01456	-0,03527	0,01373	0,01881	0,02230	0,01100	-0,00963	0,00557	0,00797	0,01316	0,01976
11	0,00293	0,00263	-0,00116	0,00242	0,00469	0,00162	-0,01730	0,00680	0,00419	-0,01176	0,00302	0,00390	-0,00745	0,01368
12	-0,00491	0,00030	-0,00454	-0,00369	0,03057	-0,00424	-0,00813	-0,00283	-0,00191	-0,00443	0,00035	-0,00024	-0,01193	0,00382

	CESBV	CESKR	JIN	PELH	PIS	PRACH	STRAK	TAB	DOM	CHEB	KARVAR	KLAT	PLZENT	PLZENS
1	0,79013	0,28309	0,43644	0,46381	0,49961	0,39385	0,62163	0,47997	0,65576	0,36834	0,80008	0,46491	0,33781	0,46797
2	0,53147	0,51846	0,31373	0,81373	0,98198	0,72365	0,67391	0,51016	0,36997	0,42082	0,40651	1,17837	0,43754	0,61039
3	0,35961	0,76211	0,01389	0,18684	0,24749	0,06606	-0,00748	0,11305	0,14780	0,30001	0,19907	0,22091	-0,08771	0,19834
4	0,05433	0,49629	-0,27615	-0,21412	-0,00384	-0,30287	-0,20243	-0,12648	-0,05527	0,12604	0,05113	-0,05250	-0,22660	-0,09265
5	-0,03812	0,03817	-0,32731	-0,22418	-0,19028	-0,29194	-0,28460	-0,16918	-0,08832	0,01415	-0,03713	-0,17933	-0,10346	-0,11681
6	-0,06585	-0,23821	-0,23764	-0,10925	-0,12629	-0,12025	-0,16302	-0,09889	-0,06125	-0,02474	-0,05674	-0,14255	-0,00746	-0,06843
7	-0,02415	-0,23903	-0,11779	-0,00621	-0,04926	0,01814	-0,06108	-0,01812	-0,01198	-0,01794	-0,03493	-0,04298	0,02519	-0,02568
8	0,00356	-0,09944	-0,03749	0,03997	0,01672	0,06546	0,00564	0,02443	0,01325	0,00004	-0,00709	0,01878	0,02815	0,01023
9	0,01807	0,02314	-0,00733	0,03771	0,03141	0,04942	0,01646	0,02863	0,01783	0,01081	0,00825	0,03422	0,01612	0,02308
10	0,01375	0,06475	-0,00746	0,01643	0,02212	0,01611	0,00603	0,01490	0,00980	0,01145	0,01013	0,02239	0,00171	0,01373
11	0,00600	0,04566	-0,01526	-0,00119	0,00569	-0,00628	-0,00742	0,00120	0,00156	0,00677	0,00546	0,00536	-0,00545	0,00181
12	-0,00055	0,01129	-0,01867	-0,00780	-0,00382	-0,01211	-0,01239	-0,00509	-0,00274	0,00194	0,00059	-0,00451	-0,00529	-0,00320

	PLZENN	ROK	SOK	TACH	CESLI	DEC	CHOM	JABL	LIBER	LITO	LOUN	MOST	TEPL	USTNL
1	0,26912	0,37041	0,56762	0,26998	0,50875	0,46738	0,36499	0,42487	0,62108	0,28343	0,25340	0,08445	0,39519	0,41359
2	0,65167	0,63107	0,54772	0,73590	0,64498	0,76461	1,22739	0,34177	0,47663	0,77380	1,44063	0,22350	0,89239	0,53665
3	0,24770	0,09828	0,19149	0,36438	0,62461	0,42894	0,71682	0,32466	0,21226	0,17127	0,28228	0,39380	0,63707	0,25654
4	-0,08216	-0,37605	0,03234	-0,24846	0,18730	-0,09275	0,04091	0,12546	-0,00870	0,06690	-0,19417	0,20516	0,07139	-0,03231
5	-0,16381	-0,32670	-0,08702	-0,48681	-0,13946	-0,18507	-0,22313	-0,02155	-0,08799	-0,16436	-0,36366	-0,00409	-0,14359	-0,11082
6	-0,10207	-0,06789	-0,06919	-0,34241	-0,19424	-0,10536	-0,20185	-0,07139	-0,07118	-0,07999	-0,22775	-0,08743	-0,18097	-0,09844
7	-0,02192	0,07865	-0,03327	-0,08477	-0,10286	-0,04163	-0,09194	-0,05343	-0,02458	-0,05997	-0,05522	-0,07201	-0,08805	-0,03168
8	0,02202	0,08058	0,00359	0,07976	-0,00908	0,00995	0,00212	-0,01731	0,00846	0,01536	0,04601	-0,02668	-0,00697	0,00780
9	0,02812	0,03336	0,01498	0,10960	0,03293	0,03218	0,04102	0,00688	0,01784	0,01624	0,06249	0,00608	0,03204	0,02278
10	0,01558	-0,00079	0,01247	0,06328	0,03210	0,02120	0,03492	0,01314	0,01227	0,02113	0,03566	0,01624	0,03010	0,01501
11	0,00207	-0,01242	0,00434	0,00931	0,01467	0,00437	0,01341	0,00865	0,00345	0,00348	0,00539	0,01171	0,01342	0,00470
12	-0,00462	-0,01093	-0,00117	-0,01854	-0,00029	-0,00383	-0,00263	0,00214	-0,00199	-0,00060	-0,00998	0,00355	-0,00080	-0,00263

Table A3 continued

	HAVBR	HRADKR	CHRU	JICI	NACH	PARD	RYCHN	SEM	SVIT	TRUT	USTNO	BLANS	BRNOC	BRNOL
1	0,47791	0,47181	0,51648	0,62118	0,57152	0,90252	0,68048	0,48005	0,33826	0,78615	0,39559	0,33853	0,28448	0,46328
2	0,69434	0,57531	0,82410	0,67143	0,76993	0,31475	0,39984	0,23632	0,41388	0,68435	0,68279	0,62413	0,76371	0,40338
3	0,16903	-0,08433	0,53870	0,35587	0,44544	0,18140	-0,04470	0,08095	0,17640	0,26516	0,22293	0,04151	0,21977	0,22986
4	-0,20675	-0,15065	-0,01761	-0,00900	-0,05083	-0,01017	-0,36751	-0,03603	-0,17450	-0,06407	-0,34216	-0,18573	-0,17740	-0,02050
5	-0,18306	-0,23397	-0,27237	-0,14759	-0,23666	-0,10863	-0,39451	-0,05589	-0,30332	-0,16039	-0,43473	-0,19030	-0,24450	-0,10001
6	-0,05988	-0,06522	-0,17976	-0,13000	-0,18009	-0,08284	-0,27439	-0,03393	-0,19641	-0,10959	-0,20716	-0,08803	-0,13910	-0,07760
7	0,00482	-0,01458	-0,02278	-0,05250	-0,05743	-0,02465	-0,13558	-0,00517	-0,02228	-0,03097	0,02058	0,00103	-0,02069	-0,02792
8	0,02573	0,04762	0,03824	0,00723	0,02391	0,01083	-0,05086	0,00969	0,07917	0,01669	0,10587	0,03723	0,03919	0,00769
9	0,02542	0,02546	0,03164	0,02792	0,04433	0,01943	-0,02289	0,01088	0,08237	0,02768	0,08045	0,03209	0,04275	0,01832
10	0,01223	0,01680	0,01612	0,02137	0,02884	0,01281	-0,02525	0,00560	0,03617	0,01777	0,02470	0,01271	0,02122	0,01280
11	-0,00110	-0,00503	0,00605	0,00717	0,00696	0,00318	-0,03255	0,00047	-0,00585	0,00403	-0,01163	-0,00211	0,00093	0,00364
12	-0,00610	-0,00537	-0,00213	-0,00254	-0,00579	-0,00254	-0,03322	-0,00187	-0,02136	-0,00394	-0,01995	-0,00708	-0,00792	-0,00209

	BREC	ZLIN	HODO	JIHL	KROM	PROST	TREB	UHHRAD	VYSK	ZNOJ	ZDARNS	BRUN	FRYMY	KARV
1	0,18791	0,07183	0,19552	0,25936	0,43187	0,24226	0,02604	0,09878	0,07968	0,18150	0,37382	0,22951	0,38991	0,35918
2	0,98334	1,07440	0,29913	1,27398	0,87015	1,34844	0,41516	1,21471	0,83860	0,64564	2,02313	-0,23333	0,62414	1,09253
3	0,60991	0,29142	-0,36233	0,48127	-0,00793	0,39331	0,06241	0,39824	0,39769	0,28153	0,09059	-0,37233	0,34906	0,53263
4	0,02355	-0,19297	-0,50659	-0,54033	-0,35885	-0,40522	-0,14681	-0,13969	-0,11682	-0,02033	-0,29409	-0,55033	-0,06019	0,06021
5	-0,23223	-0,22331	-0,31060	-0,34837	-0,41324	-0,37950	-0,15134	-0,22759	-0,26276	-0,14218	-0,11677	-0,47681	-0,22056	-0,19348
6	-0,20404	-0,12045	-0,06171	0,08088	-0,23429	-0,12818	-0,07333	-0,15685	-0,18000	-0,11539	-0,18681	-0,34341	-0,16242	-0,18928
7	-0,08106	-0,02078	0,07456	0,03339	-0,05601	0,01635	-0,00152	-0,04488	-0,04865	-0,04175	-0,07078	-0,23803	-0,04531	-0,08908
8	0,01272	0,03285	0,09081	-0,05578	0,03930	0,06033	0,02882	0,02711	0,03158	0,01158	0,05292	-0,09944	0,02851	0,00072
9	0,04428	0,03799	0,04868	0,03299	0,05208	0,05166	0,02581	0,04191	0,04762	0,02762	0,04520	-0,02289	0,04317	0,03686
10	0,03345	0,01942	0,00514	0,06243	0,02679	0,02153	0,01068	0,02536	0,02860	0,01953	0,02104	-0,03427	0,02566	0,03199
11	0,01102	0,00127	-0,01555	-0,00697	0,00053	-0,00362	-0,00129	0,00494	0,00538	0,00577	0,00676	-0,03265	0,00458	0,01271
12	-0,00415	-0,00686	-0,01571	-0,02971	-0,01130	-0,01225	-0,00553	-0,00613	-0,00708	-0,00296	-0,00695	-0,03312	-0,00653	-0,00205

	NOJI	OLOM	OPAV	OSTRA	PRER	SUMP	VSET	Average
1	0,23432	0,42723	0,23183	0,23957	0,22878	0,28801	0,29823	0,41990
2	1,28204	0,88461	1,96902	0,59952	1,54381	0,77442	0,90860	0,69244
3	0,26673	0,45326	0,63302	0,34302	0,88102	0,97029	0,47442	0,27078
4	-0,20841	-0,14721	-0,27337	0,03391	-0,50281	0,53575	-0,30934	-0,10408
5	-0,30865	-0,25917	-0,34921	-0,10448	-0,46582	-0,21121	-0,50496	-0,20078
6	-0,18099	-0,13707	-0,20659	-0,10648	-0,07505	-0,64851	-0,18706	-0,13113
7	-0,03153	-0,02569	-0,06194	-0,04985	-0,01938	-0,49543	0,10468	-0,03993
8	0,04707	0,02914	0,03714	0,00027	0,00792	-0,01209	0,13835	0,01958
9	0,05409	0,03889	0,06150	0,02077	0,06639	0,33565	0,04298	0,03442
10	0,02788	0,02274	0,03685	0,01803	0,04374	0,31411	-0,01939	0,02090
11	0,00209	0,00323	0,00648	0,00720	-0,00398	0,05209	-0,02061	0,00196
12	-0,00966	-0,00664	-0,00918	-0,00113	-0,01394	-0,16664	-0,00513	-0,00798

TableA3 continued

Period	SR	BanBy	Bard	Bratc	Bratv	Cadca	DoKu	DuStr	Galan	Humen	Komar	Kosim	Kosiv	Levice
1	1,00000	0,44519	0,20484	0,37674	0,22901	0,14368	0,36241	0,07472	0,30397	0,40032	0,29749	0,06059	-0,00261	0,40039
2	0,20376	0,18014	-0,10801	0,24380	0,22209	0,54522	-0,47442	0,38797	0,10248	-0,13377	0,21415	1,09610	0,35369	1,03925
3	0,13569	0,06353	0,83283	0,21528	0,30805	0,74435	-0,01255	0,43355	0,50602	0,00589	0,18566	-0,50207	0,17788	-0,68633
4	0,01530	-0,07632	0,51568	0,13455	0,09348	-0,00699	0,04562	0,11913	0,11666	0,04031	0,10672	0,27735	0,01919	0,87242
5	0,00947	-0,01297	-0,10529	0,06877	-0,01721	-0,25101	0,06600	0,04351	-0,08692	0,03412	0,04895	-0,11961	0,00596	-0,85821
6	-0,00091	-0,02521	-0,31650	0,03821	-0,02778	-0,01971	0,01559	0,00669	-0,06138	-0,01076	0,02284	0,04661	0,00591	0,87108
7	0,00022	-0,00298	-0,06923	0,01635	-0,00240	0,11481	-0,00376	0,00195	0,02085	-0,01568	0,00827	-0,01864	-0,00041	-0,87976
8	-0,00034	-0,00454	0,13784	0,00898	0,00615	0,02172	-0,00694	-0,00036	0,02453	-0,00073	0,00359	0,00639	-0,00061	0,88431
9	-0,00002	-0,00018	0,09573	0,00355	0,00266	-0,04881	-0,00236	-0,00011	-0,00165	0,00670	0,00113	-0,00234	0,00011	-0,89069
10	-0,00004	-0,00066	-0,03335	0,00203	-0,00086	-0,01586	0,00027	-0,00012	-0,00907	0,00221	0,00050	0,00077	0,00000	0,89603
11	0,00000	0,00004	-0,06520	0,00077	-0,00099	0,01994	0,00076	-0,00002	-0,00140	-0,00220	0,00014	-0,00026	-0,00005	-0,90173
12	0,00000	-0,00009	-0,00988	0,00046	-0,00010	0,00949	0,00031	-0,00001	0,00281	-0,00162	0,00007	0,00008	0,00000	0,90733

Period	LipMik	Lucen	Martin	Michal	Nitra	N.Zamk	Popr	PovBy	Preso	Priev	RimSo	Rozn	Senica	SpNVes
1	0,52605	0,29857	0,50679	0,44916	0,38439	0,51275	0,50349	0,63171	0,38859	0,61455	0,40599	0,29541	0,54325	0,24438
2	0,21563	-0,05846	0,14662	0,06681	0,28633	-0,19055	0,23790	-0,31204	0,45817	0,24744	-0,04672	-0,13212	0,11009	-0,39047
3	0,20813	0,15673	0,08605	-0,08870	0,35986	0,17786	0,22060	-0,25539	0,29251	0,24291	0,79028	0,05478	-0,09057	0,25678
4	0,02602	0,10142	0,02755	-0,08280	0,12632	0,14736	0,10922	-0,17753	-0,00389	0,04368	0,54719	0,05134	-0,09597	0,25004
5	-0,04260	0,04365	0,00739	-0,01452	0,11242	0,08977	0,08222	-0,01467	-0,04773	-0,01020	-0,01053	0,03109	-0,03088	0,14115
6	-0,03526	-0,00814	-0,00092	0,01160	0,03667	0,00746	0,05041	0,06691	0,00391	-0,01143	-0,25626	-0,00701	0,00041	0,00753
7	0,00305	-0,01510	-0,00002	0,00847	0,02881	-0,01601	0,03585	0,09080	0,01742	0,00204	-0,09420	-0,01223	0,00529	-0,02966
8	0,01628	-0,00698	0,00011	0,00038	0,00984	-0,01240	0,02397	0,07070	0,00034	0,00263	0,08336	-0,00424	0,00185	-0,02090
9	0,00719	0,00070	-0,00002	-0,00191	0,00715	-0,00237	0,01667	0,03734	-0,00545	0,00020	0,08174	0,00246	-0,00014	-0,00350
10	-0,00356	0,00238	-0,00007	-0,00089	0,00265	0,00190	0,01139	0,00808	-0,00076	-0,00069	-0,00595	0,00262	-0,00038	0,00360
11	-0,00498	0,00118	-0,00001	0,00012	0,00179	0,00179	0,00785	-0,00900	0,00159	-0,00021	-0,04230	0,00043	-0,00012	0,00313
12	-0,00102	-0,00005	0,00001	0,00027	0,00072	0,00048	0,00539	-0,01436	0,00039	0,00010	-0,01523	-0,00073	0,00002	0,00079

Period	StLub	Svid	Topol	Trebi	Trenci	Trnava	VelKrt	VnTep	Zvolen	ZiarnH	Zilin	Average
1	0,19935	0,35245	0,43396	0,17741	0,79792	0,66183	0,29576	0,12711	0,44554	0,51881	0,65211	0,37537
2	-0,32827	-0,87664	-0,18483	-0,03248	-0,10629	0,28264	0,38821	-0,48226	0,67877	0,48199	0,44855	0,12044
3	0,16278	0,10152	-0,05222	-0,00673	0,02154	0,04103	-0,45292	-0,20726	-0,74330	-0,38997	-0,08370	0,08091
4	0,18423	0,22438	-0,03629	-0,01072	0,02073	0,01140	0,05715	-0,21866	0,54167	0,29865	0,09463	0,11829
5	0,11443	0,16702	0,00310	-0,00448	0,03267	-0,00438	-0,09254	-0,07966	-0,68180	-0,33354	-0,07120	-0,04731
6	0,01080	0,01256	0,00225	-0,00250	0,00991	-0,00120	0,01494	-0,03270	0,55780	0,24196	0,03011	0,03304
7	-0,02288	-0,03236	0,00209	-0,00120	0,00225	-0,00105	-0,01232	-0,00638	-0,57060	-0,22894	-0,02481	-0,04480
8	-0,01806	-0,02211	0,00018	-0,00061	-0,00070	-0,00019	0,00332	-0,00148	0,51995	0,18377	0,01138	0,05054
9	-0,00382	-0,00172	-0,00002	-0,00032	-0,00036	-0,00010	-0,00145	0,00019	-0,49841	-0,16051	-0,00779	-0,03607
10	0,00286	0,00496	-0,00008	-0,00017	-0,00012	-0,00001	0,00056	0,00010	0,46709	0,13401	0,00406	0,03883
11	0,00288	0,00309	-0,00001	-0,00009	0,00001	0,00000	-0,00018	0,00008	-0,44186	-0,11441	-0,00248	-0,04058
12	0,00087	0,00017	0,00000	-0,00005	0,00001	0,00000	0,00008	0,00002	0,41632	0,09656	0,00138	0,03687

Table A4: Results of Unit Root Tests

	Critical Values			Test Statistics										
	1%	5%	10%	Natur	Prahac	BEN	BER	KLAD	Kol	Kut	MEL	MLA	NYM	PRAE
qf-tausq(z)	-35,5	-27,9	-24,1	-13,65	-19,82	-19	-13,51	-18,36	-14,81	-22,48	-14,27	-12,46	-16,64	-8,76
qf-tau(z)	-29,2	-21,7	-18,2	-12,58	-21,28	-19,35	-12,25	-14	-7,34	-18,24	-9,07	-10,3	-15,29	-8,83
qf-mu(z)	-20,6	-14,1	-11,2	-1,24	-21,09	-14,32	-11,72	-13,7	-6,51	-17,85	-8,9	-7,8	-14,34	-3,64
qf-tau(dz)	-29,2	-21,7	-18,2	-23,31	-29,53	-32,65	-25,18	-31,44	-32,08	-37,13	-23,72	-28,1	-28,4	-49,49
qf-mu(dz)	-20,6	-14,1	-11,2	-23,73	-26,1	-31,55	-24,56	-31,44	-32,09	-37,35	-24,17	-28,66	-28,55	-47,55
DF: t-tau(z)	-3,96	-3,41	-3,12	-3,19	-4,55	-3,62	-2,72	-3,15	-1,88	-3,47	-2,44	-1,83	-3,96	-2,13
DF: t-mu(z)	-3,43	-2,86	-2,57	-3,17	-4,53	-2,86	-2,59	-3,21	-2	-3,39	-2,58	-1,86	-3,64	-1,53
DF:t-tau(dz)	-3,96	-3,41	-3,12	-4,93	-4,35	-4,41	-3,8	-5,84	-4,36	-5,93	-4,23	-5,11	-5,79	-4,9
DF:t-mu(dz)	-3,43	-2,86	-2,57	-5,05	-4,53	-4,46	-3,88	-5,95	-4,35	-6	-4,23	-5,27	-5,86	-5,03
	PRAWE	PRi	RAk	CESBV	CESKR	JIN	PELH	PIS	PRACH	STRAK	TAB	DOM	CHEB	KARVAR
qf-tausq(z)	-13,87	-21,96	-14,6	-14,3	-12,75	-12,53	-13,26	-16,34	-14,09	-10,54	-17,14	-17,47	-13,87	-12,71
qf-tau(z)	-14,2	-20,62	-15,37	-14,09	-12,56	-12,46	-14,32	-17,45	-13,85	-10,54	-15,55	-15,92	-10,48	-13,16
qf-mu(z)	-6,7	-10,02	-16,39	-14,82	-12,68	-7,57	-14,94	-18,53	-14,09	-10,92	-8,92	-15,09	-3,4	-5,87
qf-tau(dz)	-19,09	-31,66	-33,16	-19,56	-20,68	-19,25	-30,85	-28,54	-27,36	-23,95	-24,79	-22,32	-19,15	-26,84
qf-mu(dz)	-16,56	-30	-29,65	-19,28	-20,88	-19,08	-29,91	-27,14	-26,91	-24,72	-24,12	-22,37	-15,11	-25,12
DF: t-tau(z)	-3,96	-4,8	-3,32	-3,36	-3,52	-3,18	-2,78	-3,63	-3,45	-2,54	-3,38	-3,38	-2,77	-3,19
DF: t-mu(z)	-2,82	-2,74	-3,48	-3,4	-3,59	-1,81	-2,8	-3,7	-3,49	-2,56	-2,32	-3,08	-0,75	-1,7
DF:t-tau(dz)	-4,62	-5,57	-3,43	-3,75	-4,48	-4,16	-5,2	-3,93	-4,43	-4,23	-4,26	-3,83	-3,61	-3,75
DF:t-mu(dz)	-5,03	-5,46	-3,36	-3,92	-4,66	-4,35	-5,29	-3,96	-4,4	-4,31	-4,28	-3,93	-3,5	-3,7
TEST	KLAT	PLZENT	PLZENS	PLZENN	ROK	SOK	TACH	CESLI	DEC	CHOM	JABL	LIBER	LITO	LOUN
qf-tausq(z)	-15,78	-24,81	-18,67	-13,49	-21,35	-9,93	-12,54	-13,02	-15,14	-14,67	-13,32	-13,78	-8,9	-14,99
qf-tau(z)	-11,27	-13,53	-14,88	-10,76	-13,58	-10,14	-7,88	-11,29	-9,43	-14,46	-14,17	-14,54	-9,73	-11,02
qf-mu(z)	-8,67	-12,73	-9,63	-6,8	-9,87	-2,42	-6,93	-10,64	-2,5	-4,92	-12,99	-11,83	-4,88	-8,87
qf-tau(dz)	-30,62	-38,96	-35,32	-32,32	-30,41	-32,82	-22,8	-23,55	-30,26	-27,76	-25	-23,1	-32,07	-26,23
qf-mu(dz)	-30,49	-38,97	-35,17	-32,29	-30,93	-31,23	-23,61	-23,4	-30,51	-27,36	-20,52	-21,08	-28,45	-26,33
DF: t-tau(z)	-2,56	-2,73	-3,07	-2,67	-3,29	-2,6	-2,67	-2,96	-2,08	-3,53	-4,47	-3,62	-2,41	-2,82
DF: t-mu(z)	-2,13	-2,97	-2,28	-1,87	-2,25	-0,93	-2,34	-2,9	-1,21	-1,58	-4,29	-2,64	-1,31	-2,48
DF:t-tau(dz)	-3,87	-5,74	-4,86	-4,41	-6,31	-3,5	-5,4	-3,97	-4,52	-3,93	-4,28	-3,83	-3,63	-3,89
DF:t-mu(dz)	-3,93	-5,66	-4,93	-4,44	-6,32	-3,49	-5,37	-4,06	-4,59	-3,96	-4,21	-3,85	-3,63	-3,93

Table A4: cont.

TEST	MOST	TEPL	USTNL	HAVBR	HRADKR	CHRU	JICI	NACH	PARD	RYCHN	SEM	SVIT	TRUT	USTNO
qf-tausq(z)	-19,76	-12,9	-12,49	-18,42	-17,19	-14,37	-11,02	-12,33	-15,5	-14,64	-9,96	-11,72	-16,19	-13,31
qf-tau(z)	-7,54	-15,17	-13,23	-15,07	-16,77	-9,17	-13,19	-11,97	-15,81	-15,8	-10,94	-11,71	-15,44	-13,81
qf-mu(z)	1,36	-1,25	-2,61	-13,72	-16,76	-8,84	-15,62	-12,59	-15,76	-17,68	-6,03	-10,9	-15,65	-11,65
qf-tau(dz)	-38,79	-26,95	-33,98	-32,05	-37,91	-25,52	-22,71	-22,63	-26,8	-23,42	-31,35	-25,49	-25,38	-28,49
qf-mu(dz)	-32,09	-25,27	-31,93	-32,24	-36,85	-25,75	-21,62	-22,83	-26,28	-23,03	-26,03	-24,68	-25,33	-27,31
DF: t-tau(z)	-2,27	-3,22	-2,64	-3,16	-2,99	-2,39	-3,22	-2,36	-2,9	-3,72	-3,05	-3,03	-3,81	-3,11
DF: t-mu(z)	1,33	-0,79	-1,03	-2,88	-2,87	-2,39	-3,27	-2,35	-2,8	-3,72	-1,45	-2,69	-3,83	-2,66
DF:t-tau(dz)	-5,19	-4,06	-4,71	-5,05	-4,7	-4,43	-4,78	-5,49	-4,82	-5,19	-4,05	-5,09	-4,56	-6,75
DF:t-mu(dz)	-4,36	-4,34	-4,95	-5,12	-4,85	-4,49	-4,98	-5,77	-5	-5,36	-3,98	-5,01	-4,66	-6,72

TEST	BLANS	BRNOL	BRNOC	BREC	ZLIN	HODO	JIHL	KROM	PROST	TREB	UHHRAD	VYSK	ZNOJ	ZDARNS
qf-tausq(z)	-15,53	-15,49	-21,83	-14	-18	-12,12	-18,68	-15,59	-17,29	-11,93	-18,86	-12,06	-10,77	-17,49
qf-tau(z)	-12,05	-15,18	-21,76	-13,12	-15,23	-11,74	-19,46	-16,45	-18,3	-5,83	-14,25	-9,01	-10,28	-14,35
qf-mu(z)	-2,09	-4,43	-13,37	-13,66	-4,33	-10,6	-9,29	-17,81	-10,47	-1,65	-4,51	-2,79	-10,29	-13,36
qf-tau(dz)	-37,69	-28,91	-39,8	-28,18	-43,17	-30,36	-35,12	-24,22	-31,66	-41,99	-45,33	-32,91	-18,97	-34,42
qf-mu(dz)	-37,86	-28,32	-37,73	-27,57	-42,88	-30,36	-34,95	-24,3	-31,11	-41,94	-42,67	-32,76	-18,81	-34,24
DF: t-tau(z)	-2,92	-3,32	-5,03	-2,98	-2,96	-2,88	-3,96	-3,98	-3,94	-1,59	-3,08	-2,16	-4,5	-3,33
DF: t-mu(z)	-0,81	-1,48	-2,64	-3,01	-1,37	-2,71	-2,19	-4,02	-2,39	-0,69	-1,15	-1,05	-4,57	-3,21
DF:t-tau(dz)	-5,05	-4,32	-4,86	-3,99	-5,15	-4,28	-5,49	-4,62	-4,96	-4,45	-5,08	-4,1	-3,27	-4,96
DF:t-mu(dz)	-5,05	-4,41	-4,85	-4,05	-5,21	-4,33	-5,57	-4,7	-5,02	-4,49	-4,99	-4,18	-3,31	-4,98

TEST	BRUN	FRYMY	KARV	NOJI	OLOM	OPAV	OSTRA	PRER	SUMP	VSET
qf-tausq(z)	-11,41	-12,69	-11,35	-14,21	-11,06	-15,14	-10,2	-12,71	-12,53	-15,19
qf-tau(z)	-7,4	-7,34	-8,01	-4,65	-10,92	-12,02	-3,23	-12,57	-12,56	-9,23
qf-mu(z)	-7,26	-6,52	-4,7	-4,59	-4,83	-10,62	-2,19	-12,29	-11,06	-3,95
qf-tau(dz)	-20,42	-24,13	-22,52	-29,59	-30,63	-29,9	-34,94	-40,71	-21,81	-28,28
qf-mu(dz)	-20,68	-24,58	-22,52	-29,1	-30,35	-29,49	-35,02	-40,41	-21,83	-28,66
DF: t-tau(z)	-2,36	-1,84	-1,94	-1,28	-2,41	-2,69	-0,77	-2,46	-4,31	-2,48
DF: t-mu(z)	-2,32	-2	-1,75	-1,74	-1,61	-2,46	-1,21	-2,39	-3,21	-1,2
DF:t-tau(dz)	-4,47	-4,54	-3,83	-4,32	-5,34	-3,96	-4,43	-6,54	-5,32	-5,8
DF:t-mu(dz)	-4,53	-4,57	-3,98	-4,15	-5,49	-4,01	-4,41	-6,75	-5,24	-5,84

Table A4 continued

TEST	SR	BanBy	Bard	Bratc	Bratv	Cadca	DoKu	DuStr	Galan	Humen	Komar	Kosim	Kosiv
qf-tausq(z)	-10,07	-13,54	-14,01	-12,44	-13,72	-10,55	-15,75	-7,58	-11,23	-20,43	-8,73	-31,53	-13,72
qf-tau(z)	-3,79	-12,51	-8,96	-12,11	-7,12	-4,23	-6,84	-3,08	-3,16	-3,45	-1,08	-31,42	-6,03
qf-mu(z)	-2,9	-7,8	-8,47	-13,88	-4,67	-3,28	-6,74	-3,2	-3,69	-4,29	-3,12	-6,05	-6,15
qf-tau(dz)	-32,05	-37,11	-33,75	-41,53	-32,06	-37,59	-33,58	-40	-37,01	-42,07	-47,5	-59,56	-52,93
qf-mu(dz)	-31,97	-36,04	-33,67	-37,52	-32,06	-37,19	-33,66	-39,48	-36,13	-39,44	-40,74	-59,56	-52,66
DF: t-tau(z)	-1,11	-2,43	-2,22	-4,69	-1,99	-1,29	-1,85	-0,94	-0,99	-0,82	-0,4	-3,49	-1,52
DF: t-mu(z)	-1,32	-1,88	-2,14	-4,74	-1,57	-1,09	-1,88	-1,1	-1,42	-2,1	-2,36	-1,69	-1,62
DF:t-tau(dz)	-3,84	-4,35	-4,9	-3,68	-4,4	-5,38	-4,33	-4,07	-5,41	-7,23	-4,85	-6,39	-5,66
DF:t-mu(dz)	-3,8	-4,46	-4,96	-3,32	-4,45	-5,28	-4,37	-4	-5,09	-6,09	-3,63	-6,47	-5,63

TEST	Levice	LipMik	Lucen	Martin	Michal	Nitra	N.Zamk	Popr	PovBy	Preso	Priev	RimSo	Rozn
qf-tausq(z)	-9,88	-10,86	-12,22	-11,06	-14,23	-9,65	-9,8	-9,33	-13,04	-10,74	-9,02	-11,63	-13,09
qf-tau(z)	-10,35	-4,36	-6,01	-2,71	-3,61	-9,82	-4,1	-8,43	-3,64	-5,2	-3,83	-4,02	-4,16
qf-mu(z)	-1,25	-3,98	-4,29	-3,24	-4,32	-6,74	-2,92	-2,74	-3,68	-2,69	-3,71	-1,65	-3,42
qf-tau(dz)	-49,9	-29,74	-29,63	-41,97	-37,3	-30,79	-32,02	-17,03	-31,72	-33,46	-32	-32,42	-36,35
qf-mu(dz)	-48,39	-29,65	-29,29	-40,9	-33,41	-28,1	-31,5	-17,33	-31,12	-33,34	-31,65	-31,78	-34,01
DF: t-tau(z)	-2,69	-1,39	-1,79	-0,67	-1,5	-2,52	-1,32	-1,75	-1,22	-1,49	-1,13	-1,32	-1,15
DF: t-mu(z)	-0,64	-1,66	-1,74	-1,28	-2,57	-1,78	-1,33	-1,36	-1,36	-1,28	-1,35	-0,97	-1,93
DF:t-tau(dz)	-4,05	-4,91	-4,4	-4,89	-6,14	-3,17	-3,88	-2,31	-4,54	-4,39	-4,09	-4,33	-5,86
DF:t-mu(dz)	-4,08	-4,85	-4,34	-4,7	-4,95	-3,27	-3,87	-2,44	-4,38	-4,39	-4,05	-4,36	-5,2

TEST	Senica	SpNVes	StLub	Svid	Topol	Trebi	Trenci	Trnava	VelKrt	VnTep	Zvolen	ZiarnH	Zilin
qf-tausq(z)	-12,28	-12,32	-14,08	-13,64	-15,66	-4,62	-13,93	-11,22	-14,84	-12,6	-16,79	-8,37	-10,61
qf-tau(z)	-4,2	-2,63	-11,01	-4,98	-3,03	-3,89	-12,87	-6,14	-5,32	-4,61	-4,98	-7,07	-4,53
qf-mu(z)	-4,4	-3,6	-9,03	-3,97	-3,87	-4,06	-4,15	-6,11	-3,99	-4,78	-4,12	-2,08	-4,19
qf-tau(dz)	-33,49	-32,3	-29,45	-38,83	-35,97	-31,45	-43,86	-34,83	-46,16	-36,16	-48,59	-46,56	-35,94
qf-mu(dz)	-33,17	-29,96	-29,22	-38,04	-34,11	-29,42	-42,03	-34,77	-45,14	-35,47	-48,51	-46,46	-35,83
DF: t-tau(z)	-1,27	-0,87	-2,81	-1,39	-1,04	-1,09	-2,47	-1,67	-1,59	-1,39	-1,42	-1,73	-1,18
DF: t-mu(z)	-1,48	-1,85	-2,32	-1,77	-1,61	-1,49	-2,05	-1,76	-1,78	-1,86	-1,79	-1,02	-1,42
DF:t-tau(dz)	-5,05	-4,79	-4,13	-4,4	-5,16	-3,35	-4,25	-4,07	-4,98	-4,96	-4,97	-4,08	-4,15
DF:t-mu(dz)	-4,95	-4,26	-4,16	-4,25	-4,61	-3,26	-4,1	-4,08	-4,89	-4,71	-4,87	-4,13	-4,12

Table A5: Log Determinant Values for different Models by Regions in the Czech and Slovak Republics

D(L)	E(L)	F(L)	Prahac	BEN	BER	KLAD	Kol	Kut	MEL	MLA	NYM	PRAE	PRAWE	PRi	RAk	CESBV
2	3	3	-10.631	-8.174	-8.676	-8.216	-8.333	-8.233	-8.693	-9.568	-8.217	-10.162	-8.602	-7.995	-7.825	-9.480
3	1	1	-10.724	-8.352	-8.821	-8.155	-8.524	-7.916	-8.812	-9.456	-7.928	-9.984	-8.344	-7.757	-7.912	-9.400
3	1	2	-10.723	-8.406	-8.869	-8.453	-8.622	-8.147	-8.919	-9.491	-8.510	-9.990	-8.356	-7.813	-7.913	-9.395
3	1	3	-10.793	-8.456	-8.998	-8.496	-8.671	-8.317	-8.937	-9.745	-8.513	-10.188	-8.614	-8.222	-7.972	-9.672
3	2	1	-10.766	-8.399	-8.926	-8.299	-8.621	-8.143	-8.875	-9.466	-8.532	-10.052	-8.344	-7.948	-7.917	-9.422
3	2	2	-10.737	-8.401	-8.862	-8.424	-8.628	-8.221	-8.917	-9.494	-8.597	-10.052	-8.358	-7.924	-7.943	-9.416
3	2	3	-10.839	-8.450	-8.972	-8.444	-8.676	-8.362	-8.935	-9.797	-8.602	-10.302	-8.613	-8.344	-7.983	-9.702
3	3	1	-10.877	-8.470	-9.039	-8.473	-8.676	-8.316	-8.893	-9.707	-8.542	-10.299	-8.603	-8.376	-8.011	-9.634
3	3	2	-10.860	-8.463	-8.968	-8.426	-8.680	-8.407	-8.942	-9.811	-8.603	-10.315	-8.701	-8.332	-8.013	-9.646
3	3	3	-10.841	-8.463	-8.958	-8.431	-8.619	-8.428	-8.949	-9.783	-8.538	-10.315	-8.751	-8.343	-8.030	-9.710

D(L)	E(L)	F(L)	CESKR	JIN	PELH	PIS	PRACH	STRAK	TAB	DOM	CHEB	KARVAR	KLAT	PLZENT	PLZENS	PLZENN
2	3	3	-7.447	-8.090	-8.299	-8.453	-8.015	-8.842	-8.333	-9.068	-9.136	-9.495	-8.183	-8.304	-8.725	-7.375
3	1	1	-7.326	-7.970	-8.015	-8.465	-7.911	-8.525	-8.359	-9.154	-9.193	-9.665	-8.459	-8.243	-8.642	-7.460
3	1	2	-7.499	-8.012	-8.226	-8.481	-7.998	-8.548	-8.366	-9.148	-9.200	-9.691	-8.549	-8.329	-8.849	-7.559
3	1	3	-7.564	-8.403	-8.395	-8.655	-7.999	-8.711	-8.462	-9.264	-9.267	-9.690	-8.557	-8.365	-8.861	-7.563
3	2	1	-7.332	-7.988	-8.191	-8.532	-8.257	-8.892	-8.456	-9.216	-9.204	-9.668	-8.599	-8.424	-8.724	-7.527
3	2	2	-7.544	-7.996	-8.243	-8.551	-8.236	-9.065	-8.494	-9.186	-9.227	-9.692	-8.589	-8.441	-8.850	-7.568
3	2	3	-7.603	-8.378	-8.422	-8.677	-8.239	-9.072	-8.541	-9.288	-9.285	-9.689	-8.594	-8.465	-8.861	-7.571
3	3	1	-7.512	-8.405	-8.482	-8.642	-8.258	-9.006	-8.557	-9.315	-9.261	-9.698	-8.603	-8.450	-8.727	-7.529
3	3	2	-7.636	-8.385	-8.498	-8.644	-8.238	-9.085	-8.564	-9.282	-9.294	-9.710	-8.593	-8.474	-8.850	-7.568
3	3	3	-7.645	-8.317	-8.576	-8.716	-8.239	-9.082	-8.596	-9.281	-9.294	-9.704	-8.515	-8.474	-8.914	-7.582

D(L)	E(L)	F(L)	ROK	SOK	TACH	CESLI	DEC	CHOM	JABL	LIBER	LITO	LOUN	MOST	TEPL	USTNL	HAVBR
2	3	3	-8.048	-8.637	-7.581	-8.389	-8.253	-7.726	-9.160	-8.820	-7.886	-6.938	-8.040	-8.055	-8.551	-8.276
3	1	1	-7.669	-8.853	-7.293	-8.446	-8.276	-8.026	-9.023	-9.076	-7.945	-7.074	-8.145	-7.880	-8.462	-8.207
3	1	2	-7.868	-8.855	-7.404	-8.481	-8.406	-8.043	-9.023	-9.108	-7.943	-7.166	-8.146	-7.888	-8.462	-8.436
3	1	3	-8.130	-8.865	-7.645	-8.643	-8.504	-8.040	-9.105	-9.232	-7.997	-7.179	-8.150	-8.173	-8.735	-8.546
3	2	1	-7.902	-8.882	-7.553	-8.446	-8.310	-8.064	-9.024	-9.117	-7.961	-7.253	-8.162	-7.888	-8.468	-8.407
3	2	2	-7.937	-8.890	-7.539	-8.524	-8.415	-8.039	-9.025	-9.108	-7.995	-7.252	-8.167	-7.939	-8.460	-8.466
3	2	3	-8.240	-8.906	-7.734	-8.671	-8.540	-8.035	-9.113	-9.234	-8.053	-7.267	-8.175	-8.201	-8.731	-8.561
3	3	1	-8.280	-8.892	-7.769	-8.648	-8.369	-8.063	-9.169	-9.246	-8.013	-7.287	-8.172	-8.263	-8.727	-8.472
3	3	2	-8.252	-8.900	-7.759	-8.698	-8.516	-8.034	-9.171	-9.235	-8.060	-7.287	-8.181	-8.260	-8.716	-8.557
3	3	3	-8.244	-8.913	-7.767	-8.696	-8.552	-8.035	-9.320	-9.226	-8.059	-7.182	-8.187	-8.275	-8.731	-8.552

Table A5: cont.

D(L)	E(L)	F(L)	HRADKR	CHRU	JICI	NACH	PARD	RYCHN	SEM	SVIT	TRUT	USTNO	BLANS	BRNOL	BRNOC	BREC
2	3	3	-8.342	-8.416	-8.756	-8.735	-9.544	-8.983	-8.872	-7.815	-9.211	-8.025	-8.117	-7.629	-8.531	-6.590
3	1	1	-8.128	-8.492	-8.567	-8.157	-9.441	-8.349	-9.019	-7.646	-9.214	-7.432	-7.881	-7.604	-8.602	-6.723
3	1	2	-8.124	-8.736	-8.596	-8.317	-9.513	-8.406	-9.009	-7.812	-9.514	-7.693	-7.910	-7.666	-8.605	-6.783
3	1	3	-8.391	-8.752	-9.015	-8.846	-9.876	-9.200	-9.025	-7.971	-9.577	-8.130	-8.085	-7.769	-8.698	-6.802
3	2	1	-8.247	-8.665	-8.623	-8.235	-9.472	-8.469	-9.042	-7.841	-9.403	-7.695	-7.996	-7.719	-8.619	-6.753
3	2	2	-8.302	-8.726	-8.624	-8.314	-9.514	-8.480	-9.033	-7.838	-9.512	-7.722	-7.998	-7.723	-8.621	-6.783
3	2	3	-8.559	-8.743	-9.046	-8.839	-9.891	-9.331	-9.045	-8.008	-9.575	-8.238	-8.139	-7.819	-8.699	-6.802
3	3	1	-8.478	-8.691	-9.069	-8.930	-9.840	-9.280	-9.060	-8.039	-9.512	-8.296	-8.208	-7.817	-8.718	-6.778
3	3	2	-8.575	-8.743	-9.080	-8.939	-9.899	-9.329	-9.052	-8.019	-9.581	-8.249	-8.205	-7.818	-8.724	-6.798
3	3	3	-8.571	-8.739	-8.985	-8.960	-9.900	-9.336	-9.044	-8.019	-9.504	-8.248	-8.308	-7.819	-8.725	-6.799

D(L)	E(L)	F(L)	ZLIN	HODO	JIHL	KROM	PROST	TREB	UHHRAD	VYSK	ZNOJ	ZDARNS	BRUN	FRYMY	KARV	NOJI
2	3	3	-5.574	-6.875	-7.400	-8.055	-7.107	-5.254	-5.972	-6.082	-6.392	-7.745	-6.925	-7.877	-7.703	-6.980
3	1	1	-5.699	-6.868	-7.254	-7.771	-7.013	-5.385	-6.102	-6.161	-6.533	-7.686	-6.265	-7.878	-7.754	-7.013
3	1	2	-5.714	-6.856	-7.501	-7.908	-7.079	-5.385	-6.107	-6.178	-6.597	-8.119	-6.276	-8.016	-7.763	-7.072
3	1	3	-5.730	-6.868	-7.573	-8.214	-7.225	-5.400	-6.133	-6.233	-6.614	-8.151	-6.982	-8.181	-8.001	-7.073
3	2	1	-5.724	-6.975	-7.434	-8.098	-7.247	-5.390	-6.119	-6.181	-6.612	-8.094	-6.295	-8.031	-7.762	-7.185
3	2	2	-5.726	-6.962	-7.524	-8.131	-7.205	-5.390	-6.117	-6.188	-6.620	-8.164	-6.289	-8.032	-7.747	-7.185
3	2	3	-5.736	-6.966	-7.588	-8.378	-7.305	-5.403	-6.136	-6.242	-6.630	-8.218	-7.067	-8.202	-7.978	-7.188
3	3	1	-5.726	-6.976	-7.488	-8.373	-7.324	-5.400	-6.142	-6.232	-6.612	-8.145	-7.011	-8.236	-8.044	-7.185
3	3	2	-5.729	-6.963	-7.576	-8.389	-7.277	-5.400	-6.139	-6.233	-6.643	-8.213	-7.150	-8.227	-8.010	-7.185
3	3	3	-5.736	-7.060	-7.589	-8.380	-7.329	-5.403	-6.140	-6.240	-6.618	-8.089	-7.151	-8.242	-8.012	-7.211

D(L)	E(L)	F(L)	OLOM	OPAV	OSTRA	PRER	SUMP	VSET
2	3	3	-8.068	-6.833	-7.346	-7.094	-7.478	-7.561
3	1	1	-7.925	-6.900	-7.493	-6.594	-7.272	-7.274
3	1	2	-8.005	-7.087	-7.496	-6.938	-7.711	-7.537
3	1	3	-8.323	-7.087	-7.508	-7.237	-7.706	-7.677
3	2	1	-8.050	-7.054	-7.496	-6.676	-7.623	-7.606
3	2	2	-8.040	-7.109	-7.496	-6.942	-7.691	-7.606
3	2	3	-8.331	-7.109	-7.507	-7.236	-7.687	-7.752
3	3	1	-8.359	-7.055	-7.517	-7.220	-7.622	-7.747
3	3	2	-8.352	-7.110	-7.518	-7.298	-7.686	-7.728
3	3	3	-8.292	-7.094	-7.530	-7.286	-7.685	-7.769

Table A5 Continued

D(L)	E(L)	F(L)	BanBy	Bard	Bratc	Bratv	Cadca	DoKu	DuStr	Galan	Humen	Komar	Kosim	Kosiv	Levice
2	3	3	-3.730	-2.535	-4.273	-3.063	-2.290	-3.375	-3.257	-3.207	-3.646	-3.142	-1.610	-0.630	-3.598
3	1	1	-3.555	-2.521	-4.207	-3.095	-2.309	-3.396	-3.192	-3.100	-3.721	-3.145	-1.586	-0.636	-3.615
3	1	2	-3.562	-2.517	-4.249	-3.095	-2.295	-3.404	-3.192	-3.120	-3.709	-3.147	-1.608	-0.654	-3.641
3	1	3	-3.836	-2.555	-4.269	-3.098	-2.298	-3.450	-3.193	-3.213	-3.720	-3.162	-1.633	-0.655	-3.661
3	2	1	-3.562	-2.518	-4.253	-3.096	-2.309	-3.394	-3.252	-3.112	-3.769	-3.185	-1.594	-0.641	-3.627
3	2	2	-3.553	-2.503	-4.263	-3.105	-2.305	-3.394	-3.251	-3.187	-3.660	-3.162	-1.606	-0.656	-3.622
3	2	3	-3.831	-2.541	-4.285	-3.110	-2.312	-3.444	-3.251	-3.278	-3.666	-3.176	-1.631	-0.656	-3.640
3	3	1	-3.832	-2.586	-4.286	-3.099	-2.323	-3.436	-3.253	-3.240	-3.782	-3.192	-1.598	-0.641	-3.651
3	3	2	-3.813	-2.553	-4.297	-3.108	-2.318	-3.442	-3.252	-3.279	-3.673	-3.170	-1.613	-0.656	-3.642
3	3	3	-3.776	-2.569	-4.303	-3.094	-2.319	-3.439	-3.284	-3.241	-3.687	-3.179	-1.637	-0.657	-3.642

D(L)	E(L)	F(L)	LipMik	Lucen	Martin	Michal	Nitra	N.Zamk	Popr	PovBy	Preso	Priev	RimSo	Rozn
2	3	3	-4.289	-3.382	-4.068	-3.915	-4.010	-3.889	-4.156	-4.467	-3.802	-4.410	-3.560	-3.443
3	1	1	-4.155	-3.382	-4.139	-3.976	-3.896	-3.973	-4.042	-4.484	-3.793	-4.591	-3.367	-3.483
3	1	2	-4.168	-3.372	-4.139	-3.949	-3.965	-3.974	-4.115	-4.486	-3.788	-4.572	-3.366	-3.483
3	1	3	-4.206	-3.397	-4.139	-3.953	-3.979	-4.002	-4.157	-4.554	-3.789	-4.601	-3.365	-3.504
3	2	1	-4.155	-3.382	-4.139	-4.014	-3.988	-4.009	-4.073	-4.476	-3.799	-4.596	-3.461	-3.488
3	2	2	-4.181	-3.376	-4.143	-3.948	-4.004	-4.068	-4.113	-4.454	-3.816	-4.530	-3.631	-3.460
3	2	3	-4.228	-3.394	-4.143	-3.949	-4.020	-4.106	-4.160	-4.494	-3.817	-4.559	-3.640	-3.481
3	3	1	-4.239	-3.439	-4.142	-4.017	-4.000	-4.041	-4.131	-4.568	-3.799	-4.628	-3.435	-3.508
3	3	2	-4.268	-3.412	-4.144	-3.950	-4.029	-4.104	-4.145	-4.513	-3.816	-4.558	-3.634	-3.480
3	3	3	-4.325	-3.413	-4.106	-3.954	-4.042	-3.932	-4.198	-4.514	-3.837	-4.477	-3.615	-3.475

D(L)	E(L)	F(L)	Senica	SpNVes	StLub	Svid	Topol	Trebi	Trenci	Trnava	VelKrt	VnTep	Zvolen	ZiarnH
2	3	3	-4.194	-3.039	-2.804	-3.474	-3.721	-3.129	-5.025	-4.610	-2.927	-1.972	-3.777	-4.747
3	1	1	-4.159	-2.964	-2.821	-3.565	-3.817	-3.109	-5.116	-4.595	-3.001	-1.960	-3.786	-4.707
3	1	2	-4.191	-2.949	-2.814	-3.575	-3.812	-3.149	-5.171	-4.595	-3.021	-1.953	-3.782	-4.691
3	1	3	-4.231	-2.975	-2.828	-3.724	-3.822	-3.149	-5.173	-4.615	-3.019	-2.018	-3.979	-4.870
3	2	1	-4.209	-2.983	-2.823	-3.584	-3.815	-3.110	-5.195	-4.596	-3.036	-1.963	-3.781	-4.709
3	2	2	-4.194	-2.956	-2.818	-3.454	-3.796	-3.149	-5.117	-4.597	-3.033	-1.954	-3.655	-4.658
3	2	3	-4.232	-2.983	-2.835	-3.568	-3.807	-3.149	-5.120	-4.617	-3.031	-2.010	-3.827	-4.828
3	3	1	-4.242	-3.047	-2.842	-3.742	-3.832	-3.111	-5.200	-4.626	-3.035	-2.020	-3.964	-4.869
3	3	2	-4.225	-3.013	-2.836	-3.570	-3.813	-3.149	-5.122	-4.627	-3.031	-2.009	-3.818	-4.807
3	3	3	-4.241	-3.067	-2.835	-3.565	-3.761	-3.158	-5.104	-4.671	-2.987	-2.003	-3.827	-4.841

Table A6: Regions and their Industrial Specialization

Region	Abrev.	Ind. Group**
CZECH REPUBLIC		
Prague	Prahac	div. persp.
Central Bohemia		
Benesov	BEN	agr.
Beroun	BER	ind. persp.
Kladno	KLAD	ind. persp.
Kolin	Kol	div.
Kutna Hora	Kut	agr.
Melnik	MEL	ind. persp.
Mlada Boleslav	MLA	ind.
Nymburk	NYM	div.
Praha vychod	PRAE	div.
Praha zapad	PRAWE	agr. persp.
Pribram	PRi	div.
Rakovnik	RAk	agr.
South Bohemia		
Ceske Budejovice	CESBV	div. persp.
Cesky Krumlov	CESKR	agr.
Jindrichuv Hr.	JIN	agr.
Pelhrimov	PELH	agr.
Pisek	PIS	agr. persp.
Prachatice	PRACH	agr. persp.
Strakonice	STRAK	agr.
Tabor	TAB	div.
West Bohemia		
Domazlice	DOM	div. persp.
Cheb	CHEB	agr. persp.
Karlovy Vary	KARVAR	div. persp.
Klatovy	KLAT	agr. persp.
Plzen-mesto	PLZENT	agr.
Plzen-jih	PLZENS	ind. persp.
Plzen-sever	PLZENN	agr.
Rokycany	ROK	ind. persp.
Sokolov	SOK	ind. persp.
Tachov	TACH	agr.
North Bohemia		
Ceska Lipa	CESLI	ind. persp.
Decin	DEC	ind.
Chomutov	CHOM	div.
Jablonec n.N.	JABL	ind.
Liberec	LIBER	ind. persp.
Litomerice	LITO	div.
Louny	LOUN	agr.
Most	MOST	ind. persp.
Teplice	TEPL	ind.
Usti n. Labem	USTNL	div. persp.
East Bohemia		
Havlickuv Brod	HAVBR	ind. persp.
Hradec Kralove	HRADKR	agr.
Chrudim	CHRU	div.
Jicin	JICI	agr.
Nachod	NACH	ind. persp.
Pardubice	PARD	div. persp.
Rychnov n.K.	RYCHN	agr.
Semily	SEM	ind. persp.
Svitavy	SVIT	agr.
Trutnov	TRUT	ind. persp.
Usti n.O.	USTNO	div.
South Moravia		
Blansko	BLANS	residual
Brno-mesto	BRNOL	div. persp.
Brno-venkov	BRNOC	div.
Breclav	BREC	agr.
Zlin	ZLIN	agr.
Hodonin	HODO	div.
Jihlava	JIHL	div.
Kromeriz	KROM	div.
Prostejov	PROST	ind.
Trebic	TREB	agr.
Uherske Hradiste	UHHRAD	ind.
Vyskov	VYSK	agr.
Znojmo	ZNOJ	ind. persp.
Zdar n. S.	ZDARNS	agr.
Bruntal	BRUN	agr.
North Moravia		
Frydek-Mistek	FRYMY	ind.
Karvina	KARV	ind. persp.
Novy Jicin	NOJI	ind.
Olomouc	OLOM	div.
Opava	OPAV	div.
Ostrava-mesto	OSTRA	ind. persp.
Prerov	PRER	div.
Sumperk	SUMP	div.
Vsetin	VSET	ind.
SLOVAK REPUBLIC		
Bratislava	Bratc	div. persp.
Western Slovakia		
Bratislava vidiek	Bratv	agr. persp.
Dunajska Streda	DuStr	agr.
Galanta	Galan	agr.
Komarno	Komar	agr.
Levice	Levice	div.
Nitra	Nitra	div.
Nove Zamky	N.Zamk	residual
Senica	Senica	ind.
Topolcany	Topol	ind.
Trencin	Trenci	ind. persp.
Trnava	Trnava	div.
Central Slovakia		
Banska Bystrica	BanBy	div.
Cadca	Cadca	ind.
Dolny Kubin	DoKu	ind.
Liptovsky Mikulas	LipMik	ind. persp.
Lucenec	Lucen	agr.
Martin	Martin	ind. persp.
Povazska Bystrica	PovBy	ind.
Prievidza	Priev	ind.
Rimavska Sobota	RimSo	agr. persp.
Velky Krtis	VelKrt	agr.
Zvolen	Zvolen	agr. persp.
Ziar n. Hronom	ZiarnH	ind. persp.
Zilina	ZILINA	div.
Eastern Slovakia		
Bardejov	Bard	ind.
Humenne	Humen	agr.
Kosice	Kosim	div. persp.
Kosice vidiek	Kosiv	agr.
Michalovce	Michal	div.
Poprad	Popr	agr. persp.
Presov	Preso	div.
Roznava	Rozn	residual
Spisska Nova Ves	SpNVes	agr.
Stara Lubovna	StLub	div.
Svidnik	Svid	agr.
Trebisov	Trebi	agr.
Vranov n. Toplou	VnTep	residual

Legend: div. - diverse; persp. - perspective; ind. - industrial; agr. - agricultural

*Macro regions (kraij) in bold

** see Scarpetta and Huber (1996)