Unemployment, Wage Push and the Labour Cost Competitiveness of Regions

– The Case of Hungary, 1986–1996

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UNEMPLOYMENT, WAGE PUSH AND THE LABOUR COST COMPETITIVENESS OF REGIONS

– THE CASE OF HUNGARY, 1986–1996

GÁBOR KERTESI and JÁNOS KÖLLÕ

The paper analyses regional relative wages using individual and firm-level data from Hungary 1986-96. In regions hit hard by the transition shock labour costs fell substantially; the estimated elasticities of wages with respect to regional unemployment were in a range typical of mature market economies already in 1992-93. In later stages of the transition the hard-hit rural regions lost a large part of their cost advantage vis-à-vis Budapest and the central agglomeration for reasons including spatial diseconomies and falling search activity among the registered unemployed. The paper argues that the time path observed in Hungary (a U-curve of relative labour costs in crisis-hit regions) may prevail in other economies calling the attention to the limits of wage flexibility as a cure to persistent regional crises.

1. INTRODUCTION

In only three years following the collapse of state socialism unemployment rose from close-to-zero to two-digit levels in Hungary.[1] The regional dispersion behind the aggregate rate was considerable from the beginning. When registered unemployment reached its highest level in March 1993 (12.9%) the rates of the 170 labour office districts ranged between 4% and 34%. Local unemployment exceeded 40% in 174 municipalities and 60% in 22 settlements. In five villages predictably more than 80% of the active

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population was out of work.[2] Even a transitory shock of this magnitude could have caused severe difficulties for a society grown up in an age of full employment. The regional shocks, however, had a lasting effect: the social deprivation caused by the long-term lack of jobs, especially in the north-eastern villages, is manifest and calls for a better understanding and promotion of the possible equilibrating mechanisms.

The paper would like to contribute to this by presenting evidence on the wage push of unemployment and other factors affecting regional relative labour costs. The importance of wage adjustment in contemporary Hungary is underlined by at least three facts. First, the supply side of the market works slowly: the studies of migration and commuting in this and other CEE countries by *Erbenova* (1995), *Kertesi* (1997), *Köllõ* (1997) or *Günther* (1999) suggest that although spatial mobility is non-negligible, and does respond to changes in the economic environment, it can hardly be regarded as an efficient equilibrating mechanism under the given institutional conditions, costs and traditions. (Unlike in the US as discussed in *Blanchard* and *Katz* 1992). Second, taking other things equal, transport cost considerations and external economies favour the further concentration of economic activity in the capital areas and its relocation to the low-unemployment, high-income western border districts. (*Gorzelak* 1996, *Fazekas* and *Ozsvald* 1998). Third, government-financed infrastructure investment is also biased for the main transport routes and primate agglomerations. *(EC* 1992, 1994, 1996). Arguably, without lower relative labour costs there is little hope for the catching-up of hard-hit regions in the foreseeable future.

Since unemployment reduces the cost of labour *per se* by making recruitment and screening easier relative wages should not necessarily fall in order to attract investors. The motivation to create jobs is nonetheless stronger if these advantages are combined with some easy-to-observe and immediate gains from lower pecuniary compensation. In the paper we look at potential employer's gains of this sort following the sequence below.

Section 2 introduces the research site, derives the empirical questions from a simple model of wage bargaining and discusses data issues. In *Section 3*

[2] Szemere, Csenyéte, Kisrécse, Rakaca and Pamlény.The local rates compare the number of registered unemployed to the active population in 1990. Since outward migration and exit from the labour force are positively correlated with past and present unemployment we probably underestimate the degree of regional unemployment rate differentials.

the adjustment of wages to *registered unemployment* is analyzed with repeated cross-section regressions using individual and firm-level data from 1986-96. This is followed by an examination of the (seemingly) *region-specific* evolutions, that is, the part of the wage change that is unexplained by the registered unemployment rate differentials and other observed factors. It will be shown in *Section 4* that these evolutions were consistent with changes in search unemployment. *Section 5* investigates whether the flexible adjustment of wages was followed by regional convergence until 1996 and Section 6 concludes.

2. INSTITUTIONAL BACKGROUND AND ANALYTICAL FRAMEWORK

2.1. Wage setting

Hungary abolished central planning in 1968 and controlled wages by means of taxes until 1993. In the post-1968 regime firms were free to set wages within broad limits suggested (rather than prescribed) for occupational categories. Taxes were levied on the wage *increment* with rates depending on the ratio of wage change to a reference indicator. The details of the tax system changed rather frequently but in the typical setting the tax was a function of the ratio of wage bill growth to value added growth. The tax was prohibitive with extremely high marginal rates. The rules of taxation were gradually relaxed in the last years of state socialism: in several years between 1985 and 1990 firms were allowed to chose between different tax regimes and the emerging private firms were exempt of the wage tax from the onset. In 1992 wage control was replaced with a rather unique 'tax game' and in 1993 the restrictions on enterprise wage setting were completely abolished.[3]

In parallel, an institutional framework was built for collective bargaining of a western fashion with the national-level 'Council of the Reconciliation of

[3] In 1992 the tax to be paid by a firm depended on the rate of growth of its average wage (dw) relative to wage inflation in the economy (dW). The rules of the game were set by a national-level tripartite body in the following way. In case of dw<15 per cent or dw>15 and dW<15 the wage increment was tax-free. In case of dw>15 and dW>15 the firm faced a punitive tax. The agreement was conditioned on a certain range of anticipated price inflation E(dp). The parties agreed to renegotiate the rules in case of dW>15 and dp>>E(dp).

Interests' (CRI) on the top, industrial agreements at the intermediate level and enterprise-level negotiations at the bottom. Starting from 1992 a proposed range of average wage increase was published by the CRI at the beginning of each year except in 1995 when the negotiations failed. In principle the CRI-level talks should have been followed by industrial negotiations but soon after its establishment the sectoral level of bargaining started to lose importance. The number of registered intermediate-level agreements fell from 24 to 12 in 1992-1996 and the proportion of workers covered by them dropped from 41% to only 12%. (MoL 1998).

The minimum wage, negotiated at the national level, seems to enter the wage setting process in an indirect way via public sector wages or social benefits based on some multiple of the statutory minimum. There is wide agreement that a direct effect on enterprise behaviour is unlikely under the current settings where the minimum wage amounts to less than 1/3 of the average wage and its net value falls short of the subsistence income level by 40%. This general belief is supported by the fact that the share of workers paid at or below the statutory minimum (only 2% in 1995) is substantially lower than anywhere in Western Europe. (*Koltay* 1996, *ILO* 1997).

These pieces of information suggest that if workers and managers enter negotiations over wages they predominantly do so at the enterprise level, and they are typically not constrained by ceilings or floors determined by sectoral agreements or legislation. The negotiations are often informal since only 60% of the labour force (including public sector employees) are unionized according to the probably inflated figures given by the union federations themselves. (*ILO* 1998). Nevertheless, the number of registered firm-level agreements is also increasing (312 in 1992 and 594 in 1996). The proportion of workers covered by formal firm-level agreements was surprisingly low even so (31.6% in 1996 as reported in MoL 1998).

While there is little doubt that bargaining usually takes place at the enterprise level, often informally, much less is known about what is covered by the agreements besides wages. In particular, it is unclear whether workers and managers typically bargain over wages or both wages and employment. Since the agreements on employment are usually achieved informally – via safety regulations, manning standards or worktime restrictions – it would be difficult to make clear statements on the basis of the available scarce evidence. We think, nevertheless, that assuming 'employment-aware' unions keen about their jobless members

would be at odds with common experience. Recall unemployment, a typical symptom of employment-aware bargaining, is relatively scarce in Hungary outside some seasonal industries and agriculture. (*Köllõ* and *Nagy* 1996). Wage moderation, in exchange of jobs for the unemployed union members, fails to come up as an issue in industrial disputes. As far as resistance to extended worktime is concerned it is instructive to quote a survey carried out by the AmCham (*Martin* 1998): when foreign investors were asked about their motives to come to Hungary they ranked third (out of 36 items) that working time can be flexibly set at the enterprise level. Indeed, foreign firms regularly recall their workers for overtime and weekend shifts without hard resistance on the part of worker representatives. We think therefore that the assumption of unions primarily concerned with wages and the job stability of insiders – as opposed to unions maximizing the welfare of a fixed membership – is highly justified in the Hungarian case.

Assuming, accordingly, that that utility-maximizing employees and profit-maximizing employers bargain over wages, but employment is set unilaterally by the firm, the process can be described as a Nash-bargain.[4]

$$
\begin{aligned}
&\max_{w}\left(n\left(u(w)-u(w^{*})\right)\right)^{\beta}\left(\Pi-\Pi^{*}\right)^{1-\beta}, \\
&u'>0,\ u''<0 \\
&\Pi=\max_{n}\left(Y(n(w))-wn\right)
\end{aligned}
\qquad (1)
$$

where w is the average wage, Π is profit, Y is value added ($Y'>0$), n is employment, β $(0<\beta<1)$ is a parameter indicating the bargaining power of workers, u(.) refers to utility, and the stars denote reservation levels. The first-order condition for the maximum of the Nash-product subject to the maximum profit function is:

$$
\frac{u(w)-u(w^{*})}{u'(w)}=\frac{\beta}{1-\beta}\,\frac{\Pi-\Pi^{*}}{n-[(dY/dn)(dn/dw)]}. \qquad (2)
$$

[4] This model is a variant of *Blanchflower* and *Oswald* (1995, pp. 84-85). Alternatively, the unemployment-wage relationship could be analyzed following the theory of efficiency wages (*Shapiro* and *Stiglitz* 1984) or the theorem of simultaneous employment and wage bargaining (*McDonald* and *Solow* 1982).

Using the Taylor formula:

(3) $$u(w^*) \approx u(w) + (w^* - w)u'(w)$$

equation (2) can be re-written:

(4) $$w \approx w^* + \frac{\beta}{1-\beta} \frac{\Pi - \Pi^*}{n - [(dY/dn)(dn/dw)]}.$$

We can simplify the equation by introducing $\alpha = \beta/(1-\beta)$, $y = Y/n$ and $\pi^* = \Pi^*/n$ and taking into consideration that at the optimum $dY/dn = w$. Assuming constant wage elasticity of the demand for labour ($\gamma = (dn/dw)(w/n)$) from (4) we can draw (5):

(5) $$w \approx \frac{1-\gamma}{1-\gamma+\alpha} w^* + \frac{\alpha}{1-\gamma+\alpha} y - \frac{\alpha}{1-\gamma+\alpha} \pi^*.$$

In case workers have no bargaining power ($\beta = 0$ implying α = 0) the employer sets the wage at the reservation level. If workers have their own way ($\beta \to 1$ or $\alpha \to \infty$), they fully appropriate the firm's revenue (net of reservation profit) in the form of wages:

(6) $$\lim_{\alpha \to 0} w = w^* \quad \text{and} \quad \lim_{\alpha \to \infty} w = y - \pi^*.$$

The reservation levels of wages and profits are unobservable, so equation (5) can not be directly estimated, but we can presume that reservation wages vary with a number of observable individual attributes like gender, experience or education, and environmental characteristics. The latter can be divided to local diseconomies that should be compensated (such as the high transport costs and expensive dwellings of metropolitan areas) and to factors shaping the 'cost of disagreement'. If wage bargaining fails workers face a shorter or longer period of unemployment, at least a temporary earnings loss because of the loss of seniority, or even a permanent wage cut if the job openings are typically found in some low-wage sectors. Denoting the variables which shape the 'cost of disagreement' with **D**, the other relevant regional characteristics with **R** and human capital variables with **H** we can specify a reservation wage function:

(7) $$w^* = a_1 + \boldsymbol{a}'_2 \boldsymbol{D} + \boldsymbol{a}'_3 \boldsymbol{R} + \boldsymbol{a}'_4 \boldsymbol{H} + e_1.$$

Reservation profits may vary with industry, ownership, or other variables constituting vector **z**:

(8) $$\pi^* = b_1 + \mathbf{b}_2' \mathbf{z} + \varepsilon_2 \ .$$

Substituting (7) and (8) for w* and π* in equation (5) we come to a Mincer-type earnings function:

(9) $$w = a + \boldsymbol{b}'\boldsymbol{D} + \boldsymbol{f}'\boldsymbol{R} + cy + \boldsymbol{d}'\boldsymbol{H} + \boldsymbol{e}'\mathbf{z} + e$$

In order to make (9) estimable we need to approximate **D** with some observable variables. Customarily, regional unemployment rates are used at this aim but this choice poses difficult questions in a period when the composition of unemployment is changing dramatically and the rules of unemployment assistance are modified year by year. To explicate this problem, and justify the procedure we follow during the analysis, a brief section is devoted to the changing patterns of unemployment and of related institutions.

2.2. The patterns of unemployment

Unemployment was not statistically observed, and was presumably very low indeed, in Hungary prior to 1985-86 when a last attempt to 'speed up' the socialist economy failed. The final years of the communist rule brought about a marked decline of labour demand (Kõrösi 1998) motivating the introduction of retraining benefits and redemployment allowance of limited availability already in 1987. Even so the first reliable statistical observations indicated a mere 1.2 % rate of registered unemployment at the end of 1990.

During the transition registered unemployment rose sharply until 1993 and was declining since then. The composition of the stock by duration and access to financial assistance changed considerably as shown by a most simple overview in *Table 1*.[5]

[5] On the duration of unemployment, assistance and their interactions in Hungary see particularly *Micklewright* and *Nagy* (1993, 1994).

Table 1
Unemployment and related institutions during the survey period

Year	Registered unemployment	ILO/OECD unemployment		Unemployment insurance	Social benefit for UI exhausters
		Rate	LTU %		
1986	n.a.	n.a.	n.a.	no	..
1987	0.1	n.a.	n.a.	limited	..
1988	0.2	n.a.	n.a.	limited	..
1989	0.3	n.a.	n.a.	limited	..
1990	0.4	n.a.	n.a.	limited	..
1991	1.9	n.a.	n.a.	max 24 mo	no
1992	7.8	9.4	16.6	max 18 mo	no
1993	13.2	11.9	30.3	max 12 mo	yes
1994	11.4	10.7	42.0	max 12 mo	yes
1995	11.1	10.2	45.9	max 12 mo	yes
1996	10.7	9.9	53.7	max 12 mo	yes

Notes: **Registry figures**: January 1. (For 1987-89: estimates by the CSO). **LFS figures**: first quarter. LTU stands for workers having lost their jobs for more than one year.

Source: CSO (1998). **Benefits**: In 1987-90 benefits were provided for workers affected by mass layoffs. Availability was not guaranteed by law. In 1991-96 UI was earnings-related, capped and had a fixed minimum amount. SB was means-tested, flat-rate and open-ended.

The registry-based and the ILO/OECD measures of unemployment were fairly close to each other on the national level until 1996 but the regional dispersion of search activity has always been substantial as will be discussed later.

As suggested by the table, accounting for the heterogeneity of the unemployment stock with respect to job search, spell duration and financial status would be vital (even more than in established market economies) but a precise decomposition is practically infeasible. Unfortunately, the Labour Force Survey was started only in 1992 and is only representative for large territorial units. Further problems would arise if we wanted to analyze how the LTU share or the ratio of UI or SB recipients affect wages. These variables are observed at lower levels of aggregation but their values depend on the historical time path of unemployment and are extremely strongly correlated.

Since wages are expected to respond to search unemployment, but we can not observe the latter at an appropriate level of disaggregation, an admittedly second-best indirect way was chosen for the forthcoming

empirical analysis. We shall start with registered unemployment rates measured on the level of 170 labour office districts as a proxy of **D** while **R** will be represented by a vector of region dummies.

(10) $$w = a + \boldsymbol{b'u} + + \boldsymbol{f'R} + cy + \boldsymbol{d'H} + \boldsymbol{e'Z} + e$$

In interpreting the results from equation (10) it should be kept in mind that the **f** parameters measure regional effects holding *registered unemployment* constant. In the districts where search unemployment is low relative to registry unemployment they are expected to be higher, and vice versa. Fortunately, on the level of the spatial units and settlement types distinguished by **R** both the registry and the LFS-based measures are available after 1992 so we can relate the movements in the **f** parameters to changes in the search intensity of the non-employed.

It should be added that the rationale of 'holding registered unemployment constant' is not purely technical. Passive registered unemployment may not be highly important from the point of view of wage moderation but it is still a meaningful indicator showing the gravity of the disease to be cured perhaps more accurately than does the restrictive ILO/OECD measure.

2.3. Data

We use data from the National Labour Centre's Wage Survey (WS) for estimating cross-section OLS regressions for 1986, 1989 and 1992-1996. (No data are available for 1987-88 and 1990-91). The WS waves cover random samples of 3-12 thousand firms employing more than 20 workers (10 workers in 1995-96) and 10% random samples of their employees. The number of individual observations exceeds 85,000 in each year.

A summary of sample properties, variables and weighting is given in App. 1. At this point only the key variables will be introduced briefly. Unemployment was assumed to be zero in 1986 and was measured on the level of 170 labour office districts later. (For 1989 we used the first available disaggregated observation from 1990.) The rates compare the number of registered unemployed to the active population of 1990. A justification for this second-best solution and an accounting of the resulting bias is given in *Ábrahám* and *Kertesi* (1997). The region dummies stand for 5 macro-regions (central, north-western, north-eastern, south-western, south-eastern) and 3 settlement types (county capitals, other towns, villages) plus Budapest. Productivity was measured on the firm level with sales net of material cost per worker.

The equations are first estimated for the full sample using the specification of equation (10). *Table A1* presents the coefficients and test statistics except those of the 27 industry dummies. For an overview of how industry rents were changing see *Fig. A1*. The impact of demographic and human capital variables is discussed in detail *Kertesi* and *Köllõ* (1999). *Table A1* calls the attention to growing wage differentials by firm size and ownership while *Fig. A1* hints at a leveling off of labour costs within manufacturing; falling wages in the tertiary sector; increasing industry rents in some extraction industries, the energy sector, railways and public transport. These developments would certainly deserve closer investigation but in this paper we only interpret the results directly relevant for the issue of regional relative labour costs.

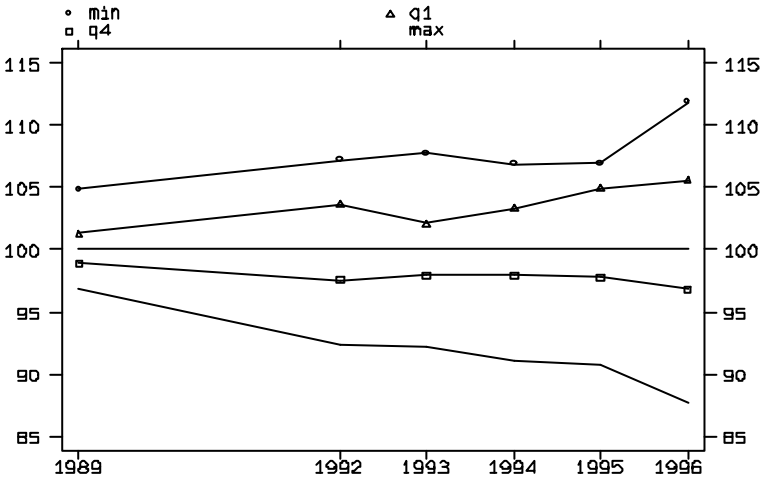
Allowing for the possibility that free wage bargaining started earlier in small firms, exempt of regulations, another pooled model was estimated with unemployment and firm size interacted. (The main results presented in *Table 2*). We also estimated the equations for 12 occupations using a simplified functional form and restricting the analysis to 1995. (*Table A2*). The results from the WS samples are confronted with data on wage recovery among the unemployed (*Table 3*). After evaluating the link between wages and unemployment in these models we turn to the inspection of the 'pure' region effects (**f**) and possible explanation of their time-path.

3. WAGES AND REGISTERED UNEMPLOYMENT

As Hungary moved towards free enterprise-level wage bargaining individual earnings became increasingly responsive to local unemployment and the link between wages and productivity strengthened markedly. Between 1986 and 1996 the productivity-elasticity of the wage grew from 6% to 20% with only minor fluctuations. After similarly marked rise the unemployment-elasticity of earnings reached -10% a value interpreted by Blachflower and Oswald (1994) as *the* typical estimate in mature market economies. (*Fig. 1* based on *Table A1)*

Fig. 1
The elasticities of individual earnings with respect to firm-level productivity and registered regional unemployment in 1986-96

Fig 2.
Labour cost differentials implied by unemployment 1989-96
(Regions with median unemployment = 100)



The wage gaps implied by the observed unemployment rate differentials holding other wage determinants constant are displayed on Fig. 2. Starting from a presumed zero effect in 1986 the implied gap between the best and the worst regions widened from about 7% in 1989 to 25% in 1996.

The predicted differentials relate to labour costs, that is, wage differentials between firms of identical productivity. Estimating the wage equations without the productivity term would yield stronger unemployment effects (coefficients higher in absolute value by about 0.02 throughout 1992-96). If the unemployment rates were measured at the level of the 20 counties rather than the 170 labour office districts the models would yield lower elasticities. In 1995, for instance, the estimate would be -0.075 as opposed to -0. 091.

Compared to similar results from other transition countries the Hungarian estimates hint at a relatively high degree of wage flexibility. Using data from 1996 *Munich, Svejnar* and *Terrell* (1999) estimate an elasticity of -0.050 for Czech men and -0.078 for women. Their equations relate to all wage earners (including budget sector employees and the self-employed) and are controlled for education, experience, one digit industry, firm size, ownership, and a dummy for Prague.[6] In order to produce roughly comparable results in Hungary 1996 we extended the analysis to public sector employees and estimated the equations separately for men and women using the same controls as the *Munich* et al. study. The estimates in this case were -0.118 for men and -0.092 for women. For the Polish private sector, 1995, *Puhani* (1997) estimates earnings functions controlled for education, experience, job grade, one-digit industry, four region dummies, marital status, children, disability and previous unemployment experience – with the voivodship unemployment rate entered in per cent – and gets parameters of -0.008 for men and -0.003 for women. A similar specification estimated for the Hungarian private sector 1995 (without the family-level and career-related variables) yields -0.014 for men as well as for women.

The unemployment elasticity of the wage increased faster in smaller firms. (*Table 2*) This is consistent with the expectation that being exempt of wage taxation, free of legal restrictions and informal pressures – and subject to harder competition – the privately owned small firms had the motivation and the authority to adjust their wages to local unemployment already in the early stages of the transition. Following the liberalization of wage setting in 1993 the differences between smaller and larger firms, in this respect, gradually disappeared.

[6] Two other variables control for recall bias.

Table 2
The elasticities of individual earnings with respect to registered unemployment at firms of different size

Firm size	1986	1989	1992	1993	1994	1995	1996
Small (L=30)	..	-2.9	-9.5	-11.5	-10.7	-10.1	-9.3
Medium (L=300)	..	-2.1	-7.4	-7.8	-8.7	-9.4	-10.5
Large (L=1000)	..	-1.7	-6.3	-5.8	-7.6	-9.0	-11.2

Calculated by evaluating the marginal effect of unemployment on the wage at the given firm size. The estimated equations deviate from (10) in that firm size (L) was measured continuously and was interacted with unemployment by including ln(L), ln(u) and ln(L)·ln(u) on the right-hand side.

We do not study structural breaks by age groups or genders because it seems difficult to interpret the group-level estimates $(dw^j/w)/(du/u)$ showing the response of wages in group *j* to variations in the *aggregate* regional unemployment rate. We nevertheless tested the stability of the **b** parameter by estimating earnings functions for all occupations where the number of observations exceeded 3,000. In the case of the largest industry-specific occupational groups (metal and light industrial manual workers) the models were also estimated for those employed in the engineering and textiles industries, respectively. In order to reduce the number of explanatory variables continuos schooling and firm size variables were entered. The industry dummies were dropped and **R** was represented only with the settlement size dummies. *Table A2* presents the results for 1995, a year when we already expect similar parameters centered around -9.1 %, the estimate for the pooled sample. Indeed, the coefficients fall close to this value (in ten out of twelve cases they are between -8.5 % and -11 %) with the notable exception of office clerks (-16.3 %). Arguably, the extreme value in this case indicates a high degree of substitutability and also reflects compositional bias stemming from the fact that the office clerks do rather different jobs in metropolitan areas, where company headquarters are located, and in small villages hit by high unemployment.

The results encourage the proposition that in about five years following the collapse of state socialism a statistically significant link was established between unemployment and wages, with sign and magnitude similar to those observed in fully-fledged market economies. Nevertheless, before accepting that wages behave 'as they should in a market-based system' we have to confront the basic findings with alternative interpretations and address further factors shaping regional relative wages.

3.2. Registered unemployment and wage recovery - A digression

In bargaining models the causation leads from high unemployment to low pay and we interpret the results from the earnings functions accordingly. In principle, the underlying chain of events can be different: following a demand shock some employees, those with high reservation wages, do no accept the pay cuts taken by their fellow workers and quit to look for better jobs or register for benefits without searching. The outcome of this scenario is observationally equivalent with the outcome derivable from a bargaining framework: earnings are lower and registry unemployment is higher where the shock had been stronger. In this presentation the *threat* of unemployment is the cause, lower pay is an intermediate effect and high registered unemployment (combined with not necessarily high search unemployment) is the final result.

The evidence discussed later in the paper will leave no doubt that there is an element of truth in this argumentation but it would predictably fail as a general explanation. The available scarce evidence suggests that the reservation wages of the registered unemployed are not rigid, as assumed in the above-told scenario, but fall with the rate of registered unemployment.

To find support for this proposition we estimate wage change regressions for reemployed workers using a part of a sample analyzed in detail in *Köllõ* and *Nagy* (1996). In that paper it was argued that workers returning to employment in high-unemployment regions within 6 months do so at the cost of additional wage cut. In the case of long spells the paper found no significant link between local unemployment and wage recovery. We reestimate the equations distinguishing between two types of long spells and get significant results for a part of the long-term unemployed.

The data refer to 6931 previously displaced workers leaving insured unemployment for a job in April 1994. (Temporary layoff spells are excluded). All workers whose benefit payment was terminated for the reason of finding employment in this period were interviewed by officers in charge of benefit administration. The pre-unemployment earnings figure considered (w^0) is average gross monthly earnings in the four, full calendar quarters preceding registration, as registered in the UI records. Post-unemployment gross monthly earnings (w^1) are expected ones in the first months following reemployment, as reported by the interviewed workers. Earnings gains and losses are adjusted for wage inflation between the date

of registration and exit (both w^0 and w^1 are expressed in 1994 March values). Unemployment was measured as in this paper.

The completed long spells are divided into two categories. First the probability is estimated that a worker is observed after a long as opposed to a short spell. The estimation is made with binary probit using gender, education, experience, tenure, location, industry and firm size of origin as predictors. Type A long spells are those with a predicted probability *Prob (spell length > 6 months) > 0.5* and Type B spells are those where P<0.5. Simply stating, Type A spells lasted long and it was expected on the basis of the worker's attributes. Type B spells lasted long despite favorable personal attributes (ones which generally imply a short spell). The intention to make this distinction stems from the conjecture that some Type B spells may have lasted long for reasons other than the lack of adequate job offers.[7] The wage change regressions are presented in *Table 3* for short spells and Type A and Type B long spells.

The estimated impact of the local unemployment rate on real wage change is presented in *Table 3*. The predictions show the percentage change of the real wage of a male worker with primary education, 5 years of tenure; full time non-managerial job before and after unemployment; no change in sector, occupation, firm size and distance of travel; completed unemployment duration of 12 months (long spells) and 3 months (short spells) respectively; at 10 % and 20 % rates of regional unemployment.

The results reinforce that workers returning to employment after a short spell do so at the expense of larger wage cuts in high-unemployment regions. This, in fact, also holds for the majority of long spells if we control, roughly as we do, for waiting behavior. In the case of Type B long spells (cases where we would normally expect a short rather than a long spell) the coefficient is positive and only significant at the 10% level. We observe mean earnings *gain* from unemployment and a low seniority-age ratio that hints at highly mobile workers in this group.

[7] Obviously, this procedure has nothing to do with duration analysis. The probits simply want to distinguish between people of similar personal characteristics but different completed spell lengths. We also note here that the standard selectivity-bias corrected wage change regressions (with probit for exit during the month under examination) indicated no self-selection bias in this sample (op.cit. p 286).

Table 3
Results on workers leaving the UI register for a job in April 1994
OLS estimation of $ln(w^1/w^0) = \mathbf{b_1 X} + b_2 ln(u) + e$ by groups*

Spell length: Actual *Expected*	Short *Short*	Short *Long*	Type A Long *Long*	Type B Long *Short*
Impact on the rate of wage change of the local registered unemployment rate ($100 \cdot b_2$, t-values in brackets)	-4.5 (-2.6)	-4.3 (-1.7)	-8.3 (-3.7)	+4.2 (1.6)
Nobs:	2508	1331	1932	1160
Predicted wage change (%) (see the text)				
at u = 10%	-5.5	-13.5	-1.4	+4.7
at u = 20 %	-8.4	-18.3	-4.3	+8.2
Memo items:				
Mean real wage change (%)	+0.7	-3.3	-9.9	+2.3
Average age	36.3	34.6	36.3	34.3
Tenure in last job (years)	1.5	7.9	9.8	2.5

*The estimated equations are identical with those presented in *Köllõ* and *Nagy* (1996, 289) except for taking log of the unemployment rate and making distinction between four rather than two groups of job losers. The **X** controls include gender, experience, tenure in last job, spell duration, education, change of travel time, change of worktime, change of job grade, change in industry-specific wage returns associated with inter-industry shifts, change of firm size, ownership of the new employer.

At least in the case of the first and the third groups the estimated impacts are significant and question the assumption of wage rigidity on the part of the registered unemployed. In fact, the larger wage cuts accepted by many job seekers under the pressure of poor job prospects may have contributed to the fall of wages in the depressed areas.

4. ”REGIONAL” WAGE EFFECTS

As was previously emphasized the settlement-size and region dummies of our models are expected to capture agglomeration and spatial effects holding registered unemployment constant. We now turn to the study of these effects using *Fig.3.* The left panels display the time paths of the **f** parameters as defined in equation (10). The right panels show the coefficients of the region dummies in models estimated without the productivity variable.

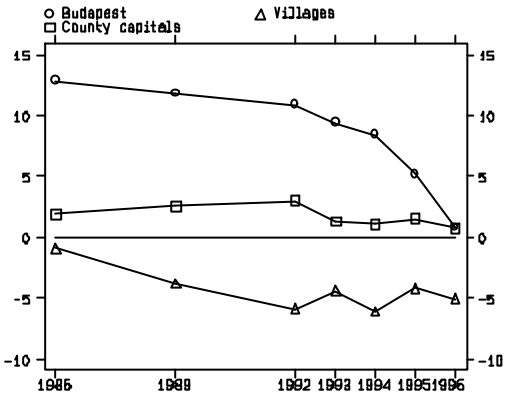
Fig.3.

‘Pure’ regional differentials in 1986-96

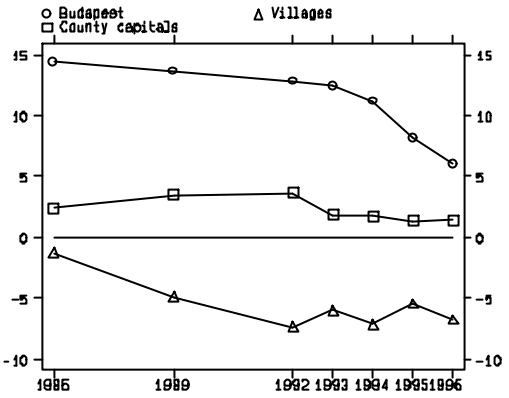
The coefficients of region dummies in models estimated
with and without the productivity term
The reference categories are towns and the south-eastern region, respectively

A) Differences between urban and rural areas

Labour cost

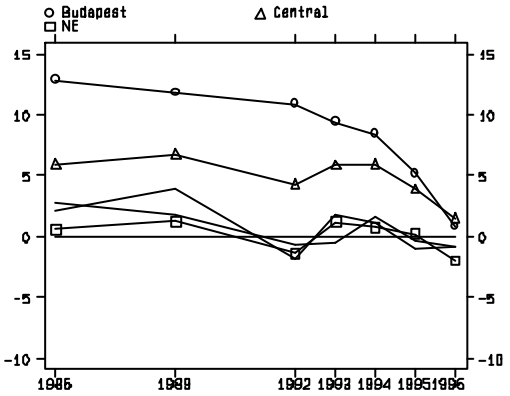


Earnings

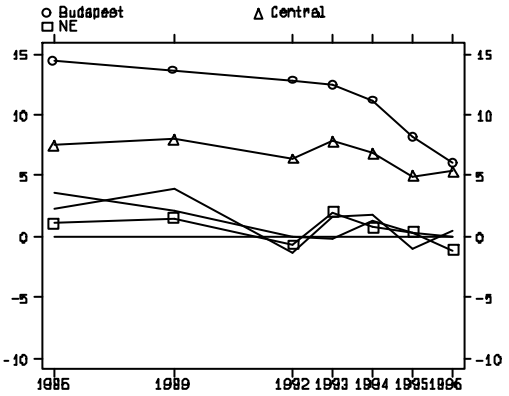


B) Spatial differences

Labour cost



Earnings



Starting with cost differentials by settlement size we observe the widening of the cost gap between rural and urban areas before 1992, followed by a substantial fall of labour costs in Budapest and a minor decrease in county

capitals. By 1996 the differentials between Budapest, the county capitals and smaller towns virtually disappeared while the gap between towns and villages was stabilized at a magnitude of about 5%. The bottom left panel tells a similar story with respect to spatial differentials: following 1992 the cost of labour started to fall in the centrally located regions. A slight decrease could be observed in all regions relative to the (south-eastern) reference category. By 1996 the 'pure' spatial differentials between the western, eastern and southern parts of the country became statistically insignificant and those between the central agglomeration and other regions shrank to a fraction of the 1992 level.

We only make a brief comment, without providing empirical support, on developments prior to 1992. The charts depict the widening of the *urban-rural* wage gap in this period and we believe it might be explained, in the spirit of Paul Krugman's 'new economic geography', with the growing relative costs of living in urban areas. A substantial increase of transport costs might be mentioned as one of the important underlying developments. The privatization of the council flats (for the tenants) may have further increased the relative expenses since it virtually eliminated the rental housing sector and raised the pecuniary cost of entry to metropolitan areas.

The substantial *tightening* of the cost gap between urban and rural areas – as well as between central and peripheral regions – after 1992 seems more difficult to understand at first sight.[8] Compensating wage differentials must have changed in favour of the primate agglomeration in this period because public transport costs kept on rising, real estate prices continued to differentiate, and pollution and congestion grew dramatically. Arguably, at least two factors may have worked against the upwards wage pressures: agglomeration economies on the one hand and the volume of search (at a given rate of registered unemployment) on the other. The forthcoming sections discuss these potentially important factors and briefly discuss some other mechanisms of similar impact.

4.1. Agglomeration effects

Besides their high purchasing power, sizable markets, accessibility, high schooling levels and good infrastructure Budapest and its agglomeration offer a wide selection of 'goods' producing external economies such as direct link with the political and financial decision-makers, spillover effects

[8] Analyzing earnings functions for Poland *Puhani (*1997) also found that the difference between large cities and smaller towns or villages decreased between 1992 and 1995.

due to high firm density (twice as high as the national average), cooperation with universities, and so on. In 1994 Budapest inhabited less than 20% of Hungary's population but produced 34.5% of its GDP, concentrated 60.8% of the public sector employees, 49.7% of the financial sector workers, 43.5% of the university students, 57.5% of the joint ventures and 75.4% of the R+D expenditures as shown by *Fazekas* and *Ozsvald* (1998).

We test the existence of external economies in the central parts of the country by comparing spatial differences in terms of wages versus labour costs (wages controlled for productivity). Reestimating equation (10) without the productivity variable yields the regression-adjusted earnings differentials displayed on the right-hand side panels of *Fig. 3*.

It is apparent from the comparison of the right and left panels that a large part of the fall in labour costs in the primate agglomeration stemmed from a rise in productivity. Regression-adjusted labour costs fell by about 10 % in Budapest between 1992 and 1996 but earnings fell only by 5%. The respective magnitudes for the central agglomeration were 5% versus 2%. Productivity shrank slightly in villages relative to urban areas while wages and labour cost moved in tandem in regions other than the primate agglomeration. Since the firms' industrial affiliation, capital-labour ratio and some other key characteristics are held constant it seems justified to attribute the observed productivity trends to location.

The changes in productivity thus explain a part of the evolution of regional relative labour costs but only a part because *earnings* also declined in Budapest and central Hungary relative to other regions, and in county capitals relative to smaller settlements. A possible reason is that holding registered unemployment constant search unemployment grew in larger towns and Central Hungary relative to the peripheries.

4.2. Spatial differences in job search

The Labour Force Survey provides information on both registered and search unemployment, the latter defined on the basis of the standard ILO/OECD criteria. Drawing the data from the first quarters of 1993-96 we compare the number of active job seekers to the registered unemployed. We deviate from the practice of the Central Statistical Office in that we restrict the attention to people of working age (15-55/60) and exclude students and mothers on maternity aid. The justification for comparing

registry and search unemployment this way is given by the fact that the members of the excluded groups are seldom registered as unemployed.[9]

We calculate the ratio of ILO to registry unemployment in Budapest, county capitals, towns and villages on the one hand, and in the five geographical areas on the other. Then, following the logic of the wage regressions, we compare these ratios to those of the reference categories (towns and the South-East). Denoting the reference categories with *ref* and other groups with *j* the following indicators are displayed on Fig. 4.:

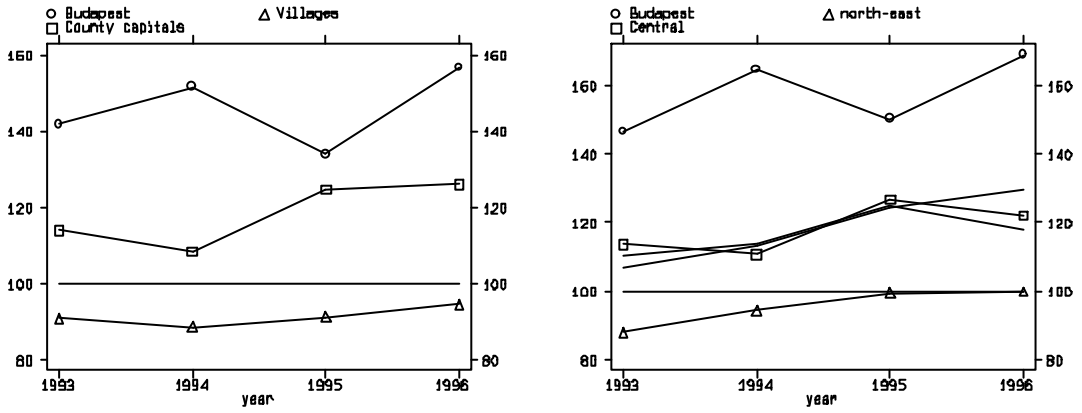
$$S_j = (U^{ILO}/U^{REG})_j /(U^{ILO}/U^{REG})_{ref}$$

Higher values of *S* indicate more search at a given rate of registered unemployment.[10]

Fig 4.

The ratio of ILO/OECD to registry unemployment by regions 1993-96

Calculated from the LFS, Q1 of each year. Reference regions = 100



It is easy to check on the left panel, where settlement types are compared, that throughout the observed period search unemployment (relative to registered unemployment) was substantially higher in Budapest and the county capitals than in smaller towns and villages. The position of the county capitals improved considerably in 1995-96. Budapest also had higher relative search intensity in 1996 than in 1993 or 1994 though we

[9] A part of the deviation between the two measures of joblessness stems from the application of a broader base in the case of the ILO/OECD rate.

[10] We note that though the LFS was started in 1992 we could not make similar calculations for that year because some of the concepts were defined differently.

observe a temporary fall in 1995. The right panel suggests that the spatial differences in search intensity were also considerable, with Budapest on the top and the crisis-hit South-East and North-East at the bottom. The differentials were fairly stable in 1993-96 except in the South-East where search intensity fell. Since the latter was chosen as the reference category the *S* indicators were ascending over time everywhere.

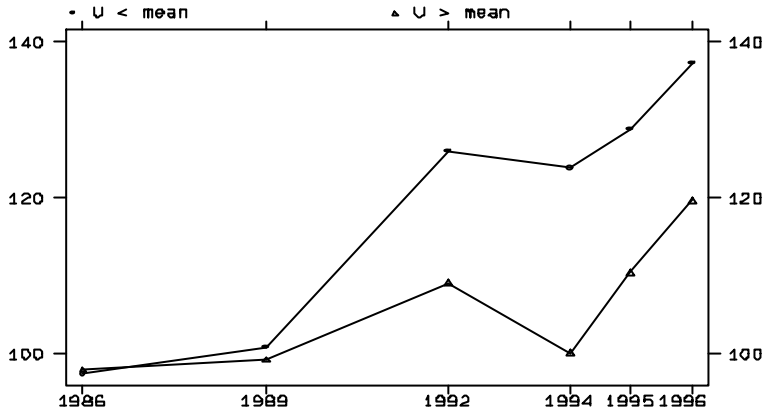
These data suggest that the fall in the **f** parameters estimated for Budapest and the 19 county capitals in (10) can be partly explained by a widening gap in search intensity between them and smaller settlements – the change was in fact consistent with the assumption that stronger competition for jobs restrains wages. It is also worth noting that the spatial differentials in ILO/OECD unemployment are smaller than the differentials in the registered rate therefore our wage equations underestimate the responsiveness of earnings to the the number of job seekers. The 'true' unemployment elasticities of wages may have been well below -10% in 1995-96.

4.3. Other mechanisms

This section discusses some 'disturbances' complicating the relation between local unemployment and local wage push. First, the competition for private sector jobs can be stronger or weaker, at a given volume of search unemployment, depending on the attractiveness of private relative to public sector positions. Second, the unemployed can look for jobs outside their place of residence so the locus of wage push does not necessarily coincide with the locus of joblessness. The pressure on wages can vary at a given unemployment rate depending on the balance of inward and outward commuting.

(i) *The public-private wage gap.* Because of national pay scales the wage effect of regional unemployment is weaker in the public sector, therefore the private/public wage gap varies across regions. Without trying to address the issue in detail (see *Kézdi* 1998) we would provide data suggesting that the wage advantage of the corporate sector increased substantially in regions where the rate of registered unemployment remained low during the transition.

Fig. 5.
The ratio of mean earnings in the corporate sector to mean earnings in the public sector in low- and high-unemployment regions
Female workers aged 25-45 with secondary school background



Calculated from the Wage Survey

Given that the compositional differences between the two sectors are substantial we choose *female workers with a secondary school background, aged 25/45* for the sake of cross-sector comparison. The jobs offered to this category in the two sectors are fairly similar and usually require little firm-specific knowledge. We only have a few thousand observations per year per sector so the regional comparison made in Fig. 5. only distinguishes between low- and high-unemployment districts classified on the basis of registered unemployment rates in 1996.

The private/public wage gap remained tight in the high-unemployment regions until 1995-96 when a program of fiscal austerity, named after the minister of finance as the 'Bokros package', widened it to 20 %. In the low-unemployment regions where restructuring was faster, and the corporate sector more viable, the gap was widening almost continuously and the wage advantage of the private sector grew to almost 40 % by 1996. A wider wage gap may direct the job seekers towards business enterprises, increase the competition for jobs in the corporate sector and, by doing so, imply stronger unemployment-related wage push (at a given rate of registry unemployment) in the *more successful* regions.

(ii) *Commuting.* A general shortcoming of regional unemployment statistics is that they compare the number of job seekers *living* in a region to the number of employed and unemployed persons *living* there. The registers and surveys fail to account for the fact that persons living in town *i* can search for a job in town *j* and when they do so they exert influence on the wages in *j*. We take into account this problem in a rough-and-ready way relying on the observation that spatial mobility has the strongest effect on the labour markets of *small and medium-sized towns.* The two charts of *Fig. 6.* provide support in the case of Hungary.[11]

The left panel shows the ratio of non-resident employees to resident employees in the 19 county capitals using data from the 1990 Census. The highest ratios are observed in small cities and – had we omitted Miskolc, the outlier second from the right – we could also say that the smaller the city the higher the ratio. This rule would apply to Budapest with a mere 20% share of commuters. (Not shown). The second panel illustrates the exposure of a town's labour market to non-resident job seekers calculated with the formula:

$$E_j = \sum_{k \in K} POP_{kj} / POP_j$$

where K is the set of villages and towns (within 40 km) having public transport connection to town *j* and having a higher unemployment rate than that of *j*. The data relate to 1993.[12] The *E* ratio wants to measure the size of the population for which town *j* provides an accessible and relatively good market for job hunting.

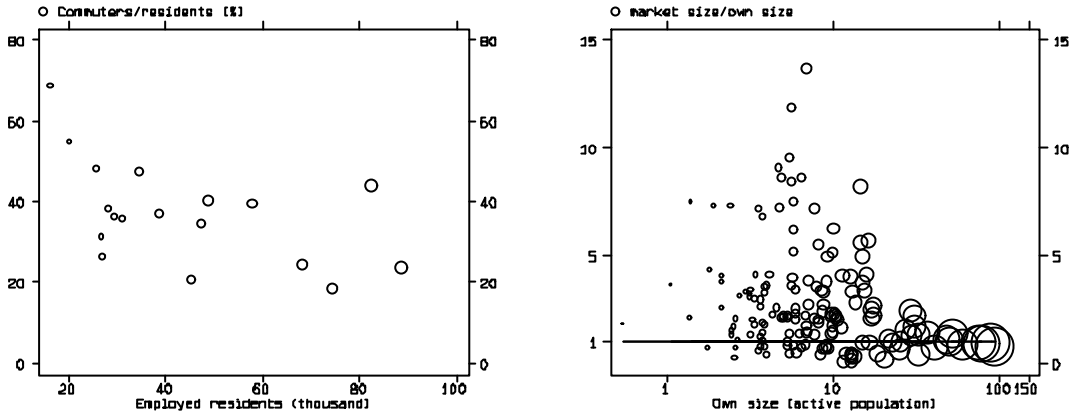
[11] The reason why this pattern may generally hold is easy to understand in the clear case when villages of equal size are spotted evenly in the geographical space, and the travel to work areas are limited by distance. In this case the rural population has roughly the same size in each TWA and the smaller the center the larger the TWA's population in relative terms. In practice bigger cities have larger TWAs, of course, but not proportionally larger.

[12] Village or town *k* is connected with town *j* if it is possible to arrive at *j* from *k* by means of train or coach (operated by a Volán company) between 5.30 and 7.30. a.m. For details see *Köllõ* (1997) The chart shows the location of the 169 labour office centers („towns"). Budapest was excluded.

Fig. 6.
Settlement size and inward commuting

Commuters/local employees and the size of county capitals (1990 Census)

Exposure to non-resident job seekers and settlement size (E ratio, see the text)



The chart suggests the highest levels of exposure to external job seekers in medium-sized towns. Many of the smaller ones have depressed labour markets providing no better opportunities for job seekers than they have at their place of living. In the larger centers the number of external job seekers, constrained by distance, remains low in *relative* terms simply because the city itself is large. Insofar as we trust in these data we can conclude that the number of non-resident job seekers can be particularly high in smaller towns. The wage push exerted by them appears as a 'settlement size-specific' wage disadvantage on the part of smaller towns in models like (10). Had we measured the number of job seekers properly we would have observed smaller region-specific wage differentials between large and small cities and larger ones between urban areas (as a whole) and villages.

* * *

Taken together, sections 4.1.–4.3. suggested that a large part of what appeared 'region-specific' in our standard earnings regressions could be traced back to regional differences in search intensity or other mechanisms governing the *actual* competition for jobs in the business sector. The fact that we found these 'competitive pressures' relatively strong in the well-performing districts is not accidental in our opinion and raises doubts over

wage flexibility as a cure to high regional unemployment. Before discussing these doubts in more detail it may be useful to observe, as far as the 'time series' at hand permit, the development paths of regions following the transition shock.

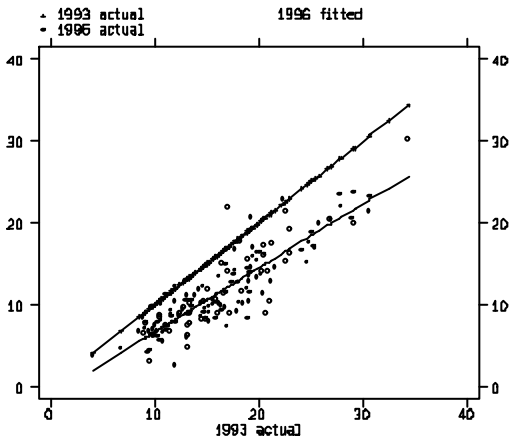
5. CAN WE OBSERVE CONVERGENCE (UNTIL 1996)?

Even in the US where regional shocks are less persistent than in Europe a typical district needs about five years to recover, mostly by virtue of outward migration, as shown in Blanchard and Katz 1992. Despite of the fact that the time elapsed since the transition shock is short, and the available evidence scarce, we try to summarize some basic statistics on the possible returns to flexible wage adjustment. First we look at unemployment persistence with the aid of *Fig. 7*.

Fig. 7

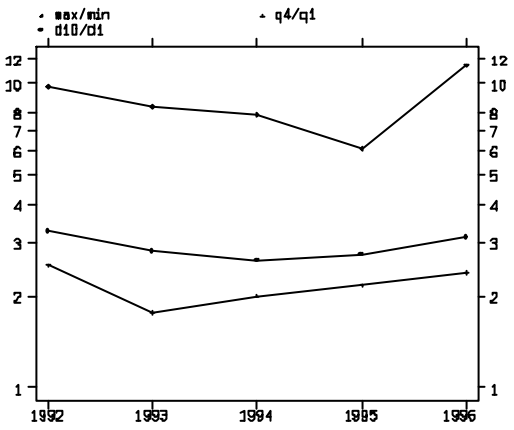
Registered unemployment rate differentials (170 regions)

Registered unemployment rates
170 regions by unemployment
in 1993 and 1996



Measures of dispersion

max/min , d10/d1 , q4/q1



The left panel shows the location of regions by registered unemployment in 1993 and 1996. The rates declined almost everywhere and fell more in absolute terms in high-unemployment districts. However, as shown by the right panel, the standard measures of inequality (maximum/minimum, top/bottom deciles and quartiles) indicate growing differences in relative terms. The max/min ratio increased in 1996, the interdecile range was

widening in 1995-96 and the quartile ratio had been growing since 1993. [13] A high degree of persistence is also shown by a Spearman's correlation coefficient of 0.85 for rankings in 1993 and 1996 – a very high value if we consider that the rankings are exposed to random changes to a large extent because of the small size of the labour office districts. (The average district inhabits only 50,000 people).

Second, we look at indicators of the demand side of the labour market in regions hit differently by the transition shock. (*Table 4*). The 170 micro-regions are ranked by their unemployment rates in 1993. Q2. and grouped into quintiles with q1 denoting the *best* 1/5 of regions. We follow the quintile groups over time in 1993-96 (or 1995 as the data permit).

The first indicator is *physical capital formation* measured with the proportion of firms installing new equipment or opening new facilities. The results indicate statistically insignificant differences between good and bad districts in 1993-95. In 1996 the records of the 'worst' 1/5 of regions seem better than the average. Pearson's chi-square for the crosstabulation of the 5 region groups and the 2 outcomes[14] provides a value of 9.8 significant at the 0.044 level. A 2x2 table where q5 is distinguished from all other regions yields a chi-square of 4.83 significant at the 0.028 level. Thus, we cannot reject the hypothesis that the proportion of firms expanding their capacities was higher in the hardest-hit 1/5 of regions than elsewhere, in 1996.[15] Unfortunately we lack information on the employment effect of these investments.

Second, *firm creation* is considered as an indicator of economic vitality. In this respect the gap was spectacularly widening between the regions, at least until data were available (1995). The gap between q1 and q5 became wider in both absolute and relative terms. (The former is easy to check from the table. In relative terms firm density grew by 90% in q1 and 77% in q5 between 1992 and 1995.) The net change in *sole-proprietorships* depicts a similar path: the growth in absolute terms was slower in the hard-hit regions in all years. (In relative terms the number of entrepreneurs increased by 34% in q1 and 28% in q5 in 1992–1995).

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[13] Yet unpublished calculations by *Károly Fazekas* suggest that regional dispersion grew further in 1997-98.

[14] Existence/lack of investment.

[15] It might be added that by regressing the physical capital formation dummy on unemployment (using 170 observations on the latter) we get positive coefficients in both logit and probit models but only at a significance level of 0.14. Entering a linear and a squared term simultaneously yields insignificant parameters.

Table 4

Success indicators in five groups of regions 1993–96

Physical capital formation

The proportion of firms installing new equipment or building within 6 months following the survey date (per cent of all interviewed firms)

Quintiles of regions by level of unemployment in 1993. Q2.

	q1 lowest	q2	q3	q4	q5 highest
1993	17.6	17.6	18.4	19.9	17.2
1994	24.0	20.4	21.2	21.2	21.1
1995	23.4	23.0	22.8	23.8	23.5
1996	24.4	21.4	25.2	23.2	27.6

Source: NLC Labour Market Forecast Survey (second waves).
Nobs: 4178, 4517, 4478 and 4449 firms, respectively

Firm creation (net)

Annual change in the number of firms per 1000 inhabitants (sole-proprietorships excluded)

	q1 lowest	q2	q3	q4	q5 highest
1993	6.3	3.3	2.8	2.1	1.5
1994	6.6	3.1	2.2	1.7	0.9
1995	2.3	2.4	1.7	1.5	1.0

Source: TSTAR database of the Central Statistical Office.

Business start-ups (net)

Annual change in the number of sole-proprietorships per 1000 inhabitants

	q1 lowest	q2	q3	q4	q5 highest
1993	9.1	8.5	8.2	6.5	5.4
1994	13.1	8.2	7.2	5.3	3.0
1995	2.7	1.3	0.5	0.8	0.6

Source: TSTAR database, Central Statistical Office.

Foreign firms

Workers employed in majority foreign-owned firms (per cent)

	q1 lowest	q2	q3	q4	q5 highest
1993	13.1	8.5	6.5	5.7	4.8
1994	15.5	9.8	8.3	6.1	5.8
1995	20.8	13.2	11.1	9.1	8.8
1996	22.3	16.8	14.3	14.9	11.7

Source: Wage Survey

Finally, a proxy of *foreign direct investment* is summarized. It seems that q3 and q4 were able to keep pace with q1 and q2 in terms of foreign-firm density but the disadvantage of the hardest-hit 1/5 of regions apparently increased. It must be added that we use the share of foreign-firm employees in total employment as a success indicator. The ratio of foreign employees to the labour force (or to the population) would certainly indicate divergence.

Though, as was emphasized earlier, it may be too early to expect spectacular change in regional disparities, observing no change or divergence in important respects certainly deepens the doubts whether wage adjustment could efficiently help the depressed regions. A higher proportion of firms installing new equipment in 1996 is the only potentially promising development we could register in the hard-hit areas – some six years after the transition shock.

6. LESSONS FOR RESEARCH AND POLICY

Economists advocate wage flexibility in the conviction that it constitutes the core of an equilibrating mechanism which, on the long run, prevents the depressed regions from final collapse. Leaving aside the severe side effects (*Freeman* 1995), the problem of the time needed for a 'wage-led' recovery, efficiency wage considerations and other debated issues we would like to emphasize some inherently paradox effects exerted by wage flexibility on regional evolution.

(i) First, the effect of wage flexibility is controversial because its impact on job search. Regions unequally affected by a general economic shock reach very different unemployment rates within a short time. Right after jobloss workers usually look for employment actively, so the difference between registered and search unemployment will be small in all regions. If wages are flexible they fall in region B, hit by a severe shock, relative to the more fortunate region A. The returns to job search then deteriorate in B because of lower wages, less jobs per job seeker, and the erosion of human capital under the long periods workers must spend out of work. In region A these affects are weaker. As a result, the differences in search unemployment and hence wage push are diminishing and – if wages are flexible – the wage gap between A and B starts to narrow. B's labor cost relative to A follows a U-shaped path. The degree of wage flexibility affects the *curvature* of this

path implying faster wage decline in B during the crisis but a faster wage decline in A when the crisis is over and wages react to changes in the volume of search.

The relevance of this mechanism depends on the responsiveness of unemployed workers to expected utility from job search, on the one hand, and on the responsiveness of factor mobility to spatial variations in labour costs, on the other. In Europe where large movements in and out of the labour force occur in response to changes in regional fortunes (Decressin and Fatás 1995, Jimeno and Bentolila 1998) but migration and relocation are less intense than in the US it certainly bears some relevance.

(ii) Second, wage flexibility reduces the demand for consumer goods and services and restricts the scope for small business development. Lower firm density reduces the spillover effects generating external increasing returns, and probably weakens the 'demonstration effect' low-wage SMEs can have on wage bargaining at larger firms.

(iii) Third, wage flexibility tends to depreciate the value of being employed in an enterprise (relative to working in the public sector) and thus averts the job seekers from the sector where wages could respond to high unemployment.

In the particular case of Hungary we could observe several indications of the above-mentioned paradoxical effects. It would be strong to say that they all tightened the cost gap between the *hard-hit* and the *more fortunate* regions because all of them had special context. The statistics on job search indicated large differences between 'metropolitan' and small-town or rural labour markets. Agglomeration economies favoured the primate agglomeration vis-à-vis the peripheries. Commuting predictably leads to increased wage push in relatively small towns as opposed to villages or large cities. Still, the tendency is clear in that these factors, taken together, improved the cost competitiveness of centrally located urban areas touched by a minor 'transformational recession' versus the peripheral rural areas hit by a severe shock.

Simulations using data from *Figs. 2* and *3* can show how large are the magnitudes. A village in a high-unemployment area (q4) had a cost advantage of 23 % vis-à-vis Budapest in 1993 of which we attributed 10 % to the wage pressure of higher unemployment (see q4 and q1 on *Fig. 3.*) while 13 % was due to other factors. By 1996 the wage gap associated with

registered unemployment widened to 15 % while the residual differential came down to zero. The total difference in labour cost thus fell from 23 % to 15 %. Since an employer is interested in the gain he/she can make by moving from one location to another – not in the unemployment-related component of the gain – the implications of these changes for factor mobility are by no means promising.

What are the messages for policy? While it is true that wages in Hungary are flexible by Western standards it hardly discredits the attempts to step further. The predominance of decentralized wage bargaining averts some kinds of rigidities, characteristic of corporatism or excessive government intervention, but other risks are present. Incumbent workers bargaining with their employer may be less prone to accept lower wages if unemployment is high than a union organized on occupational or regional level. The coexistence of free-market practices in the competitive sector and centralized bargaining in the public sector (national pay scales) makes the adjustment of regional wages more difficult. Some 'active' labour market programs isolating the long-term unemployed from the labour market (like communal public works in many cases) also hinder the adjustment of wages. Increasing the 'sensibility' of incumbents to unemployment (or non-employment rather); taking actions to maximize the volume of search on the labour market; reforming wage policies in the public sector are reasonable directions for economic policy, in our opinion.

The choice of economic actors facing the given wages, transactions costs and externalities widen or, at best, maintain the substantial regional differences evolved during the transition. This refers to foreign investors choosing location; people deciding on business start-up; families pondering over change of residence; or workers comparing the costs and benefits of continued job search versus inactivity. In order to *diminish* regional disparities the non-wage costs in question should change first of all. We briefly discuss two policy areas where some realistic goals might be achieved.

Spatial mobility. The almost full privatization of the rental housing stock for tenants combined with the tradition of low spatial mobility warns that the pecuniary cost of migration, and the subjective disutility associated with moving, will remain rather high in the foreseeable future. In search of solution mortgage financing has been advocated by many experts and was actually started by some banks. Others believe that it is easier to promote mobility among young people who can move without mortgaging property,

that is, by building student dormitories, opening the secondary schools for non-residents, offering temporary assistant positions or training for young people from depressed areas.

Regional mobility might also gain from a better transport system but its impact on spatial ‘cohesion’ is dubious in principle and unknown in practice, as yet. It is too early to evaluate the impact on trade and investment of the few motorways leading to the backward parts of Hungary. A point where the uncertainty is not so severe is the case of public transport policies. In the long-lasting period ahead of us when the cost of private transport will exceed the cost of public transport (for the average wage earner) raising the fares seems to be a better policy than cutting the services, at least from the point of view of regional cohesion, because the latter reduces the net benefit from employment drastically in villages. It should be added that the potential gain from commuter-friendly policies is larger in well-performing macro-regions so they can actually widen the east-west and central-peripheral disparities within the country.

Education. While the correlation between a region’s educational level and its unemployment rate, business density, FDI inflows, incomes or taxes appears to be strong this relationship should be interpreted with care. There are clear cases, especially in single-firm settlements and mono-industry enclaves, where a coordinated action for reforming the local educational system could provide high returns by diversifying the supply of skills. The ‘bad equilibrium’ that we observe so frequently in remote villages (high rates of unemployment and miserable wages on the labour market, absenteeism, high drop-out rates and low quality of teaching in the schools) seems much harder to change. Attempts to ‘raise the level of education’ predictably fail if the prospects of employment do not improve in parallel. The integrated projects addressing several aspects of such a wrong equilibrium simultaneously are protracted by the strong verticality of the governmental structure surviving from the state socialist past. The adaptation of the highly diversified institutional framework of European local development policies could forward the development of crisis areas.

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APPENDIX

The Wage Survey: Sample and variables

The National Labour Centre's Wage Survey covers a representative sample of firms and 10% random samples of their workers. The survey excludes small firms (20 or less employees in 1986-94, 10 or less employees in 1995-96). In this paper the analysis is restricted to workers in the business sector by choice. Banks and insurance companies are also excluded (because their firm-level indicators like productivity or capital-labour ratio are not comparable to those of other sectors.)

The cases are weighted to ensure representativity. An individual weight (w_1) stands for the number of workers represented by a respondent given the sampling quota within his/her firm. The original survey did not contain information on firm-level non-response. Comparing the target population and the sample *by firm size and two-digit industry* weights (w_2) were attached to firms as well. The final weights ($w_1 \cdot w_2$) restore representativity under the assumption that non-response is uncorrelated with variables in the calculations.

Notes on the variables. **Experience**: potential experience (age-schoolyears-6). **Education**: highest completed educational grade. **Job grade**: drawn from the 4-digit FEOR code. **Industry**: Classification based on observed flows between the old (pre-1993) and new industrial codes. The procedure followed and an accounting of mistakes presented in Kertesi and Köllõ (1997). **Location**: refers to the settlement where the worker is employed. Central: Pest, Fejér and Komárom counties. N-West: Gyõr-Sopron, Vas, Veszprém, Zala. S-West: Baranya, Somogy, Tolna. S-East: Bács-Kiskun, Csongrád, Békés, Jász-Nagykun-Szolnok. N-East: Hajdú, Szabolcs-Szatmár-Bereg, Borsod-Abaúj-Zemplén, Heves, Nógrád. **Unemployment**: log of the registered rate measured at the level of 170 labour office districts. **Capital-labour ratio:** net value of fixed assets per employee. **Productivity**: sales net of consumer tax, price subsidies and material cost, per employees. Dummy for negative value added. **Ownership**: Majority owner, based on shares in subscribed capital.

Table A1

Wage equations (Wage Survey, OLS)

Dependent: log gross monthly earnings in May + 1/12 of previous year's bonuses*

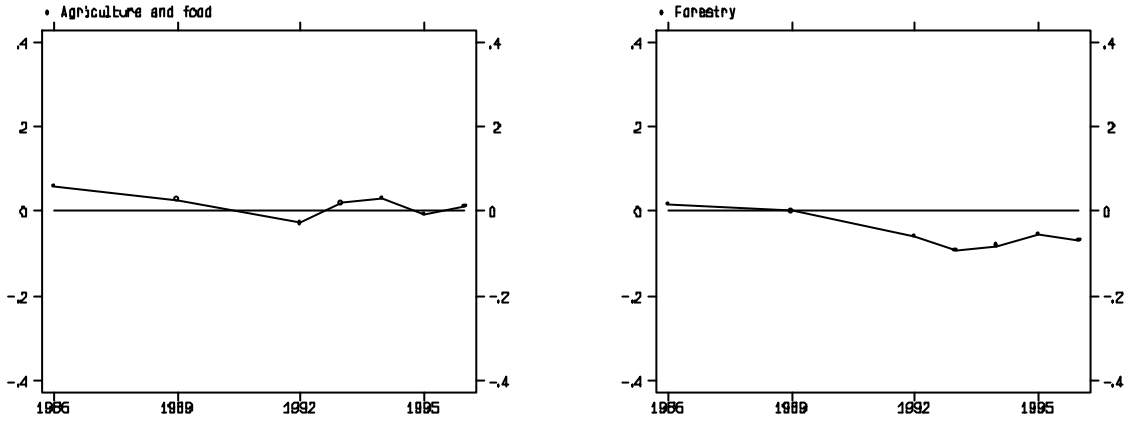
	1986	1989	1992	1993	1994	1995	1996
Male	.2850	.3025	.2211	.2287	.2415	.2243	.2128
	(153.5)	(133.2)	(80.3)	(78.7)	(83.2)	(75.3)	(69.7)
Experience	.0294	.0299	.0257	.0244	.0235	.0210	.0207
	(107.8)	(89.2)	(57.9)	(53.5)	(50.5)	(45.3)	(42.5)
Squared x 100	-.0476	-.0473	-.0381	-.0357	-.0318	-.0282	-.0273
	(-82.5)	(66.8)	(38.3)	(35.0)	(30.3)	(26.8)	(24.4)
Vocational	.1198	.1152	.1297	.1326	.1268	.1090	.1271
	(54.6)	(44.4)	(40.5)	(40.2)	(36.4)	(30.8)	(36.9)
Secondary	.1360	.1462	.2164	.2286	.2148	.1870	.2006
	(50.1)	(45.0)	(55.5)	(56.3)	(52.6)	(44.4)	(46.6)
Higher	.3578	.4415	.5450	.5834	.5870	.5339	.5593
	(76.9)	(78.9)	(86.7)	(86.8)	(96.9)	(85.4)	(81.3)
Non-manual	.0931	.1729	.2194	.2460	.2466	.2147	.2336
	(35.0)	(54.5)	(59.7)	(63.2)	(67.1)	(56.2)	(55.0)
Manager	.5427	.8653	.7552	.7108	.8410	.7526	.8450
	(62.2)	(91.3)	(79.1)	(55.5)	(96.2)	(84.8)	(78.9)
Budapest	.1282	.1182	.1087	.0940	.0843	.0517	.0080
	(43.8)	(16.4)	(15.9)	(12.8)	(10.9)	(6.7)	(1.0)
County capital	.0191	.0255	.0295	.0129	.0118	.0149	.0075
	(8.3)	(9.2)	(8.5)	(3.6)	(3.2)	(4.0)	(2.1)
Village	-.0088	-.0379	-.0589	-.0439	-.0611	-.0416	-.0508
	(3.6)	(12.5)	(15.9)	(11.4)	(15.4)	(10.5)	(12.8)
Central	.0593	.0674	.0432	.0588	.0592	.0395	.0149
	(20.8)	(17.8)	(8.9)	(11.5)	(11.1)	(7.2)	(2.5)
North-West	.0275	.0179	-0.007	-.0055	.0158	-.0042	-.0083
	(10.0)	(4.8)	(1.4)	(1.1)	(2.9)	(0.8)	(1.5)
South-West	.0203	.0384	-.0181	.0183	.0113	-.0100	-.0088
	(6.5)	(10.1)	(3.6)	(2.7)	(2.1)	(0.4)	(1.6)

	1986	1989	1992	1993	1994	1995	1996
North-East	.0061 (2.4)	.0123 (3.8)	-.0139 (3.5)	.0114 (2.7)	.0078 (1.8)	.0018 (0.4)	-.0207 (4.3)
Unemployment rate (log)	..	-.0160 (9.3)	-.0663 (13.1)	-.0735 (11.9)	-.0777 (11.7)	-.0914 (14.4)	-.1003 (17.3)
11-20 employees	..	..	..	..	..	-.2763 (48.8)	-3303 (55.9)
21-50 employees	-.0424 (2.2)	-.0494 (6.3)	-.0852 (15.3)	-.1126 (21.4)	-.1624 (32.7)	-.1817 (36.9)	-.2207 (43.1)
50-300 empl.	-.0424 (12.8)	-.0524 (15.7)	-.0492 (14.6)	-.0574 (16.4)	-.1332 (37.5)	-.0864 (23.4)	-.0909 (23.5)
1001-3000 empl.	.0202 (8.6)	.0333 (11.6)	.0561 (14.2)	.0490 (11.3)	.0453 (9.8)	.0247 (4.9)	.0256 (5.2)
3000- empl.	.0479 (16.8)	.0400 (11.0)	.0927 (18.9)	.0385 (6.4)	.0524 (8.2)	.0523 (8.3)	.0396 (5.4)
Productivity (log)	.0631 (33.7)	.0897 (42.7)	.1197 (68.5)	.1625 (78.1)	.1406 (72.3)	.1616 (78.3)	.2044 (97.3)
Negative value added dummy	-.0653 (9.1)	-.0287 (4.2)	-.1063 (13.1)	-.0952 (10.1)	-.0837 (8.8)	..	-.0140 (1.3)
Capital/labour ratio (log)	.0302 (19.6)	.0250 (13.8)	.0183 (15.1)	.0108 (8.8)	.0093 (15.5)	.0066 (5.3)	-.0047 (3.7)
Private	..	..	-.0030 (0.8)	-.0263 (8.3)	-.0224 (6.2)	-.0283 (8.5)	-.0362 (9.6)
Foreign	..	..	.1469 (26.7)	.0883 (18.9)	.1256 (26.5)	.1206 (27.7)	.0999 (21.2)
Mixed ownership	..	..	.0564 (15.6)	.0206 (2.4)	.0253 (5.1)	.2111 (1.2)	-.0712 (2.4)
aR2	.4523	.4619	.5200	.5039	.5325	.5201	.5432
RMSE	.2755	.3273	.3546	.3671	.3849	.3819	.3889
Nobs	116,306	110,888	88,813	87,151	96,282	91,510	92,099

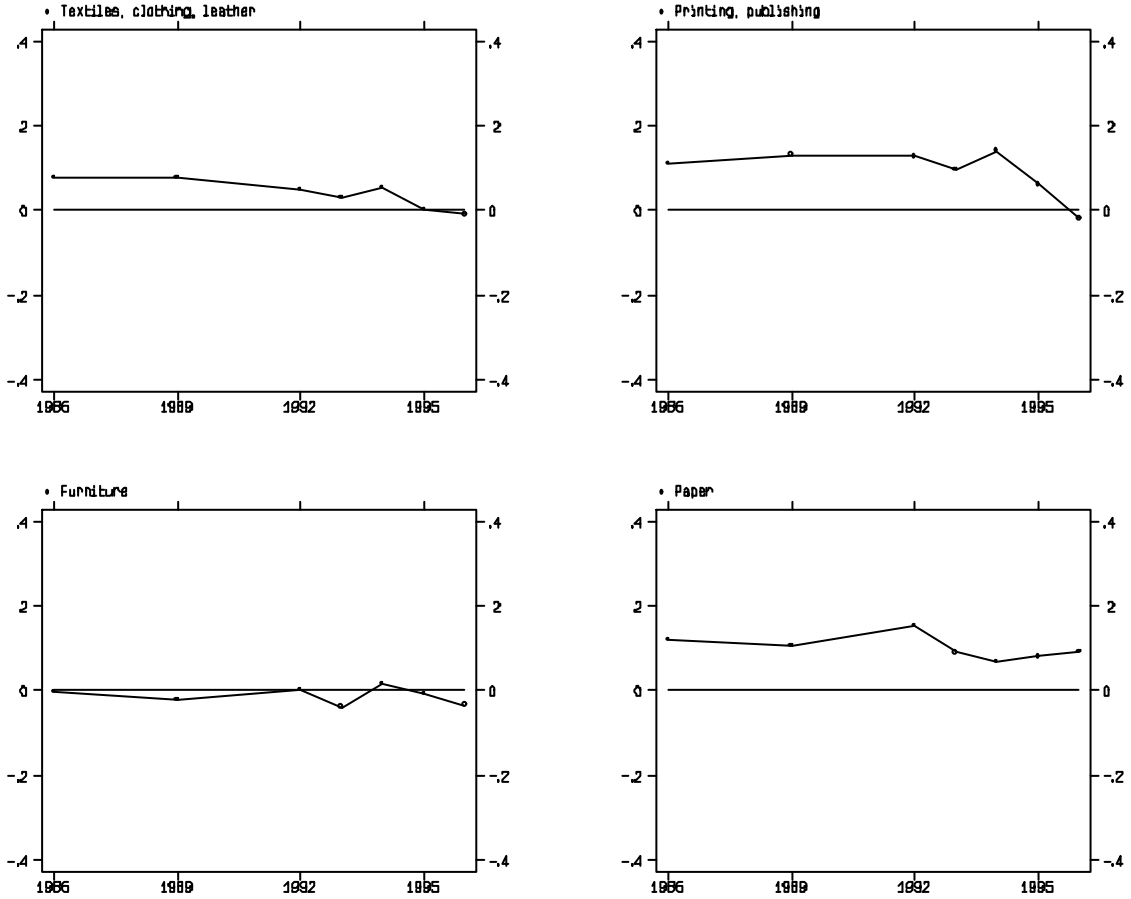
* 27 industry dummies added. References are female, primary school, manual, towns other than county capitals, South-East, 301–1000 employees, state ownership

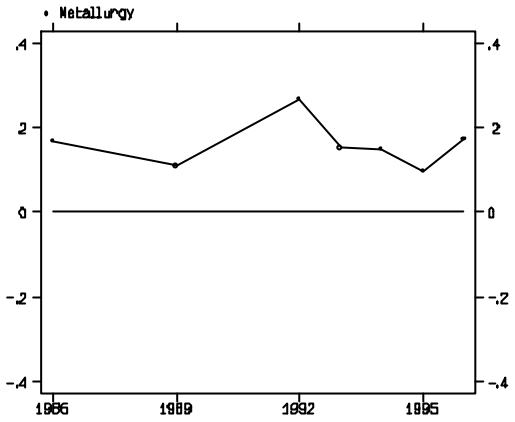
Fig. A1
The parameters of industry dummies in 1986-96 (Reference: engineering)

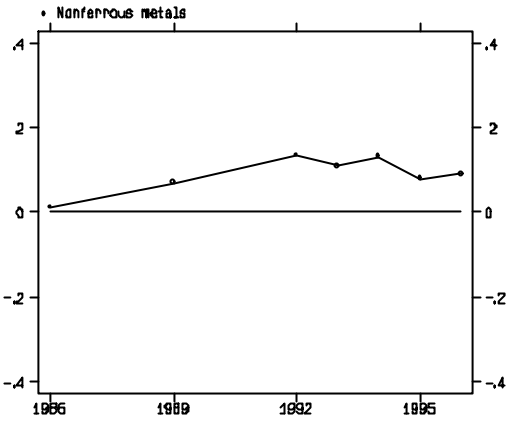
1) Agriculture, forestry and food

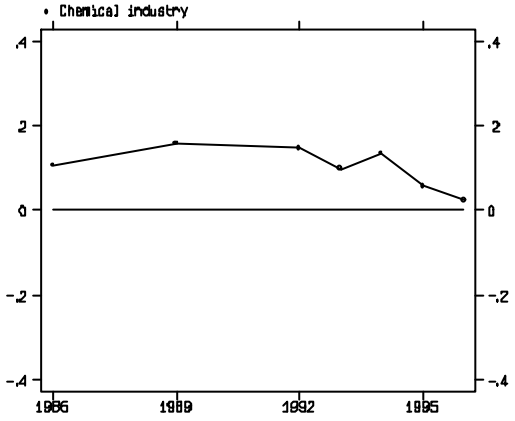


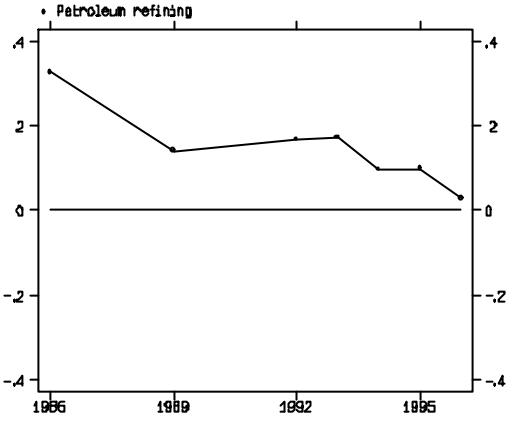
2) Manufacturing



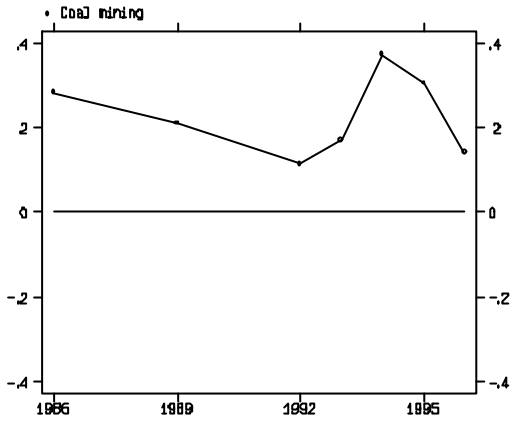

• Metallurgy
.4
2
0
-.2
-.4
1986
1989
1992
1995

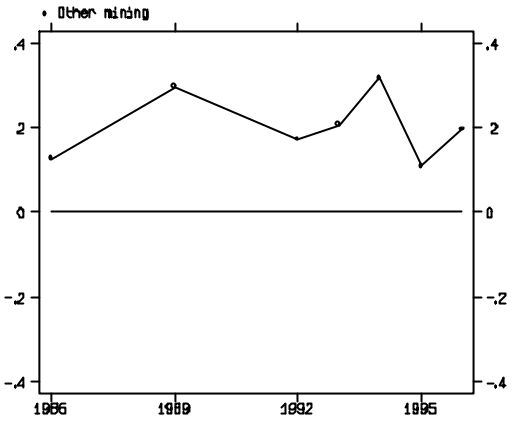

• Nonferrous metals
.4
2
0
-.2
-.4
1986
1989
1992
1995

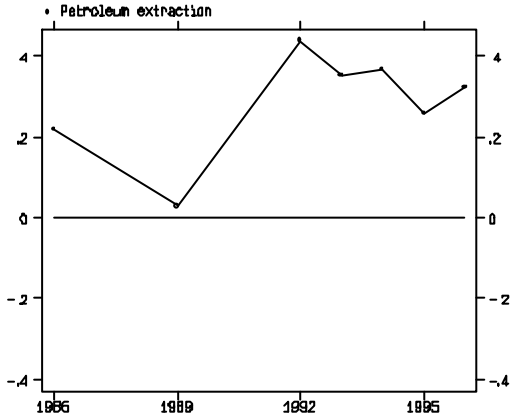

• Chemical industry
.4
2
0
-.2
-.4
1986
1989
1992
1995


• Petroleum refining
.4
2
0
-.2
-.4
1986
1989
1992
1995

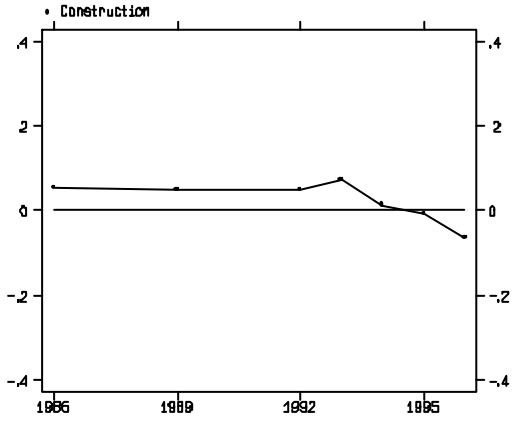
3) Extraction



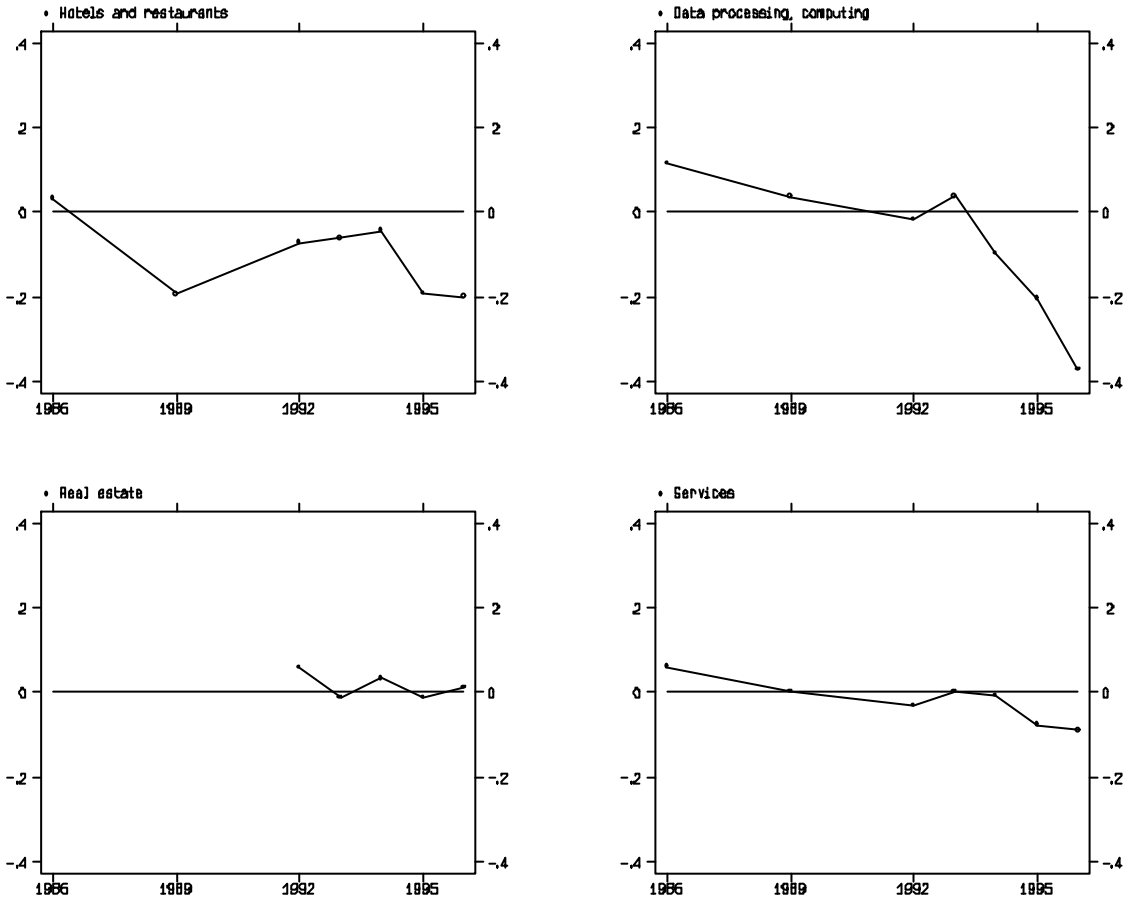




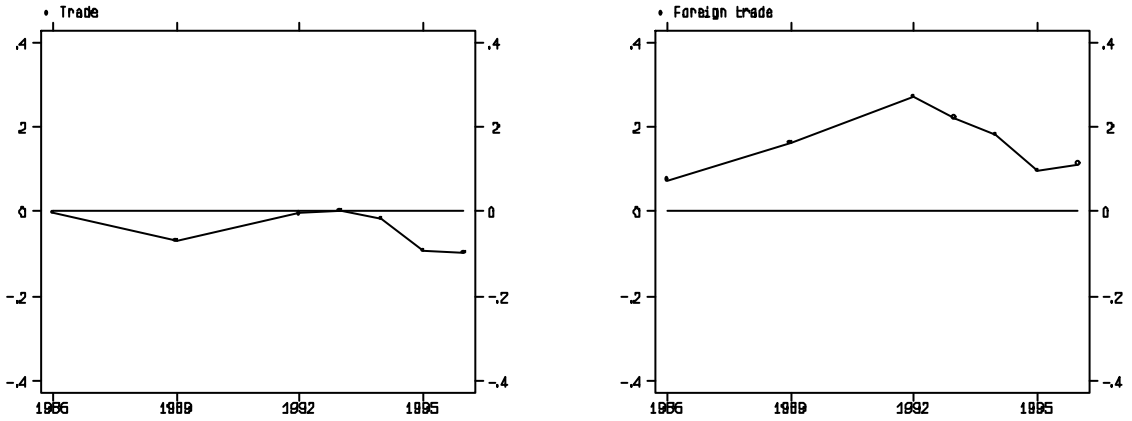
4) Construction



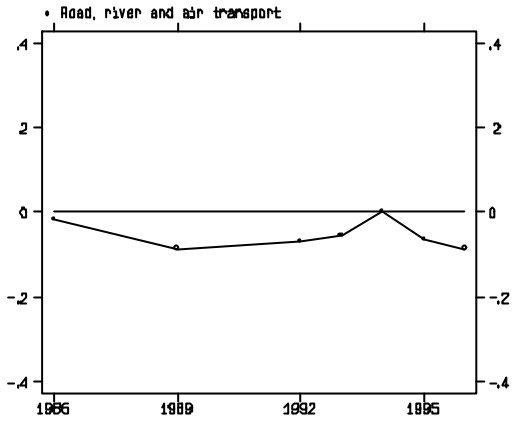
5) Services

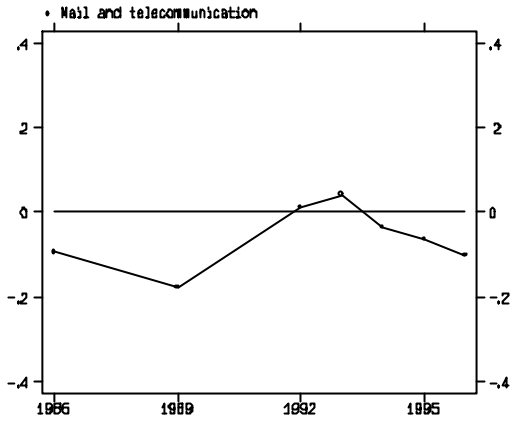


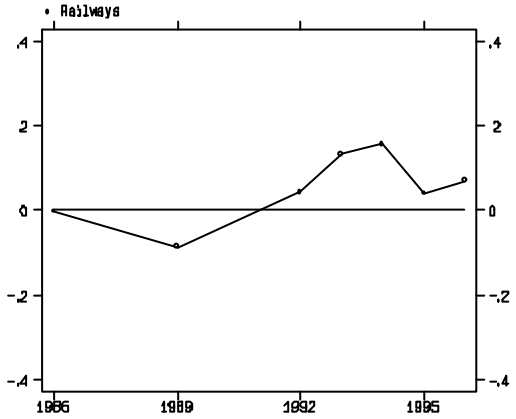
6) Trade

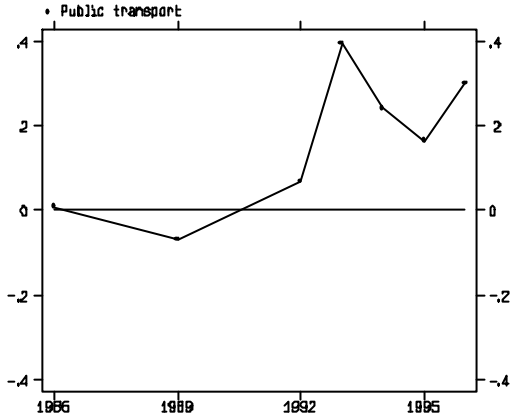


7) Transport and telecommunication

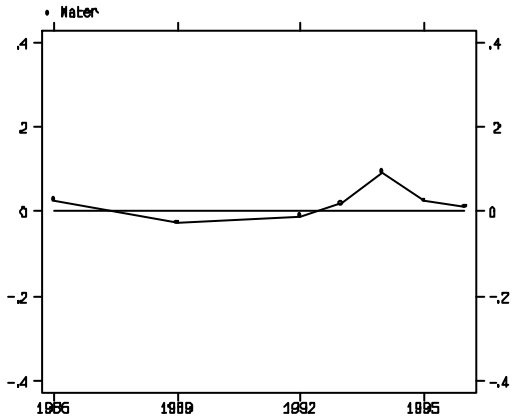








8) Energy and public utilities



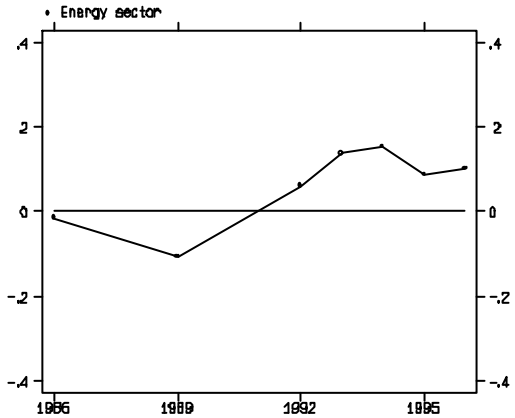


Table A2
Wage equations for selected occupations, 1995 (OLS)

Occupation (Nobs)	Male	Exp Exp^2	Educ..	lnK/L	ln(L)	ln(y)	ln(u)	Const	aR^2
Managers	9.66	2.38	9.38	2.88	5.82	22.6	-8.74	8.58	0.412
(11,336)		-1.67							
Technicians	19.56	2.24	3.97	1.98	5.64	16.46	-9.61	9.02	0.369
(4,127)		-1.66							
Administrators	5.84	2.22	5.48	2.89	3.42	14.3	-9.57	8.9ö	0.291
(8,454)		-2.55							
Office workers	9.74	1.36	5.25	1.50	3.45	15.52	-16.33	8.80	0.374
(5.600)		-0.97							
Light industrial occ.	14.02	2.11	3.94	2.06	5.23	19.73	-9.99	9.02	0.389
(4,052)		-3.56							
– in Textiles	11.21	1.64	4.00	-0.77	6.77	28.23	-9.47	8.98	0.355
(2,189)		-2.25							
Metal workers	19.91	2.39	3.00	-0.07[n]	5.47	22.54	-10.8	8.98	0.344
(11,617)		-3.60							
– in Engineering	24.51	2.14	3.45	-1.44	6.53	28.45	-8.26	8.93	0.372
(4,615)		-3.05							
Machine operators	19.03	1.75	3.37	3.97	3.73	22.79	-9.08	9.22	0.546
(5,188)		-2.64							
Construction workers	31.52	1.89	4.82	0.59[n]	4.54	17.65	-11.51	8.69	0.266
(4,354)		-2.35							
Drivers	8.68	1.33	1.11	1.40	8.11	12.00	-8.48	9.29	0.306
(6,636)		-1.68							
Unskilled workers	18.73	0.62	0.74	1.66	2.51	13.31	-9.28	9.43	0.249
(6,817)		-1.19							

Estimated from the Wage Survey. Unmarked coefficients are significant at the 0.01 level. n: not significant. The parameters, except the constants, were multiplied by 100 (10^4 in the case of experience squared). The coefficients of the settlement dummies (Budapest, county capitals, towns, villages) are not displayed.

ln(K/L): Capital/labour ratio, ln(L): firm size, ln(y): productivity, ln(u): unemployment

The detailed name of the occupations (two-digit FEOR code):: **Managers (13)**: Managers of firms, factories and departments. **Technicians (31)**: Technicians, dispatchers, programmers and other technical occupations. **Administrators (36)**: Employees in charge of business administration, finance, planning, trade, business-related communication and human resource management. **Office workers (41)**: Accountants, secretaries and other office clerks. **Light industrial workers (73)**: Spinners, weavers, dressmakers, tanners, shoemakers, printers, etc. **Metal workers (74)**: Metal workers, foundry workers, fitters, turners, locksmiths, mechanics. **Machine operators (81)**: Operators of manufacturing equipment, assembly workers. **Construction workers (74).** Bricklayers, masons, carpenters, plasterers, etc. **Drivers (83)**: Operators of all kinds of mobile machines. **Unskilled workers (91)**: Unskilled manual workers, porters, cleaners, guards.