THE HUNGARIAN LABOUR MARKET
REVIEW AND ANALYSIS
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FOREWORD BY THE EDITORS

The goal of our labour market yearbooks is to review annually the main developments on the Hungarian labour market and to give an in-depth analysis of the key issues. The subsequent chapters of this volume present 'stylised facts' and recent research results, together with selected information and statistical data. Our further intention is to guide readers in finding other relevant publications and reliable statistical sources. Experiences accumulated with the publication of the previous volumes (four in Hungarian and two in English) and their reception in Hungary and abroad validated our original idea and gave us the encouragement and stimulation to enhance both the contents and the quality of the new volumes.

This year we put 'in focus' regional differences and inequalities. In Hungary political and economic transformation brought about considerable spatial disparities in the level of economic development According to research evidence these differences tend to be permanent in both their level and pattern. Although earlier urbanisation trends changed in the 1990-s, mostly in the centre of the country and in favour of villages in metropolitan areas, the spatial divide remains alarming. The subsequent chapters try to find the causes of, and the cures for, spatial inequalities: first by identifying factors behind regional disparities on the labour market, second by investigating the ways and means of alleviating these inequalities with the reallocation of labour and capital. Without a strong tradition of related economic research, we found it important to open up perspectives of analysis. On the one hand we have elaborated on the spatial allocation and movement of firms, and, on the other, on the factors determining both. Although the behaviour of labour and capital is more or less similar in these respects, the respective problems are not the same and data availability and research experience are rather different. This is the reason why we discuss them in separate sections, but at almost equal length.

Considering spatial movement, Chapter 1.1, relying on two influential models, argues that if transaction costs are sufficiently small, potential employees are probably willing to take on the inconvenience of moving in exchange for improved work conditions. This mechanism leads to individual migration and tends to attenuate imbalances and ultimately inequality. If associated costs are high and discourage moving in spite of substantial gross gains, or if the forces creating inequality prove to be permanent, then inequalities are there to stay and the social benefit of removing them will be lost.

While individuals often look beyond strictly economic considerations, enterprises base their location choice on expected returns. Nevertheless, Chapter 2.1, points out that looking at only classic motives and ways of exploiting spatial differences (which are similar to mechanisms we learn about in the case of employees) and not considering the effect of the economic environment is a mistake. Empirical studies of the second part support the claim that firm relocation can generate a positive feedback on the behaviour of other firms. Co-operation and spillovers between firms can improve the conditions of "traditionally good" areas even further, while those of "traditionally bad" areas might just continue deteriorating if there are no external forces to break the vicious circle. Such differences shape the availability of business partners for firms and the set of available jobs.

The individual mobility decision is influenced by various factors whose connection to economic interest can range from loose to strong. We picked two proxies for potential advantages which were relatively easy to grasp: regional unemployment rates and average wages. Although spatial variation is substantial in both, Chapters 1.2 and 1.3 offer different interpretations about the extent to which these can actually be exploited by individuals. Differences in both cases are shaped not (only) by a variation in the response, but by the composition of the labour and of the firms, along with their local interaction. At the same time we witness the well-known East-West division of the country characterised by the leading role of the North Western and Central regions, surprisingly without the outstanding leadership of Budapest.

It would appear that there are differences that employees could exploit with regard to employment, if not to wages. The question is whether it is worth trying to actually use these differences. Is it better to move or to commute to a better workplace? How important are the related costs? Chapter 1.4. reports that in a (plausibly) bad scenario, an average person moving house might lose the wages he/she had earned throughout a whole year. Contrary to popular belief therefore it is not the levies on swapping a flat, but the associated risks which cause the greatest problem magnified by a scarce supply. Swapping a flat is not a problem for the more affluent (mov-

ing typically to green residential areas of agglomerations), but a serious concern to those wanting to escape from poor areas. The defensive strategy of municipalities seeking to discriminate "problematic" immigrants does nothing to alleviate the problem.

What then can one expect who chooses not to move, but decides rather to venture into commuting. Chapter 1.5 employs a special database to look at the effect of various factors on commuting probabilities, most importantly its cost and the distance to the job to be taken. A remarkable characteristic of the data is that it is informative about both the distance and the financial consequences As intuition might suggest actual results show that financial constraints are transmitted to commuting too, an effect most pronounced in the case of women.

Despite costs to mobility, which are sometimes not trivial, about four per cent of the population changes residence in the period of a year. Is this rate small or big? Are economic incentives important? Chapter 1.6 aims at answering these questions with the use of micro-level data, which confirm the effect of economic incentives not sufficient to sustain regional gap closing process. Mobility in Hungary is largely connected to sub-urbanisation: the flow of labour from cities to surrounding villages. Results show that the bulk of mobility takes place within a (micro) region, traditional models of mobility and migration cannot be successfully applied. Differences within a region also need to be handled with care, as the workplace is often not identical to the place one lives.

Even if people move, it is mostly the inhabitants of backward regions who cannot break free from their place of living. This may be because they lack the appropriate skills or qualifications or, put another way, hold obsolete skills and/or qualifications. It remains a question how pressing the need is to move and how willing enterprises are to move to backward regions? The second part of "in focus" looks at this question from various aspects, concentrating on manufacturing and related industries because these industries play an outstanding role in economic growth and because of their responsiveness to the economic environment. As labour demand and its structure is important to potential employees, enterprises are interested in the presence of suitable labour and, as Chapter 2.1 points out, the network of co-operation whose operation depends on companies that are in some sense nearby. We have been used to the idea for some time that Hungary lies on the boundary of East and West, subject to the influences of both worlds. Chapter 2.2 shows that this border is present if measured by the strength of the European economic "force field", and generates productive connections largely responsible for the growth of the Hungarian economy. Chapter 2.3 points out that it is the engineering (automobile industry to a great extent) and electronics companies of Western Hungary that play a

decisive part in economic growth. A common characteristic of these enterprises is that they are situated on easily accessible sites, employ well educated labour and became an integral part of the European economic "force field". If there is a goal to decrease the almost deterministic effects of spatial differentials, it is crucial – argues Chapter 2.2 – that the geographic distance of the disadvantaged regions from the centre is "reduced" through the rapid development of infrastructure and improved accessibility.

Almost every study reflects on the distribution of knowledge, of human capital. Chapter 1.6. and the chapters of the second part suggest that more educated people are much more likely to move, due to a great extent to the fact that industries mostly settle in already developed regions. Educated people either move to their proximity, or do not have an incentive to move away and move to pleasant locations within reach of the newly established workplaces. The analysis in Chapter 2.2 indicates that instead of decreasing inequality, such distribution of human capital increases it even more. Knowing this, it does not come as a surprise that FDI does not play a pioneering role in either of these respects. Chapter 2.4 illustrates the behaviour of enterprises with results that appear familiar, but with surprising magnitudes in many cases. One of these results is that the number of jobs created by foreign owned firms well exceeded those created by domestic owned ones. Unfortunately the positive effect of the former, working through business connections, is region-specific as well.

What can we conclude from all of this? It seems that although both labour and capital are free to move, neither moves in such a way that the disadvantage of certain regions would diminish significantly. Since effects are cumulative, they do not reverse by themselves, which prompts the need for external help to reduce regional inequalities. Development of the infrastructure, and the decreasing of barriers to the formation of contacts is a key element for both potential employees and enterprises. It is of equal importance that both the labour force and the business environment of disadvantaged regions become more attractive. Although such processes benefit from the regionalisation of Central Europe and the enlargement of the European Union, helping them should remain a top priority for some time to come. We can only hope that helping the accumulation of human capital, schooling and education programs in general will become part of the official "regional agenda" just as the development of the road network did.

As before, we continue to restrain ourselves from offering economic or social policy recommendations. We would instead prefer to promote dialogue between science and policy, by making research findings accessible to a broader audience. At the same time, we do not hide the research

shortcomings and point out those areas that are still to be investigated by genuine research in Hungary.

Similarly to the previous volumes the opening chapter gives an overview of recent labour market developments and employment policies. The closing chapter presents a statistical data set, and gives comprehensive information on the main economic developments, such as demographic trends, labour force participation, employment, unemployment and inactivity, wages, education, labour demand and supply, regional differences, migration, commuting, and labour relations, together with some international comparison and methodological remarks. Data on wage and income differentials are also presented, along with labour market developments at lower levels of government and in smaller regions. In assembling this chapter we added a separate subsection with abundant data based on the last (2001) and the previous general census.

THE CURRENT SITUATION ON THE LABOUR MARKET AND LABOUR MARKET POLICY IN HUNGARY

Károly Fazekas

1 INTRODUCTION*

Hungary has successfully passed, during the 90's, through the most painful period of economic transformation and today has developed into a vigorous market economy. The average growth of the GDP has been 4.25 per cent annually since 1997, steadily exceeding the EU average. This excellent performance of the economy was mainly due to the dynamism of the export oriented manufacturing sector which is dominated by foreign-owned companies. Hungary takes third place in the per capita ratio ranking of the net FDI inflows in the group of EU25 countries. In its 2003 Regular Report, the Commission concluded that the country *"is a functioning market economy and the continuation of its current reform path should enable Hungary to cope with competitive pressure and market forces of the Union"*.[1]

1.1 Recent macro-economic tendencies

In 2001, mostly as a result of the downturn in the external economic environment and changes in economic policy the favourable position of the economy somewhat deteriorated. The export driven growth of the previous years was replaced by a development stimulated by internal demand. Strong fiscal expansion, such as the pre- and post-election wage increase in the public sector and state financed infrastructural developments prevented the economy from slowing down but the cost was high: the overall macroeconomic balance of the Hungarian economy has deteriorated. In 2002, the investment of the national economy increased by 5.8 per cent largely due to projects financed by the state budget. The salaries of civil servants increased on average by 50 per cent from 1 September 2002 contributing to a 13.6 per cent real wage increase for the whole year. The growth of GDP decreased from 3.7 to 3.3 per cent in 2002 and to 2.5 per cent in the first eight months of 2003. Hungary's export growth has slowed considerably since 2001. The export growth was 9 per cent in 2001, 4 per cent in 2002 and almost stagnated in the first part of 2003. Inflow of Foreign Direct

* The first version of this chapter was prepared for the spring edition of the European Employment Observatory Review. This updated version has been published with the kind permission of the Publisher of the EEO Review.

1 CMR (2003) Comprehensive monitoring report on Hungary's preparation for membership. Released on 5th November 2003. http://europa.eu.int/comm/enlargement/report_2003/pdf/cmr_hu_final.pdf

Investment (FDI) decreased substantially in 2002 from 2.4 billion dollars in 2001 to 0.9 billion dollars in 2002 with a further deterioration of this trend in the first 6 months of 2003. The labour market reflected these negative tendencies. The employment ratio which showed steady increase since 1997 took a reverse direction. (see Figure 1) The economic and labour market performance of the most backward regions deteriorated to such an extent that regional differences have deepened further.

The recovery which was expected for the 2nd half of 2003 has been delayed and was moderate in 2003. Nevertheless, according to the latest forecasts made by GKI Economic Research Co., and by the National Bank of Hungary[2] the Hungarian economy probably reached the bottom of the slowdown in the summer of 2003 and growth slightly accelerated in the remaining part of the year. The expansion of the GDP was be 2.9 per cent for the year as a whole. This figure is the smallest since 1996 but is still higher than the EU average by more than 2 percentage points and is more or less equal to the performance of other Central European countries. The rate of inflation increased. The inflow of foreign direct investment was be substantially higher than in the previous year, mainly due to higher privatisation revenues. Nevertheless, it did not suffice to cover the current account deficit. Consequently, the net indebtedness of the country has been grown.

The service sector was responsible for the major part of growth but in the 2nd half of the year the GDP produced in industry startred to gain more importance. Investments in the manufacturing industry – especially the purchase of new machinery – started to increase after the sharp decline of the previous year. The performance of the trade, real estate and non-business service sectors has been improved considerably. Employment was increasing in these three sectors, while it was decreasing in the business sector as a whole. Real earnings increased by 9.2 per cent in 2003.

The Central Statistical Office confirmed that the economy grew by 4.2 per cent (year-on-year) in the first quarter of 2004. The rise in industrial output averaged 10.4 per cent in this period. Even better news is that this revival of the economy was driven by investments and exports, indicating clearly the breaking away with the domestic demand stimulating policies of 2001–3 which led to a serious deterioration of macroeconomic balances and decline in the competitiveness of the Hungarian economy.

Inflation, fiscal and current account imbalances are, nevertheless, still the weakest points of the Hungarian macroeconomy. The rate of inflation which was 6.9 per cent in April increased further in May, reaching 7.6 per cent on a year to year basis. The rate registered for June was 7.5 per cent. The fast pace of price rise was mainly due to the increase of indirect taxes. The fiscal deficit amounted to HUF 1,045 billion (EUR 4 million) in the

2 GKI (2003): Forecast of GKI Economic Research Co. on Developments in the Hungarian Economy in 2003. http://www.gki.hu/frame.php; MNB (2003): Quarterly Report on Inflation. National Bank of Hungary. Budapest. November. 2003. 11. 25. http://english.mnb.hu/modulei.asp?id=2&did=2346

first six months – almost 88 per cent of the full-year target. The government took restrictive measures (cuts in expenditure in the amount of HUF 120 billion (EUR 460 million) to reduce the budget deficit in February this year. The Government has submitted its Convergence Programme to the European Commission. The Programme envisages a reduction in deficit from 4.6 per cent as a proportion of GDP in 2004 to 4.1 per cent in 2005. In view of the disappointing budget situation, the Government postponed its plan of an early introduction of the Euro to 2009 or 2010. A reduction of the budget deficit of 0.5 percentage points annually is foreseen now, so the fulfillment of the Maastricht criterion of a maximum 3 per cent of GDP is only expected in 2007–2008.

Table 1: Key economic indicators

	2002 actual	2003 actual	January-May 2004	2004 forecast
1. Volume of GDP (%)	103.3	102.9	104.2	103.7
2. Industrial production (constant prices, %)	102.6	106.4	109.8	110.0
3. Investment in the national economy (constant prices, %)	105.8	103.1	118.9	107.0
4. Construction (constant prices, %)	120.1	100.7	111.2	105.0
5. Retail trade (constant prices, %)	108.6	108.8	106.8	103.0
6. Exports (current prices in euro, %)	107.4	104.1	113.1	110.0
7. Imports (current prices in euro, %)	106.4	105.8	113.7	110.0
8. Trade deficit (EUR, billion)	3.4	4.3	1.7	4.6
9. Current account deficit (according to new methodology; EUR, billion)	4.9	6.5	2.8	6.5
10. Average exchange rate of the euro (in HUF)	242.9	253.5	256.0	253.0
11. Deficit of the general government (on cash flow basis, without local governments; HUF, billion)	1,580	1,054	1,040	1,200
12. Index of average gross earnings	118.3	112.0	108.6	109.0
13. Consumer price index	105.3	104.7	107.1	106.7
14. Consumer price index at the end of the period (corresponding month of the previous year = 100)	104.8	105.7	107.5	106–106.5
15. Rate of unemployment (at the end of the period, %)	5.9	5.5	5.8	5.9

Source: *Forecast of GKI Economic Research Co. on Developments in the Hungarian Economy in August 2004*. http://www.gki.hu/index.php?id=19&lang=en

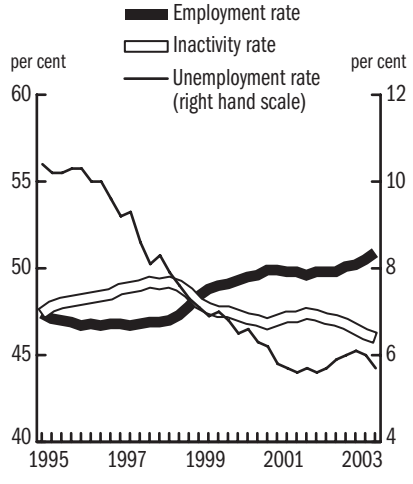
1.2 Recent tendencies on the labour market

From the mid-nineties until the second half of 2001 the performance of the Hungarian labour market was good. By the first quarter of 2001, the ILO unemployment rate fell to 5.6 per cent which was the lowest figure for the last 8 years and significantly less than the EU average (7.8 per cent).

Employment started to increase after 1997 for the first time in the decade since the transition. The decline of unemployment was striking in the most prosperous regions where not only full employment was reached but even a scarcity of (skilled) labour occurred in certain areas.

After the second quarter of 2001, however, some unsettling new tendencies emerged. The employment ratio started to decrease while the unemployment and the inactivity ratio once again started to grow with a pronounced negative effect for backward regions. The declining performance of the labour market can be explained both by external and internal factors: a general slump in the world economy and the deteriorating competitiveness of the Hungarian economy.

Figure 1: Changes in the rates of unemployment, inactivity and employment

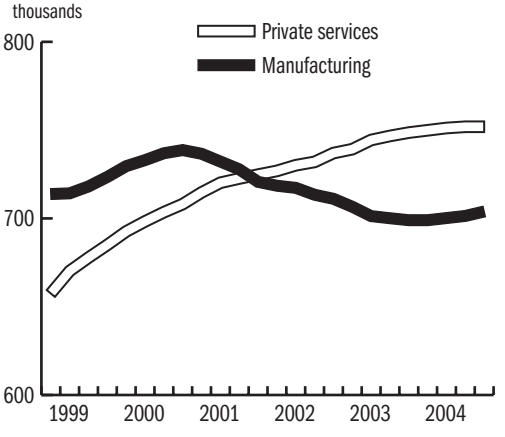


Source: *CSO Labour Force Survey*.

Hungary's manufacturing export growth slowed down considerably following the downturn of the world economy. This obviously had a negative effect on employment which was aggravated by rapid wage inflation within the country. In 2001 the gross average wage increased by 18 per cent and real wages by 6.4 per cent. In 2002, in the year of both the general and the local government elections the respective figures were 18.3 and 13.6 per cent. The explosion of wages was generated by government policy decisions: the minimum wage was increased by 57 per cent in 2001 and 25 per cent in 2002. In 2002 the wage of public sector employees was increased by 50 per cent. That year real wages grew more than three and a half times faster than the productivity of the economy. The second half of 2003 brought about improvements in the economy. Output and investments in manufacturing industries and services started to grow, unit labour costs went down somewhat and the level of employment slightly increased while un-

employment started to decrease. We can regard the developments on the labour market as a return to the longer term trend which was interrupted one and a half years ago.

Figure 2: Changes in full-time employment



Source: *MNB Inflation Report. 2003.*

1.3 Employment policy: preparation for accession

Progress in implementing the acquis in employment policy

According to the Commission's Comprehensive Monitoring Report on Hungary's preparation for EU membership (CMR)[3] *"Hungary has reached a high level of alignment with the acquis in most policy areas*". The *acquis* in the field of social policy and employment includes minimum standards concerning labour laws, equal treatment of women and men, health and safety at work, social dialogue, public health, employment policy, European Social Fund (ESF), social inclusion, social protection and anti-discrimination. In certain areas, such as the European Social Fund and anti-discrimination, Hungary still has to make enhanced efforts to complete its preparations for accession. As far as the employment policy is concerned efforts are still needed to effectively implement priorities identified in the Joint Assessment of the Employment priorities. In particular, it is important to increase the employment rate, especially among older workers and women, the unskilled and the disadvantaged and to reduce regional imbalances.

Progress in implementing the Joint Assessment Papers on employment polices

After May 2004, acceding countries started to participate in the European co-ordination of employment policies and will present their first National

3 CMR (2003) Released on 5th November 2003. http://europa.eu.int/comm/enlargement/report_2003/pdf/cmr_hu_final.pdf

Action Plans in October 2004. As a preparation for this the Commission initiated the elaboration of Joint Assessment Papers (JAPs) on employment policy priorities in each country. The key priorities of the Hungarian JAP[4] were *" boosting the job creation capacity in particular in services, increasing the employment rate, reviewing the tax and benefit systems to strengthen the incentives to create and take up jobs, adapting the education and training system to labour market needs, tackling the drop out problem, enhancing the effectiveness of adult training, addressing gender gaps and the strengthening of the Public Employment service and of the structures necessary for ESF preparation*." On 6th. November 2003 the Commission's presented a final report on JAPs in-depth reviews on progress in implementing policies.[5] The communication updates the assessment presented in the first JAP Progress Report on common policy issues and in institutional setting and administrative capacities. The communication expressed certain concerns over the recent wage developments in the Czech Republic, Estonia and Hungary as they exceeded productivity trends. Concerning regular minimum wage increase in some countries "care must be taken not to price low-skilled workers out of the labour market. As far as the key priorities of the JAP are concerned the communication recognise Hungary's efforts to develop a set of fairly comprehensive financial incentives for participation in training addressed at workers, the unemployed and the inactive while some concern was expressed over the very low levels in participation in education and training of low-skilled adults. The commission asked for a more rigorous implementation of already adopted integration strategies directed at the disadvantaged, ethnic minorities and the Roma in particular.

Preparation to utilise resources available from the Structural Fund

The Hungarian National Development Plan[6] (NDP) serves as a basis of all Structural Fund Interventions in the field of human resource development for the period 2004–2006. The Hungarian Government has elaborated five Operational Programmes in the framework of the NDP from which three include measures financed from the European Social Fund. According to the CMR "the main elements of the administrative structures are in place – however, there is a need for stronger decision-making capacity as well as greater inter-ministerial co-ordination. A more strategic approach has to be ensured with respect to all measures proposed for ESF assistance. The management, administrative, monitoring and control capacities of the relevant Ministries, intermediate bodies and financial beneficiaries should be reinforced."

In September 2003 the Minister of Employment and Labour signed the EQUAL community initiative programme for Hungary. EQUAL aims at addressing all forms of discrimination and inequalities in connection with

4 JAP (2001) Joint Assessment of the Employment Policy Priorities of Hungary. 16 November 2001, Budapest.

5 http://europa.eu.int/comm/employment_social/employment_analysis/communi2_en.htm

6 The Hungarian National Development Plan 2004–2006. http://www.nfh.hu/doc/nft/letolt3/NDP_Hungary.pdf

the labour market through developing, testing and disseminating innovative approaches and methods and through trans-national co-operation. The Hungarian Equal Programme has four priority themes: a) Facilitating access or return to the labour market for disadvantaged job-seekers; b) Promoting life-long learning and "inclusive" work practices that encourage the recruitment and retention of those suffering discrimination on the labour market; c) Reducing gender gaps and supporting job desegregation; d) Support the employability and inclusion of asylum seekers.

2 RECENT CHARACTERISTICS OF THE HUNGARIAN LABOUR MARKET

2.1 Employment, unemployment, inactivity

Labour market participation

Despite all of the governments efforts the participation ratio has been declining since the late 90's. In 2002 the Hungarian participation rate was 59.8 per cent while the corresponding figures of the OECD countries, EU member states and accession countries were 69.8, 69.2 and 66.7 per cent respectively. Among the determinants that cause the low participation rate four strongly interrelated factors seem to be crucial: a) weaknesses in labour demand for low-skilled/low-paid jobs, b) generous social transfer systems in terms of their coverage, c) the existence of serious regional backwardness on the labour market, d) the presence of a large scale informal economy.

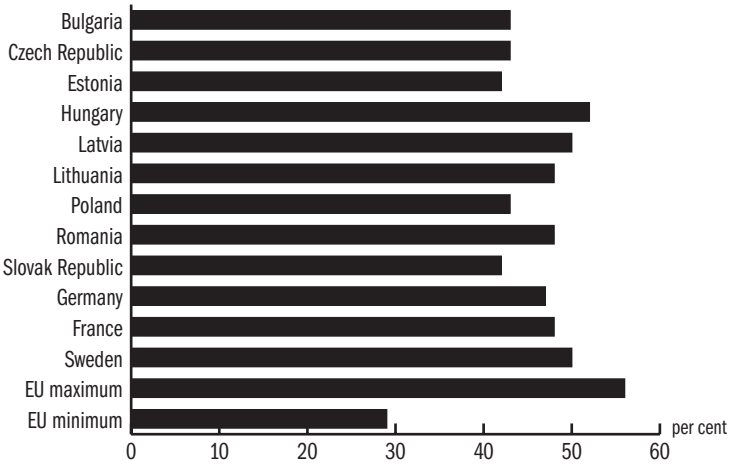
One of the important causes of low demand for the low-skilled/low-paid jobs and the large extension of the informal economy is the high tax wedge in Hungary. Despite a decrease in social security contribution rates since the early 90's, total taxes and contributions on labour remain the highest in Europe. A key element of the high tax wedge effect on low paid work is the employer's lump-sum contribution to healthcare funds. In 2003, this fixed contribution represented 9 per cent of the employer's contributions at the average wage but 17 per cent at the minimum wage.[7] Lump-sum contribution also discourages the development of part-time employment. Part time employment represents 3.3 per cent of the total registered employment in Hungary against the 17.1 per cent of EU average in 2001.

Demand for low skilled/low paid jobs was largely reduced by the large increases in the statutory minimum wage since 2000. While in 2000, 10 per cent of business employment was at the minimum wage this share had risen to 18 per cent in 2002. The increase in labour costs hit the small domestically owned firms and local labour markets in the less developed regions especially hard.(*Kertesi and Köllő* 2003) Social transfers play an important role in the income of a large number of households. In 2000, about 30 per cent of the population received some kind of allowances from social

7 The lump–sum health contribution was reduced in 2003 as a first step towards complete elimination in 2006.

security. The problem is, that a large share of the working age population is covered by social benefits (such as disability benefits, official or quasi-official early retirement schemes) which, unlike unemployment benefits, do not encourage people to return to the labour market.

Figure 3: The Hungarian tax wedge in international comparison



Note: The tax wedge (for an average production worker) represents personal income tax plus employer's and employee's social contributions as a percentage of total labour cost (including employer's contribution).

Source: *"Labour market and social policies in the Baltic States"*, OECD (2003), data 2000. Bulgaria, Romania: *JAP.*

The large extent of the informal economy means that calculations based on the labour force surveys tend to underestimate the actual work activity. According to the government's estimation as much as 40 per cent of employment is engaged in the informal sector. Uncertainty over the numbers and characteristics of informal jobs makes it difficult to develop well-targeted measures to switch them to the formal economy.

The low participation rate is influenced also by regional differences at the level of local labour markets. While job destruction during the transitional crises was evenly distributed across regions, job creation was concentrated in the most developed urban labour markets of the country. Alleviation of regional disparities was seriously hindered by obstacles of internal migration and commuting.

Employment

Unlike in most EU countries prime-age male population is also characterised by a relatively low employment rate. In 2002, 79.7 per cent of men aged 25–54 were employed, contrasting with EU countries where the rate was 86.7 per cent. Non-employed prime aged men are predominantly

low-skilled and live in the economically depressed areas. The division by gender of the employed population has been stagnant for years: around 45 per cent of the employed are women. The male employment rate exceeds the employment rates of women in all age groups. The average employment rate of prime working age (25–54) female population was 66.5 per cent in 2002. The subsequent figure for EU member states was 67.3 per cent in the same year.

During the last decade the sectoral structure of employment has changed considerably. In 2002 6.2 per cent of the employed worked in agriculture, 34 per cent in industry and 59.8 per cent in the service sector (the respective figures for the EU are: 4.4, 26.9, 68.8 per cent). The number of employees in the private sector has stagnated while that in public administration has increased. The low employment rate reflects mismatches in the levels and structure of skills. Unfortunately, the Hungarian educational performance is rather poor in international comparison. The prime age population has one of the lowest percentages of tertiary education attainment in the OECD countries. Although a sharp acceleration in enrolment has occurred in recent years, the conclusion is still valid: policies centred on education and training have to play a crucial role in improving the employability of all working age cohorts.

Unemployment

The unemployment rate reached its peak (12.5 per cent) in 1993 and has been decreasing continuously until 2001. Recently, the decrease in the unemployment rate has been partly due to the shortening of the period of eligibility for unemployment benefit, and the narrowing of the group of people eligible for such a benefit. In August –October 2003 the number of the unemployed population was 237,000, a decrease of 2.5 per cent compared to the same period in the previous year. The rate of unemployment (5.6 per cent) has slightly decreased during the last 12 months but the change is within the limits of the sample error. The Ministry of Employment Policy and Labour regards the latest developments on the labour market as a return to the longer term trend of improving labour market indicators interrupted one and a half years ago. 44.9 per cent of those unemployed searched for jobs for more than one year. The ratio of long term unemployed did not change over the last 12 months. The average length of job search was 16.3 months, almost the same as one year ago. The ratio of the 15–24 year old persons in the total number of unemployed was 22.5 per cent, while the unemployment rate of this age bracket was 13.0 per cent. This latter rate is almost the same as it was one year ago and is somewhat lower than the corresponding EU average (15.8 per cent) in September 2003.

Inactivity

43.8 per cent of the 15–64 year old population was not present on the labour market in 2002. (EU = 35.7 per cent) Withdrawal to inactivity is typical for the unskilled and older workers and especially for those living in depressed regions. Besides the skill and regional mismatches an important reason for the high inactivity ratio is the relatively low retirement age. Although the retirement age was substantially increased in recent years the higher age limits do not apply to those who are close to retirement. The dynamic expansion of secondary and tertiary education also contributed to the increase of inactivity.

2.2 Major disadvantages on the labour market

Low employment and high inactivity rates are determined by two sets of interrelated factors, a) extremely low employment probabilities of certain disadvantageous groups and b) cumulative regional backwardness on the labour market.

Disadvantageous groups on the labour markets

Roma population: The Roma are the biggest ethnic minority in Hungary. According to estimations there are 450–600 thousand Roma people (4–6 per cent of the population) in Hungary and this ratio will grow to 10–11 per cent in the next ten years. The employment rate of the Roma is roughly half, their unemployment rate is three to five times higher and the number of dependants per earner is three times higher than the corresponding figures of the non-Roma population. Family allowance and social benefits are the only source of living for many Roma families.

Table 2: Main source of income in the 15–74 year old Roma population

Status	Male	Female	Total
Child care allowance recipient	2.6	30.6	17.0
Pension recipient	16.4	16.1	16.2
Employee	17.8	11.7	14.6
Social benefit recipient	16.3	11.6	13.9
Casual work	7.4	2.0	4.6
Unemployment benefit recipient	5.8	1.7	3.7
Entrepreneur	2.9	1.4	2.1
Dependant	12.1	11.5	11.8
Student	11.0	10.4	10.7
Other	7.7	3.0	5.4
Total	100.0	100.0	100.0

Source: *HAS, National Roma Survey*, 2003. *Figyelő*. Labour market supplement. 4. Dec. 2003.

Disadvantaged young persons: The labour market situation of young people has been deteriorating. In 2002 in the age group 15–24, both the number and percentage of employed decreased. The year-on-year employment rate of the 15–19 age group decreased from 7.7 to 5.4 per cent, while the corresponding rate of the 20–24 age group fell from 51.1 to 49.3 per cent. A large proportion of young people enter the labour market either without any skill or with a skill or qualification that does not match the requirement of the employers. This is particularly true for those socially disadvantaged young persons who either come from Roma families or from state child care institutions.

Older workers: Early retirement or retirement on disability pension used to be the most important way of escaping unemployment for older people. Conditions of retirement were gradually tightened in recent years, therefore the number of people of working age pensioned for health or employment policy reasons has been decreasing. Nevertheless, as a result of previous mass early retirement schemes, only a small minority (26.4 per cent) of the over 55 population is on the labour market at present. (EU = 43.2 per cent) The Hungarian JER states that the increasing participation and employment of older people is crucial to the country's ability to finance pension and healthcare systems in the context of its fast ageing population.

Table 3: Employed and unemployed persons by highest educational attainment, 2002

Highest educational level	Employed	Unemployed
Men		
ISCED 1+2 (<=8 grades)	14.6	36.7
ISCED 3+4 (Vocational school, Secondary school)	69.5	60.0
ISCED 5+6 (Higher education)	15.9	3.3
Total	100.0	100.0
Women		
ISCED 1+2 (<=8 grades)	18.5	33.2
ISCED 3+4 (Vocational school, Secondary school)	61.7	58.4
ISCED 5+6 (Higher education)	19.8	8.4
Total	100.0	100.0
Total		
ISCED 1+2 (<=8 grades)	16.4	35.2
ISCED 3+4 (Vocational school, Secondary school)	66.0	59.3
ISCED 5+6 (Higher education)	17.6	5.5
Total	100.0	100.0

* Recalculated figures based on 2001 Census.
Source: *CSO Labour Force Survey*.

There are two EU targets in this regard, both to be achieved by 2010: the Stockholm target of an employment rate of 50 per cent for older workers and the Barcelona target to delay by five years the average age at which

older workers stop working. The skill composition of the older people is very unfavourable, therefore, training, re-training and well targeted employment promotion are important tools to improve their position on the labour market.

People with disabilities: According to the latest survey conducted by the Central Statistical Office in 2002, less than 15 per cent of the population with long-term health problems were present on the labour market (13 per cent as employed and 1.5 per cent as unemployed). Among those employed less than 20 per cent were employed in special (sheltered or supported) jobs. One of the main reasons of the low employment probability of disabled people is the inadequate availability of integrated education and the lack of disabled friendly access to buildings.

People with low levels of qualification: The level of education is a decisive factor in labour market position and employment opportunities. The participation rate of those with low levels of education is well bellow the EU average and the level of unemployment is the highest within this group.

Regional disadvantages on the labour market

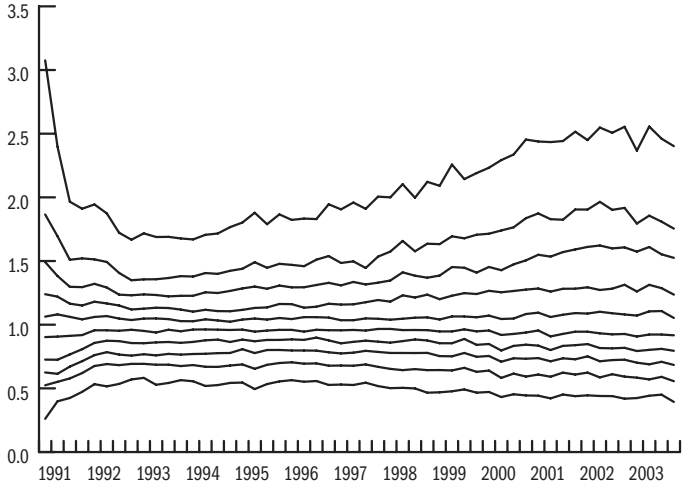
The decline in economic performance and employment during transition has been much more severe in disadvantaged rural regions of the East and Southwest than in the more urbanised Central and North-western territories. Nevertheless, regional employment or unemployment rate differences at the macro-region level are not particularly large by international comparison and have not tended to increase. The problem is that in the case of Hungary macro- or meso-region level analyses of labour market indicators give a distorted picture. Due to the relatively high travel costs of commuting and the underdeveloped transport infrastructure local labour markets are closed and fragmented. The size of local labour markets (LLMs) fits more into the category of "micro-regions".

Time series of micro-regional data have indicated a disturbing long-term tendency. Expressing mean registered unemployment rates of each deciles of the 150 micro-regions in the percentage of the median at each period gives us a detailed picture of the time path of relative unemployment rate differential[8] (Figure 4) High differences appeared during the turbulent period of the collapse of the old economy. In the second phase of transition, after a short period of decrease and stagnation, regional differences began to increase to the latest figures. The widening range has been mainly generated by the continuously deteriorating position of high unemployment regions where high inactivity ratios were combined with high unemployment, a high proportion of long-term unemployment, high dependency ratios and a serious accumulation of social backwardness. Figure 5 shows the Kernel density of relative employment rates of micro-regions in 1990 and 2001.

8 This measure is, by definition, independent from the actual levels of unemployment.

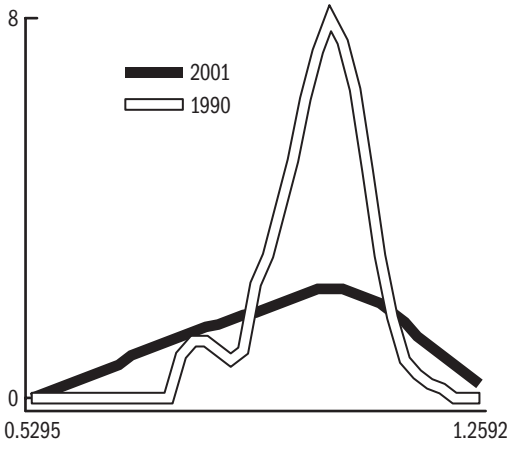
The two lines reflect high *polarisation* of micro-regions. Not only the range of the relative employment rates, but also the density of regions at the low and high end of the distribution have increased during the 1990's. This polarisation has led to an emergence of the sizeable groups of "extremely high" and "extremely low" employment regions.

Figure 4: Time path of micro-regional unemployment rate differences (1991/Q1 – 2002/Q3)



Source: *National Employment Office. Unemployment Register Data Base.*

Figure 5: Kernel density of relative employment rates (1990, 2001)

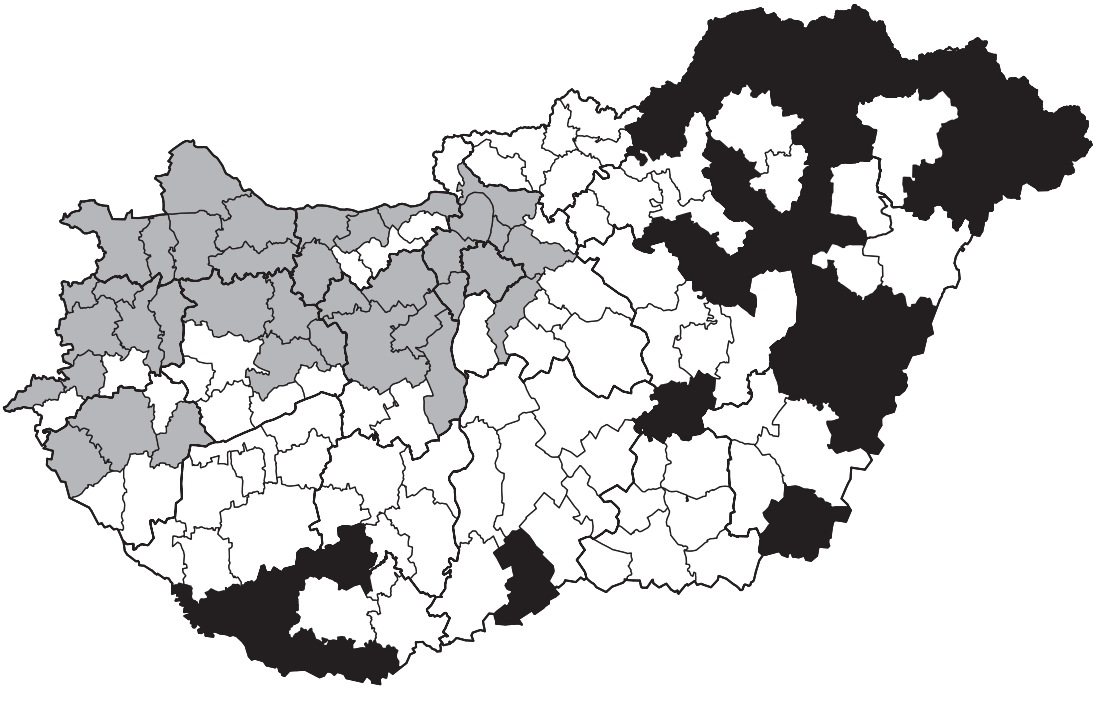


Source: *HCSO Census 1990, 2001.*

Grouping micro-regions into quartiles according to employment rates gives a simple but clearly defined picture of winners and losers of transition at

the level of LLMs. Social and economic indicators of the four quartiles indicate that employment rates are quite good proxies of the successes and failures of local economies and local societies. A high employment rate comes together with higher production, higher enterprise density, higher productivity of local firms and higher incomes, relative wealth and welfare of the local population. A low employment rate is accompanied by weak performance of the local economy, low enterprise density, low productivity of the local firms, and low income, relative poverty and lower life expectancy of the local population.(*Fazekas* 2003) Map 1 shows the geographical distribution of winners and losers (top and bottom quartiles of micro-regions). One can see a clear east-west, core-periphery division before and after the transition. The central agglomeration, and regions along the main east-west transport routes in the direction of Graz and Vienna have the highest employment rates while most of the low employment regions are located along the East-Slovakian, Ukrainian and Romanian and Croatian borders. Regional employment rate differences are determined by the region's proximity to the capital and to western portals.

Figure 6: Spatial distribution of micro-regions in the top and bottom quartiles of employment rates 2001



Grey: Top quarter; Black: Bottom quarter.
Source: *IE-HAS Regional Data Base*.

How to alleviate regional labour market differences? On the supply side of the labour market regional labour market differences could be alleviated: by *commuting*, by *internal migration* from high unemployment regions towards low unemployment areas and by *external migration and commuting* towards foreign countries. On the demand side of the labour market increasing job creation and reallocation of existing jobs towards high unemployment regions could be a means of mitigating regional differences.

Commuting: Enormous differences between the unemployment rates of urban and rural settlements indicate that daily commuting of the rural population to surrounding towns could be an equalising mechanism easing employment tensions. *Köllő* (1997) and *Kertesi* (2000b) estimated the impact of transport costs on the openness of local labour markets. They found that the equalisation of regional unemployment rate differences is strongly limited by the high costs of commuting and the resulting segregation of the local labour markets. *Kertesi* (2000b) examined commuting possibilities in the case of villages. He estimated how the costs of the availability of better urban labour markets affect the probability of becoming employed by those who could not find jobs in their places of residence. He found a strong effect of schooling on increasing the probability of work by commuting, mostly in the case of the male labour force. The more educated a person is, the higher his or her chances are to find employment that requires daily commuting. It is mostly educated people who could find jobs with wage levels high enough to cover commuting costs. Education raises the chances of employment by commuting considerably: travel costs induced job finding differentials are very large for unskilled workers, whereas similar travel costs have only trivial consequences for the job finding chances of people with higher education.

Internal migration: On the basis of large and increasing unemployment rate disparities accompanied by substantial regional wage differentials across regions one could have expected that internal migration flows would increase in Hungary as well. Yet, the reality has contradicted this expectation. Using aggregate in and out migration data by settlements, *Kertesi* (2000b) and *Cseres-Gergely* 2003)has proved that migration behaviour reacts to economic incentives. Regions with high unemployment rates have suffered substantial migration losses while those with a low level of unemployment had migration gains. The magnitude of this effect, however, is quite modest and likely to remain so in the near future. Nevertheless there are several sets of factors (tight housing market, scarcity of rented flats, and serious regional mismatch of skill) that explain the low level of internal migration in Hungary and in other CEE countries.

External migration: There have been widespread concerns that the political and economic changes, and social and ethnic tensions would lead a

large scale out-migration from CEE countries towards the European Union. These concerns have not been realised to date. As far as Hungary is concerned we do not think that external migration will be a part of a solution that could ease the regional differences in the labour market. Labour flows from Hungary's backward regions to EU countries will be small even after the accession as has been made clear by empirical studies. The migration potential of the Hungarians is low compared to that in the other East European countries and did not change much over the 90's. Hungary's labour market has been, and will be, more affected by inward migration from neighbouring countries. According to the recent migration survey in Romania, there is a substantial migration potential of neighbouring countries towards Hungary, mostly among ethnic Hungarians and Roma minorities.

Local job creation: The location preferences of investors have dramatically changed since the pre-transition era. Available data on firm creation, small business start ups, physical capital formation, and foreign direct investments suggest increasing rather than decreasing regional differentials in the density of firms and capital endowments. Despite considerable regional wage cost differences investors have not been motivated to move to the depressed regions. Several studies confirmed that FDI was one of the key factors of the economic success of Hungary in recent years. Foreign capital can decisively promote the economic restructuring of local economies providing capital, modern technologies and work organisation practices. Foreign capital is also a means for integration into the global economy and could provide important spillovers of know how towards domestic firms in the region. As far as the labour market impact of FDI is concerned, in the case of Hungary foreign firms' employment was the expanding part of the corporate segment of the labour market while domestic firms' employment continuously decreased over the 90's. Analyses on the impact of FDI inflows on local labour markets share the view that regions with a higher ratio of foreign firms' employment perform more successfully. (*Schoors van der Tol* 2002; *Sgard, J.* 2001)

The micro regional distribution of the number of firms, jobs and the volume of capital shows high regional concentration. From this point of view there are no substantial differences between foreign and domestic firms. The question is: what are the most important factors of allocation preferences of foreign firms in Hungary, and how have these preferences changed over recent years? *Fazekas* (2002) showed that micro regions with a more educated labour force and a closer location to the western trade portals attracted more foreign capital and had higher foreign firms' employment than other regions. Urban centres with a high concentration of skilled labour and proximity to the western border are in the best position. Hungary's

only one large agglomeration – Budapest and its conurbation – together with a large skilled labour pool can offer a wide selection of externalities such as direct links to the political and financial decision makers, a rich cultural life and spillover effects due to high firm density and co-operation networks with a number of universities and scientific institutions.

3 LABOUR MARKET POLICIES

3.1 Financial resources and administrative capacity for employment and labour market policy

Financial resources of employment policy

The new Employment Guidelines of the Commission emphasised that ensuring adequate financial resources is a crucial factor for efficient delivery of employment policies. In Hungary the Labour Market Fund (LMF) is the main financial instrument through which both active and passive labour market measures and the Public Employment Services (PES) are financed. LMF is supported by the contribution of employers and employees and is under the control of a tripartite body, the Governing Board of the Labour Market Fund (GBLF). Parallel with the decrease of registered unemployment the share of the total expenditure on active and passive measures in the GDP decreased from 2.8 to 0.8 per cent between 1992–2001. The share of active measures within the total expenditures doubled in this period reaching 55 per cent in 2001. Last year the declining trend was reversed and active supports rose by 27 per cent, while those on passive labour market policy measures by 12 per cent. According to the budget of the LMF the financial sources for active and passive measures will increase by 10 per cent in 2003. These policy expenditures are moderate in Hungary compared with other CEE countries. Taking into account the size of the state budgets deficit and the extremely high Hungarian tax wedge, however, there is no room to raise either expenditures or employers/employees contributions any further. The effective usage of the available domestic sources and EU contributions seems to be the crucial factor of employment policy in the near future.

Public Employment Service

The Hungarian Public Employment Service (PES) set up in 1990 passed through a continuous reform and modernisation process during the last decade. Since the last election in 2002 the new Government has changed the whole institutional set-up. A new ministry, the Ministry of Employment and Labour (MEL) was established with the goal of co-ordinating and controlling the government's employment policy. According to the Government decree the main activities of the MEL should be based on four pillars:

employment policy, social dialogue, equal opportunity and life long learning. In October 2002 the MEL issued a regulation on the duty and competence of different institutions of the PES.[9] Recent reforms aim at giving the PES a stronger role in implementing active labour market policies. After the accession the Employment Office should carry out new activities in the framework of the European Employment Services. The necessary legal conditions are in place, the next step is implementation.

According to a new proposal the government will introduce a Job Register to be based on the compulsory system of immediate registration of the initiation or the termination of employment both in the private and public sectors after 1 May 2004. The Job Register will be operated by a new administrative unit of the Employment Office. The legal foundation of the new system is under elaboration. The aim of the new register is to decrease the room for informal employment. It is estimated that 20 per cent of the 500,000 unemployed or inactive people are engaged in informal jobs. It will be possible to switch this status to registered employee status by the new system. If this proves to be successful, 100 billion HUF (385 million Euro) will be added to the GDP and 20 billion HUF (77 million Euro) to the revenue of the social security budget.

In November 2003 the Government decided on a 10 per cent cutback in the personnel of central and local government institutions. Taking into account the additional tasks of employment services in relation to the EU accession the average cutback was smaller in the PES organisation. There is no doubt that the PES needs a far more offensive strategy. It has to face the enormous task of answering requirements of the Commission's Employment Policy Guidelines and needs additional resources both in the numbers and the quality of the personnel. According to the latest update of the Commission's JAP Progress Report the administrative capacity of the PES has been improved but stronger efforts are still needed.

3.2 Active and passive labour market policies

Impact and counterbalance of the latest workfare reform package

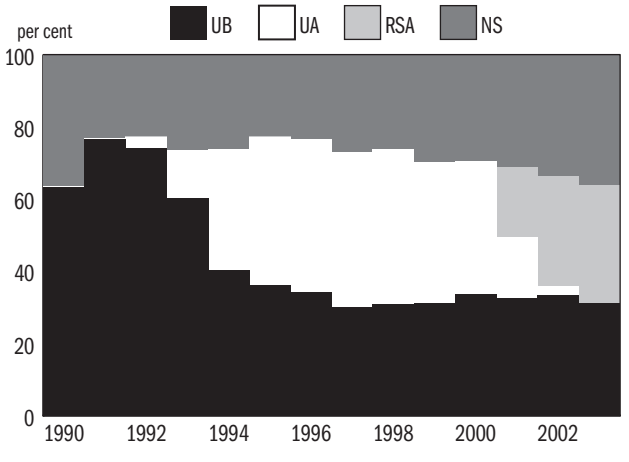
Subsequent modifications of the unemployment benefit system in 2000–2001 made it much less accessible and generous than it was in the past. In the "workfare reform package" the conditions for eligibility have been tightened and the maximum duration of the benefit was reduced from 12 to 9 months and the replacement rate was significantly lowered. The restrictions included the switch from the insurance based unemployment assistance (IUA) to a means-tested regular social assistance for the unemployed. (See Figure 7.) Local governments were put in charge of administering the Regular Social Assistance (RSA) which is given to people who

9 National Employment Office, 20 County Labour Centres, 134 Local Labour Offices and 20 Human Resource Development and Training Centres constitute the institutional framework of labour market administration in Hungary.

have exhausted the entitlements to IUA. A new responsibility of the local governments was to organise public work schemes for at least thirty days for applicants of the Regular Social Assistance. Responses and implications of the tightening of entitlement conditions and the financing and impact of public work schemes were thoroughly studied by a set of recent empirical studies (*Fazekas* 2002, *Köllő* 2002, *Galasi – Nagy* 2002). Results indicate little positive effects of the changes in terms of success in directing the long term unemployed and hard hit disadvantaged groups into the non-supported jobs of the labour market. The workfare reform has reduced the number of benefit claimants significantly but failed to raise non-subsidised private-sector employment (*Csongor at al* 2003).

In 2003 several measures were taken to counterbalance the negative effects of the former restrictions on the most disadvantaged groups of the population. One of the first promises of the new government was to elaborate a new incentive system for those who have exhausted their UB entitlement period and want to get jobs. In 2003 the Government announced several changes in the regulation of employment policy to stimulate life-long learning, employability of disadvantaged groups and better quality of work. A part of the new initiatives was aimed at the alleviation of the labour market situation of the older unemployed persons. The most important changes could be summarised as follows:

Figure 7: Composition of registered unemployed by form of assistance



UB: Unemployment benefit recipients; UA: Unemployment assistance recipients; RSA: Regular Social Assistance recipients; NS: do not receive cash assistance.
Source: *Employment Office. Unemployment Register.*

Life-long learning: After January 2003 participants of training programs under a certain level of income receive special cash benefits. Higher cash

benefits increase the motivation of the clients to participate in training. The aim of certain organizational changes was to improve the conditions of adult training.

Equal opportunity: To put into practice the principles of equal opportunity was among the priorities of the newly established Ministry of Employment Policy and Labour. On the organization side it involved the establishment a new Government Office and a new ministerial post to promote equal opportunities in Hungary.

Employability of disadvantaged people: In May 2003 the government introduced a new scheme called "job search incentive". This benefit can be provided for those people without jobs who have passed their unemployment benefit entitlement period and co-operated with the employment office. The other scheme runs under the title "job finding incentive". A modest sum will be provided for those who find employment before their job search incentive period ends. Both initiatives imply a positive discrimination in favour of older workers. Employed persons above the age of 45 are entitled to receive retraining assistance from the Employment Office even in those cases when the employer decides not to contribute to the costs of retraining. (Employers are bound by law to share the costs of the retraining of only the younger employees.) Those who are above the age of 45 are entitled to a wage subsidy after 3 months of being registered as unemployed, the sum of the wage subsidy is 70–100 per cent of the wage, the maximum entitlement period is 2 years. The respective figures for those under 45 are 6 months, 50–100 per cent and 1 year.

Local authorities are required to organise public works for the unemployed. Public works are co-financed by the local authorities and the Employment Office. For those above the age of 45 as much as 90 per cent of the total costs of the public work schemes could be financed by the Employment Office. In the case of public works in the field of health care, cultural services, education and environment protection the maximum length of the entitlement period is 1.5 years. The respective figures for those under 45 are 70 per cent and 1 year.

In the past the various measures of active labour market policy were strictly separated according to the Employment Act. One client was entitled to participate only in one program at the same time. From February 2002 the law has been made more flexible. When the target group is selected from the unemployed in the most disadvantaged position, it is possible to combine various employment policy measures within the framework of one labour market program. Compared to the individual schemes the complex programs can offer more generous benefits to those involved. Most of these programs are especially created for the Roma minority and for the older unemployed.

The shares of different active measures have markedly changed during the last year. In our opinion these changes were mostly due to the short term adjustment to the changing financial conditions, i.e. they reflect neither the adjustment to the long term priorities of employment policy nor the outcome of the evaluation of the effectiveness of different measures. Also, the aim of some of the changes was to guarantee EU conformity of employment subsidies. The fast increase of the statutory minimum wage in 2001 and 2002 decreased the employment probability in the low skilled/low wage segment of the labour market. Since unskilled/low paid workers were concentrated in high unemployment regions, the job-destruction effect of the minimum wage increase was the most obvious in backward regions. (*Kertesi – Köllő* 2003) In order to avoid further deterioration of the LM position of disadvantaged regions and workers, the Government decided that a substantial part of the Labour Market Fund should be re-arranged to finance a new scheme (*minimum wage increase compensation subsidy*) aimed at preventing the unemployment generating effects of the increase in the minimum wage. The Labour Market Fund provided support via tendering to the companies acting in "high labour-participation" and "low-wage-level" areas where the decrease of the contribution could counterbalance a part of cost-driving effects of the minimum wage increase. According to the estimation of MEL this support granted primarily to SMs contributed to retaining the jobs of 355 thousand employees in 2002. The minimum wage increase compensation subsidy involved significant resources and limited the funds available for traditional active policies. In 2002 that part of the decentralised part of the Labour Market Fund which is the source of finance for active measures was reduced by 18 per cent. The number of those participating in training and of those affected by wage subsidies has decreased by a few percentage points, while the number of those helped by community works and travel cost subsidies has increased. All in all, it is the public works which have become the most preferred active policy measure of the county level labour centres in 2002. (Table 4.)

The effectiveness of the most important active labour market programs has been assessed annually by follow up surveys since 1994. The latest survey monitored 93 thousand clients who completed active programs in the first half of 2002. The results of these surveys give plenty of information on the composition of the participants, the costs of the programs and the employment probabilities of those who completed the programs. Nevertheless, the data base and the methodology of the analysis are not suitable for the control of the effects of the changing composition of clients and of the different characteristics of local labour markets. Resources derived from the Labour Market Fund which are assigned for financing employment policy measures are divided between central and local authorities

with the corresponding levels of decision-making. It is of crucial importance that both the central and the county level decision-making bodies have more accurate information on the outcome and the effectiveness of the labour market programs.

Table 4: Inflow to different active employment policy programs in 2002

Active Employment Policy Programmes	Inflow in 2002		Previous year = 100%
	Persons	%	
Training	48,296	29.5	78.9
Wage support schemes	18,035	11.0	82.8
Public works	67,860	41.4	100.4
Job creation support schemes	285	0.2	38.8
Small business start-up schemes	2,989	1.8	82.6
Mobility schemes	6,764	4.1	109.2
Support for school leavers	8,780	5.4	90.5
Job keeping support schemes	2,894	1.8	–
Wage related tax support schemes	7,882	4.3	90.3
Self-employment support schemes	1,080	0.5	70.1
Intensive job search support schemes	54	0.0	–
Total	163,829	100.0	91.1

Source: *National Employment Office*.

4 OUTLOOK

The short-term outlook of the economy

The prognosis for the coming few months is influenced by a mix of positive and negative indicators. Preliminary data for the third quarter of 2003 suggest that the economy is in the upward phase of the business cycle with a 2.9 per cent growth of the GDP. The growth of the industrial output and the investments in this sector has been accelerating. The manufacturing production was clearly export-driven, yet overall imports have been rising faster than exports. The current account deficit is increasing due to both the worsening balance of trade and the net capital outflow. The latest report of the Hungarian Central Bank forecasts a 3.4 per cent growth of GDP in 2004 with a slow-down in domestic demand (*MNB* 2004).

The positive outlook for GDP growth, however, does not necessarily imply the expansion of employment or a further reduction in unemployment rates. Information available on labour demand and the fact of mass lay-offs are contradictory to other evidence of the boom in the private sector. According to the KOPINT-DATORG Business Survey, in the second quarter of 2003 nearly half of the manufacturing enterprises decreased, and less than on-fifth increased, the number of employees. Despite massive dismissals reported to the Employment Office the high ratio of companies making constant employment expansion indicates that a significant restructuring

taking place in the manufacturing sector. According to the short term labour market prognosis of the Employment Office the level of employment will barely increase in the second half of 2003. According to the latest report of the Central Bank on Inflation: "A pick-up in the global business cycle, the deterioration of competitiveness due to a stronger exchange rate and corporate decisions on production input ratios have a combined influence on manufacturing. Employment in manufacturing is expected to fall till the end of next year and slightly increase in 2005. The layoffs in manufacturing are compensated in the service sector where the business cycle allows employment to rise steadily. This year we expect a stagnating level of employment in the private sector as a whole. In 2004–2005 we project labour demand to pick up with a resulting modest increase in private sector employment." (*MNB* 2003).

In recent years the bulk of the employment increase was registered in the public sector. Taking into account the financial restrictions due to the high budget deficit experts anticipate further layoffs in the public sector and this trend will continue in 2004. The central budget for the next year makes it almost certain that the activity rate of the Hungarian population will stagnate while it may improve in 2005. The unemployment rate is projected to increase slightly and remain around 6 per cent throughout the next two years.

The disturbances on the financial markets at the second half of 2003 had a further negative effect on the expansion on the labour market. For reasons still to be clear the confidence of financial investors in the Hungarian currency was shaken and this led to the weakening of the HUF at the end of November. To regain the confidence of the investors the Hungarian National Bank took a drastic measure: it raised the interest rate by an unprecedented 3 per cent. A sound economic policy requires that restrictive monetary measures be harmonised with the fiscal policy. Thus, the curtailment of fiscal expenditures carried out in the first part of 2004 and expected for the next part of the year meaning *inter alia* less availability of jobs in the public sector.

Mid term expectations and employment policy answers

The number of the working age population will increase until, and will sharply decrease after, 2006. The expansion of educational attainment will continue but the structural discrepancies between the demand and supply will be accelerated. According to the latest projections (*MEL* 2004) the participation rate will be 61.7 per cent in 2006 – much less than the requirement of the EU Employment Strategy for 2005 (67 per cent). Unfortunately there are no reliable prognoses on medium and long term development of labour demand in Hungary. All of the projections stressed high

uncertainty concerning the future development of the economy and uncertainty over the labour market consequences resulting from the different paths of future developments. Nevertheless certain immediate effects could be estimated. Direct job creation effects of the accession are estimated to be around 8,000–10,000 jobs. Demand for a highly educated workforce will increase while in certain occupations (customs officials, carriers etc) a large element of jobs will be diminished. Unfortunately there are no detailed calculations on immediate short term job creation and job destruction effects of the accession. There is no doubt: the fast structural changes of employment by sectors and by branches will continue. The share of agriculture and industry will decrease while the expansion of employment in the service sector will continue. Despite decreasing labour demand in manufacturing, scarcity of (skilled) labour will accelerate and concentrate in the most developed regions. Structural changes within the manufacturing industry will continue. Employment in the textile and food industry will decrease considerably, employment in the chemical industry will slightly decrease and employment in the machine and steel industry will stagnate in the years to come.

Based on the information available the most important challenges of employment policy in the next five years could be summarised as follows:

- Insufficient demand for low-skilled labour, decreasing employment probabilities of school leavers and highly educated job seekers. Increasing structural regional discrepancies between demand and supply on the labour market, increasing scarcity of labour in certain segments of the labour market.
- Insufficient supply of highly motivated work force with special skills required by high-technology, competitive industries.
- Low employability of a large pool of long term unemployed, inactive population, disadvantageous groups concentrated in local labour markets in the less developed regions of the country.

In order to find satisfactory solutions for the recent challenges the Ministry of Employment Policy and Labour elaborated an Action Plan for 2004. The strategy was adopted by the government and was discussed by the Interest Conciliation Committee of Hungary in December 2003. The Action Plan schedules concrete steps in six fields: 1) Improving institutional and background and quality of labour market forecasts; 2) Improving job creation effects of economic development; 3) Enlargement of employment capacity of the formal economy; 4) Increase in the capacity and effectiveness of supported employment; 5) Development of employability, adaptability and training of disadvantaged persons; 6) Actions to answer the requirements of the European Employment Strategy. Most of the projects in the Action Plan are important parts of preparations for the National Employ-

ment Strategy to be elaborated and delivered to the Commission prior to October 2004. The firs version of the Action Plan (*MEL* 2004) was prepared and introduced to the social partners and experts of the academic community the in July 2004. Developments in the next months will answer the key question: Is the Hungarian Government capable of developing and fulfilling a comprehensive economic policy which should be a prerequisite for sustainable employment development in the coming years.

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INFOCUS

LABOUR MARKET INEQUALITY AND GEOGRAPHICAL MOBILITY IN HUNGARY

EDITED BY
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INTRODUCTION*

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Analysis of social inequalities usually concentrates on redistribution and reallocation of resources within a society. A high level of income inequality is not acceptable to a great number of citizens in a society, thus it is the ethical and moral opposition, together with an interest rooted in political aims that motivates most research of this kind. Inequalities however manifest themselves in many forms and raise questions other than ones concerning allocation. An important question, which is nevertheless relatively rarely looked at is how inequality affects the efficiency and workings of the economy.

Although we can not disregard the problem of allocation when looking at efficiency, the most important issue is not if the situation of a particular social group is acceptable, but whether a certain change would benefit the whole economy or just part of it. Since people living close to each other are in a similar situation in their life in many respects, regional inequality is an often surveyed subject. Nearly every chapter of this year's "Infocus" points out, that differences in the degree of economic development are not only considerable in Hungary, but also tend to be permanent both in their level and pattern. Although earlier strong urbanisation trends have changed in the 1990s, mostly in favour of villages in metropolitan areas and in the centre of the country, the division of the country seems to be alarmingly permanent. The present set of studies aims to answer two questions. Firstly we are interested in what factors cause regional inequality on the labour market, secondly we look at possible ways in which the geographic reallocation of labour (people) and capital (firms) could alleviate these inequalities.

The main target of our analysis is the mobility of labour, but research on this topic based on economic rationale does not have a long tradition in Hungary. For this reason, we found it important to broaden our perspec-

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tive into two directions. On the one hand, we tried to define precisely the kinds of inequalities we are looking at by closely examining factors forming them. On the other hand, our analysis extends to the spatial allocation and movement of firms, and also to the factors that determine both. Although labour and capital behave somewhat similarly in these respects, problems are not completely analogous – for this reason, they are discussed in separate sections. Nevertheless, because they are both key and intimately related determinants of the economy, the two areas can sometimes be separated only along artificial borders. This is why both of them are allocated a nearly equal length section – despite the fact that availability of data and the traditions of empirical research are sometimes rather different.

Spatial movement, migration of the labour force is nevertheless interesting for reasons other than its own sake. Chapter 1.1 builds on two influential models to argue that if the retaining effect of transaction costs is sufficiently small, economic agents (here: potential employees) are probably willing to take on the inconvenience of moving to a new location in exchange for improved work conditions. This mechanism leads to migration on the individual level and – through the continuous decline of regional differences – to the decline of imbalances and ultimately of inequality. If however the costs associated with the decision are so high that it is not worth moving even in the presence of substantial gross gains, or if the forces that created the inequality in the first place prove to be permanent, then inequalities are there to stay even if it would be clearly socially beneficial to remove them.

While individuals are often prevented by social and psychological bonds from following strictly economic considerations, enterprises can base their "home" choices solely on expected returns. Nevertheless, Chapter 2.1., the theoretical introduction to the second part, points out that looking at only classic motives and ways of exploiting spatial differences (which are similar to mechanisms we learn about in the case of employees) and not considering the effect of the economic surroundings is a mistake that is probably the greatest in the case of firms. Empirical studies of the second part support the claim that relocation of firms can generate a positive feedback to the behaviour of other firms. Co-operation and spillovers between firms can improve the conditions of "traditionally good" areas even further, while those of "traditionally bad" areas might just continue deteriorating, if there are no external forces to break the vicious circle. Such differences shape the availability of business partners for firms and the set of available workplaces for potential employees.

The individual mobility decision is influenced by various factors, whose connection to economic interest can range from loose to strong. We picked two proxies for potential advantages that are relatively easy to grasp, re-

gional unemployment rates and average wages. Although raw data show substantial spatial variation in both, results of Chapters 1.2. and 1.3. offer different pictures about the extent to which these can actually be exploited by individuals. The insight in both cases is that differences are shaped not (only) by a variation in the response, but also in the composition of the labour force and firms, along with the local interaction of the two. At the same time we witness the well-known East-West division of the country characterised by the leading role of the North Western and the Central regions, surprisingly without the outstanding leadership of Budapest.

Based on these observations, it looks like there are differences that employees could exploit in relation to the probability of employment, if not to wages. It is an interesting question however whether it is worth trying to actually use these differences? Is it better to move or to commute to the better workplace? How important are the previously mentioned costs? Out of the latter, it is probably living expenses that influence the probability of moving house the most. Although swapping flats is not a problem in an ideal world, the Hungarian reality is far from this: Chapter 1.4. reports that in a (plausibly) bad scenario, an average person moving house might lose her/his wages earned throughout a whole year. Opposed to common belief therefore it is not the duties levied on swapping a flat, but risks associated with such a transaction that is the main factor causing the greatest problem, which is further magnified by the fact that the rental flat stock is quite small in Hungary. Until this situation changes, swapping a flat remains a "luxury". It is no problem for those who are affluent (moving typically to the green residential areas of agglomerations), but causes serious trouble to those wanting to escape from poor areas. The defensive strategy of municipalities seeking to discriminate "problematic" immigrants does not help too much in solving the problem, either.

What can then one expect who does not move, but ventures into commuting, thus avoiding the risky business of swapping a flat? Chapter 1.5. employs a special database to look at the effect of various factors on commuting probabilities, most importantly its cost and the distance to the job to be taken. A remarkable characteristic of the data is that it is informative about both the distance over which an employee commutes and the financial consequences of such a commute. Statistical results confirm intuition showing that financial constraints are transmitted to commuting too, an effect most pronounced in the case of women.

Although there are nontrivial costs to mobility, a little more than 4 per cent of the population changes its residence to a new settlement in Hungary. Is this rate small or big? Is the effect of economic incentives important? Chapter 1.6. aims at answering these questions with the use of a series of data sources. Based on micro-level data, the effect of economic incentives

is confirmed, although the economic significance of these is probably less than what is required to sustain regional equilibration processes. The reason for this can be the fact that mobility in Hungary is largely connected to sub-urbanisation, the flow of the workforce from cities to surrounding villages. These results show that in the case where the bulk of mobility takes place within a (micro) region, traditional models of mobility and migration cannot be successfully applied. Differences within a region also need to be handled with care, as the workplace is often not identical to the place one lives.

We have already seen that the labour force is not very likely to follow differences between labour markets within the country. Even if people move, it is mostly inhabitants of backward regions who cannot break free from their place of living, maybe because of the low value of their property or because their human capital is not quite compatible with advanced technology. It remains a question however how pressing is the need to move, how much enterprises are willing to move to backward regions? The introduction and the empirical studies of the second part of "Infocus" look at this question from various aspects. Although being quite important from the employees' point of view, it is neither services that grease the wheels of the economy nor the constantly changing agriculture, with its considerable share of employment that stands in the focus of the second part, but manufacturing and related industries. This prominent place is due largely to the enormous part these industries play in economic growth and their responsiveness to the economic ambience. As the presence and structure of labour demand is important to potential employees, enterprises are interested in the presence of a suitable labour force and, as Chapter 2.1. points out, the network of co-operation whose operation depends on companies that are in some sense nearby. We have been accustomed to the idea for some time that Hungary lies on the boundary of East and West, subject to the influences of both worlds. Chapter 2.2. shows that this border is present if measured by the strength of the European economic "force field", generating productive connections largely responsible for the growth of the Hungarian economy. Chapter 2.3. points out that it is the engineering (automobile industry to a great extent) and electronics companies of Western Hungary that play a central part in economic growth. A common characteristic of these enterprises is that they are situated on easily accessible sites, employ well educated workers and became an integral part of the European economic "force field". If there is a goal to decrease the almost deterministic effects of spatial differentials, it is crucial – argues Chapter 2.2. – that geographic distance of the disadvantaged regions from the centre is counterbalanced through rapid development of infrastructure and improved accessibility.

Almost every study reflects on the distribution of knowledge, of human capital. Chapter 1.6. and chapters of the second parts put together a picture showing that better educated people are much more likely to move, and this is due to a great extent to the fact that industries mostly settle in already developed regions. Educated people either move to their proximity, or do not have an incentive to move away and move to pleasant locations within reach of the newly established workplaces. The analysis in Chapter 2.2. indicates that instead of decreasing it, such distribution of human capital increases inequality even more. Knowing this, it does not come as a surprise that international investors do not play a pioneering role in either of these respects. Chapter 2.4. illustrates the behaviour of enterprises with results that look familiar, but can be numerically surprising in many cases. One of these results is that the number of jobs created by foreign owned firms well exceeded those created by domestically owned ones. Unfortunately the positive effect of the former, working through business connections, is region-specific as well.

What can we conclude from all of this? It seems that although both the labour force and capital are free to move, neither moves in such a way that the disadvantages of certain regions would diminish significantly. Since effects are cumulative, they do not reverse by themselves, which elicits the need for external help to reduce regional inequalities. Development of the infrastructure, decreasing barriers to the formation of contacts is a key element for both potential employees and enterprises. It is of equal importance that both the labour force and the business ambience of disadvantaged regions become more desirable. Although such processes benefit from the regionalisation of Central Europe and the enlargement of the European Union, helping them should stay a top priority for some time to come. We can only hope that helping the accumulation of human capital, schooling and in general education programs will become part of the official "regional agenda" just as the development of the road network did.

1 LABOUR MOBILITY AND ITS CONDITIONS

1.1 Theoretical background to the causes and effects of the regional mobility of the labour force

Zsombor Cseres-Gergely

Before we start a fundamentally empirical investigation of the regional mobility and migration of the Hungarian population, it is a good idea to organise thoughts about the issue. This is necessary not only to see more clearly the potential mechanisms behind the population flow, but also to be able to decide, which processes are possible to detect at all and which are not. Besides our focus on labour market developments, this approach is the main characteristic that can differentiate economic analysis from other approaches.

In what follows, we are going to look at four main areas. We begin with a decision problem for individuals contemplating upon mobility. After this a model of the macroeconomic consequences and potential benefits of migration is briefly introduced. Then we look at some concepts that are going to be used frequently in later chapters. Finally, the simple model is enhanced with features that close the gap between its original form and everyday experiences. The original mathematical models will be presented in a more verbal form.

The individual mobility decision

It is quite trivial that after committing to a choice of residence, one is usually located at a given place for an extended amount of time. This means not only that free time and pastime is spent near this location, but also that employment is much less costly near the place of living.[1]

The mobility decision is formulated in its now classic form in *Harris and Todaro* (1970). The authors constructed a so-called general equilibrium model describing population flow between rural villages and towns, whose main variables are not imputed from outside of the model, but generated as a result of internal mechanics. The idea is the following. Since the focus

1 Although commuting is clearly a choice for many, it merely increases the "actio radius" of a worker to a certain area. There are also professions which do not require physical presence. Nevertheless, these have not yet achieved high penetration among the majority of the population despite a recent expansion.

is on the urban minimum wage, one motivation of the relocation is the expected difference between urban and rural wages. This gap is the main decision factor. If expected wages in the towns are higher than in the villages, workforce migrates to the towns. If production capacities are fixed, then due to the relative abundance of labour, this difference decreases and is finally eliminated through the decrease of the marginal product of labour.[2] Although unemployment does not have a direct influence on individual decisions, one can easily imagine a situation where it plays a role that is equally important to, or even more important than, wage differentials.

Let us now return to our imaginary decision maker! There is a place of living given, where local labour market conditions are characterised by the unemployment rate, a proxy for the security of a workplace and the wage, a proxy for the rewards a job has to offer. The labour market opportunities of a person are of course shaped by many other factors, but let us suppose that these are, in general, good measures of them. In this case, potential employees are attracted to regions with higher wages and/or lower unemployment, ceteris paribus.

In choosing between two potential places of residence, pair-wise relationships of these characteristics will be decisive. If one unit of money is valued the same way by the poor and the rich, educated and uneducated, thus decision makers are neither risk averse nor risk takers in particular, then we can suppose that wages and unemployment rates would exert the same effect no matter their level. But if this is so, we can think about a weighted average of the two characteristics that one can measure on which the decision about residential move can be based: it is better to live in settlement X if this index is higher there than in Y.[3] The decision is of course influenced by the potentially incurred costs as well.

The complete decision process can be formulated in various ways. As an extreme case, one can suppose that everybody can take into account every location when considering a move – this allows for basically two approaches. In the first, there is a one-phase decision to be made, where every individual alternative is studied and compared to all the others and finally one of them is selected. In the first phase of the second approach, the best alternative is selected (possibly in a way that is analogous to the one described before), then it is compared to the current place of living: if the alternative performs better, the move takes place, if worse, it does not. Although this distinction might seem to be artificial, it is important in practice.

Up to now we have talked about mobility only, but if the motivation comes from the labour market, mobility might well be preceded by another phase, where decision is made not upon the change of residence, but upon the change of workplace, the plan being commuting instead of relocation. The commuting decision can be thought of as very similar to that which

2 Their point is actually that with a minimum wage, the gap does *not* in fact close.

3 This amounts to supposing a linear utility function for the decision makers. Such a utility function was used in *Fidrmuc and Huber* (2002) and will be used in Chapter I.6. here.

we see in the case of mobility. The differences come mostly through costs and benefits. While in the case of commuting, transportation is a decisive factor, successful mobility requires a well developed market for real estate (see for example *Köllő*, 1997; and *Cameron – Muellbauer*, 2001; *Böheim – Taylor*, 1999)

Migration as a vehicle for eliminating regional imbalances

Mobility of the population, between or within countries, has been of interest to economists in both the United States and Europe for some time. Migration within countries poses the question: how the net position of the country changes in terms of educated workforce as a result of migration.[4] In the second case of within country migration, the most interesting question is whether the mobility of the population can help to reduce differences in development within a country.

An extension by *Blanchard and Katz* (1992) revises the classic argument presented by Harris and Todaro.[5] Instead of spending too much time on formulating the micro level argument, the authors start from differences observed between states of the US in terms of labour market conditions and development. Their aim is to quantify the responsiveness of migration to all (both) factors creating disequilibrium gaps, therefore, it becomes an important hypothesis (even without being part of a behavioural model) that migration is responsive to differences in unemployment, too. This year's "Infocus" echoes their question, among others: are the forces of migration able to equilibrate the observed differences, and if yes, how long will it take to achieve that?

The macro-level movements highlighted by the paper are exactly the equilibrating mechanisms used by Harris and Todaro. Let us now suppose that workers think along the lines of this model and that there are indeed differences in regional national labour market conditions: unemployment is lower and the wage is higher in developed regions, while it is the other way around in less developed ones. In such a case, it is in the interest of inhabitants of less developed regions to move into a more developed one so that they can realise the gains offered by the differences. If there is a sufficiently high number of decisions along these lines, then there will be an excess supply of labour in the more developed region, wages being driven down and unemployment up in turn (depending on the elasticity of labour demand). At the same time, there is an opposite process in motion in the developed region, since wages grow and unemployment diminishes with the emigration of the labour force. As the features of the two regions become equal, a simple calculation would suggest it not worthwhile to move and the process will come to an end. Given that such a story is valid for all possible pairs of regions, the forces equilibrate the whole country.[6]

4 These problems are studied extensively for example in *Borjas*, 1994.

5 One has to note however that the idea was already developed and presented by *Pissarides and McMaster* (1990), although in a less grand format.

6 Because the low marginal product of labour can be caused by underinvestment in assets, also the mobility of capital can equilibrate the labour market. This mechanism is discussed in the second part of "Infocus".

Lacking sufficient data to apply such a model to Hungary, we can only adopt its central ideas. Besides the heterogeneity of individual decisions (we shall see more on this later), three important conditions have to be satisfied.

First, the real estate, most importantly the market in flats has to work perfectly. If prices of flats are depressed in the departure region for some reason, than much less potential migrants will be able to realise their idea of moving and that might not be enough for a significant change on the labour market.

Second, costs related to the move can trigger a selection mechanism. Facing similar costs,[7] it is the most "fit" that start first, as the move is the least costly for them – these are usually the most educated of the labour force, ceteris paribus. Productivity of the remaining population is thus diminishing, leading potentially to a shortage of the workforce in some industries or jobs requiring special training. If that workforce was not productive enough on its own without a sufficient amount of well-trained colleagues, or it did not fit in well with capital-intensive production methods, such a migration would possibly exacerbate problems instead of reducing them.

Third, only the initial state of the two regions can be different, they must fare along a similar path after that. In particular, there are no effects such as new investments that would improve the developed region more thus leading to labour market differences that are justified. If nonetheless this was the case, the emigration of skilled labour would continue and possibly accelerate. Importantly, wages in the better-developed region would stay high, since capacities that can absorb the labour force are constantly increasing, too. At the same time, wages in the less developed region would stay depressed, since their increase requires a "pull" of sufficient demand.

Two concepts

Having seen the framework for the analysis of the individual migration decision and also its potential effect on the economy as a whole, it is time to define some fundamental concepts. In what follows the term "migration" will refer to the action whereby someone changes her or his place of living by crossing borders of a large geographical unit such as a country or a region. The choice of the spatial unit has a profound effect on whom we regard as a migrant. Most often we look at migration between countries or within countries and across large regions. Since the two problems are analogous, we look at the second possibility. If one wants to form a view about the extent of migration, a suitable regional unit has to be chosen. If it is too small, "too much", if it is too large, "too little" migration will be detected. To define what is "too little" or "too much", we can look at the condition of the economy, at similar economies and the nature of the

7 The word "cost" is used here in a broad, economic sense, meaning not only monetary costs, but the loss of social connections and emotional stress, too.

population flow. The regional units among which differences are detected can also be helpful in deciding upon the suitable resolution.

The mobile population is more numerous than that of the migrants. We consider somebody mobile, if the relocation does not take place in the same settlement.[8] In contrast to migration, the effect of local relocations is local too. A move from one micro-region to another or one from a town to its suburb clearly has no effect on inequality between regions, but influences the internal distribution of the population. Although the large-scale equilibrating effect of migration is missing here, it is an important question how the relocation processes can affect the economic potential of a region through secondary channels. One such mechanism is allocating less affluent workers to affordable places that might also be closer to industries, thus reducing the burden of commuting as well. Another even tighter, but similar category is those moving *within* a settlement, labelled as "flat mobility".

Talking about commuting, a potential phase before moving house, a special form of migration, known as "commuter-migration" has to be mentioned (see for example *Illés*, 1995 on this). In this case the employee does not work at her or his place of residence, but at in an area farther away, maintaining probably some sort of accommodation near the workplace. Such "commuters" spend more than one night away from home. It is important to differentiate them from the others for they will be included in the mobile or migrant population in general statistical figures.

What else triggers moving: some more complicated relocation strategies

So far, we have considered only a simple, bare-bone model of mobility. Reality is of course much more complex with variations that have a nontrivial impact on the conclusions we draw. The most important complications will be highlighted following *Akkoyunlu and Vickerman* (2002).

In the simple model, we have not considered explicitly, whether a person or a household is the relevant decision-making unit. Actually we assumed that preferences concerning relocation are well represented and aggregated, or an even stronger structure: they are identical to one household member's preferences. But if this is not the case, we have to take into account that moving has a potentially different impact on household members. In general, the preferences of all household members are combined when making the decision, and the answer is affirmative only in the case when the household as a whole (in a more restricted case: all household members) benefits from the move.

Another aspect of the household model is the possibility of risk sharing. If all household members work at the same location, there is no protection to shocks that affect the particular region. On the other hand, if

8 Although this distinction might not be trivial, it coincides with the taxonomy of some respectable institutions, such as that of Statistics Canada: http://www.statcan.ca/english/concepts/definitions/mobility.htm.

some members work in a distant region, possibly as a commuter-migrant (defined as above), then the effects of such shocks are dampened through pooling resources.

A further source of complications arises from the observation that mobile people do not choose alternative regions with equal probability. If past migrants from a given settlement give a hand to prospective ones in finding accommodation, for example, migrants will prefer settlements that have already attracted population from their homeland. Because this is a self-reinforcing mechanism, in the absence of countering forces, small initial differences can grow substantial and strong spatial flows emerge that are hard to rationalise within the framework of a simple model (*Carrington et. al.*, 1996).

It was also implicitly assumed that only the immediate economic motivations play a role in the mobility decision, while local surroundings and other non-tradable amenities do not. If this is not true, quality and landscape of the neighbourhood, by shaping the mobility decision, can attract people with similar tastes. As a result, real estate prices at places preferred (by affluent households) go up, while those not preferred go down. Surroundings thus, begin to have an effect on the migration decision not only through the utility they generate, but also through the feedback effects they trigger.

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1.2 Regional differences in the employment probability

Gyula Nagy

This chapter deals with the regional differences in the chance of employment from 1992 to 2002. The employment probability was estimated by logit models based on the labour force survey (LFS) of the Central Statistical Office (CSO) and the differences across regions were investigated. Estimations were based on 1st quarter data of every second year from 1992 to 2002. Separate models were estimated for women and men.

Although LFS data available include labour market participation and employment data on the 15–74 years old population, we limited our sample to the 25–50 year old women and 25–55 year old men. We dropped the age group below 25 since the expansion of the education, the considerable increase in the share of participation in secondary school and higher education and as a result, the considerable decrease in employment activity of this age group in the '90s would otherwise influence our findings. Similarly, the employment and participation rate of those around retirement age has been influenced by the change of that during the period investigated and accordingly, the older age groups have also been dropped.

The employment rate (the share of employed persons in the corresponding age group) for men and women are given in Figure 1. During the first half of the '90s, the employment rate of both men and women decreased by 5 and 8 percentage points, respectively. Since 1988 employment rates have risen moderately, by 2 and 3 percentage points for men and women, respectively. Taken as a whole, during the period of 1992–2002 the employment rate decreased; in the 1st quarter of 2002, the employment rate of men was 2 percentage points below that in the 1st quarter of 1992, as for women the size of the decline reached 8 percentage points.

Figure 1: Employment rates for women aged 26–50 and men aged 26–55

Source: *Labour Force Survey*.

The employment probability depends partly on the probability of employment intentions – economic activity –, partly on the probability of finding a job for those who enter the labour market with the purpose of employment. As people with an intent to supply labour form the economically active population, some of them find a job – they are the employed –, some of them do not – they are the unemployed. The purpose of the present analysis is to show the differences in chance of employment. We distinguish two groups: the employed and the non-employed people, with the latter including the unemployed and the inactive. According to the ILO definition, the employed are those people who worked for pay or had a job or an active business during the reference week.

For the purpose of the research of regional differences of employment probability, we used the seven NUTS2 regions as defined by the CSO: Central Transdanubia, Western Transdanubia, Southern Transdanubia, Northern Hungary, Northern Great Plain, Southern Great Plain, and Central Hungary. Type of settlement – village, town, county seat, Budapest – educational level, age group, marital status and the number of children, are used as control variables in the analysis. The results of the estimations are given in Table 1.

First, we discuss the effects of control variables. *Educational level* has a strong positive effect on the probability of employment, both for men and women. Women with incomplete primary education have about 40 per cent lower employment probability than the reference group with primary school education. The same difference is 25–30 per cent for men. The chance of employment of persons with a higher education is 25 per cent higher for women and 18–20 per cent higher for men than that of those with only primary school education.[9] According to the results, differences in educational level are somewhat larger in the case of women than in the case of men.

For the *age group* variable, the age group of 25–30 is the base category. In the case of women, the employment probability of this age group was the lowest, the estimated coefficients for all other age groups were significant and positive. Women of 36–40 have the highest employment probability, but women of 46–50 are still more likely in work than those who are 25–30 years old. Since bringing up children has a definite effect on activity probability, it is likely that it influences our results. The 'number of children' variable in our model gives no information on the age of the children; consequently, we can only partly control for the effect of bringing up children on the employment probability of the women of 25–30. Beyond that, the probability to be unemployed is higher among young people. The employment probability of men decreases with age, for the oldest age group in our sample, the 51–55 year old men, it has been more than 20 per cent below that of the 25–30 year old men since 1998.

9 To show the differences we consider the marginal effects. The marginal effect in the logit function is $p\cdot(1-p)\cdot \acute{c}$, where p is the probability an event occurs, and $\acute{c}$ is the estimated coefficient

Table 1/a: Logit models of employment probability, men

	1992		1994		1996		1998		2000		2002	
	coef.	z	coef.	z	coef	z	coef.	z	coef.	z	coef.	z
Educational level												
Incomplete primary education	–0.787	–8.19	–1.092	–8.24	–1.198	–8.56	–1.160	–9.16	–1.314	–9.14	–1.484	–9.68
Vocational school	0.532	9.33	0.675	11.58	0.650	11.84	0.704	15.42	0.836	16.94	0.958	19.02
General secondary school	0.949	9.16	0.981	9.41	0.966	10.17	0.815	10.18	0.568	6.11	0.759	7.51
Vocational secondary school	0.943	12.08	1.067	13.63	1.156	15.06	1.299	19.56	1.316	19.92	1.301	19.52
Higher education	1.649	15.87	1.752	16.61	1.877	18.36	1.920	22.44	2.113	22.11	2.029	21.56
Age-group												
31–35 years	0.177	2.20	–0.052	–0.60	0.051	0.62	–0.038	–0.53	–0.019	–0.26	0.226	3.01
36–40 years	0.049	0.64	–0.212	–2.63	0.027	0.35	–0.138	–1.97	–0.243	–3.26	–0.040	–0.53
41–45 years	0.106	1.29	–0.318	–3.73	–0.176	–2.33	–0.349	–5.46	–0.529	–7.70	–0.411	–5.70
46–50 years	–0.159	–1.89	–0.679	–7.71	–0.441	–5.51	–0.588	–8.94	–0.786	–11.59	–0.651	–9.50
51–55 years	–0.514	–5.91	–0.886	–9.46	–0.877	–10.70	–1.148	–16.69	–1.177	–16.46	–1.270	–18.27
Marital status and the number of children												
Single, no children	–0.824	–13.14	–0.946	–14.37	–0.753	–12.68	–0.898	–17.71	–0.995	–18.96	–0.970	–18.22
No. of children	0.011	0.34	–0.071	–2.20	–0.018	–0.60	–0.091	–3.53	–0.050	–1.80	–0.094	–3.36
No. of children*single	–0.385	–1.76	–0.438	–2.16	–0.221	–1.46	–0.732	–4.49	–0.179	–1.24	–0.479	–3.47
Region												
Central Transdanubia	–0.033	–0.34	–0.308	–2.88	–0.178	–1.77	0.033	0.38	0.132	1.45	–0.016	–0.17
Western Transdanubia	0.478	4.35	0.302	2.49	0.203	1.86	0.453	4.82	0.396	4.04	0.368	3.61
Southern Transdanubia	0.037	0.37	–0.637	–5.96	–0.450	–4.46	–0.346	–4.08	–0.423	–4.82	–0.590	–6.57
Northern Hungary	–0.420	–4.57	–0.823	–8.18	–0.649	–6.87	–0.603	–7.64	–0.641	–7.82	–0.691	–8.13
Northern Great Plain	–0.229	–2.52	–0.771	–7.81	–0.657	–7.15	–0.597	–7.81	–0.734	–9.32	–0.789	–9.64
Southern Great Plain	0.079	0.83	–0.381	–3.70	–0.049	–0.50	–0.013	–0.16	–0.051	–0.60	–0.282	–3.25
Type of settlement												
Town	0.157	2.78	0.211	3.55	0.106	1.93	0.161	3.36	0.216	4.27	0.326	6.34
County seat	0.128	1.85	0.288	4.03	0.260	3.66	0.113	1.90	0.223	3.70	0.410	6.49
Budapest	0.461	4.78	–0.105	–1.03	0.045	0.46	0.029	0.36	0.168	1.96	0.057	0.65
Constant	1.131	10.73	1.549	13.51	1.205	11.52	1.289	14.58	1.432	15.33	1.409	14.85
No. of observations	14,444		12,072		13,062		17,385		17,489		17,269	
Pseudo R^2	0.980		0.116		0.115		0.121		0.134		0.142	

The base categories are primary schooling, age 25–30, married with no children, Central Hungary and village.

The more children women bring up the less chance they have to work outside the home. To some extent this is connected to the fact that the labour supply of women decreases with the number of children. Further, women with more children are less likely to be employed than those without or with fewer children. Having one child more, the employment probability of non-single women (married or living together with a partner) decreases by 10–15 per cent. The same effect is somewhat lower, 5–13 per cent, in the case of single women.[10] There is no difference between the single and non-single women with no child. The 'number of children' variable showed a significantly weak negative effect (having one more child decreases em-

10 In the case of single women the coefficient of the 'number of children' variable can be calculated as the sum of the coefficients of the variables 'number of children' and the 'number of children*single'

ployment probability by 1–1.5 per cent) in three various years (1994, 1998, 2002). One would expect a positive relationship between the number of children and the employment probability of men, due to the obligation to maintain the family. The reason of our opposite results can be explained by arguing that the coefficient of 'number of children' variable masks other effects not included in our model, for example the common effect of employment discrimination against Romas and the high number of children in Roma families.

Table 1/b: Logit models of employment probability, women

	1992		1994		1996		1998		2000		2002	
	coef.	z	coef.	z	coef	z	coef.	z	coef.	z	coef.	z
Educational level												
Incomplete primary education	–1.280	–12.37	–1.702	–10.88	–1.611	–9.77	–1.828	–11.47	–1.807	–10.23	–1.874	–10.36
Vocational school	0.531	8.36	0.586	9.13	0.694	11.09	0.515	9.81	0.773	14.19	0.703	12.76
General secondary school	0.602	9.16	0.826	11.43	0.792	11.74	0.705	11.89	0.673	10.44	0.693	10.22
Vocational secondary school	0.964	14.33	0.819	12.39	1.035	15.50	0.990	17.40	1.265	22.06	1.104	19.05
Higher education	1.053	13.76	1.404	16.69	1.493	19.20	1.572	22.57	1.637	23.55	1.606	22.42
Age-group												
31–35 years	0.719	11.31	0.840	11.80	0.983	14.08	0.868	14.02	0.709	11.60	0.672	11.18
36–40 years	1.067	16.46	0.952	14.15	1.133	17.04	0.861	14.17	0.928	14.80	1.012	15.70
41–45 years	0.821	11.57	0.803	10.84	0.962	13.86	0.721	12.30	0.711	11.73	0.681	10.77
46–50 years	0.639	8.42	0.472	5.98	0.512	6.95	0.289	4.73	0.387	6.37	0.299	4.97
Marital status and the number of children												
Single, no children	–0.057	–0.78	0.036	0.48	–0.018	–0.26	0.027	0.46	–0.024	–0.41	–0.022	–0.38
No. of children	–0.505	–17.91	–0.520	–16.83	–0.717	–23.63	–0.685	–25.67	–0.714	–26.40	–0.771	–27.68
No. of children*single	0.229	3.89	0.152	2.52	0.132	2.37	0.128	2.54	0.245	4.63	0.244	4.76
Region												
Central Transdanubia	–0.241	–2.54	0.006	0.07	–0.054	–0.56	–0.079	–0.97	0.118	1.41	0.135	1.60
Western Transdanubia	0.043	0.43	0.404	3.80	0.276	2.75	0.288	3.35	0.285	3.24	0.210	2.34
Southern Transdanubia	–0.115	–1.16	–0.020	–0.20	–0.083	–0.85	–0.121	–1.44	–0.166	–1.95	–0.209	–2.40
Northern Hungary	–0.389	–4.23	–0.117	–1.23	–0.292	–3.17	–0.294	–3.70	–0.287	–3.60	–0.285	–3.48
Northern Great Plain	–0.347	–3.85	–0.253	–2.74	–0.286	–3.20	–0.422	–5.53	–0.392	–5.10	–0.432	–5.50
Southern Great Plain	–0.202	–2.18	–0.038	–0.40	–0.110	–1.20	–0.121	–1.54	–0.152	–1.91	–0.263	–3.27
Type of settlement												
Town	0.144	2.66	0.179	3.12	0.189	3.46	0.135	2.86	0.186	3.84	0.159	3.21
County seat	0.283	4.39	0.341	5.01	0.244	3.66	0.272	4.69	0.359	6.08	0.234	3.95
Budapest	0.043	0.48	0.101	1.11	0.107	1.21	0.095	1.23	0.050	0.64	–0.025	–0.32
Constant	0.477	4.95	–0.035	–0.35	–0.076	–0.80	0.162	1.96	0.043	0.51	0.203	2.38
No. of observations	12,921		10,740		11,575		15,253		15,236		14,704	
Pseudo R^2	0.112		0.116		0.150		0.139		0.152		0.152	

The base categories are primary schooling, age 25–30, married with no children, Central Hungary and village.

Figure 2a: The marginal effects of region variables on employment probabilities of men, Transdanubian regions

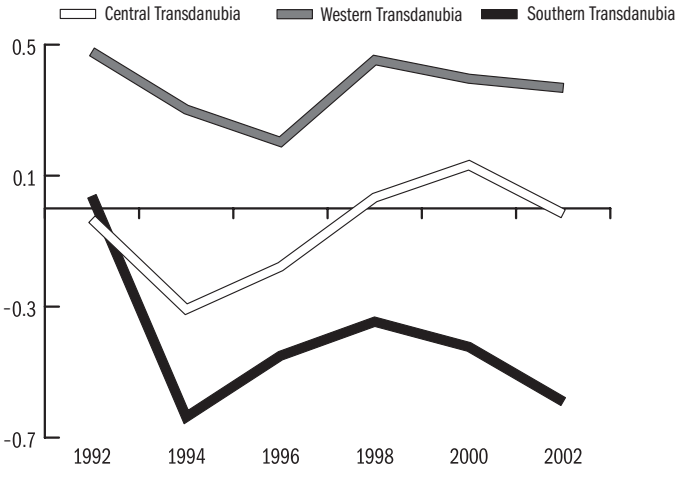
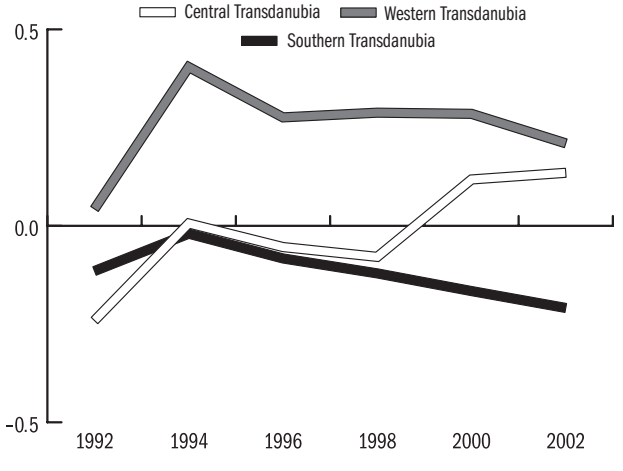


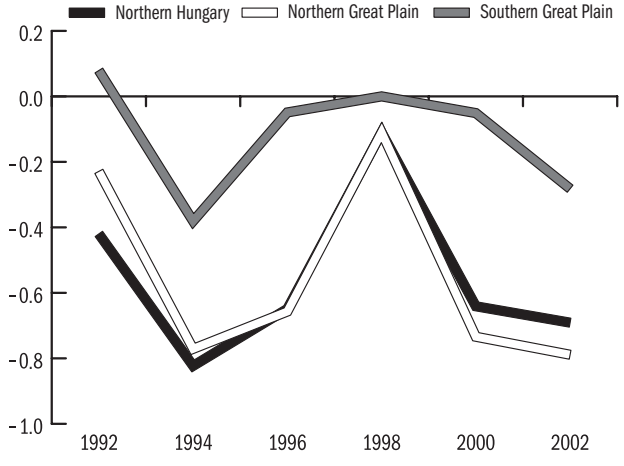
Figure 2b: The marginal effects of region variables on employment probabilities of women, Transdanubian regions



The marginal effects of the *region* variable are given in Figures 2a-2d. The base category is the region of Central Hungary, which includes Budapest and Pest county. Let us consider first the results for the Transdanubian regions (Figures 2a-2b). In the region of Western Transdanubia, the probability of employment of both men and women is higher than in the region of Central Hungary. The coefficients are significant for all but one year (1996 for men and 1992 for women) as implied by the z statistics in Table 1. Controlling for the effect of other variables in the model the employment probability of men was 3–7 per cent (4–8 per cent for women)

higher in Western Transdanubia than in the region of Central Hungary. As for the Central Transdanubia region, coefficients were insignificant for both men and women except for one year. This means that the probability of employment in Central Transdanubia does not differ from chances in Central Hungary (the coefficients were significant and positive for men in 1994 and for women in 1992, and in both cases the difference in employment probability was 5 per cent). Since 1994 in the region South Transdanubia the chance of employment of men has been significantly below that in Central Hungary, with a difference in probability ranging between 6 and 12 per cent (it decreased between 1994 and 1998 and increased after). On the contrary, there was no employment disadvantage for women living in South Transdanubia from 1992 to 2000. The only year was 2002 when the coefficient was significant (with a marginal effect of 4.5 per cent).

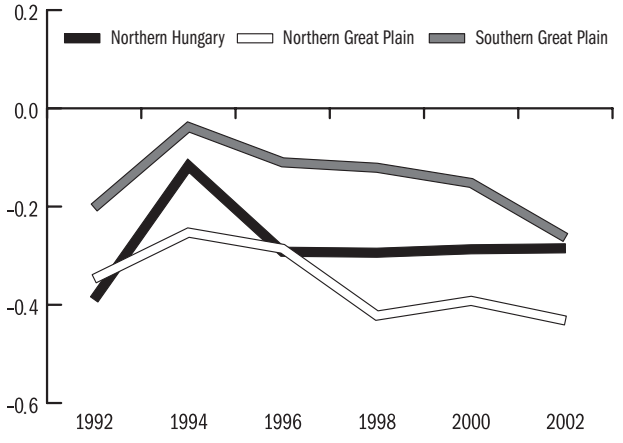
Figure 2c: The marginal effects of region variables on employment probabilities of men, Eastern regions



Results for the Eastern regions are shown in Figures 2c-2d. For the region of the Southern Great Plain, we had significant coefficients for both men and women only in two out of the 6 years. Men had a disadvantage of 6.5 per cent in 1994 and 4 per cent in 2002, women 4 per cent in 1992 and 6 per cent in 2002. In the rest of the period, there was no difference in the employment probabilities in the region of the Southern Great Plain and Central Hungary. The chance of employment for men is quite low in both Northern Hungary and the Northern Great Plain. There was a significant negative difference in all the 6 years; it reached about 6 per cent in Northern Hungary, in the Northern Great Plan it was just 3 per cent in 1992 but has been rising to 10–15 per cent in both regions since 1994. The coefficients for women were also negative in both regions and significant, with

one exception (1994, Northern Hungary), but the difference in the probability was smaller. As for Northern Hungary, results show a 3–8 per cent difference in probability. As for the Northern Great Plain the gap is 7–10 per cent, compared to the region of Central Hungary.

Figure 2d: The marginal effects of region variables on employment probabilities of women, Eastern regions



Note: For Figures 2a-2d the base category is Central Hungary.

To sum up, our findings show considerable regional differences in the employment probabilities. In the region of Western Transdanubia, both men and women have higher chance to be employed than those who live in other regions of the country. Our results show a considerable employment disadvantage for both men and women – larger for men – in the region of Northern Hungary and the Northern Great Plain. Beyond that, men have a low chance to be employed in Southern Transdanubia.

There is also a difference in employment probability by types of settlement. In towns, the chance to be employed is 2–4 and 3–4 per cent higher for men and women, respectively compared with those who live in a village. (In the categorisation of the type of settlement, the base category was village.) Those who live in county seats have an even greater advantage compared to those who live in villages: 4–5 per cent for men and 5–7 per cent for women. (The coefficients of town and county seat variables were significant in each of the 6 years for men; in the case of women, the coefficients of town variable were significant in 5 out of the 6 years, the coefficients of county seat variable in 4 years.) The 12 estimations gave only one significant coefficient in the case of Budapest. According to our results, controlling for other variables included in the model, the people who live in Budapest have no higher probability to be employed than those who live in the villages in county Pest (the base category in this case).

1.3 Regional differentials in earnings and labour costs

János Köllő

Potential earnings gains and savings in labour costs are among the most important factors shaping spatial mobility. This chapter addresses the scope for such gains by analysing wage differentials across NUTS-II regions and types of municipalities over the period of transition (defined here as 1986–2001).

Workers' potential gains can be measured by regional differences in net wages paid for a given type of job. Statistical data on regional average earnings are available but their pairwise comparison does not yield precise measures of the potential gains from moving. The personal characteristics of would-be migrants are fixed and are to be controlled for. Similarly, the effect of compositional differences (by industry, firm size and occupation) on regional average wages is to be filtered out.

Some of the potential control variables are observable and their effect can be easily removed from the data using regression techniques. The conditional expected values of wages estimated with a regression model provide more precise measures of the potential gains from mobility, and these estimates often yield quite different results than do the raw data. The difference between average wages in Budapest and small urban centres (cities and towns excluding county seats) amounted to 49 per cent in 2000, for instance, while the regression-adjusted differential relating to workers of the same gender, age, education, occupation, industry and firm size reached just 23 per cent.

While it is certainly advisable to filter out the effect of individual attributes that remain fixed while the worker moves from one place to another, the question of what else should be held constant in the regional comparison of wages is often difficult to answer. Differences in productivity and unemployment are good examples of this kind of ambiguity. Productivity levels vary largely across regions, and are partly explained by unobserved skill differentials among workers. Regional inequalities in the knowledge of foreign languages or internet literacy support that such hard-to-observe skill differentials do exist. It can not be taken for granted that the median worker of region *i*, employed in a low-productivity firm, can easily find a job in region *j*'s typical, high-productivity enterprise given his/her level of unobserved skills. Therefore a comparison based on earnings equations uncontrolled for firm productivity is likely to overestimate workers' potential gains/losses from moving between *i* and *j*. However, equations, when controlled for productivity, are likely to underestimate the true wage gap. As long as region *j*'s labour productivity is higher for reasons other than unobserved skills, and employers share the productivity gains with work-

ers, movers can acquire a wage gain larger than what is suggested by the productivity-controlled regressions. This ambiguity clearly has practical relevance: controlling for productivity reduces the estimated wage gap between Budapest and urban centres from 23 to 15 per cent.

Another question is whether one should control for *unemployment*. As will be shown later, local unemployment rates have a strong impact on local wage levels – this is one of the reasons why moving from macro-region *i* to macro-region *j* yields a wage gain. However, in many cases such a gain can be acquired by moving from high-unemployment to low-unemployment districts *within* region *i*. Comparisons based on regressions uncontrolled for local unemployment therefore tend to overestimate the wage gain from changing region. Including local unemployment to the right-hand side of the earnings equation has substantial impact: the estimated region-specific wage differential between Budapest and urban centres diminishes further to only 6 per cent.

Similar concerns arise on the part of *employers*. The labour cost differential between regions, relevant for employers, can be approximated by comparing gross wages controlled for compositional effects. (Since payroll taxes are roughly linear, they can be ignored). However, the unit cost of labour also depends on the productivity of the employees that need to be taken into account in order to have reliable estimates of the potential gains from relocation. This calls for comparing regional wage differentials between firms of identical productivity, that is, controlling the wage equation for average product or some other measures of efficiency (total factor productivity, for instance). The argument for holding local unemployment constant applies in this case, too, and it is also supported by further considerations. Relocating from a prosperous region to a high-unemployment one may raise non-wage expenses such as screening costs, and the firm is also likely to face diseconomies due to low firm density, distance from decision-makers and trade portals, and less developed infrastructure.

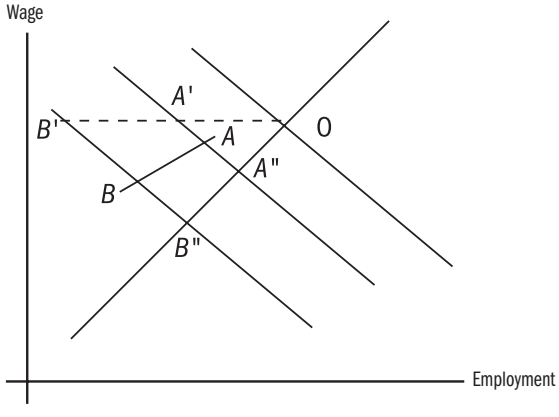
In the following sections we analyse regional wage differentials using data from the Wage Survey conducted in 1986, 1989 and annually since 1992. The survey comprises firms employing more than 20 workers (1986–1994), 10 workers (1995–98) and 5 workers (1999–2001). Wages in private firms are analysed first. This is followed by a study of earnings differentials in the public sector and micro-enterprises uncovered in the Wage Survey. Wage differentials controlled (uncontrolled) for productivity and local unemployment will be interpreted as lower-bound (upper-bound) estimates.

Regional wage differentials and the wage curve in 1986–2001

Wage differentials by unemployment rate bear great importance to economists and policy-makers interested in the flexibility of labour markets. Un-

der certain assumptions the relationship between regional wage levels and regional unemployment levels provides information on how wages adjust to regional shocks. To clarify how these linkages may come into being in a transition economy consider two regions (*A* and *B*) hit by demand shocks of different magnitudes at the start of transition. The possible outcomes are sketched in Figure 1 with an upward-sloping labour supply curve, downward-sloping labour demand curves and an upward sloping wage curve (*AB*). If wages were rigid representative firms of region *A* and *B* would shift to points *A'* and *B'*. Relative wages would not change while unemployment levels (*OA'* and *OB'*) would differ substantially at the end of the day. With infinitely elastic wages the adjustment would lead to points *A"* and *B"*: i.e. the shocks would be fully absorbed by wages and unemployment differentials would be eliminated.

Figure 1: Reactions to regional shocks



We have several reasons to expect an outcome like the one depicted by curve *AB* on Figure 1. Wages are higher and unemployment is lower (employment is higher) in *A* than *B*. There are both theoretical and empirical arguments supporting this expectation.

First, the push effect of unemployment on wages may not be linear in unemployment. High unemployment is usually associated with longer duration of unemployment spells given that in some cases a protracted joblessness erodes the human capital of the job seekers, or firms are averse to taking on the long-term unemployed for other reasons. Thus, the wage push will be a concave function of unemployment. Second, if unemployment is high the wage required to deter shirking is lower as argued by *Shapiro and Stiglitz* (1984) and other proponents of the efficiency wage theorem. Third, if workers and employers bargain over both wages and employment (as in the seminal model of *McDonald and Solow* 1982) regions will be located along a contract curve connecting regimes with low employment and

low wages with their high-employment, high-wage counterparts. (In this case regions are shifted along the *AB* curve rather than moving to *A* and *B* through *A*' and *B'*.)

Empirical research of the relationship between wages and unemployment repeatedly identified lower wages in high-unemployment regions. While the estimates vary over a wide range, a multitude of studies found the elasticity of regional wages with respect to regional unemployment to be around –0.1. (See overviews by *Blanchflower and Oswald* 1990, 1992, 1995 and *Winter-Ebner* 1997).

Note that the linkage between unemployment levels and wage levels provides reliable information on wage flexibility if the supply of labour is not highly elastic. To see this suppose that at the end of the adjustment process, the *AB* curve becomes nearly parallel with the supply curve while both *A* and *B* fall close to *A"* and *B"*, the points expected under infinitely elastic wages. Since the unemployment differentials are small, the wage curve analysis would indicate weak correlation between unemployment and wages, hinting at 'inflexibility'. The risk of this kind of misinterpretation is lower the steeper the supply curve. Fortunately, labour supply is indeed highly inelastic in most labour markets.

Table 1: Elasticities of individual earnings with respect to regional (NUTS-IV) unemployment, 1986–2000

	Net monthly earnings		Gross monthly earnings	
	Base model	Controlled for productivity	Base model	Controlled for productivity
1986	0.0000	0.0000	0.0000	0.0000
1989	-0.0197	-0.0055	-0.0238	-0.0065
1992	-0.0696	-0.0546	-0.0854	-0.0673
1993	-0.0755	-0.0591	-0.0923	-0.0726
1994	-0.0857	-0.0711	-0.1056	-0.0879
1995	-0.0955	-0.0757	-0.1177	-0.0938
1996	-0.1142	-0.0935	-0.1309	-0.1073
1997	-0.0755	-0.0527	-0.0826	-0.0578
1998	-0.0851	-0.0662	-0.0896	-0.0738
1999	-0.0936	-0.0673	-0.1014	-0.0728
2000	-0.0689	-0.0561	-0.0757	-0.0617

Keeping these caveats in mind we can conclude from the data that Hungarian wages exhibit a high degree of flexibility. As shown in Table 1, between 1986 and 1996, the elasticity of net and gross wages with respect to NUTS-IV, micro-region level unemployment increased from zero to –0.11 and –0.13, respectively. Later, the estimated elasticities decreased in absolute value and stabilised in a range between –0.07 and –0.1, rather close to the 'benchmark' of –0.1. Given an eight-fold difference in the unem-

ployment rates of the best and worst regions in this period their wage levels were estimated to differ by about 17 per cent holding other wage determinants constant. (Supposing an elasticity of –0.09 the wage difference can be approximated as $1\text{-}e^{-0.09 \cdot \ln(8)}$).

Estimates from individual earnings functions controlled for gender, age, education, experience, job grade, industry, firm size, firm ownership, firm's capital-labour ratio and NUTS-II dummies (base model). Productivity of the employer was measured by sales net of material costs divided by the number of workers in the respondent's firm. For further details see endnote J1.

Models including firm's productivity among the regressors hint at significantly lower elasticities – ones fluctuating between –0.05 and –0.07 after 1996. While the estimated wage differential between the best and worst regions amounted to about 17 per cent, the estimated wage gain of a firm relocating from the best to the worst region without a loss of productivity did not exceed 12 per cent ($1\text{-}e^{-0.06 \cdot \ln(8)}$).

Differences between types of settlements

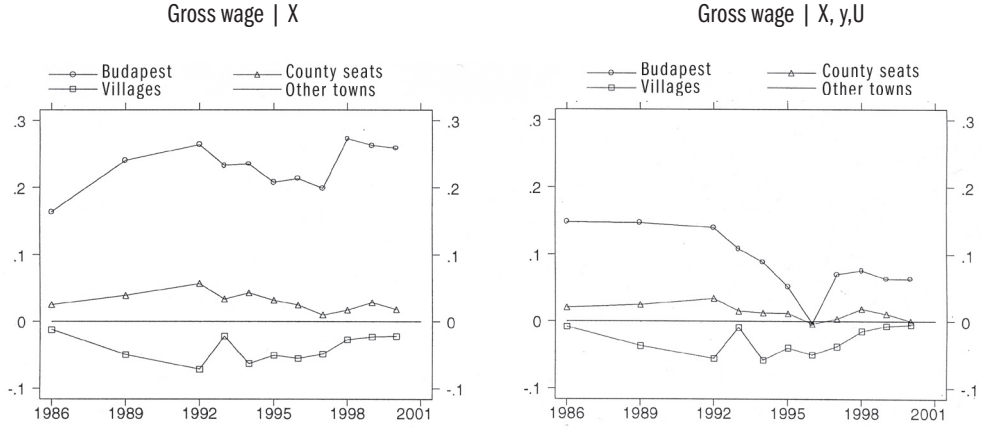
Figure 2 shows estimates of the net earnings differentials by types of settlements (Budapest, county seats, other urban centres treated as the reference category, villages). Symbol |X indicates that the difference is controlled for the individual and environmental characteristics listed in the footnote of Table 1 while |X,y,U stands for estimates holding also the firm's productivity and local unemployment constant.

The difference between villages, small towns and the 19 county seats were modest throughout the transition and had nearly vanished by the end of the 1990s.

Figure 2: Regression-adjusted net earnings differentials between settlements 1986–2000

The inclusion of productivity and unemployment into the models only affects the estimates for Budapest versus other settlements. While the estimates based on equations controlled for the *X*-s varied in the 17–22 per cent range and followed an increasing trend, those controlled for *X, y* and *U* were much lower and followed a decreasing trend. A worker, moving from a low-unemployment town to the capital finding a job at a firm of similar efficiency as the original employer, could expect a net wage gain of about 6–7 percentage points at the end of the 1990s. Considering higher costs of living in Budapest this gain seems rather modest.

Figure 3: Regression-adjusted gross wage differentials between settlements 1986–2000



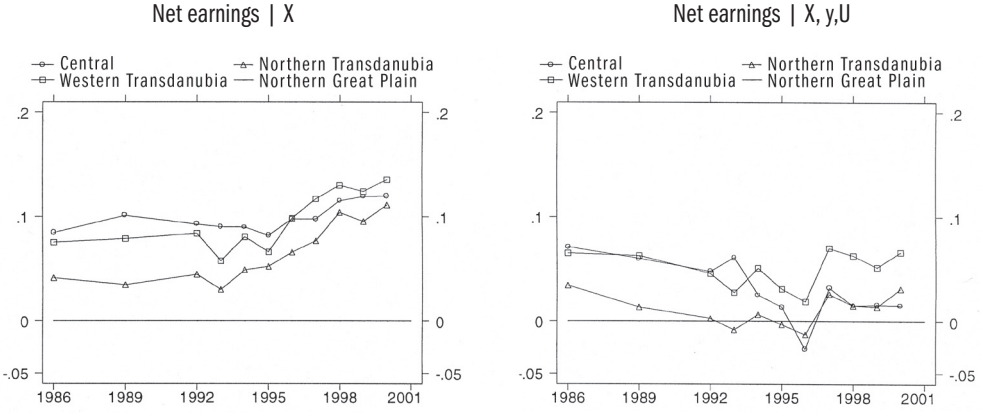
The estimates of labour cost differentials (Figure 3) yield qualitatively similar results. A firm relocating from Budapest to a small town can expect its average wage to drop by 25–27 per cent. (See the left panel). However, in order to realise this gain the firm has to maintain its productivity level – a difficult task when the positive external benefit from running a business in a prosperous, large metropolitan area is lost. Comparing firms of identical productivity on the right panel suggests a lower potential gain: about 15 per cent in 1986 diminishing to about 5 per cent in the middle of the 1990s and rising again to the range of 10–15 per cent later. The path of the adjusted gain is probably explained by the faster recovery from the transformational recession of the Budapest area. The differences between county seats, other towns and villages were widening in 1986–96 but had nearly disappeared by the end of the transition period.

Regional differences

Regional wage differentials, which seem substantial on the basis of raw data, appear to be rather small once individual and employer attributes are controlled for. We study these differences in figures 4–7. The Northern

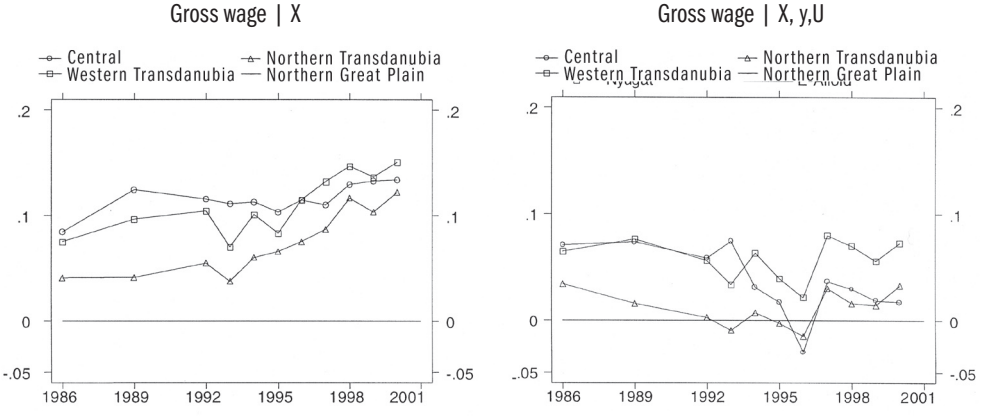
Great Plain is treated as the reference category in all of these charts. Figures 4 and 5 depict the path of net and gross wages in the most developed regions (Central without Budapest, Western, and North-Transdanubian) relative to the Northern Great Plain.

Figure 4: Regional net earnings differentials 1986–2000



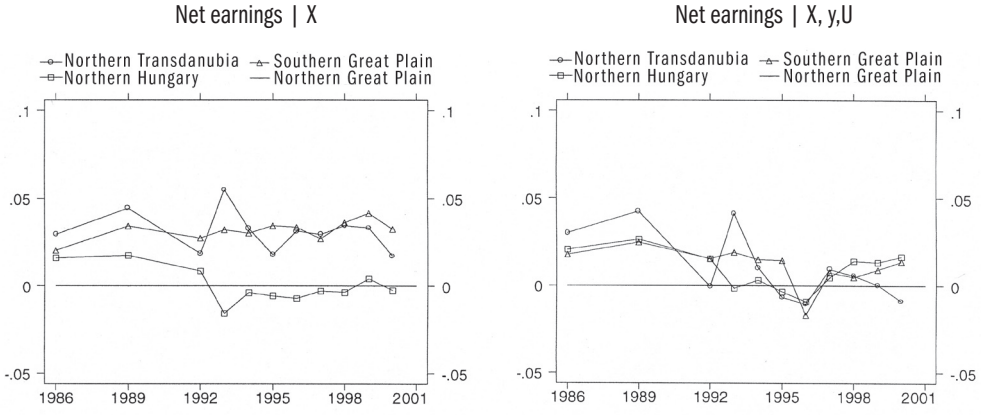
The wage advantage of developed regions increased from about 5 per cent to 10–14 per cent between 1986 and 2000. It is apparent from the comparison of the two panels, however, that the gap was mostly explained by the growing relative productivity and diminishing relative unemployment level of the central and western regions. The wage gap, when adjusted for these variables, did no exceed 6 per cent.

Figure 5: Regional gross wage differentials 1986–2000



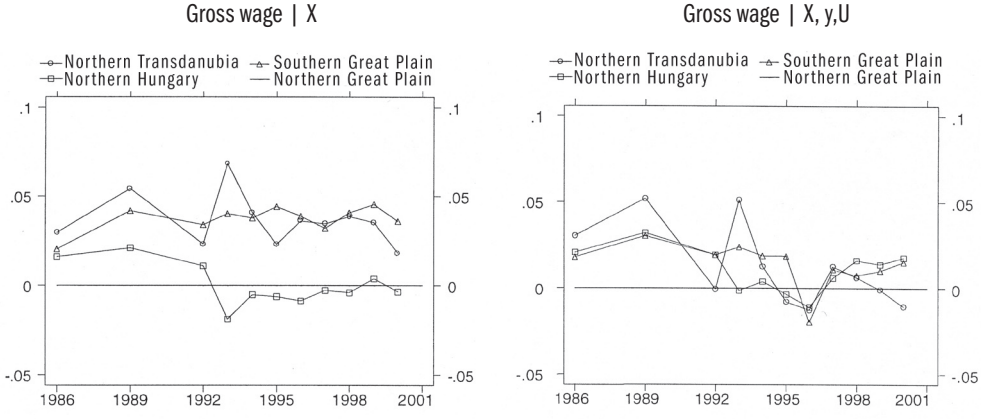
The estimated gross wage differentials followed a similar path. A firm moving from the most developed western part of Hungary to the Great Plain without a loss of productivity could expect a labour cost gain of between 2 and 7 per cent since the mid-1990s.

Figure 6: Regional net earnings differentials 1986–2000



Figures 6 and 7 show the wage path of three less developed regions (South Trandanubia, Southern Great Plain, Northern Hungary) relative to the Northern Great Plain. The net earnings differentials are small whichever estimate is considered and became negligible by 2000. The same holds for the gross wage differentials irrespective of whether they are adjusted for productivity or not. The raw wage differentials between these regions are fully accounted for by differences in observable skill endowments and industrial composition.

Figure 7: Regional gross wage differentials 1986–2000



The patterns discussed in this section hold for within-industry wage differentials as well. *Köllő* (2003) found the scope for gainful relocation to be wider in light industry than engineering and the tertiary sector. The paper also analysed the residual wage distribution and concluded that earnings regressions tend to overestimate wages in the Northern Great Plain and Northern Hungary by about 2–3 percentage points. The qualitative conclusions drawn here are not affected by these results.

Regional wage differentials in the public sector

So far we analysed earnings variations in the private sector while those in the public sector are equally important from the potential migrants' point of view. Table 2 fills the gap by presenting estimated net earnings differentials controlled for the effects of gender, experience, education and job grade. Since the differences between NUTS-II regions are very small and quite often statistically insignificant, the table only displays the unemployment elasticity of wages and the variations across types of settlements.

Public sector wages are apparently less responsive to unemployment as indicated by the elasticities varying between –0.01 and –0.04. This is explained by the bureaucratic rules of wage setting allowing no adjustment to labour market conditions. In fact, it is rather likely that the observed weak negative correlations reflect compositional differences – the fact that the depressed areas, most of them rural, have smaller schools, basic health institutions, and only low-ranked offices of public administration.

Table 2: Regression-adjusted net earnings differentials in the public sector. 1992, 2000

	Public administration		Education		Health	
	1992	2000	1992	2000	1992	2000
Unemployment elasticity	-0.0308	-0.0399	-0.0277	-0.0257	-0.0199	-0.0134
Budapest	128.5	120.3	113.0	105.6	115.1	110.5
County seats	120.7	124.2	99.9	99.6	103.7	103.5
Urban centres	100.0	100.0	100.0	100.0	100.0	100.0
Villages	90.2	93.2	102.1	97.6	102.8	100.0

Wage differentials between villages, towns and county seats are negligible in all sectors while public administration pays higher wages in county seats. The wage advantages of Budapest (and of county seats in public administration) are probably explained by the compositional differences mentioned above. The wage advantage of Budapest (controlled for X) seems marginally lower than that observed in the private sector.

Micro-firm employees and casual workers

Analyses based on the Wage Survey are often criticised for not covering firms smaller than five workers, part-timers, and casual workers. The 2001 April-June wave of the Labour Force Survey (LFS) that asked the respondents about their wages opens the possibility to fill this gap. In this paper only the regional aspects are discussed.

Using information on usual working time, industry, and firm size it is possible to determine the part of the LFS sample belonging to the target population of the Wage Survey. The sub-sample which were asked about wages

contained 18,452 such workers and 3,699 further respondents (mostly micro-firm employees). The wages of the two populations were analysed with regressions having gender, age, age squared, education, one digit industry, Budapest dummy and the local unemployment rate on the right hand side. The coefficients of the two latter variables are presented in Table 3.

Table 3: Regression-adjusted regional wage differentials in the Labour Force Survey sample, April-June 2001

	Wage Survey target population		Other wage earners	
	Net wage*	Gross wage	Net wage*	Gross wage
Employed in Budapest	0.0589	0.0753	0.0791	0.0994
Unemployment elasticity	-0.0822	-0.1027	-0.0904	-0.1084
Number of respondents	18,452		3,669	

* Adjustment for personal income tax was made by the Central Statistical Office using tax tables.

The wage advantage of workers employed in Budapest appears to be smaller than in the Wage Survey, which is based on firm-reported payroll data. This is probably explained by a much higher rate of refusal among high-income Budapest respondents – a common experience of income surveys. More importantly, there is no statistically significant difference between the two sub-samples in terms of the Budapest effect and the unemployment elasticity of wages.

Summary

Data suggest that wage differentials between Hungary's macro-regions were not substantial in the beginning of the 1990s and by the end of it, those between types of municipalities almost completely vanished, except for Budapest. Estimates concerning the capital's wage advantage vary over a wide range of 6–23 per cent depending on the choice of model. The differences are smaller if productivity and/or local unemployment are held constant and larger if these factors are considered to be irrelevant from the mobility gain's point of view. Depressed regions do not provide large savings in labour costs for relocating firms. It seems that wage differentials can not play a decisive role in worker migration decision either. Improvements in employment probabilities and quality of the environment most probably matter more than a few percentage points gain in earnings.

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Note J1.

The Wage Survey (WS) is an annual survey conducted by the National Labour Centre in 1986, 1989 and each May since 1992. In the waves used in this paper the sampling procedure was the following (i) the firm census provided by the CSO serves as the sampling frame (ii) it is a legal obligation of each firm employing more than 20 workers to fill in a firm-level questionnaire and provide individual data on a 10 per cent random sample of the employees. (iii) budget institutions irrespective of size have to fill in the institution-level questionnaire and provide individual data on all employees (iii) Firms employing less than 20 workers according to the census are sampled in a procedure stratified by four-digit industries. The firms contacted are obliged to fill in the firm-level questionnaire and provide individual demographic and wage data on all employees. The observations are weighted to ensure that they are representative. About 180 thousand individuals employed in 20,000 firms and budget institutions were observed in 1999–2001.

The regressions quoted in this section had log monthly gross or net earnings on the left hand side. The coefficients were estimated with ordinary least squares. All the coefficients (b) appearing in the tables are significant at 0.01 level after adjustment for heteroscedasticity. The tables and charts display approximations of the percentage differentials by $\exp(b)$.

1.4 The housing market and residential regional mobility in the 1990s – the case of Hungary

József Hegedüs

Housing mobility and regional mobility

Social scientists tend to agree that a strong relationship exists between the housing system and regional mobility. However, they seem to agree much less on what the causal relationships exactly are and, consequently, which social policy tools would be appropriate to apply to reach a certain aim. This chapter describes the relationships between the housing system and regional migration, primarily from the perspective of the former, and attempts to identify factors within the housing sector that affect the latter. The analysis, based on two significant household surveys by the HCSO[11] concentrating on housing conditions, seeks to underpin empirically the theoretically established relationships or, where it is impossible to produce evidence, to illustrate them.

In international comparison, housing mobility[12] (move by households) in Hungary is rather low. Annually 3 to 4.5 per cent of households move whereas in Western European countries the rate is significantly greater. (*Hegedüs*, 2001). In the theory of welfare economics, low mobility has a serious negative impact primarily by undermining the efficiency of programs targeted at reducing unemployment, and inflexible consumption of housing contributes to the under-usage of the housing stock thus creating additional social costs.

Low housing mobility is often explained by various cultural and social factors, but these explanations lack empirical underpinning and often build on historically unjustified stereotypes. Here these factors will not be discussed and the focus will be on those that explain households' behaviour, assuming that households – within the constraints of information available for them – make rational decisions.

Apart from factors determining housing demand (such as demographic conditions, household incomes and expectations), housing mobility is mostly affected by "transaction costs", which are made up of several elements.

1. The first of these factors is that changing a home in the owner-occupied sector is one of the most important economic decisions of a household, fundamentally affecting the household's portfolio. (In Hungary, 96 per cent of housing is owner-occupied). The average value of a home amounts to 5 or 6 times the average household's annual income. (The housing price/income ratio was 5.9 in 1999, while in 2003 it was 6.5.) This means that a bad decision on the housing transaction (for instance that a household undervaluates their old housing by 20 per cent or over-valuates the new housing by 20 per cent) may put more than a year's income at risk. This factor in-

11 HCSO (Hungarian Central Statistical Office) empirically surveyed housing conditions in 1999 and 2003. The sample included 10,754 respondents in 1999 and 8,000 in 2003, but through a special sampling procedure relocating families are overrepresented in the 2003 sample. The research was lead by János Farkas.

12 Hereafter long term relocation of a household is meant by housing mobility. In empirical research, "long term" means a period of time longer than six months. This definition is different from the usual definitions of migration mobility. Thus, in the housing surveys by HCSO in 1999 and 2003 housing mobility rates are somewhat lower, yet in several aspects provide a more realistic picture of long term processes in the housing market. The weight of temporary relocation is probably smaller in the Hungarian housing market as the rental housing stock, which is supposed to make it possible, is practically missing.

creases risks, i.e. constraints mobility, especially in the case when there is no reliable information available on the time trend of housing prices.[13]

2. Moving involves substantial tax and financial burdens. Duties, registration fee and the potential hiring of a real estate agent may increase actual transaction costs. In Hungary,[14] the duty is the greatest item, though the average duty of 4.5 to 5 per cent is not high by Western standards.[15] While many researchers have pointed out the negative correlation between transaction costs and housing mobility, the actual impact mechanisms, however, are supposed to be much more complex.

3. Lack of information and knowledge of the housing market is an important factor too. While this factor is naturally interrelated with risks caused by the great value of housing property as an asset, it does play a role in itself. Knowing prices, of course, is of primary importance, but there are several other risk factors that should not be disregarded, such as the reliability of ownership attestations, which can be one of the factors restraining housing mobility.[16] Also, the time requirement of selling housing is part of transaction costs.

4. Most researchers consider the high rate of owner-occupation as one of the main causes of low mobility, as indeed owner-occupation increases transaction costs partly because of the above listed factors.

High transaction costs necessarily reduce housing mobility and the efficiency of the housing sector.[17] Housing mobility, however, is also connected to the systems of housing finance and subsidy. For instance, it is a widely known relationship that low and controlled rents limit mobility as families are reluctant to relinquish the "hidden" subsidies (*Hegedüs – Tosics*, 1992). The underdeveloped housing finance system discourages mobility as buying a place to live without affordable loans is not an option even for middle and upper-middle income households.

Factors influencing mobility within the same settlement naturally work in the case of relocation between localities too. Regional mobility, however, is more intensively influenced by certain different factors. In the communist regime, the lack of a housing finance system lead to the strengthening of a self-help system of housing construction in which people, relatives or friends, received and gave help in building homes both financially and "in-kind". This system greatly contributed to the conservation of the regional structure of settlements. Current municipal housing policies also contribute to the rigidity of this structure and to the low regional mobility.

Regional differences in housing prices and housing investments

The regional difference in housing prices is a serious constraint on housing mobility. Affordability of housing is generally expressed by the price-to-income (P/I) ratio. In Western European countries, this ratio is between 2 and

13 The efficiency of the automobile market is greatly increased by highly standardised prices of second hand cars, thus making " the probability of loss" much smaller than in the real estate market.

14 The amount of the duty is 2 per cent of the market value of housing in the case where the price is less than HUF 4 million, and 6 per cent of the value on top of the HUF 4 million limit. The law provides two kinds of relief: in the case of newly constructed housing by a company the buyer is exempted from paying the fee, and first time buyers under 35 are granted a 50 per cent reduction, limited at HUF 40 thousand (if the price of the housing is not more than HUF 8 million).

15 In France and Belgium the duty is over 10 per cent, but in the UK and Italy it is less than 3 per cent. (*Mclennan*, 1998)

16 No wonder that in developed countries a separate insurance product, the title insurance, has been developed to reduce risk of loss due to "erroneous" registration.

17 According to *Lruvrnsteijn and Ommeren* (2002), a one per cent increase in transaction costs reduces the probability of moving within the owner–occupation sector by 8 per cent.

3.5, whereas in Hungary in the past decade it was 5 to 6. In general terms, the higher is the P/I ratio, the lower is mobility (*Strassman*, 2000).

In the early 1990s, housing prices were declining in real terms but started to soar again after 1999. Although no single reliable time series data are available for housing prices, our estimates based on various sources, confirm this trend. The price/income ratio grew from 5.9 to 6.5 between 1999 and 2003, which means that housing prices grew more rapidly than did incomes. Nevertheless, affordability of housing improved with the greater accessibility of housing credit.[18]

The 1999 and 2003 HCSO Surveys provide information on regional differences and trends of housing prices.[19] Clearly, regional differences in housing prices increased over the past four years. Looking at housing by types of settlement, the difference between villages and the capital city agglomeration has grown from 2.5 to 3.7. By regions, the relative difference between the Central Region and the Northern Great Plain region has grown from 2.0 to 2.3. Increasing regional differences make mobility between geographical units (regions and types of settlements) harder within the private sector. An efficient rental housing sector (which would include a workable rent assistance scheme both for private rental and the communal sectors) could eliminate this obstacle to regional mobility.

Table 1: Average housing prices in 1999 and 2003 by types of settlement and by regions (HUF million)

Type of settlement	1999	2003	2003/ 1999	Region	1999	2003	2003/ 1999
Budapest	5.15	13.35	259	Central Hungary	5.11	13.85	271
Bp. Agglomeration	6.18	19.51	316	Central Transdanubia	3.82	8.98	235
City with county rights	3.91	9.93	254	West Transdanubia	4.85	10.59	219
City	3.19	7.43	233	South Transdanubia	2.99	7.60	254
Rural agglomeration	5.18	11.89	230	Northern Hungary	2.48	6.04	244
Village	2.48	5.33	215	Northern Great Plain	2.49	6.10	245
Average	3.72	9.33	251	South Great Plain	2.83	6.04	213
				Average	3.72	9.33	251

Source: *HCSO 1999, 2003 Housing conditions*.

Regional differences in housing prices are reflected in the different housing/income ratios as regional differences of incomes tend to be much smaller than those of housing prices.

Regional differences in the housing price/income gap reinforce our earlier findings that the access to housing varies by regions. Acquiring a home is easier in villages and less developed regions, where employment and earning prospectives are limited.

18 The affordable housing price/average housing price ratio is the measure of the price of housing affordable through borrowing as a percentage of average (average or median) housing prices. Another indicator of affordability is the ratio of affordable homes/homes for sale, which is a measure of what percentage of homes for sale is affordable for average income households.

19 Values of housing are specified through regressive estimates in which parameters of homes (location, type of home, state of home, size and amenities etc) are used to explain the values attributed to the housing by respondents (the hedonic model). Variables included in the model proved to be relevant for more than 70 per cent of the variation of estimated housing values.

Table 2: The housing price/income ratio in 1999 and 2003 by types of settlement and regions.

Type of settlement	1999	2003	2003/ 1999	Region	1999	2003	2003/ 1999
Budapest	7.4	8.2	111	Central Hungary	7.4	8.5	114
Bp. Agglomeration	8.6	11.5	133	Central Transdanubia	5.7	6.2	109
City with county rights	6.0	6.9	115	West Transdanubia	7.3	7.4	101
City	5.3	5.8	108	South Transdanubia	5.1	5.7	111
Rural agglomeration	7.4	8.5	115	Northern Hungary	4.2	4.8	117
Village	4.5	4.3	96	Northern Great Plain	4.4	4.9	113
Average	5.9	6.5	111	South Great Plain	5.2	5.1	99
				Average	5.9	6.5	111

Source: *HCSO 1999, 2003 Housing conditions.*

Owner-occupied housing and mobility

The literature seems to agree that the ownership structure of the housing stock, i.e. the large share of owner-occupied homes is one of the key reasons for low housing mobility, which in turn reduces the employees' ability to adapt to the uneven regional distribution of jobs. Consequently, there is a correlation between the lack of rental housing and unemployment.

The explanation to this is that not only are transactions costs of moving owner-occupied housing high but the rental housing sector is missing in regions offering good job opportunities. A further consequence of the dominance of owner-occupied housing may be that employees are forced to accept jobs that are the nearest to their homes even if the job does not pay well and requires less expertise than their professional qualifications. Furthermore, the lack of adequate housing supply increases the costs of investment that would create jobs. (*Oswald*, 1999)

While the share of rental housing had been low (21 per cent) in Hungary before 1990 by European standards, after the privatisation in the 1990s, similarly to the rest of Eastern Europe, the share of rental housing dropped to just 4 per cent of the overall stock (*HCSO*, 2003). Note however, that extremely high mobility in the private rental sector is due to the chaotic tenant-lessor relations rather than to a healthy mobility.

Still, housing privatisation cannot be considered to be the primary cause of low mobility as tenants in the council rental sector had quasi-ownership rights and could practically move freely (i.e. "sell their home"). Although the Housing Act of 1993, which defines the legal framework of the management of the rental housing stock, limited these rights, tenants (and direct descendants living in the same home) have their home more or less freely at disposal.[20] The share of tenants (especially in the private rental sector) having reported their intention to change their housing situation within the next five years is twice as large as that of owner-occupiers (47 and 19

20 The so called fictitious exchange of housing is a still existing practice, yet it is up to the housing department of the individual municipalities how strictly they enforce compliance with the law.

per cent, respectively). However, this is the result of the temporal and disadvantageous status of renting rather than of the difference in transaction costs involved in moving.

New constructions and moving (transaction chains)

Housing policy and especially new constructions influence the volume of moving and regional mobility. Dwelling construction is interrelated with moving both indirectly and directly through the so called transaction chains.[21] Newly constructed housing is bought by households who "vacate" and sell their old housing, which then can be occupied by other families. In this sense, a substantial part of moving is connected to new housing construction. The significance of new housing is measured by the length of the transaction (moving) chains, which shows how many families can move by building a new housing unit.

Empirical research shows that in the early nineties the length of transaction chains of new housing was 1.87, which means that 100 new housing units brought 87 existing housing units into the market. The same kind of research on the period 1980–1985 identified 1.3 to 1.6 long chains (*Hegedüs*, 1993, *Hegedüs – Tosics*, 1992). In the light of international comparisons, these figures suggest low mobility. The value of indicators with similar content is 2 to 3.5 in Western countries, but in certain partial markets the mobility is found to be as low as in Hungary.

Based on the HCSO Surveys of 1999 and 2003, the length of chains is assumed to grow: while in the transactions of the 1970s vacancy (the probability that the chains can be continued) was 0.33, in the 1980s it was 0.42, in the early 1990s 0.49 and between 1996 and 2002 0.56. This means that the estimated value of the transaction chain grew from 1.5 to 2.2. "Vacancy" indirectly signals the chance that movers can sell their old homes, which differ by types of settlement and regions. These data indirectly refer to the regional differences of the length of transaction chains (filtration).

Table 3: The vacancy rate of moves between 1996 and 2002 by regions and types of settlements*

Region	Vacancy rate	Type of settlement	Vacancy rate
Central Hungary	0.58	Budapest	0.57
Central Transdanubia	0.59	Bp agglomeration	0.67
West Transdanubia	0.53	City with county rights	0.60
South Transdanubia	0.54	City	0.55
Northern Hungary	0.49	Rural agglomeration	0.56
Northern Great Plain	0.44	Village	0.42
South Great Plain	0.55	Total	0.54
Total	0.54		

* In cases of households which moved their current housing between 1996 and 2002.
Source: *HCSO 1999, 2003 Housing conditions*.

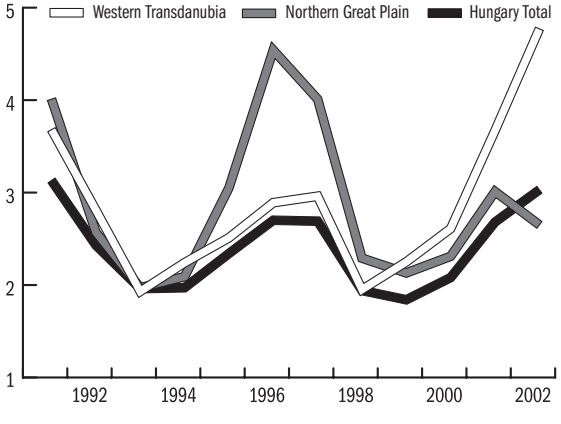
21 This is connected to the problem of filtration. Filtration is a process by which the situation of a family or a housing unit changes within the housing system due to housing mobility or any other change taking place in the housing system. The filtration process can be described as follows: Building high cost (expensive) new housing increases supply in the housing market, which reduces the relative prices of high cost homes. As a result, higher income families move out of their old homes and occupy the new stock, which reduces demand for older housing (provided supply is constant). Thus relative prices fall in this sector of the housing market, too. Consequently, this part of the housing stock becomes affordable for relatively lower income families, who quit their old, poorer quality housing. This again reduces demand – and prices – yet in another segment of the housing market and lower income families can move in. This process goes on and reaches the poorest and those in the worst housing situation.

The housing subsidy system and the regional distribution of new constructions

Because of the cuts in subsidies and the drop of household incomes, housing construction fell from the annual 80–90 thousand in the 1980s to 20–30 thousand in the 1990s. Despite shrinking sources, the housing subsidy system favoured new constructions, and interventions resulted in two booms, the first of which took place in the period between 1995 and 1997, while the second followed after 2001 and is still in progress, so it is not clear yet whether it is a temporary or a permanent trend.

The relative boom in 1995 was triggered by changes in the housing construction subsidy system: to offset the effect of the cancellation of the VAT allowance, the support (earlier called the social policy support) available for new constructions and depending on the number of children, was raised.[22] The volume of housing construction temporarily grew, quite interestingly, primarily in less developed regions and counties. The reason for this was that the support/housing price (construction costs) ratio was higher in these less developed areas. This effect was further increased by a separate program,[23] through which, over a period of two to three years, several large families could acquire new, though poor quality and badly located housing without own assets.[24] A positive aspect of this program was that it benefited – though not intentionally – large, low income households (many of them Roma). Its regional impact, however, was controversial as housing was built in areas with relatively high unemployment and bad earning prospects. Theory says that in depressed areas demolition (cuts in the supply) should be used to ensure that relative differences in prices do not increase. (*Isoda*, 2003)

Figure 1: Housing constructions per 1000, 1999–2002 (national total and two regions)



Source: *HCSO, Housing statistics year books 1990–2000.*

22 This support was renamed because the earlier scheme called social policy subsidy did not really target those in need for they were less likely to enter the market of newly built housing. Paradoxically, the subsidy became available for lower income households when it was changed. By assuming that the share of households with three or more children in the population is so small (around 5 per cent) that raising the subsidy would not be perceivable, decision makers did not foresee the effect of changing the subsidy system: for 1996 HUF 12 billion was allocated, the actual spending was HUF 31 billion; for 1997 the plan was HUF 16 billion and the actual amount was HUF 30 billion. This is similar to the situation with forecasts concerning the effect of interest subsidies after 2000.

23 The National Roma Minority Council and its Social Constructions public use company was allocated HUF 20 million in 1996, HUF 20 million in 1997 and HUF 300 million in 2001 to help Roma families with several children and who did not have the necessary own resource to build homes. The basic aim of the project was to enhance equitableness by allocating resources only to those in need and to make the allocation of subsidies transparent and stop abuses related to constructions without adequate resources.

24 The controversial nature of the subsidy system is well illustrated by the fact that subsidised housing was often built in settlements where they could not be sold for 50 to 60 per cent of the amount of the subsidy.

The second boom came after 2000 with the change of the housing policy when the interest subsidy for housing loans was raised. This subsidy targeted the middle class, and accordingly, the demand surplus shifted to more prosperous regions. Figures of housing constructions in two regions forcefully illustrate the different impacts of the two periods. In the Northern Great Plain region the number of housing constructions per 1000 in the period 1995–1997 significantly surpassed the much more developed other region (Western Transdanubia); in the boom starting after 2000 the relationship was just the opposite.

Local housing policy and regional mobility

Housing and social policies of local governments play an important role in shaping the "transaction costs" of moving municipality. Within the housing subsidy system, local governments control 15 to 17 per cent of subsidies (1998–2001). In granting these subsidies, local decrees explicitly prefer local residents. The analysis of local housing decrees suggests that criteria of the assignment of council rental housing and granting local subsidies include several years' residence or employment in the municipality. Municipalities (39) covered by the research provide rental housing exclusively for people who have lived there for several years (in about half of the municipalities at least 5 years), probably fearing to some extent that by opening up the possibility of renting for non-residents would lead to a heavy inflow of the poor. In the case of local subsidies, eligibility criteria do not include local residence in only five municipalities. (*Teller*, 2003)

On the one hand moving to another municipality involves losing the local housing subsidy, while on the other hand to meet the criterion of a local residence for several years is a serious problem owing to a narrow private rental market and high prices. In Budapest, the average private rent in 2002 (HUF 935 /m2) is nearly two and a half times that of other cities or towns (*HCSO*, 2002). Thus, regional differences are reflected in private rents, too. The private rental housing market is a problem not only in terms of high prices but also in relation to legal uncertainties. The share of landlords not letting their tenants officially register in the housing was estimated at 30 or 40 per cent by a research on the private rental sector in Budapest (*Kis*, 2003). This implies that such tenants will not become eligible for subsidies connected to residence even after several years of living there.

Conclusions

Housing mobility in the Hungarian housing system is low by international comparison but is clearly on the rise. The process is influenced by conflicting factors. Rising housing prices and rents of private rental housing, the high housing price/income ratio and transaction costs have an adverse

impact, while macroeconomic developments (inflation, interest rates) and the improvements in the housing subsidy system affect housing mobility positively.

Regional housing mobility involving a move between municipalities, however, remains seriously constrained by institutional factors. The lack of private rental housing and the un-regulated nature of the sector, lack of information on the housing market and the role of local governments in the subsidy system conserve the regional structure of settlements and are an obstacle to inter-municipal mobility. The existing housing system and the lack of adequate housing policy greatly contribute to the risk born by individuals if they move municipality. Mobility towards regions with good job prospects reduces the common burden of the society, yet risks are unilaterally born by employees. It seems appropriate to launch housing assistance programs aiming at a more even distribution of risks.

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1.5 Commuting

Tamás Bartus

Introduction

Although the unemployment rate has been decreasing in Hungary for the last ten years, it is still high in those villages where it was the highest (above 20 per cent) in the mid 1990s. In their earlier papers, János Köllő and Gábor Kertesi formulated the hypothesis that the cause of persistent unemployment in villages is that commuting costs substantially exceed the returns to commuting in terms of wages (*Köllő,* 1997; *Kertesi,* 2000). The hypothesis of commuting costs can be summarized as follows. Suppose an unemployed person receives two job offers. One of the jobs is located in the current place of residence, while the other job is located in another settlement at distance *d* from the place of residence. The unemployed person prefers commuting if the value of the latter wage offer (w_d) minus the costs of commuting (c_d) is higher than the value of the local wage offer (w_0),[25] so the hypothesis of commuting costs simply states that

$$w_0 > w_d - c_d. \quad (1)$$

Otherwise the unemployed person prefers to work in his place of residence (and thus becomes a *stayer*).

Several attempts were made to test this hypothesis empirically. *Köllő* (1997) constructed a *transportation database* with settlements as unit of observation. Using this database he showed that if there are no public transportation links, commuting with cars would use up a substantial part of the expected wages. Public transportation links are especially underdeveloped in regions where villages with high unemployment rates are typically located. *Kertesi* (2000) used the 1996 Microcensus of the Hungarian Statistical Office, but he measured commuting costs with the help of the transportation database. Kertesi found that the probability of commuting decreases with commuting costs, measured as the unemployment rate of the place of residence and that of those settlements that can be reached with a fixed amount of HUF 4,000.

The above mentioned studies have a common weakness: The types of commuting as developed with the help of the transportation database are an imperfect measure of the actual commuting costs. The types of commuting are properties of settlements, but not properties of individuals. The measurement would be precise if commuters used means of transportation that are assumed by the researcher who developed the estimate of commuting costs when preparing the transportation database. This assumption however cannot be verified in the absence of information about individual commuters.

25 Standard models concerning value of time imply that the full cost of commuting is the sum of the monetary costs (c_d) and the costs associated with travel time. See, for example, *Fujita* (1989) and *Brueckner, Thisse* and *Zenou* (2002).

This chapter tests the hypothesis of commuting costs using individual-level data. Our aim is to examine the relationship between commuting distance and the probability of commuting. Knowing this relationship is of high social and theoretical importance, especially when commuters bear all costs of commuting. This is because local unemployment rates are likely to be persistent if the probability of commuting substantially decreases with commuting distance.

Data and variables

Our analyses are based on a survey that took place among unemployed people who were entitled to unemployment benefits and got a job in the period between the 18th of March and the 7th of April 2001 (N = 105,924). In this period 9,474 people got a job, out of which 8,339 people completed the questionnaire (*Köllő,* 2002). The survey provides information about the characteristics of both the new and the previous job, the names of the settlement where the job is located, place of residence, and commuting time.

Unfortunately, the questionnaire did not contain questions about the actual costs of commuting. Commuting costs will be measured with a dummy variable that identifies those for whom commuting is costly. More precisely, this variable takes the value 1 if the employer does not cover travel expenses, while it takes the value 0 if the firm covers a part or the full amount of travel expenses or organizes the travel of workers on its own expenses.

The actual value of the wage offer is also unknown. Respondents were asked to estimate their prospective gross monthly wage with the help of a minimum and a maximum value. The monthly gross wage variable used in this chapter is the simple average of these two estimates.

Commuting distances were matched to our data from a unique database containing the distance matrix of Hungarian settlements.[26] Since there are 3,157 settlements, the database contains $3{,}157^2 = 9{,}966{,}649$ (almost ten million) observations and three variables (the codes of two settlements and the distance between these settlements). It is important to note that the distance of a settlement from itself is zero, thus people working in their place of residence are characterized with zero commuting distance.

Besides these variables, our analyses control for unemployment rates. All unemployment rates used in later analyses are calculated from the TSTAR 2000 database of the Hungarian Statistical Office and the Institute of Economics HAS. The TSTAR databases have settlements as observations and covers information about several economic, social and demographic variables. Our unemployment rates are defined as the ratio of the number of the unemployed to the number of the economically active population.

As in almost all survey data, our sample is not free of data problems. We deleted those cases in which settlement codes or values of variables were

26 The data were obtained from Psoft Kft. at a reduced price.

nonsensical. Additionally, the sample size was further reduced by three additional deliberate decisions. First, we excluded those unemployed who changed their place of residence during their unemployment spell. The reason is that migration might disturb the empirical relationship between commuting distance and commuting decisions (*Ihlanfeldt – Sjoquist,* 1998). Second, in order to increase the homogeneity of the sample, we neglected people with a college degree, those employed part-time or only for one month, and those who were not working under an employment relationship. Finally, we excluded those cases in which the estimated wage figures are probably unreliable. To repeat, wages in our data are means of subjectively estimated minimum and maximum values. For the majority (approximately 80 per cent) of respondents the difference between the maximum and the minimum was either zero or less than HUF 10 thousand. An estimate is treated unreliable if the difference exceeds the (admittedly arbitrary) limit of HUF 10 thousand. As a result of these decisions, we are left with a sample size of 4,448 for further empirical analyses. I will refer to this sample as the estimation sample throughout this chapter.

The empirical model of commuting decisions

Our aim is to assess the impact of the distance between the place of residence and work (d) on the chances of commuting. The probability of commuting is the function of wages (w) and the monetary costs of commuting (c_d):

$$\Pr(I = 1) = F(w - c_d), \tag{2}$$

where I is a binary variable measuring commuting ($I = 1$ for commuters, and $I = 0$ for stayers)[27]. It is reasonable to assume that the monetary cost of commuting is a linear function of distance. Let c be the monetary cost of traveling one km and assume that traveling has no fixed costs. Then equation (2) can be reformulated as

$$\Pr(I = 1) = F(w - cd). \tag{3}$$

Unfortunately, our data does not allow a direct estimation of equation (3). First, the monetary cost of traveling 1 km (c) is unknown. What we know is whether or not traveling involves monetary costs. Second, the measurement of commuting distance is not perfect. Due to the use of the distance matrix, people, who work in their place of residence, are assumed to travel 0 km. If $d = 0$ for workers who do not have to travel to other settlements then equation (3) cannot be estimated using the standard statistical models for discrete choice problems, like the logit or the probit model.[28] Thus, we have the problem of not being able to estimate the effect of commuting distance on the probability of commuting.

27 The notation used here and throughout the chapter is a slightly modified and generalised version of that proposed by Wilkinson and Rogers, 1973: Symbolic Description of Factorial Models for Analysis of Variance; In: *Applied Statistics*, Vol. 22, No. 3. [the ed.]

28 This is due to technical reasons. Measurement creates a deterministic relationship between the absence of commuting and zero commuting distance. In probit and logit models, deterministic relationships are modeled with infinite parameter estimates, since in these models infinitely large coefficients guarantee that the occurrence of an event is one. Unfortunately, the convergence of the probit and logit models might be difficult to achieve if one of the coefficients is infinitely large. In order to secure the convergence of the iterative estimation, one should discard those observations in which the relationship between distance and commuting is deterministic. After deleting these observations, however, the sample will cover only commuters and thereby the model cannot be estimated.

This problem can be solved using additional assumptions. The commuting costs variable expresses the fact that the employer does not cover the travel expenses of his or her workers. Paying such coverage depends probably on the voluntary choice of the employers. The choice of covering travel expenses is likely to be influenced by local and regional unemployment rates, commuting distance and commuting time. On the one hand, coverage of travel expenses is beneficial if the employer finds it difficult to find or attract workers. This difficulty appears if the local unemployment rate is high. On the other hand, coverage of travel expenses is obviously costly, especially under three conditions. The first condition is commuting distance: the larger is this distance, the more money is spent on the workers. The second condition is the wage level at the firm: the same amount of coverage is perceived more costly by employers who pay high wages. The final condition is commuting time. A long travel time makes workers tired, thus such workers are likely to exercise less effort than other workers. Additionally, commuters are less willing to be happy with unofficial extra working hours. In short, the time spent on commuting should decrease the quality of the worker in the eyes of employers (*Brueckner – Thisse – Zenou,* 2002).

These additional assumptions imply that the probability of receiving no travel contributions is positively related to the monthly salary, to commuting time and commuting distance, while negatively related to the local unemployment rate. Thus,

$$\Pr(c_d = 1) = F(w_d + t_d + d - u_{ws} - u_{wm}), \tag{4}$$

where u_{ws} and u_{wm} denote unemployment rates in the place of work and in the micro-regions of the place of work, respectively.

Of special theoretical and social importance are those commuters whose travel expenses are not covered. We are therefore interested in modeling the event of costly commuting. Our empirical analysis aims at testing the following equation:

$$\Pr(I = 1;\ c_d = 1) = F(w_d - c_d;\ w_d + t_d + d - u_{ws} - u_{wm}). \tag{5}$$

Since the probability at the left hand side of equation (5) is a function of commuting distance, estimating (5) provides an answer to the question of how does commuting depend on commuting distance.

Empirical analysis

The empirical analysis proceeds in three steps. First, we analyze the impact of wages and commuting costs on the probability of commuting. Then we turn to the question of who the people are who do not receive contributions to commuting costs. Finally, we examine the question of how do

commuting choices depend on commuting distance in the absence of travel contributions.

Before estimating these models, it is useful to examine the data. *Table 1* shows the means of the variable in four different samples. The figures displayed in the first column are calculated using the sample of those unemployed people who are *not* included in the sample used in the subsequent analysis. The data on gender, educational level and age are taken from the registers of Employment Bureaus. The second column shows the same statistics for those who are members of the sample used in the analysis. The third and fourth columns show means of the variables if the analysis is restricted to the immobile workers and commuters, respectively.

Table 1: Means of variables in four different samples

Variable	Cases not included in the estimation sample	Estimation sample	Stayers	Commuters
Number of observations	101,418	4,448	2,479	1,969
Commuters (%)	46.08	44.27	–	–
Montly gross wage (in thousands of HUF)	59.15	51.25	48.14	55.18
Travel hours	0.86	0.79	0.41	1.29
Travel costs (%)	57.69	57.10	86.92	20.43
Distance between places of work and residence (km)	9.60	9.71	0.00	22.99
Gender: 1 if male (%)	52.91	74.06	72.09	76.54
Educational level: apprentice (%)	40.90	51.44	53.13	49.31
Educational level: secondary (%)	25.49	16.73	16.05	17.57
Age	36.82	37.99	38.66	37.14
Unemployment rate in the place of residence (%)	8.82	8.18	7.96	8.46
Unemployment rate in the place of work (%)	7.55	7.81	8.05	7.50
Unemployment rate in the micro-regions of the place of residence (%)	7.17	7.25	7.96	6.22
Unemployment rate in the micro-regions of the place of work (%)	7.35	7.48	8.05	6.66

Comparison of the first two columns answers the question of whether the estimation sample can be considered as a random selection from the sample of unemployed who got a job. There are no substantial differences in the means of the dependent variables such as commuting and travel costs. There is a substantial difference of about 8 thousand HUF in the mean of monthly gross wages. The reason is that the minimum wage, which was 40 thousand HUF at the time of the study, is perceived as an upper limit on the estimates concerning the minimum value. Contrary to this, there are no salient figures that would constrain the estimates concerning the maxi-

mum value. To illustrate this point, consider two individuals who will have the same wage. The only difference is that the first of them is more uncertain concerning the actual value of the wage. Then the second individual is more likely to report a high maximum, and thereby to exceed our arbitrary criterion (HUF 10 thousand) of sample inclusion. Finally, there are large differences in the means of human capital variables. Men and people having an apprentice education are overrepresented, while high school graduates are underrepresented in the estimation sample. This might be due to the fact that men and people with an apprentice education are more likely to get a job. Note that choosing a general secondary (or grammar) school instead of an apprentice education is more popular among girls than among boys. Then these differences can be reduced to a single difference: men are more likely to be included in the estimation sample.

The figures shown in the last two columns help us to describe the commuters. Commuting is not a rare phenomenon: About 44 per cent of our successful job seekers commute. An average commuter spends 1.29 hour (80 minutes) on travel. The average commuting distance is 23 km. Thus, an average commuter needs 40 minutes to get to his or her work. Commuters, on average, report a monthly wage higher by about 7000 HUF than stayers. These results imply that an average commuter cannot spend more than 7,000 on travel expenses. Finally, note that men and people with an apprentice education are more likely to be found among the commuters than among stayers.

Now we move to the empirical test of the hypothesis of commuting costs. We begin with answering the question of how the probability of commuting is influenced by commuting costs. In our sample, commuting is costly only for 20 per cent of the commuters. Since the travel expenses of the vast majority (87 per cent) of stayers are not covered, there is a strong negative relationship between commuting and commuting costs. To put it simply: those people will commute whose travel expenses are covered. Since coverage of travel expenses is a decision of employers, job seekers will accept a job offer outside their place of residence only if the employer is willing to cover the travel expenses of the worker.

To test our hypothesis, we will make use of a well-known multivariate statistical technique: the logistic regression. The multivariate analysis is indispensable since acceptance decisions of job seekers depend not only on commuting costs but also on individual characteristics such as gender, age, education and the characteristics of the local labour markets. *Table 2* shows the estimation results. We expect the wage variable to have a positive, while the commuting cost variable to have a negative effect on the probability of commuting. The signs of the parameter estimates of these two variables are consistent with our expectations. The parameter estimates

are statistically significant. Thus, the probability of commuting increases with the wage offer, but it decreases if commuting is costly. Apart from the commuting cost variable, the variables have similar effects among both men and women. Note that unemployment in the place of residence has a positive, while unemployment in the micro-region has a negative effect on commuting.

Table 2: The probability of commuting: parameter estimates from logistic regression (numbers in parentheses are standard errors)

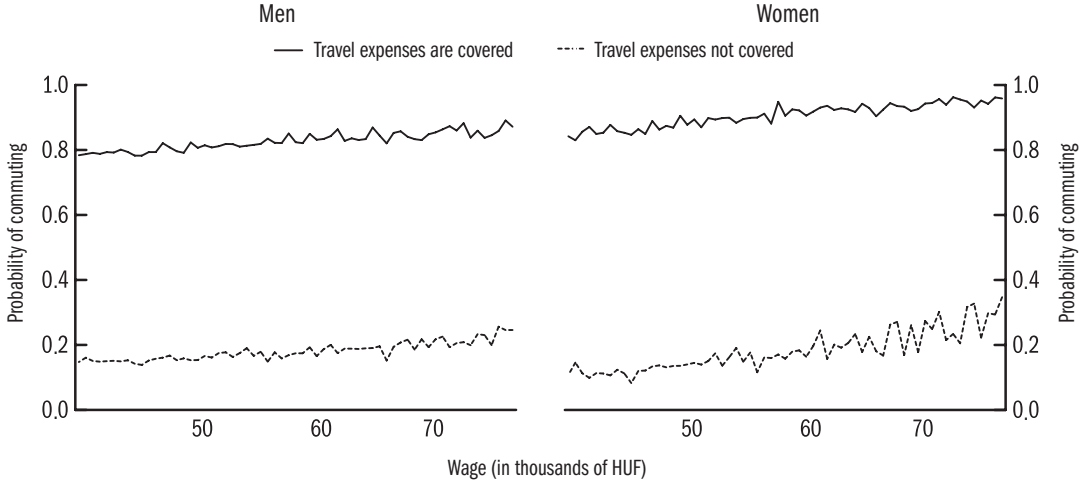
Variables	Full sample	Men	Women
Monthly gross wage	0.015	0.014	0.015
	(0.003)**	(0.003)**	(0.010)
Commuting costs	–3.495	–3.288	–4.344
	(0.093)**	(0.103)**	(0.225)**
Gender	–0.067		
	(0.113)		
Educational level: apprentice	–0.209	–0.184	–0.428
	(0.103)*	(0.113)	(0.261)
Educational level: secondary	–0.222	–0.250	–0.245
	(0.146)	(0.179)	(0.285)
Age	–0.017	–0.016	–0.017
	(0.005)**	(0.005)**	(0.013)
$(Age - 40)^2$	0.000	–0.000	0.003
	(0.000)	(0.000)	(0.001)*
Unemployment rate in the place of residence	0.127	0.122	0.127
	(0.015)**	(0.016)**	(0.046)**
Unemployment rate in the micro-region of the place of residence	–0.113	–0.108	–0.140
	(0.019)**	(0.021)**	(0.053)**
Constant	1.508	1.340	1.952
	(0.283)**	(0.305)**	(0.842)*
N	4,067	3,077	990
Log-likelihood	–1,620.48	–1,298.82	–308.60
χ^2 statistics	2,335.23	1,642.29	705.93

* $p < 0.05$; ** $p < 0.01$.

Figure 1 shows the effect of commuting costs on the probability of commuting. The panels show the predicted probabilities of commuting as a function of wages, separately for men and women. The upper curve shows the predicted probabilities for those who receive contributions to travel costs, while the lower curve shows the predicted probabilities for those who do not receive such contributions. When preparing the curves, it was assumed that the unemployment rates in the place of residence and in the micro-regions are 20 and 10 per cent, respectively. These figures are typical for villages that can be found in the economically backward Northern-Hungarian region.

The figure clearly shows how large the effect of the monetary costs of traveling is on commuting decisions. If the travel expenses of a prospective commuter are promised to be covered, then he or she will commute with an estimated probability of at least 90 per cent. However, if all of the travel expenses must be paid by the worker, the predicted probabilities of commuting are much smaller. Assuming a monthly wage of HUF 40 thousand, the predicted probabilities are 30 per cent for men and 20 per cent for women. Assuming a higher wage of HUF 80 thousand, the predicted probabilities are slightly larger, 40 per cent for men and 30 per cent for women. This means that only very high wages will make commuting likely, provided the travel expenses are not covered. Thus, coverage of travel expenses has a large impact on commuting, and this effect is larger than the effect of wages.

Figure 1: The predicted probability of commuting as a function of monthly gross wage



Notes: Predicted probabilities are calculated from the parameter estimates shown in Table 2. It is assumed that unemployment rates in the place of residence and in the micro-region of the place of residence are 20 and 10 per cent, respectively.

We proceed by examining the question of who are the workers whose travel expenses are covered, and who are the workers who should pay all costs of traveling. Again, we estimate a multivariate logistic regression model, since the employer's decisions to support the traveling of workers might depend on the human capital characteristics (such as gender, age, and education) of the workers.

Table 3 shows the estimation results. The coefficient of the wage variable is negative, and it is significant in the full sample and among women. This means that wages are negatively related to travel costs. In other words, the higher the wages the larger is the chance that employers contribute to travel costs. The distance and travel time variables are negative and significant for

both sexes. Thus, contrary to our expectations, distance and travel time decrease the chances of receiving coverage of travel expenses. This means that employers support workers who live relatively far from the place of work.

Table 3: The probability of the existence of commuting costs: parameter estimates from logistic regression (numbers in parentheses are standard errors)

Variables	Full sample	Men	Women
Monthly gross wage	–0.006	–0.005	–0.021
	(0.003)*	(0.003)	(0.010)*
Distance between places of work and residence	–0.111	–0.082	–0.288
	(0.006)**	(0.006)**	(0.022)**
Travel time	–1.121	–1.183	–0.891
	(0.087)**	(0.097)**	(0.222)**
Gender	–0.188		
	(0.101)		
Educational level: apprentice	0.083	0.006	0.261
	(0.097)	(0.109)	(0.239)
Educational level: secondary	0.058	–0.048	0.319
	(0.135)	(0.168)	(0.272)
Age	0.011	0.014	–0.000
	(0.004)*	(0.005)**	(0.012)
$(Age - 40)^2$	0.001	0.000	0.002
	(0.000)	(0.000)	(0.001)
Unemployment rate in the place of work	–0.013	–0.004	–0.037
	(0.018)	(0.019)	(0.049)
Unemployment rate in the micro-region of the place of work	0.089	0.094	0.062
	(0.021)**	(0.022)**	(0.054)
Constant	1.204	0.688	2.897
	(0.277)**	(0.306)*	(0.770)**
N	3,775	2,824	951
Log-likelihood	–1,678.30	–1,302.64	–326.91
Ë statistics	1,769.35	1,256.70	598.57

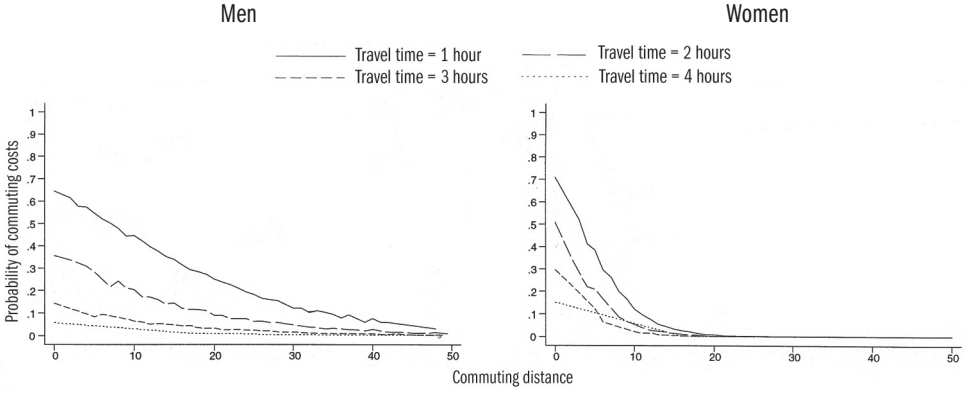
* $p<0.05$; ** $p < 0.01$

Figure 2 offers a visual interpretation of the estimation results. The two panels display the predicted probability of commuting costs as a function of travel distance and travel time for both men and women separately. When drawing the curves, it was assumed that unemployment rates at the place of residence and in the micro-region are 10 per cent, and the wage is relatively high, HUF 80 thousand.

There are two relationships that are of special interest. First, the probability of paying all travel expenses substantially decreases as the commuting distance increases. An average male employee will not pay all travel expenses if commuting distance is 50 km. For a female employee, the commuting distance associated with zero commuting costs is only 20 km. Second, the

probability of the existence of commuting costs decreases with travel time. Employer contribution is received by those workers for whom commuting to work takes a long time.

Figure 2: The probability of the presence of commuting costs as a function of the distance between places of residence and work for four different values of travel time



Notes: Predicted probabilities are calculated from the parameter estimates shown in Table 3. It is assumed that unemployment rates in the place of work and in the micro-region of the place of work are 10 per cent, and monthly gross wage is HUF 80 thousand.

We conclude the empirical analyses with the simultaneous analysis of commuting decisions and commuting costs, as described by equation (5). The estimation technique is the bivariate probit model (*Greene,* 2000). The bivariate probit model is relatively complicated and rarely used. However, it enables us to study the relationship between commuting decisions and commuting distance indirectly because it is possible to compute the predicted probabilities of commuting in the presence of commuting costs as a function of commuting distance.

The bivariate probit model was estimated separately for men and women. *Table 4* displays the estimation results. With one exception, we obtained results that are similar to the analyses of commuting decisions and the presence of commuting costs, which were reported in Tables 2 and 3. The only exception is that we did not find a significant effect of the wage variable. Again, the effect of the commuting cost variable is negative.

To interpret the estimation results, consider *Figure 3*. The two panels show the predicted probability of commuting in the presence of commuting costs as a function of commuting distance for male and female employees. When computing the predicted probabilities, several assumptions were made concerning the labor market. It was assumed that the unemployment rate is 20 per cent in the place of residence, while it is 10 per cent in the settlement where the work is located and in the micro-regions of both set-

tlements. Besides, it was assumed that the wage offer is HUF 80 thousand, which can be considered as very attractive. Clearly, there is a substantial difference between men and women in the probability of commuting if travel expenses are not covered.

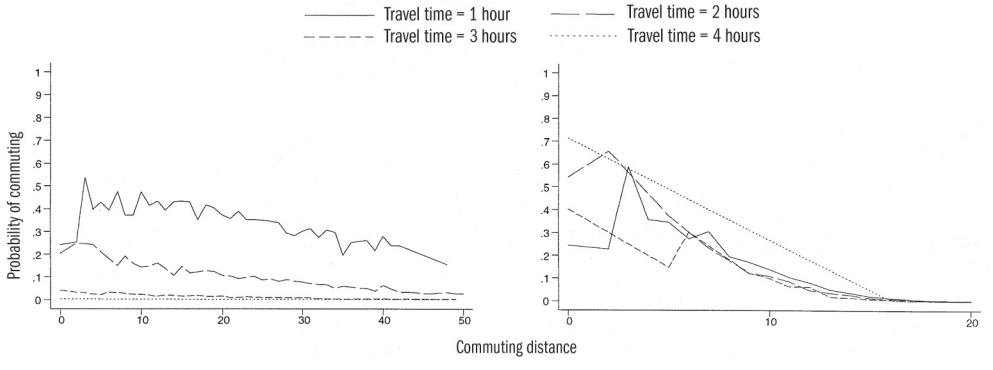
Table 4: The probability of commuting in the absence of coverage of travel expenses. Parameter estimates from bivariate probit model (numbers in parentheses are standard errors)

Variables	Men		Women	
	Commuting	Commuting cost	Commuting	Commuting cost
Monthly gross wage	0.000	–0.001	–0.004	–0.009
	(0.002)	(0.002)	(0.005)	(0.005)
Commuting costs	–3.334		–3.124	
	(0.062)**		(0.106)**	
Distance between places of residence and work		–0.026		–0.204
		(0.003)**		(0.011)**
Travel time		–1.013		–0.133
		(0.053)**		(0.090)
Educational level: apprentice	–0.053	–0.005	–0.144	0.160
	(0.070)	(0.066)	(0.131)	(0.129)
Educational level: secondary	–0.063	–0.062	–0.038	0.179
	(0.109)	(0.099)	(0.145)	(0.146)
Age	–0.004	0.009	–0.003	–0.007
	(0.003)	(0.003)**	(0.007)	(0.007)
$(Age - 40)^2$	0.000	0.000	0.001	0.001
	(0.000)	(0.000)	(0.001)*	
Unemployment rate in the place of residence	0.001		0.001	
	(0.010)**		(0.022)*	
Unemployment rate in the micro-region of the place of residence	–0.044		–0.034	
	(0.012)**		(0.026)	
Unemployment rate in the place of work		0.030		0.004
		(0.011)**		(0.022)
Unemployment rate in the micro-region of the place of work		0.057		0.003
		(0.013)**		(0.025)
Constant	1.585	0.165	1.683	1.896
	(0.194)**	(0.183)	(0.437)**	(0.428)**
Correlation of residuals across the equations	0.805**		1**	
N	2,820		949	
Log-likelihood	–2,413.65		–494.74	
Ẽ statistics	3,734.67		1,189.54	

* $p<0.05$; ** $p < 0.01$

Whatever the traveling time, there is a small portion of men who are willing to commute to a workplace that is 50 km away. However, there are no women who are willing to commute to another settlement if the commuting distance would exceed 20 km. Note that these are the women who are more likely to prefer commuting if commuting is costly and the commuting distance is very small, say, 5 km. Thus, women react more sensitively than men to a small increase in commuting distance. This pattern holds regardless of commuting time. To summarize, the presence of commuting costs constrain the commuting opportunities of both sexes, but this is valid especially for women.

Figure 3: The predicted probability of commuting in the absence of coverage of travel expenses as a function of the distance between places of residence and work for four different values of travel time



Notes: Predicted probabilities are calculated from the parameter estimates shown in *Table 4*. It is assumed that unemployment rate in the place of residence is 20 per cent, unemployment rates in the place of work and in the micro-region of the places of work and residence are all 10 per cent, and monthly gross wage is HUF 80 thousand.

Summary

This chapter addressed the question of how commuting behavior is influenced by the distance between place of residence and place of work. The most important findings are as follows. 1) Commuting occurs frequently, almost half of the successful job seekers in our sample are commuters. A more surprising finding is that commuting is strongly associated with the absence of commuting costs: 80 per cent of commuters receive coverage of travel expenses. 2) The presence of travel costs drastically reduces the probability of commuting. Our findings indicate that commuting is almost a sure event if employers cover travel expenses. However, if travel expenses are not covered, the predicted probability of commuting ranges between 20 and 40 per cent, depending on gender and wage. 3) The distance between the place of work and place of residence has a stronger effect on the prob-

ability of the coverage of travel expenses among women than among men. An average female employee receives such coverage with a very high probability when she has to travel at least 25–30 km, while an average male employee receives coverage of travel expenses for sure if the distance between the place of work and that of residence exceeds 50 km. 4) Parallel to this fact, if travel expenses must be paid by the worker, the probability of commuting is zero for women if the commuting distance were larger than 20 km, while for men it is zero if commuting distance were about 50 km.

In the light of previous research, the most interesting finding is the gender difference in the relationship between commuting costs and commuting distance. Our findings imply that travel costs constrain the commuting behavior of women more than that of men. Note that these are the women who are usually in a more disadvantaged labour market position anyway. We found that the unwillingness of employers to cover the travel expenses of their workers is an additional cause of the disadvantaged position of women. Another important result is that large-distance commuting is likely to compensate for the disadvantaged spatial position of the place of residence among those who receive partial or full coverage of travel expenses.

Our findings might suggest that coverage of travel expenses on the part of employers is a necessary condition for the reduction of persistent regional inequalities. This conclusion, however, neglects the possibility that employers will reduce labour demand as a reaction to increases in labour costs. If employers cut labour demand, it is difficult to predict the net effect of coverage of travel expenses on regional differences in unemployment rates. Knowing the precise effect of coverage of travel expenses on labour demand is a necessary condition for formulating firm policy recommendations on the basis of our empirical results.

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1.6 The effect of economic incentives on regional mobility in the 1990s in Hungary[29]

Zsombor Cseres-Gergely

We have followed important elements of mobility and migration decisions in earlier chapters. Having seen the framework for these decisions, we used empirical evidence to motivate the research on the role of unemployment and wage differentials, surveyed the role and situation of the real estate market that is relevant from an uncertainty point of view and looked at commuting, a step often taken before or instead of moving house. This chapter builds on the previous ones and looks at the actual flow of the labour force. It is organised as follows. First, a brief survey of the macro-level population flows in the 1990s is presented showing departures from previous trends and international experiences. Second, we investigate which non-economic factors need to be looked at when studying mobility. Finally an attempt is made using econometric techniques to quantify the extent to which economic incentives affect mobility, and to find out whether these provide sufficient motivation for moving house.

Developments of temporary and permanent migration at the macro-level

The Hungarian economy went through extraordinary changes during the 90s. Gross output fell sharply at the beginning of the period, returning only slowly to its higher, pre-transition level. The collapse of industrial centres established artificially under the socialist regime often resulted in a mass destruction of jobs making poor economic conditions a threat to large regions. The Hungarian economy is thus characterised by various and fairly stable regional inequalities (see *Köllő and Nagy* in previous chapters).

To be able to account for inequalities and population flows precisely requires data of the finest possible geographic resolution. The TSTAR database, the best source of data in the present context (described in Appendix B), allows for analysis at the settlement and micro-region level. Using these data, I created a panel[30] of settlements, to which data on registered unemployment and estimated average wages (coming from the Wage Survey, already used in Chapter 2) were merged. Using these data, issues that are of interest to us can be studied.

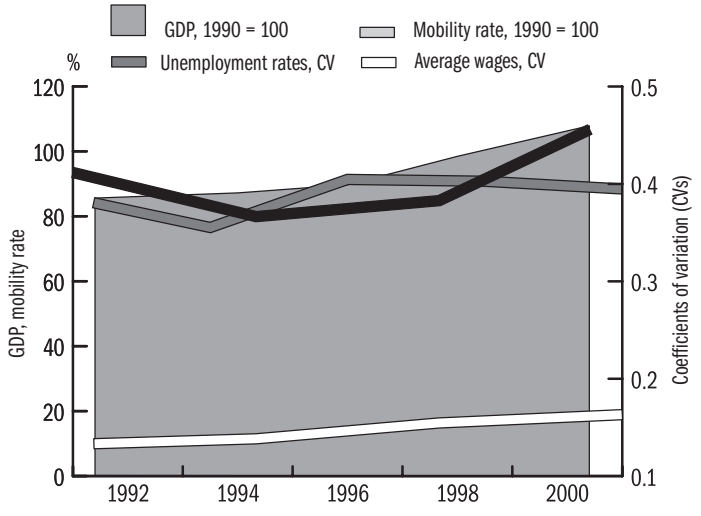
Figure 1 shows the evolution of the overall mobility rate, GDP and inequality in terms of both unemployment and average wages across 150 micro-regions through time using coefficients of variation.[31] Note that both measures of inequality tell the same story. Before 1992 inequality does not change substantially (if anything, it decreases), but starts increasing after 1995. From that point on, this pattern of growth is rather permanent.

29 The research on which this account is based was supported by the European 5. Framework Programme.

30 A panel is a series of cross–sections in which the same observation units can be tracked over time.

31 This standardised measure is the ratio of the standard deviation and the mean of a variable.

Figure 1: Evolution of the mobility rate, GDP at the country and labour market inequality at the micro region-level between 1990 and 1999



Source: Own calculations based on the *TSTAR, LFS and Wage Survey of the NLC.*

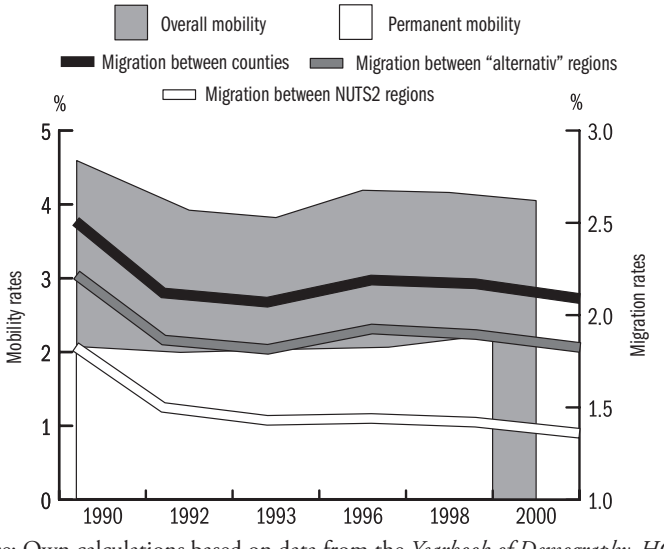
Let us return briefly to the situation of our imaginary Chapter 1 decision-maker who is contemplating moving. For someone who has already embarked upon migration with little success in the past, increasing inequality can indeed be good news. Good news, for if someone longs to move away from the current residence in order to get rid of unfavourable conditions a greater in the indicator variables shows the existence of a wide range of possibilities. Such advantages are of course useful only in the case when other counter-inductive effects do not annihilate them. If a lower rate of unemployment for example goes together with a lower level of wages then a change might not be profitable. By the same token, it is not worth moving if the higher wage observed in another region is a product of a labour market, which is not in reach for the individual for some reason, such as a lack of qualifications.

We can also observe the changes in the mobility rate over time (its value in 1990 is used as a 100 per cent base) on Figure 1. Referring back to the definition in Chapter 1, we have defined mobility as a relocation in which the settlement of residence is changed. This definition is thus different from the narrower category of migration, which includes only those crossing regions when moving house. Mobility rate, the ratio of mobile persons and the population is around 4 per cent in every year and it does not change over time. This happens despite the changes in motivations captured by the average wage and unemployment inequality, our labour market proxies. Although there is a slight dip to be observed in 1994, this has to be

treated with caution due to administrative changes (see *Ekéné*, 1998 for details). However, there are other economic motivations that can drive mobility apart from inequalities the key one being the overall uncertainty of the economy proxied by the GDP in this context. Studying Spanish labour flows, *Bentolila* (1997) argues that a high level of total output indicates that the economy is working in a "higher gear" yielding engagement more likely than it is in a recession. Nevertheless, our data do not reveal any strong relationship between the respective variables.

Let us take a look now at migration, instead of mobility only. Figure 2 uses three possible definitions of the migration rate to show its evolution (dashed lines) and for comparative purposes also depicts overall and temporary mobility (dark and light grey areas). The line with small crosses marks NUTS2 regions, small triangles are for "alternative" regions used in the calculations and small squares mark the use of micro-regions.[32] The trend of migration is very similar to that of mobility. After a strong initial decline up to 1994 all variables show an increase with individual variability only. The relative magnitude of individual rates are explained by the difference in the regional units (counties versus regions) as well as the position of Budapest. Indeed, regional classifications differ in this respect: while the NUTS2 lumps Budapest into the Central Region with Pest county, the "alternative" one separates it. The gap between the rates brought about by this difference indicates that there is an important exchange of population between the capital and Pest county. Later we shall come back to this issue.

Figure 2: Evolution of mobility and migration based on different definitions



Source: Own calculations based on data from the *Yearbook of Demography, HCSO*.

32 NUTS2 regions are: Central Hungary (Budapest and Pest county), Central Transdanubia (Fejér, Komárom–Esztergom, Veszprém counties), Western Transdanubia (Győr–Moson–Sopron, Vas, Zala counties), Southern Transdanubia (Baranya, Somogy, Tolna counties), Northern Hungary (Borsod–Abaúj–Zemplén, Heves, Nógrád counties), Northern Great Plain (Hajdú–Bihar, Jász–Nagykun–Szolnok, Szabolcs–Szatmár–Bereg counties), Southern Great Plain (Bács–Kiskun, Békés, Csongrád counties). The "alternative" regions are: Budapest, Eastern Transdanubia (Pest, Komárom–Esztergom, Fejér, Veszprém counties), Western Transdanubia (Győr–Moson–Sopron, Vas, Zala counties), Southern Transdanubia (Baranya, Somogy, Tolna counties), Region Between the Danube and Tisza Rivers (Bács–Kiskun, Csongrád counties), Great Plain (Békés, Hajdú–Bihar, Jász–Nagykun–Szolnok counties), Heves and Nógrád Counties, Borsod and Szabolcs Counties.

It is interesting to note that mobility in Hungary is low and still migration seems to be high by international standards. Although the size of the regions and the different density of the population renders such a comparison difficult, the NUTS2 migration rate of 1.4 per cent is comparable to 2.5 per cent in Sweden (see *van der Gaag and van Wissen*, 2001), or even 4.2 per cent in Britain, the highest in Europe (reported by Jackman and Savouri, 1992). A comparison with the first table presented in the paper of *Peter Huber* (2002) reveals even starker differences. According to this, the comparable numbers are 0.5 per cent in the Czech Republic, 0.7–0.44 in Poland and even lower in Italy and Spain, and even in the Netherlands it is just 1.6 per cent. Although these seem to be considerable differences, one has to be careful for it is not clear whether all national statistics include both temporary and permanent migrants. Although there is no evidence on this, a conservative approach might be to divide the Hungarian rates by 2, thus approximating the rate of only permanent migrants. The result is 0.7 in this case. This number is very similar to the international results, but in no way smaller than those.

Changes in the structure of mobility

Although the evolution of the mobility rate tells no easily interpretable story, early signs suggest that some major changes in the structure of mobility may actually be in effect. Thinking about structural change, some interesting questions emerge. How have different settlements "performed" during the decade in terms of mobility gain? Could the previously attractive ones keep their status, or was there a radical change behind the relatively calm scenes? Aggregate developments in the first part of the decade and in the preceding periods are well documented, among others in *Illés* (1995). However we know less about the 1990–1999 period as a whole including structural changes. The extensive study of *Kupiszewski et al* (2001) focusing on the entire second half of the twentieth century is of great help here. To look briefly at mobility in the '90s, I use the micro-level data of the TSTAR database permitting the use of a smaller unit of analysis: settlements.

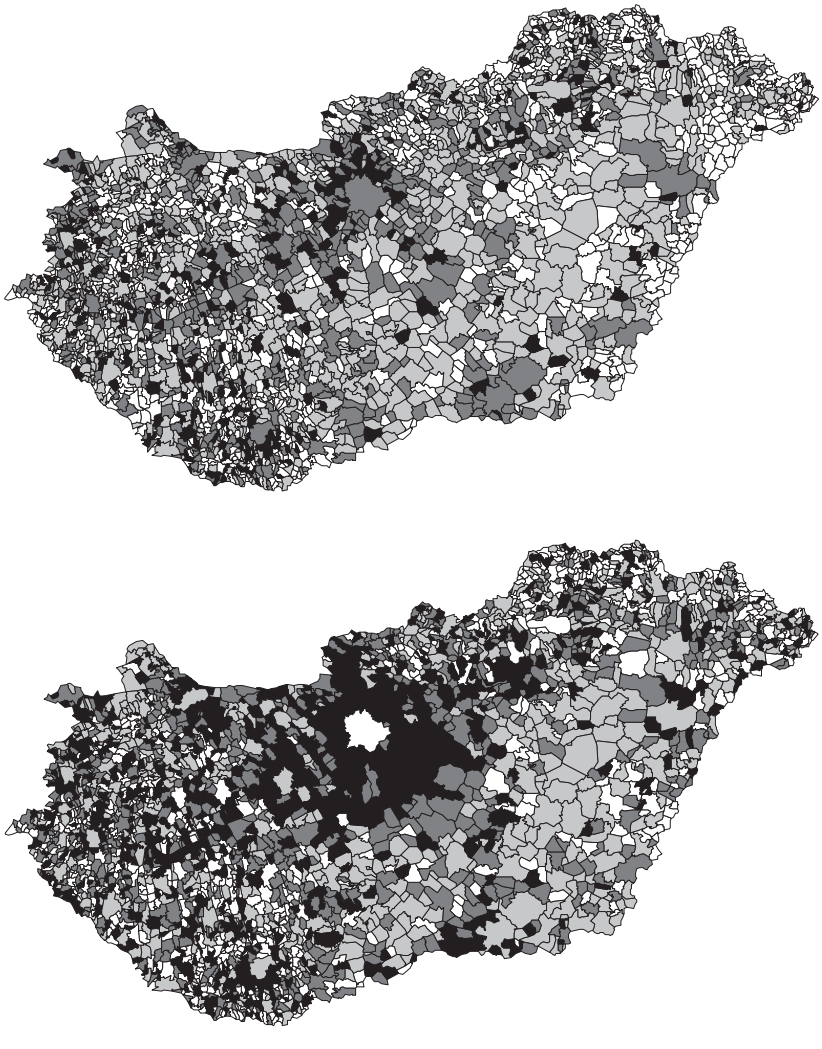
Table 1: Persistence of settlements' status in terms of mobility gains (correlation of relative gains in time periods)

	1980–1990	1990–1999	1990–1994	1995–1999
1980–1990	1			
1990–1999	0.48	1		
1990–1994	0.44	0.83	1	
1995–1999	0.34	0.81	0.34	1

Source: Own calculations based on *TSTAR* and data from the *1980 Census*.

As a first step, it is worth carrying out the comparison *Kertesi* (1997) used, looking at a former period, calculating the correlation between the net relative gains of settlements in different periods. Table 3 presents the results for the 1980–1990, the 1990–1999 periods as well as for the 1990–1994 and 1995–1999 sub-periods. It is evident that the correlation between the net relative gains is positive, but decreasing: the average relationship between the1980s and the second half of 1990 is quite small. The fact that only a small portion of previous winners were able to stay on top suggests a strong structural change.

Figure 3: Relative mobility gains of settlements on the beginning and end of the 1990s



Maps of Figure 3 present a more detailed picture of the nature of the change, showing relative gains of the settlements at the beginning and at the end of the 1990s.[33] Areas shaded in black indicate the largest gains, completely white ones indicate the largest losses, while dark and light shades of grey indicate smaller gains and losses respectively (shading is constant across the time periods). Even if the maps were not created in a way to make the precise identification of regions or counties possible, one can clearly see the fundamental difference between the two time periods. In the first one, distinct regions of winner settlements can not be identified. A metropolitan region being formed around Budapest is notable, but there are successful settlements all around the country. Losses are similarly patchy if concentrated on regions of the Great Plain, a classic area of population loss.

The second map shows a characteristically different situation, with three strong tendencies emerging. Firstly the further growth of the Budapest metropolitan area is hard to miss. It is important that settlements here apart from Budapest itself are almost all quite small and have the village status. This process is documented in *Dövényi – Kok – Kovács* (1998) pointing out that such a suburbanisation process is dominated by the move of wealthy and educated families leaving for green-belt areas. Secondly it is apparent that small regions seem to perform well also in other parts of the country. Many settlements of the Great Plain for example, which previously seemed to be completely hopeless, are not among the ones with the greatest population loss. Nevertheless, most of the winners are still clustered around a central town. Almost around every large town such as Miskolc, Pécs, Szeged, Debrecen or Győr, a strip of steady population gain has been forming. As a third observation one can identify the counterpart to this effect, too. Centres of the forming agglomeration areas that used to be attractive destinations in the beginning of the decade turned out to be net losers. This is true for all centres, but shows itself most strongly in the case of Budapest.

Setting the regional perspective aside for a moment, let us look at this process focusing on types of settlements only. A complete picture could only be obtained from a database with all possible flows between settlements (this is unavailable for confidentiality reasons). Thus, we have to put up with figures on marginal flows showing in- and outflows to and from all settlements without any indication of the composition of the flow. Table 2 shows relative net gains for different years between 1991 and 1999 for different types of settlements and population categories.

The figures reinforce the impression created by the two maps we have seen before. It is clear that Budapest is the greatest loser of all: its negative balance in 2000 is greater than what its gain was at the beginning of the decade. Although the composition is not presented, raw data suggest

33 Data for 1990, 1991, 1992 and 1998, 1999 and 2000 are averaged to obtain a less noisy figure for the beginning and the end period, respectively.

that there is not only a persistent and high degree of outflow hidden in net figures but that a steady decrease of inflow is a key determinant, too. County seats perform similarly to Budapest, showing similar effects with a two year lag – they turn from being winners to be losers, too. The status of the smaller cities is rather mixed as both smaller and bigger ones gain over time, but those in the middle lose and the reason for this is not clear. Nevertheless, the table shows that the clear winners of the decade are small settlements. Every year, the group of largest villages increased their population by the same amount as if an average sized large village was created. Although their situation was by no means good at the beginning of the decade, villages and small settlements could recoup their losses by the end of it to such an extent, that they closed with an overall positive balance. Although their average performance is remarkable, we have to bear in mind that the most successful villages are to be found in the agglomeration area of large towns, as *Kupiszewski et al*. (2001) pointed out.

Table 2: Relative migration gains by settlement types and population categories, 1991–1999

		1991	1993	1995	1997	1999
Budapest		0.35	-0.06	-0.59	-0.66	-0.80
County seats		0.27	0.16	-0.35	-0.45	-0.31
Other cities	20,000-	0.04	0.12	0.11	0.01	0.05
	10,000-20,000	-0.26	-0.13	-0.04	0	0.11
	-10,000	-0.27	-0.21	0.24	0.27	0.20
Villages	5,000-	0.04	0.51	0.84	1.05	1.24
	2,000-5,000	-0.15	0.02	0.55	0.56	0.49
	1,000-2,000	-0.3	-0.15	0.35	0.38	0.30
	-1,000	-0.5	-0.34	-0.03	0.22	0.07

Source: Own calculations from *TSTAR*.

Motivations for mobility besides economic incentives

Given that migration is under scrutiny here largely due to its potential equilibrating effect, the small theoretical model and its extensions in Chapter 1 focused primarily on the effects of economic incentives. In the empirical investigations however, even when not to be modelled explicitly one has to look at the potential weight of other factors.[34] A reason for this is that such forces might influence our estimates concerning mobility, and in an extreme case mask the forces that we are interested in.

To look at the motivations behind mobility, I used the data from the 1997 "Regional Development Survey" conducted by Szonda Ipsos, an opinion research company (a fuller description is given in Appendix B). This representative survey asked adults if they had moved house in the past and if so, what the key motives were. It is important that the survey did ask spe-

34 *Kok* (1991) attempted a much more comprehensive analysis of the problem, accounting for non–economic factors as well, but looking at the pre–1990 period only.

cifically about the reason for moving since from 1990 on there is no official statistic on the distribution of such reasons even though it used to be a common practice. Although these pieces of information would be interesting to relate to the actual direction of the move, this is not possible due to lack of information on the identity of the "sending" settlement.

Table 3: Relative incidence of mobility motivations by time of moving house and results of factor analysis relating to them

	Proportion of those answering "yes"			Factor weights	
	1970s	1980s	1990s	"active"	"defensive"
Life too expensive	5	10	15	–0.09	0.54
Poor job opportunities	28	26	24	0.44	0.04
Problems with paying utility bills	9	13	18	–0.04	0.53
Condition of the building was poor	10	12	17	0.15	0.32
Safety in the neighbourhood was poor	3	6	7	0.06	0.45
People were too poor	3	5	4	0.22	0.32
Buying rented accommodation helped in moving	3	6	8	–0.01	0.26
Bigger, better flat	35	35	33	0.23	0.36
Schooling facilities	25	24	17	0.78	–0.04
Medical care facilities	24	21	18	0.8	0.04
Shopping	26	23	20	0.85	0.02
Pleasant surrounding; less pollution	19	23	24	0.04	0.48
Cultural facilities	21	20	15	0.79	–0.01
Transportation not being cut off	25	22	20	0.78	0.05
Back to relatives	37	36	36	–0.02	0.02

Source: Own calculations from the *Regional Development Survey of Szonda Ipsos*. Cell sizes are above 37, except for "Safety was poor" and "People were poor".

Respondents had to mark if various motives played a part in their decision to move. Because of the general nature of the survey, the list of possible choices is far from being complete,[35] but sufficiently detailed to draw some cautious conclusions. The proportion of affirmative answers are shown in the first three columns of the table, including figures for those who moved (for the last time) in the 1970s, 1980s or 1990s.

Among the motives, prevalence of poor labour market conditions in the previous place of living is one of the most important reasons to move house. Similarly important reasons include conditions of regional amenities such as access to facilities and pleasant surroundings. A large increase in mentioning "too expensive" and "paying utility bills" is notable, suggesting that besides working conditions and amenities, financial pressure associated with a place of residence emerged as an important issue. There is a decreasing incidence in the mentioning of "man made" features of the surroundings while the mentioning of the role of natural ones increased.

35 It was not possible to state a general family reason or marriage as a motivation, which is nevertheless a quite frequent one, according to casual observation and outside evidence.

Even the importance of transportation is falling owing to a marked rise in the stock of personal vehicles. Comparing these factors with aggregate figures of mobility, these appear to be in line with sub- or counter-urbanisation starting in the early 1990s.

The only way to isolate migrants from the pool of mobile people in this database is to constrain the population to those who moved across counties. This operation however yields so little cell sizes in most cases that confident evaluation is impossible. The remarkable exceptions were the role of labour market motivations and moving back close to family. Unfortunately we do not know the labour market status of the migrant and it is uncertain if their move was temporary. In the latter case aggregate data suggest that the proportion of students is likely to be high among them, which would explain the phenomena to a great extent. Some moved to a town but having found no job – maybe as a result of the manufacturing industry moving towards the countryside – returned to their homeland. This would strengthen the same phenomenon (see *Eké*né, 1998 for this).

On the subject of attitudes, it would be interesting to know to what degree the hypothesis of rational decision making based upon unbiased choice is in line with reality. Although information is also available on the perceived success rates for each type of motivation, these are so high with so little variance[36] that they hardly convey any information. Nevertheless, unsatisfactory working conditions, the prime reason to move, have been successfully improved in about 87 per cent on average in every period. This is a high number in absolute terms as well as relative to others in the list.[37]

If the incidence of mentioning the above motivations is random, we can not draw conclusions about typical underlying strategies in mobility or suggesting possible tradeoffs between motivations. To explore the covariance pattern behind them, a principal component analysis was carried out. Two factors emerged from the analysis, whose weights are shown in columns 4 and 5 of Table 3.[38] These weights show the strengths of the underlying variables within the factors – dominance of one or the other helps interpreting the given factor. Factor scores or "values" of the factors are created by weighting the values of the underlying variables with their respective weights.

Factors gather motives that are attached to one of two strategies that I term "active" and "defensive", respectively. The first one characterises an upwardly mobile behaviour, seeking better working conditions and man-made amenities that a place of living can offer.[39] The second one describes a potentially more defensive strategy. People here seem to flee from costs and financial pressures, taking advantage of selling previously rented or purchased accommodation. Man-made amenities, unlike natural ones, are not particularly valued. Labour market opportunities may not be considered a driving force either.

36 Questions were similar to the ones regarding motivations asking "To what extent do you feel that your expectations were fulfilled in this respect?" Scores vary between 60 and 93 per cent in the first block of questions (with the exception of a 22 per cent rate for "too expensive") in 1986–1990 – and between 92 and 98 per cent in the second block.

37 It might be tempting to draw the conclusion that migration is an extremely effective relief to labour market difficulties. However, at this point we need to keep in mind that our sample contains probably the most successful migrants of all.

38 Factors with an eigenvalue higher than unity survived and they were rotated using the varimax method. I experimented with different retention rules other than the one based on eigenvalues and also with creating factors for people migrating in different periods. Retaining different number of factors did not produce any better interpretable results, also shown by the fact that the eigenvalue of the third factor was only 0.38 as opposed to 3.6 and 1.3 for the first two. One important loss is a factor that (retaining a total of five) collects the motive to move in order to move back close to relatives, even at the expense of losing labour market opportunities and other amenities. Using different periods provided no further insights as structures were almost unchanged.

39 Characteristics of such a strategy is described in *Eké*né (1998) in detail.

It is important to stress however that categories "active" and "defensive" can not be replaced with "wealthy" and "poor", as if the responses could characterise two sub-populations. City life can serve as the only possibility to break away from poor living conditions, but also a way to satisfy a refined taste for cultural entertainment. By the same token, it is not only the less well off who plan to move out of a town, but also those who are successful professionally and the ownership of cars makes crossing distances (and commuting) manageable, an effect that was already mentioned in connection with the suburbanisation of Budapest. Labour market conditions are irrelevant in the first case because those fleeing the towns have a weak chance to be employed anyway. It is also negligible for the second group since well educated people must almost certainly expect a good job opportunity in the town nearby.

Table 4: Average factor scores by different mobility routes (scores for the "active" factor on the left and for the "defensive" on the right, in italic)

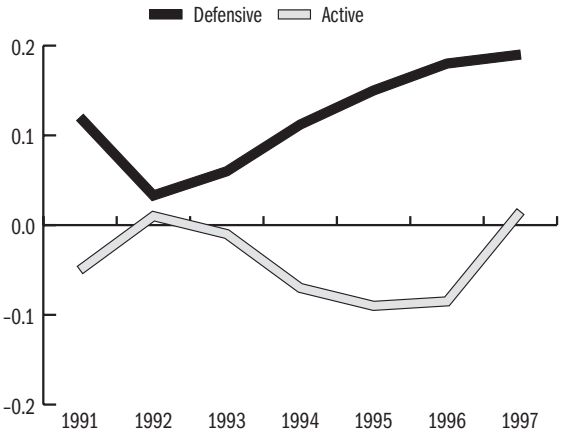
	Budapest		County seats		Other cities		Villages		Together	
Budapest			–0.46	*0.48*	–0.52	*0.28*	–0.44	*0.65*	–0.47	*0.52*
County seats	0.25	*–0.34*	–0.38	*0.18*	–0.38	*0.13*	–0.49	*0.67*	–0.37	*0.37*
Other cities	0.36	*–0.15*	0.36	*–0.23*	–0.26	*0.07*	–0.44	*0.17*	–0.12	*0.02*
Villages	0.66	*0.04*	0.92	*–0.11*	0.49	*–0.19*	–0.16	*–0.10*	0.27	*–0.11*
Together	0.47	*–0.10*	0.40	*–0.04*	0.08	*–0.03*	–0.32	*0.21*	–0.02	*0.08*

Source: Own calculations from the *Regional Development Survey of Szonda Ipsos*. Cell-sizes are above 50, except in the Budapest-County seat relations.

The two types of strategies suggest a mainly urban and rural type of lifestyle. To check this intuition, I have calculated average factor scores for those moving after 1989 for both the "sending" and for the "receiving" settlements. Table 4 shows the results.

There is a clear picture emerging from the combinations of the two factors. Moving upwards in the settlement hierarchy almost always goes hand in hand with a great "active" motivation and a low level of "defensiveness" whereas moving downwards is characterised by the opposite pattern. Terming the two factors as "active" and "defensive" is thus probably not too misleading. There is a decreasing flow of workers from villages to towns and an increase in the other direction. Thus, we can conjecture that motivations change over time along with the composition of movers. The smoothed trend of the factors, shown in Figure 4. justifies this only partially. There is no definitive trend in the first, "active" factor (light line) although it takes mostly negative values in the second half of the decade. The second, "defensive" factor (heavy line) on the other hand shows a steady rise over time starting from 1994, which is in line with what we found so far.

Figure 4: Average factor scores by year of relocation (smoothed using the lowess method)



Source: Own calculations from the *Regional Development Survey of Szonda Ipsos*.

Characteristics of the mobile population

Although aggregate figures can capture certain characteristics of the mobile population, there are at least two important deficiencies of this method. First, there is very little background information available on the movers themselves since data comes from administrative sources. Second, because of this aggregate nature of the data, the researcher is not able to combine various traits, therefore no single own (or "marginal") effect can be established. If, for example, there seems to be evidence that younger and more educated people are more likely to move, we can not really tell whether this is the case because younger people (i.e. members of younger cohorts) are better educated on average than their ancestors were, or because it is really the more educated, also among the younger ones, who are more likely to move. Such pitfalls can be avoided if instead of aggregate data, one uses micro data on individuals.

There is of course a cost to these advantages. Micro level data are collected through sampling, yielding (theoretically) less precise information than that which may be obtained from the aggregates based on the whole population. A further problem comes from the fact that generally surveys are representative of the population as a whole, which does not necessarily guarantee that it is also representative for a specific group. There is only one large and general enough survey that supplies data of the desired nature: the 1996 Microcensus conducted by the Hungarian Central Statistic Office. For each individual, this survey records the place of residence in 1990 and 1996 and also the place of work in 1996.[40] Another important

40 Unfortunately we do not know whether there was a move between the two time points, and if yes, how many. For this reason, the migration rate calculated from the Microcensus can not be compared to those coming from aggregate data, as there are two factors at work against each other. On the one hand, the data cumulates the proceedings of six years, so we see the result of many changes over a longer period. On the other hand, since mobility is not a one–way process, and we have seen reasons before for movers returning to their previous residence, the data most certainly documents less moves than the sum of all moves over six years. The problem comes from the fact that we do not know the proportion of returns neither on macro, nor on micro level. Nevertheless, if we are not interested in the proportion of the movers, but their behaviour in relation to characteristics, than this might not be such a great problem.

advantage is that we are able to tell temporary and permanent residences apart. We can identify not only geographic but also individual and family-level characteristics. Despite the fact that information is abundant, unfortunately everything refers to 1996, so searching for traits that make an individual more likely to move, one can use only a limited subset of them. In what follows, these data will be used.

Before I characterise the mobile population, it is worth a detour to match the overall story told by the micro data to that of the macro level evidence. This is useful not only to make sure that the former reflects reality well enough, but also to differentiate the behaviour of permanent and temporary migrants.

Distribution of the population across types of settlements is shown in Table 5, with rows denoting types of settlement in 1990 and columns marking types of settlement in 1996. It is apparent that the dominant direction of flow, pointing to villages from larger towns, is set primarily by permanent movers. Only 10 per cent of such movers settle in Budapest or in towns, and this figure is less in absolute terms than those originally living there. However, movements of temporary migrants show a different picture. Many of them moved away from Budapest, but many moved in, too. At the same time, a much smaller proportion of these people move to or between villages. The two types of mobility, having almost the same proportion in the aggregate, are markedly different in terms of spatial orientation. Yet the path traced by permanent mobility seems to be stable and its effect is cumulative in nature. Note that neither of these features is true for the temporary mobility. This finding may seem to be trivial, but this is actually not the case. The reason for such a pattern might be that amenities that are attractive for permanent movers (pleasant environment, lifestyle) are stable over time, but factors that attract temporary movers (seasonal employment, schools) do not have such a permanent effect. It would of course be interesting to look at the long term changes in amenities, but unfortunately neither of our data sources are long enough to permit such an analysis.

When selecting key characteristics of the mobile population, one can rely on the models introduced in the theoretical summary of Chapter 1. Note that even if these frameworks are not formalised, they are the explanations we normally bear in mind. According to these, people contemplating moving away from their current residence, compare their readily available labour market conditions to those in the best of all alternatives. Action is taken only if it seems to be "worth" moving, taking into account all the non-pecuniary costs and benefits. It is the various individual traits that determine how costly a move is for a particular individual. In theory therefore we are interested in the possible features that may influence the probability of moving.

Table 5: Mobility of temporary and permanent migrants across types of settlements

Residence in 1990	Residence in 1996				
	Budapest	County seats	Other cities	Villages	Together
Permanent					
Budapest	1	1	5	6	12
County seats	2	3	4	10	19
Other cities	3	5	6	11	25
Villages	4	9	11	20	44
Together	9	18	25	47	100
Temporary					
Budapest		3	7	8	19
County seats	5	4	4	6	19
Other cities	8	9	5	6	28
Villages	8	10	8	8	34
Together	21	26	24	28	100

Source: Own calculation using the *1996 Microcensus*.

The data at hand unfortunately limits our attention considerably, since many of the characteristics are observed only *after* the move. This causes a problem, since we can not be confident that the move was not affected by some unobservable event that was in some relation with the actual characteristic whose effect. An example of such a case is when a young man inherits a flat in a larger city, to which, for a long time, he has wanted to move, but could not afford the move beforehand. If this very young man marries at the same time, the two events would coincide and this may mask individual reasons. Indeed, our imaginary data is not informative about inheritance and we would thus conclude that young married people move to towns in order to build a foundation for their fortune.[41] Such pitfalls can be avoided if only those characteristics are looked at that do not change over time (or changed between the two time periods in a way that is "harmless" to the problem). Such characteristics are the basic demographic ones: age, gender and schooling if handled carefully.

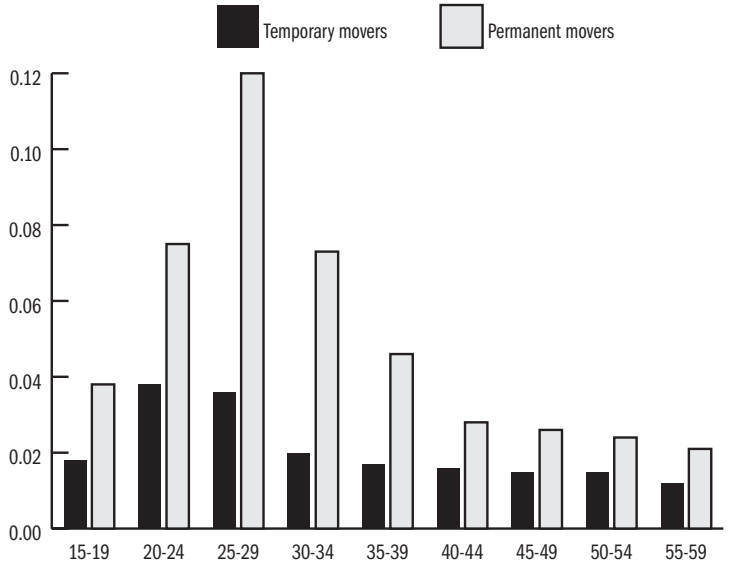
Whatever is the motivation for the move, it is a demanding enterprise and because of this, we can expect that the probability of a move is changing over the lifecycle. Figure 5 shows the share of movers, both temporary and permanent, by age groups. It is worth noting that while the highest proportion of permanent movers are to be found in the age group 25 to 29, those moving temporarily are clustered close to the age of 20. If we think strictly about labour market motivations, such a pattern might be surprising.

An interesting supplement to the problem of many young temporary movers is to be found in the Demographic Yearbook of the HCSO (see for example page 328 in the 1998 yearbook). Looking at a time series of

41 This is of course true only if the event happens frequently enough. In a flat market with very high prices, this is far from being unlikely.

monthly changes in mobility, one can see that after approximately balanced monthly figures, there is a large increase in the temporary movements around September. This is exactly the time when students start their terms and those studying far from home take their places in dormitories. In the case of the capital and county seats, this spike amounts to more than 25 thousand, but even in the case of villages, it is more than four times the usual amount. Because of this, often in September about third of the total annual mobility takes place.

Figure 5: Proportion of permanent and temporary movers by age categories



Source: Own calculations using the *1996 Microcensus*.

The level of schooling affects the likelihood of the mobility of the population between 18 and 40 years of age: average schooling is markedly different between the spatially mobile group and the rest of the population, and difference can also be detected between the two types of movers. Table 6 shows that the proportion of movers is well above the average in two groups: those having less than primary education and those with higher education. This wedge is even more pronounced when schooling of the temporary movers is compared. A comparison of activity, education and schooling status shows that on the one hand, around 20 years of age there is a high proportion of *active* temporary movers, and on the other, there is a similarly large proportion of them among those attending secondary education. Seasonal change of temporary mobility and this observation corroborate the hypothesis that a large proportion of temporary movers are simply students.

Table 6: Proportion of permanent and temporary movers in education groups

	Not mobile	Permanent	Temporary	Together
Incomplete primary	91.85	7.43	0.72	100.0
Completed primary	90.30	8.23	1.47	100.0
Vocational education	91.09	7.29	1.62	100.0
Secondary schooling	89.88	7.51	2.61	100.0
College	82.38	12.53	5.09	100.0
Together	89.64	8.13	2.24	100.0

Source: Own calculations based on the *1996 Microcensus*.

Although economic activity could have changed several times between 1990 and 1996, it is worth taking a cautious look at the proportion of movers within categories of activity. Table 7, showing such proportions, confirms our previous findings. Given that economic activity is very different among women and men in this age-group, two panels of the table refer to the two sub-populations. In the case of men, we find movers in above-average proportions among working or unemployed persons (the active population) and among those, very few are actually taking advantage of childcare leave. Students, if they move, are among the temporary movers. In the case of women, we see a similar although even more pronounced picture. Mothers on child care leave are twice as likely to move (or rather: having moved) than the average, a proportion surpassing even that of students'.

Table 7: Proportion of permanent and temporary movers in activity groups

	Not mobile	Permanent	Temporary	Together
Men				
Working	89.5	7.9	2.5	100.0
Unemployed	91.2	7.0	1.8	100.0
On child care leave	91.1	8.9	0.0	100.0
Pensioner	94.9	4.3	0.7	100.0
In full-time education	90.2	3.3	6.4	100.0
Other	93.8	4.9	1.3	100.0
Women				
Working	90.5	7.0	2.4	100.0
Unemployed	90.9	7.4	1.7	100.0
On child care leave	82.8	15.2	1.9	100.0
Pensioner	91.4	6.7	1.8	100.0
In full-time education	87.2	4.7	8.7	100.0
Other	89.7	8.2	2.1	100.0

Source: Own calculations based on the *1996 Microcensus*.

Based on the above characteristics, we can imagine the typical mover or family. If the move is permanent, then the family is young, with or expecting a child and economically more active than the average. If the move is temporary, then the typical person is even younger, mostly studying or

working. Although raw data show these relationships quite well, it would be interesting to know if these effects are in work alone or if they are just transmitting some other effect (because all of them are strongly related to the person's position within the life-cycle).

Estimating the probability of relocation using a multivariate technique

To separate the potentially distinct effects of individual characteristics, we can build on the theoretical motivation of Chapter 1 and estimate the impact of our effects on the individual probability to move.[42] Besides the characteristics discussed in the previous chapter, the model also includes two key variables representing labour market conditions in the original place of living: the average unemployment rate and wages (as discussed in chapters 2 and 3). Since individual data is not available on these, they are supposed to capture the general condition of the labour market in the sending region.

First I estimated the probability of mobility focusing on the population between the ages of 18–60 for whom a labour related move matters a lot. Results of this estimation are to be found in the Appendix in Table F1. Although the model captures only a small proportion of the variation in the data, thinking about the many factors influencing mobility, this does not come as a surprise. The impact of key variables is nevertheless well-determined and predictions at the mean of them are not far from the observed values.

Summarising the results of the estimates, one can state that the hypotheses that we were considering until now have been confirmed. Labour market condition variables have a statistically significant effect on the individual probability of permanent mobility and also have the expected sign: higher unemployment rate induces mobility, while higher wages decrease it. The same is not true for temporary mobility, which can be attributed to the fact that the temporary movers have very diverse motivations for moving. Labour market effects do not exert a significant impact on mobility in their case. Education has the theoretically predicted effect: people with at least secondary education are much more likely to move than those with vocational training or less, regardless of being permanently or temporarily mobile. Taking the 18–24 year olds as a reference, older people are less and less likely to move – the result we have seen in the raw data depicted on Figure 5. If one restricts the sample to only those not in full-time education, people in the 25–39 age group are more and not less likely to move (results are available on request). Using this as a robustness check, we also find that estimates do not change considerably.

Having seen the advent of suburbanisation during the 1990s, one might also wonder how the behaviour of those, who do not move to suburbs, is

42 More formally: we model the choice using two outcomes and fit a logit regression model. Relating that to individual decision is simple, using for example the index–function type approach common in labour economics.

different from those who do. Table F2 of the Appendix gives estimates similar to the previous ones, but without people who moved to suburbs.[43] The difference for the whole population and for permanent movers is slight with labour market effects being more significant and that of secondary education less. However, in the case of temporary movers, we find that the effects of labour market indicators are appropriately signed and those of other variables are of similar significance and magnitude as those of permanent movers. Overall, it seems that although the model employed captures the effects of the variables of interest, suburbanisation begins to erode its universal applicability.

Conclusions

This chapter looked at mobility developments in Hungary in the 1990s on both the macro and the individual level. We can draw two important conclusions on the aggregate level. Although comparability of the relevant statistics is not trivial, relative mobility in Hungary is low by international standards, whereas the 1.4–0.7 per cent range for the rate of longer distance migration is comparable to European migration figures. Although the evolution of mobility- and migration rates do not show a substantial change over time, the underlying structure does. Previously dominant mobility routes, from villages to towns have been reversed. This is partly due to the actions of the affluent but partly of those, who can not keep up with the pace of life in a town and move to villages. This reflects the suburbanisation processes documented in demographic-statistical literature.

Surveying the characteristics of the mobile population, it becomes apparent that although labour market conditions play an important part as a motivation for relocation, they are clearly not the only, or the dominant one. It is important to acknowledge this fact not only to understand that the full explanation of a move is well beyond the scope of a single paper, but also to see clearly that not every single move can be included when one thinks about alleviating regional inequalities through migration. Individual data also confirmed that movers are particularly often found among young adults, educated individuals and those planning to have a family. Seasonal data hint at the possibility that a large proportion of the 2 per cent temporal mobility rate is generated by students, which is again something to bear in mind in connection to regional inequalities.

Finally, individual data were used to look at how individual characteristics as well as labour market indicators such as average wages and unemployment rates influence movements between settlements. Results show that all of the factors included in regressions have a significant impact on mobility, even if the total explanatory power of the model is not particularly great. The impact of labour market indicators have the expected sign and

43 We used the categorisation of the HCSO to tell if a settlement belongs or does not belong to the suburbs.

those of individual characteristics show a similar result that we have already seen in the raw data. Although these results were not completely valid for temporary movers, filtering out those who moved to a suburban belt not only strengthens results both in terms of overall significance and size of impact, but in the case of temporary movers also yields the expected results.

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Appendix

A) Numerical results of multivariate analysis

Table F1: Marginal effect of factors influencing mobility in the case of permanent, temporary and all movers (age between 17 and 60)

	All mobile persons		Permanently mobile		Temporarily mobile	
Unemployment rate – sending	0.0011**	(0.0001)	0.0010**	(0.0001)	–0.0001	(0.0001)
Average wage – sending	–0.0005	(0.0002)	–0.0003	(0.0002)	–0.0002	(0.0001)
Primary education	0.0090	(0.0047)	0.0044	(0.0039)	0.0068*	(0.0033)
Vocational education	0.0106*	(0.0048)	0.0051	(0.0039)	0.0094**	(0.0036)
Secondary education	0.0249**	(0.0051)	0.0074	(0.0040)	0.0231**	(0.0047)
Higher education	0.0704**	(0.0076)	0.0373**	(0.0059)	0.0473**	(0.0087)
Age: 25–39	–0.0038*	(0.0018)	0.0049**	(0.0016)	–0.0074**	(0.0007)
Age: 40–59	–0.0673**	(0.0019)	–0.0471**	(0.0017)	–0.0194**	(0.0009)
N	110,339		110,339		110,339	
Pseudo R^2	0.04		0.04		0.05	

Data: *1996 Microcensus*.

Table F2: Marginal effect of factors influencing mobility in the case of permanent, temporary and all movers, without those moving to suburbs (age between 17 and 60)

	All mobile persons		Permanently mobile		Temporarily mobile	
Unemployment rate – sending	0.0009**	(0.0001)	0.0008**	(0.0001)	0.0001**	(0.0000)
Average wage – sending	–0.0021**	(0.0001)	–0.0008**	(0.0001)	–0.0010**	(0.0000)
Primary education	0.0004	(0.0027)	–0.0015	(0.0023)	0.0017	(0.0013)
Vocational education	0.0003	(0.0028)	–0.0019	(0.0023)	0.0027	(0.0014)
Secondary education	–0.0008	(0.0028)	–0.0079**	(0.0021)	0.0068**	(0.0019)
Higher education	0.0139**	(0.0039)	0.0007	(0.0027)	0.0168**	(0.0043)
Age: 25–39	–0.0033**	(0.0012)	0.0014	(0.0011)	–0.0027**	(0.0003)
Age: 40–59	–0.0377**	(0.0014)	–0.0268**	(0.0012)	–0.0072**	(0.0005)
N	106639		107597		109307	
Pseudo R^2	0.05		0.04		0.1	

Data: *1996 Microcensus*.

Heteroskedasticity robust asymptotic "t" statistics in parentheses. ** indicates significant difference from zero at least 1 per cent, * at least at 5 per cent level, while no stars indicate other, higher levels. The impact of the variables is evaluated at the mean. In the case of binary indicators, the impact corresponds to a discrete change, not to the derivative proper. The hypothesis that regressors have no joint explanatory power is rejected in all cases at all significance levels.

B) Databases used for the calculations

TSTAR. TSTAR,[44] a comprehensive database contains administrative information on more than 3,100 Hungarian settlements. Data are available on a variety of topics including demographics and the number of persons moving into and out of the actual settlement, regardless of whether it is a temporary or a permanent change. One shortcoming of these data is that there are no time-series spanning a whole decade available for most variables due to constantly changing definitions and scope of data-gathering at governmental offices.

The TSTAR is not originally built as a panel database of the settlements. Some settlements looked for and gained independence and new ones were created by a split. To improve on the dataset we put them back together and treated these places in the form of 1990 status. This reduces the number of settlements to 3,070. Using this database, a panel is created with selected variables.

	N	Mean	Std. dev.	Min.	Max.
Mobility rate	1,350	4.2	0.8	2.3	7.9
Unemployment rates	1,200	12.7	4.6	2.9	30.2
Average earnings	1,050	18.8	3.6	11.6	36.2

Microcensus. The "Microcensus" (MC) is a large representative sample of the population, conducted by the HCSO, providing extensive information on around 200 thousand individuals, their homes and households. Answering this survey is mandatory, so there is virtually no bias from non-response (but due to discrepancies between the population registry and reality, the sample is weighted). In the MC, we know the identity of the settlement where people lived in 1990 and 1996, but we do not know what happened in the meantime and have no information on past characteristics of the respondents.

Omitting children who were not yet born in 1990, the sample size is 183,589 with 10,127 movers. Constraining age to the 18–60 year age band, we are left with 111,205 observations, of which 7,445 are movers. 5,699 of them are permanent and 1835 are temporary movers. Taking only people over 30 years of age into consideration, we have 77,532 observations, with 2,657 permanent and 755 temporary movers. Looking at the effect of back-commuting to the previous place of living, I excluded those who do (809) and those who do not (9,318) commute back and these observations were eliminated from the sample altogether.

Mobility here is defined as living in different settlements in 1990 and 1996. This means that repeated movers and those moving only once during the period are both counted only once, but movers returning to a previous address never. Masking repeated and temporary moves will bias the fraction

44 TSTAR is a Hungarian acronym for "Településsoros Statisztikai Adatbázis Rendszer", Settlement–level Statistical Database System, created at the Institute of Economic, Hungarian Academy of Science with the Hungarian Central Statistics Office from several sources.

of movers and possibly weaken signs of the relations we are interested in. Nevertheless, if the moves are time-consistent and every choice dominates a previous one, the signs of the relations should not be affected.

Regional Development Survey. The "Regional Development Survey" (RDS) of the Szonda Ipsos market research company elicited questions on individuals' living circumstances and reasons for moving house. The sample size is 26,800 with 1200 observations from every county except from Budapest, where 4,000 interviews took place. Because of the disproportionate sampling and possibility of non-response, the data is weighted.

Movers here are defined as those not having been born in the present settlement of residence. Out of the 26,736 respondents of the RDS, only a little more than half (57 per cent) were born in the current place of living and about 1 per cent moved in from elsewhere. The sub-sample without these people (and the 200 moving house within Budapest) will be designated as "movers" (also excluding those without a date of relocation), reaching a total of 11,344.

In the RDS, we do not know the identity of the sending settlement, just its type and for every type its approximate spatial relationship to the current place of living ("far", "close"), which makes it unsuitable to estimate individual mobility propensities. The benefit here is that the year of moving house for the last time is known, so it is possible in some sense to trace the change of motivations over time and relate those to aggregate observations. Also, here we have a departure from the definition of mobility used in the aggregate data. Here we record moving in every year, but only the last one for everybody. This means that a yearly snapshot will include all movers conditional on staying at the new residence. Accordingly, the more frequently one moves, the later she or he is recorded.

Auxiliary Data Sources. I imputed wage and unemployment data from auxiliary data sources. For the former, I used the Wage Survey of the National Labour Centre (NLC), comprising years 1992, 1994, 1995, 1996, 1997, 1998 and 1999. This is a sample of around 150 thousand employees of firms with more than 11 employees, providing high quality payroll wage data. The number of observations makes it feasible to estimate the mean wage for the 150 small regions, but not for smaller units.

Unemployment figures refer to the number of registered unemployed, coming from records of the NLC and are valid on the settlement level. Lacking real time-series on the number of active persons, we use two feasible measures: the number of active persons in 1990 (known from the Census) and the number of persons of active age (18–59 year old men and 18–54 year old women) registered in the TSTAR database. Estimation using both measures revealed that the choice between them does not have any important influence on the results.

2 MOBILITY AND SPATIAL DISTRIBUTION OF CAPITAL

2.1 Motives of corporate location choice

Gábor Békés

In this chapter we discuss the main motives behind the location choice of companies. Contrary to the traditional approach of international economics, we consider not only the choice among countries but look at the determinants of selecting a particular geographical unit such as a region or a city. When making a decision, a firm would consider a wide range of variables such as the price and availability of its input factors, wages and features of the local labour market (education, skills). Furthermore, firms will take into account the presence of other firms, especially those they intend to conduct business with. As a result of many individual decisions, industrial agglomerations will develop, and the spatial structure of the economy will change. Some regions and cities will see their economic potential rise while others see it diminish.

This chapter aims at providing a theoretical background for the empirical studies on capital mobility published in this volume. In order to be brief and focus on relevant issues only, we concentrate on determinants of those firms that may consider all potential production sites. Also, we focus on determinants relevant for a small and open economy such as Hungary. In what follows, we discuss the background of these location choices using results from international, regional and urban economics as well as research on industrial organisations.

We analyse corporate decision problems in two frameworks. First, in a *static* setting, we simply consider the key comparative advantages and opportunities a given site needs to offer in order to lure in more investments given its actual structure of production and demand. Our second, *dynamic* approach takes into account not only the decision of the given firm but also examines externalities that a decision imposes on other firms' location choice. For example, when a car manufacturing company chooses a par-

ticular region for its new plant, it influences the profit and cost functions of tyre manufacturers or steel producers. Further, it changes conditions at the local labour market thus having an effect on all local firms. The static approach is a relevant analytical framework for small and medium sized firms, while governments and multinational corporations need to think in a *dynamic* setting. In what follows, we describe both structures.

In laying out the theoretical background, we make no difference between Hungarian and foreign owned or small and large multinational firms. It can be assumed that any corporation makes a decision based on (location dependent) expected costs and profits. However, a large company with production sites and a sales force all over Europe has much more options then a medium sized Hungarian manufacturer. There are two crucial reasons for this. First, there exist barriers to entry (legal and market information, languages, etc.), especially to foreign markets. Second, in order to profit from a greater division of labour, the firm should reach a certain size or the fixed costs of investment will not be recouped. A large firm that has enough resources to finance start-up costs and benefit from production technologies exhibiting economies of scale, will indeed be able to consider many location options. Hence, small firms are more likely to stay alive where they were established – maybe just out of luck, and respond to a deterioration of conditions by shutting down production.

The static approach

When companies consider options, they first tend to think in a static mindset and compare pros and cons for all potential sites. There are a few key motives distilled from theory and empirical approach.[1]

One of the oldest motives for investing in a particular area is to exploit its resources. This leads to the development of a vertical production structure setting production of each component wherever inputs are available thus enhancing overall productivity. In economic theory, in the absence of barriers to trade (tariffs), transportation and other transaction costs, intra- and international trade would fully equalise input and final good prices. However, in reality there are tariffs and more importantly, transport and information costs and so prices differ. Hence firms may relocate whenever relatively cheaper inputs such as natural resources or trained labour are found. As a result of capital investments the changing production structure will reflect the regional comparative advantages. A relatively cheaper labour force invites the entry of labour intensive industries (e.g. textiles), while regions with a relatively superior skill and education base should attract research and development intensive sectors (e.g. pharmaceuticals). It is worth noting that R&D intensive sectors are likely to be part of an international organisation thus contributing to a rise in the volume of trade.

1 For more details on national and international location choice, see *Dunning* (1993), *Helpman and Krugman* (1998), *Markusen and Venables* (1998) or *Szanyi* (1998).

A key dilemma of international (or inter-regional) expansion is whether (and when) local production should be added to local sales force. Starting production involves a range of costs including administration (learning about legal and tax obligations and making necessary adaptation), fixed investment (such as creating infrastructural background) and variable costs depending on the size of production (buildings, machinery, etc.). Further questions to consider are the loss of economies of scale as well as management costs arising from decentralized production. Advantages of local production must be related to cheaper inputs and importantly, to lower transportation costs (including the burden of bearing exchange rate variability). Further, local supply allows for meeting local demand more flexibly. Strategies aimed at serving local markets involve horizontal direct investment, i.e. firms replicate production structures in various countries/regions. One example is motor vehicle production in Europe, where similar cars are produced in various countries and sold principally locally.

In addition to the above, there are further determinants of location choice. As for FDI to less developed economies, the key variables include (see. e.g. *Veuglers*, 1991):

- barriers or high costs of foreign trade (e.g. tariffs, quotas);[2]
- openness: opportunity to participate in global production structures, market integration – option of larger "home" market;
- geographical proximity (common border, shared language and culture) as well as cheaper transportation to meet demand of nearby regions;
- urbanisation – greater concentration of demand, modern society;
- political, legal and regulation stability;
- risk management – diversification of production in order to hedge country risk (of exchange rate variability, nationalisation, introduction of tariffs, etc.).

Finally, let us point out that it is not only market forces but state support and public policy actions as well that should influence corporate location choice.[3] In our view, a set of the most important investment-friendly public policies would contain market liberalisation, tax breaks and other forms of financial support such as export subsidies, public investment and labour force development support (e.g. enhance the skill base of workforce via education and vocational training, assist labour migration). In a broader sense, an economic policy that provides a stable political and monetary climate shall be considered as part of an investment enhancing public policy.[4] In addition to this, development of infrastructure, especially that of transportation and communication networks will influence location choice. A new express train will for example cut commuting time and reshape cost structure for a company in services, thus prompting some firms to move to cheaper areas or on the contrary, concentrate dispersed offices.[5]

2 This is one of the first ideas that appeared in the literature. In his famous work on "tariff factory", *Haberler* (1936, pp 273–278) analysed the impact of tariffs on trade and showed that an increasing tariff in one sector leads to a rise in capital inflow for it becomes cheaper to produce locally than it is to import goods.

3 On the role of public financial support, see *Dicken* (2000), *Antalóczy and Sass* (2000) or *Kalotay* (2003)

4 A foreign policy that ensures foreign markets or promotes market integration may well be considered part of such policy.

5 *Vives* (2001) looks at the impact of a new speed train line between Madrid and Barcelona.

In a policy-oriented paper, *Martin* (2002) looks at the impact of various regional policies. He considers alternative actions, such as inter-regional highways and plain monetary transfers to find that different policies yield different spatial impacts both in terms of equity and efficiency. In many cases higher efficiency would reduce spatial equity. For example motorway construction allows for a concentration of production by making use of the now cheaper means of transport. The side effect is a loss of industry in some other regions, a consideration often missed by policy-makers. For example, *Puga* (2001) quotes a report of Committee of the Regions that emphasises positive impacts of a better infrastructure but disregards agglomeration forces that may lead to a loss of industry in the poorer region that was originally to be developed.

A dynamic approach

By the basic (neoclassical) model of economics textbooks, economic activity is dispersed evenly through space since the flow of production factors levels out differences in development and prices alike. Wherever there is a scarcity in one good or factor, its relative price will be higher making it worthwhile to ship goods from other places in the world as long as prices are equalised. Equalisation may be reached via trade and/or capital investment and labour migration. It is easy to see that this is not the case in reality: there is a concentration of activity in cities, industrial or financial centres, and there is a marked difference between developed and underdeveloped regions even within one country.[6]

There are many reasons for the concentration of production, cheaper production with economies of scale technology being probably the most important. However, there are various reasons why companies would not only build large plants but target settlements close to each other – thereby creating industrial centres. Our dynamic approach backed by its key theory called "new economic geography" aims at uncovering the essential reasons behind both agglomeration and dispersion of economic activity (i.e. firms choosing distant locations for starting new production).[7]

The set of determinants of location choice sampled in the previous section will be extended when dynamic considerations are taken into account and their relative importance may also be shuffled. Now the strategic interaction of companies turns out to be a key issue and furthermore, expectations of future developments are becoming part of the decision making process. Our comments are grouped in the following categories: input factors, proximity of markets and transaction costs.

1. *Input factors*: These are the variables that can be found in the static approach as well, although in a dynamic setting their expected values also come into play. Determinants of the labour market include present and

6 A classic example for agglomeration is the international region called "Blue Banana" that encompasses North–Italy, Southern Germany, South–East of France and the Île–de–France, Benelux countries and South–East England. There are actually cities with a distinct specialisation, such as Palo Alto in California, City of London, the rug–specialist Dalton or the Chinese city that is responsible for producing some 50 per cent of Chinese clothing buttons. For more, see *Krugman* (1991) or *Porter* (1990).

7 Key books on the theory are *Fujita, Krugman and Venables* (1999) and *Baldwin et al.* (2003)

expected wages, their skill and education content, and other features of labour supply and demand. For capital, the relevant factors are investment costs such as project financing fees, availability of bank loans and venture capital, taxes and subsidies. Other variables will include the price and availability of land and raw materials.

2. *Proximity of markets*. Distance among various firms and distance between producers and consumers are key determinants of location choice in an economic geography approach. Being close to potential suppliers allows a firm to concentrate on its core business and buy intermediate goods from local businesses. The final price and thus profits will depend on the size of the local market as well as on the proximity of all other consumers (market potential). In a dynamic setting one must also take into account the fact that a location decision of a firm will have a long running influence on the local labour market, potentially affecting adjacent labour markets, or even prompting inward migration. Thus, not only will the labour supply rise to meet its demand, but more customers will yield a larger market that in turn will have repercussions on production.

3. *Transportation and other transaction costs*. Prices of both final and intermediate goods are dependent on the costs of their transportation and the related fees of making business abroad, thus shaping patterns of trade and investment alike. Transaction costs include a variety of fees and expenditures related to communication, legal advice, hedging, or even bribery.

4. *Strategic interaction.* Another benefit may stem from strategic interaction among firms, as local investment signals determination for the given market and this may alter competitors' behaviour. *Dunning* (1963) added that in a global competition firms may have to simply invade a market to survive competition.

Comparative advantages and the static approach help understand why diverse regions develop in a diverse fashion, possibly specialising in areas of production where relative strength is present. The dynamic approach is set to explain why similar regions may develop different production structures and how agglomeration and dispersion forces influence convergence or divergence of regions or countries.

New economic geography: theoretical background and results

Let us put forward here an element of the economic intuition that lies behind theories of *new economic geography*. Most of the models in this class assume that firms produce with increasing returns to scale technology, market transactions are costly and these costs determine whether firms benefit from settling close to one another thereby giving rise to agglomerations. In the lack of transaction (trade) costs, production would be determined by supply side considerations (such as efficient scale size) only. However, if

transportation is costly, the demand side becomes a determining factor of location choice as being close to customers gives lower operating costs. Accordingly, a shift in transaction costs may lead to the relocation of industries as both the optimal level of concentration and the optimal distance from customers is altered.

To better grasp the key ideas of the new economic geography, let us consider a simple framework with two regions, one of them having slightly more firms than the other. Firms can decide whether to settle in the first, second or in both regions. The more firms are present in a region, the more easily can they find the required intermediate goods locally. Hence, there is a lower import share and saving on transport costs will make final prices lower as well. Greater competition among firms will also lead to higher wages that, along with lower prices help raise living standards. Better prospects will draw migrants from the other region and the labour pool will rise, which will lower wages to some extent. The size of the market however will increase, helping firms to sell more, which allows them to lower prices. Also, a larger market (more customers locally and the possibility to make an even better use of increasing returns to scale) will make new firms enter the region. Thus, in this case labour market development and capital flows reinforce each other: efficiency of production and stronger purchasing power of customers will offset rising wages and agglomeration forces lead to a growing concentration of activity in one region. The Swedish Nobel-laureate economist Gunnar Myrdal dubbed such developments "cumulative causation" (*Myrdal*, 1957).

Of course, agglomeration forces do not prevail without boundaries; there are dispersion forces in action, too. First and foremost, high wages will make certain wage-sensitive industries incapable of offsetting rising costs. These companies will at some point opt for locating in the other region. Although they will face much higher transaction costs when selling to the larger (and richer) region, production costs will be much lower in the other region. Another reason for moving is falling final prices as a result of greater competition. In this case the benefits of lower competition in the other region will offset the disadvantages of losing suppliers and some customers in the larger region. As we have seen, the size of transaction costs and thus the distance between markets plays a pivotal role. Note, that remoteness not only incorporates physical distance "as the crow flies" but also the quality of the transport network, language and cultural barriers, differences in corporate management styles or the regulatory environment.

Building on the classic "static" findings and working with the framework sketched above, let us enumerate the main variables that determine the result of agglomeration (or centripetal) and dispersion (or centrifugal) forces and some features of outcomes.

Transaction costs and wages. These are the key variables. The level of transportation costs determines market structure and the (optimal) size of companies as well as the industrial structure of the economy. Lower transportation costs will make companies more likely to concentrate production and export to distant markets thereby affecting the properties of the given market. Market integration, industrial specialisation, and the appearance of industrial clusters are all interrelated in this framework. As for the labour cost, its level determines the capacity of the given region to lure in investment and prevent existing investment leaving. High wages may only prevail in highly agglomerated areas with strong market potential and efficiently producing firms. While a certain wage level may just prevent new firms in some of the industries from entering, excessively high wages will lead to a massive exodus and the break up of clusters. As for very low wages, in the early phases of development it will be the key factor in making firms enter and possibly create the seeds of a future agglomeration.

Dynamic considerations matter. Wage level and other costs influence decisions by individual firms but these decisions are interrelated: future decisions by firms will influence overall conditions of companies already present. There is room for cumulative causation to influence firm location and the spatial structure of economic activity. Apart from comparative advantages, firms need to take into account the pluses stemming from proximity to other firms and the minuses caused by higher wages and fiercer competition.

Non-linear relationship. One of the most interesting results is that the number of firms in a region or even the general level of development in a region does not hinge linearly upon wages and transportation costs. Let us assume that costs in an industry are falling gradually. Up until a certain level it remains optimal for the mainstream technology users to produce in one particular region, and hardly any firm would find it optimal to move. However, when costs reach a certain level, some firms will find it optimal to shift production to another region thereby changing optimality conditions for other firms who then choose to relocate, too. Thus, the landscape is reshaped as transaction costs fall, but not in line with changes of the cost level.

Small changes may yield large reallocation – and vice versa. As a result of non-linear relationships, a small change (like a minor drop in transport cost) will lead to a large-scale shift provided that the economy features the cost level just dividing two agglomeration equilibria. The opposite case may be true as well: if the economy is locked in a particular spatial equilibrium, and transaction costs are very low or very high, a fairly large cost change would not imply a shift of production.

The policy consequences of the arguments above are of crucial importance. In various cases, granting tax breaks will have no far-reaching effect for the companies attracted will not make others follow. Policy will be effective only when the economy is close to a critical level of costs: only then will a policy action have an impact that is strong enough to be worth spending taxpayers money on. Also, capital should be taxed (or wages allowed to rise) only when the agglomeration is strong, i.e. co-location externalities are strong enough to offset higher costs.

History matters. As a result of cumulative causation and non-linear relationships, the starting point does matter considerably as it will determine which production structure will be actually reached out of the various possible equilibria. A small advantage in the beginning may well grow over time. Despite investment incentives, the process of agglomeration will only kick in when necessary features co-exist. In a similar fashion to history, luck or accidents may play a key role. A personal contact born out of sheer luck can make a company choose a particular region prompting other firms to follow suit.

Some international evidence

Carr, Markusen and Maskus (2002) consider US investments abroad and show that per-capita inward direct investment into developing countries is positively related to the host-country market size and per-capita income. They argue that that US outward investment is looking for labour skills and large markets as well as low barriers to investment and high-quality infrastructure. Importantly, the lack of labour skills, legal institutions, and infrastructure makes poor places unprofitable locations for production despite a large and cheap labour pool. As for Central and Eastern Europe (or CEE), various studies such as *Baniak et al* (2002) also emphasise the role of legal and macro-economic stability in securing foreign investment flows.

Working with international data on various industries, several studies investigated national specialisation of production. One key question is whether comparative advantage or geographical considerations (such as proximity to suppliers and customers) would dominate. For European countries, *Midelfart-Knarvik et al*. (2001) found that besides comparative advantages such as skills and education or access to capital, access to suppliers is an important determinant of location choice. This confirmed findings of previous studies carried out on US data by *Ellison and Glaeser* (1997). An interesting feature of the European development is that specialisation patterns in less developed EU countries, such as Greece, Portugal or Ireland, are much more in line with economic rationale (both for comparative and geographical advantages) than is the case in developed EU states. One explanation is that in these countries industrialisation took place later and the role of

foreign investors, choosing a location based on strategic considerations was more significant. Thus, one should expect manufacturing location to be even more determined by the local advantages in the CEE countries.

Regional clusters

A central topic of theories on location decisions is the notion of clusters. One basic definition of an industry cluster is "geographical concentrations of industries that gain performance advantages through co-location" (*Doeringer and Terkla* 1995, p. 225). Thus, a cluster simply denotes a group of firms that are fairly close to each other, i.e. transportation of goods and services between any two is very easy and cheap or the workforce can flow easily. Another source of common faith is when production draws on the same source of raw materials, business services and labour pool. What is more, economic geography emphasises that proximity fosters technological externalities or spill-overs, i.e. when innovation (in production technology, management, etc.) by one firm is easily revealed and imitated by others.

Studies of industrial organisations find that the development of clusters is similar to that of metropolitan agglomerations, for in both cases externalities and accidents play important roles. *Porter* (1990) studies corporate networks located in one small region and distinguishes two types of cluster: vertical ones (linked through buyer-seller relationships), and horizontal ones (where firms share a common market, technology or labour force). The approach of *Rosenfeld* (1997 p.10) emphasises joint access to needs by defining an industry cluster as "a geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue, that share specialised infrastructure, labour markets and services, and that are faced with common opportunities and threats". *Jacobs and Man* (1996) emphasises the importance of the settlement of a key player in the region. This core of development may be a University such as Stanford University in California giving rise to Silicon Valley, or a multinational corporation as was the case with the computer manufacturer Apple Corporation in Singapore.

The exact location of industrial clusters may be explained by various factors with the most important determinant being proximity to main export markets, especially in newly developed countries. This explains the spatial structure of Central European electronics and motor vehicle manufacturing clusters – located primarily along the Western border (see figure 3. in chapter 2.3 in this volume). Capital cities and their satellite towns and villages may also attract manufacturing driven by access to concentrated consumer demand and supply of business services. In order to economise on transport, proximity to major means of commerce (motorways, waterways and airports) will also determine the exact location of clusters. However,

there are many individual cases suggesting that personal contacts or pure chance are still important determinants.[8]

Learning about the structure of clusters, determinants of firm location and forces of agglomeration will help to formulate a more effective regional as well as industrial policy. Equipped with such knowledge, economic policy can be tweaked to better serve region-specific needs (be it labour market intervention, infrastructure, adult education, etc.) so that investments become more desirable. Such specific programs are carried out in some US states.[9] However, it is far from clear if state intervention is capable of creating seeds of clusters or if economic policy has the capacity to manage them.

The impact of European Integration

Finally, let us touch upon a topic that has become relevant for the CEE region lately: accession to the European Union and its effect on location choice. Integration of European markets is certainly driving transaction costs down. Most of the tariffs have already disappeared and membership in a customs union finished the process of trade integration. Further, adopting European-wide regulation and standards or facilitating information flow within the bloc will all lower the costs of starting a new business abroad or managing international business contacts.

We should bear in mind that the impact of market integration, just like that of a new motorway, is two-sided. It allows local producers to export more easily to developed markets, but imports will reach less developed regions more cheaply, too. Also, the alteration of transaction costs makes the relationship between geographical advantages and disadvantages shift. Recalling arguments on dynamic impacts and non-linear relationships, we can posit that integration will not have a balanced impact on CEE regions. Some regions will catch up relatively rapidly while others will find it difficult even to keep the present pace of development. The common currency will lower costs of currency risk and also have a twofold impact: on the one hand exporting will be less risky to new members, but on the other hand export oriented production will become even more profitable in those areas. Overall, spatial inequality is likely to rise.

Of course, EU accession will influence the limits of economic policy and alter the capacity to grant investment incentives. Customs-free zones will be abolished, state aid will be supervised and in most cases prohibited by Brussels, and new companies will have to meet stringent environmental regulation.[10]

8 One may just consider the example of Polish and Hungarian expatriates "luring home" firms they work for.

9 *Rosenfeld* (1997) presents the case of two US states, Arizona and Oregon.

10 This point was kindly raised by Györgyi Barta.

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2.2 The influence of location and education on regional inequalities in Hungary

József Nemes-Nagy

Introduction

The pattern of regional development and spatial structure in a country is a function of numerous factors. Former comparative studies have already convincingly confirmed (*Williamson*, 1965) the *dependence* of regional differentiation *on development* – namely that developed countries are more balanced than less developed ones not only concerning social but also with respect to spatial structure.

Although around the turn of the millennium a smaller or greater oscillation is observed in regional inequalities in developed countries (e.g. in members of EU-15), the regional development gap is not anywhere getting wider. Developing countries are strongly differentiated still today – taking either stagnant continents (e.g. Africa) or dynamic regions as an example, regional inequalities are large everywhere (perhaps the best known case is the sharp regional division – coastal vs. inner regions – in China).

There are general factors behind the definite tendency towards regional polarisation in the Hungarian transition process to market economy, and those are primarily *market effects* replacing (downwards) equalising mechanisms of the socialist era (*Nemes Nagy*, 2001). In the international literature, *natural resources* and *environmental conditions* are appearing as locating and dividing factors influencing regional differentiation as frequently as models of *unitary versus federal* government. Along with all these, the most often reviewed groups of factors are beyond doubt the "harder", *material*, *infrastructural* (location, accessibility, traffic and communication) frameworks (*Kulcsárné Kiss – Nagy*, 2003) together with a group of "softer", *human factors* (primarily qualification and education).

Empirical analyses evoke a whole series of *dilemmas* related to methodology and review as well as limitations to research. Almost all conceptual components of analyses (regional *development* as well as *accessibility* or *human capital*) are typically *multidimensional* and *multi-indicatory*, thus the sets of indicators contain plenty of heuristic elements. Also, a basic methodological feature of the question is that relationships may remarkably vary *on different regional levels* (in global, continental or within-country differentiation the weight and role of various factors and mechanisms may differ). The same variability also turns up in the *historical, time* dimension: not only the spatial structure of development itself but its influencing factors change. This is indeed a common case.

In what follows, the main characteristics of the actual spatial structure of development as well as trends shaping regional inequalities in Hungary will

first be presented briefly. Following that we will talk about national accessibility and location conditions together with geographic characteristics of education and qualification. Then the joint impact of the two groups will be discussed through regression analyses of registered unemployment on the level of micro-regions. Finally we present some prospective hypotheses.

Regional differentiation and increasing inequalities in Hungary

Regional inequalities – considering most of the spatially accessible indicators – showed an *increasing* tendency in the last 15 years (*Table 1*). However, at the same time *two periods* are to be definitely separated considering almost all features. In the '90s, the income gap was definitely opening, and in the second half of the decade inequality stagnated at the high level attained. Comparing different regional levels one should note that the most important segment of regional inequalities in Hungary is the Budapest-countryside dualism. This characteristic is responsible for some two thirds of total income inequalities: according to the data of *Table 1*, the ratio of total, settlement level values and the dual value capturing only the difference between the capital and the whole country was 7.1/10.8 = 0.65 in 1988 and 9.3/15.4 = 0.60 in 2001. In addition to this there are further income differences across regions, counties, micro-regions and settlements. The series of indices show that inequalities measured on the level of seven regions or twenty counties are almost completely the same. This indicates that the seven regions are relatively homogenous in terms of income and development, and regional differentiation exhibits county-level differences even more explicitly. The unequal income level of the population in micro-regions and settlements (cities and villages, local centres and their neighbours) adds another 15 per cent to the measure of total inequalities.

Taking another simple example by describing a peculiar space-time process, we can point at the decisive role of the regional dimension in transformation (*Table 2*). Taking income as a special "diffusion process" indicator, it can be determined when a certain city reached a given level of (nominal) income. Out of 256 cities there are seven that reached the HUF 100,000 level of per capita taxable income already in 1990. On the contrary others caught up only at the end of the decade (also seven more cities in 1998–1999). Viewed from a historical perspective, 1992 was the peak year (this also was the year of the highest, over 30 per cent inflation) and by 1994 more than half of the cities passed over the limit value, then the circle broadened year by year. From the viewpoint of special processes, this process is more interesting. In two regions – Central Hungary with the capital inside and the neighbouring Central Transdanubia – every city had already reached the above-mentioned level by 1994, West Transdanubia held off one year and then all other regions followed with a one-year delay. Also in the case

of regions, the peaking year moves clearly between 1992 and 1996 with the "diffusion" wave heading eastwards.

Table 1: The formation of spatial inequalities of taxable income on different regional levels (Robin Hood indices measuring deviation of population and income share, per cent)

Years	Budapest–country (n = 2)	Regions (n = 7)	Counties (n = 20)	Micro-regions (n = 150)	Settlements (n = 3100)
1988	7.1	7.6	7.7	9.1	10.8
1989	7.5	8.1	8.2	9.8	11.7
1990	8.3	8.6	8.7	10.7	12.9
1991	7.5	8.0	8.2	10.6	13.3
1992	9.6	9.3	9.8	12.0	14.8
1993	9.9	9.6	10.2	12.6	15.1
1994	9.9	10.0	10.4	12.9	15.5
1995	9.5	9.7	10.1	12.6	15.2
1996	9.0	10.1	10.3	12.7	15.2
1997	9.3	10.5	10.7	13.2	15.4
1998	9.4	11.0	11.2	13.2	15.5
1999	9.7	11.1	11.2	13.6	15.8
2000	9.3	11.3	11.5	13.5	15.6
2001	9.3	11.1	11.4	13.4	15.4

Source: *PM–APEH database* of settlement level personal income taxes.

Table 2: Space-time process of urban income growth (number of cities by region reaching the level of HUF 100 thousand specific income)

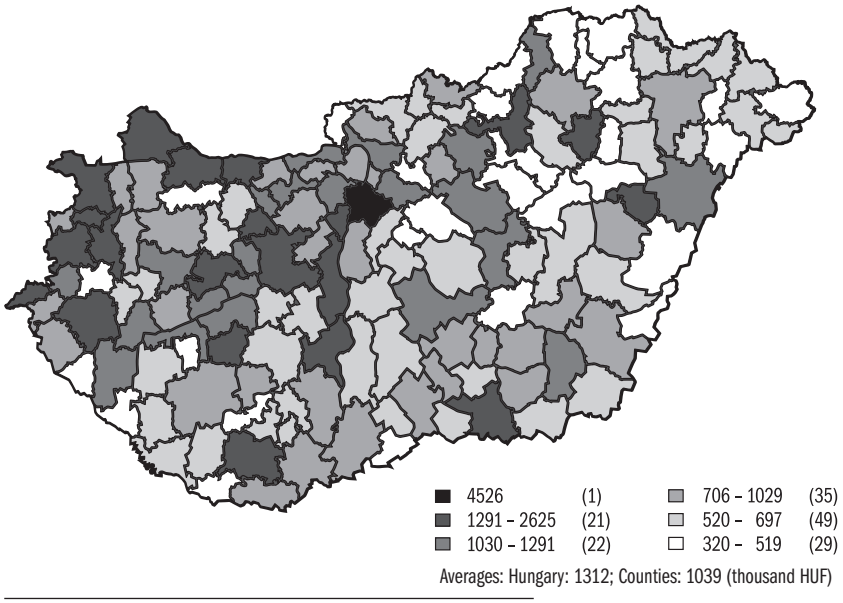
Years	Central Hungary	Central Trans-danubia	West Trans-danubia	South Trans-danubia	North Hungary	North Great Plain	South Great Plain	Total
1990	4	1	0	1	1	0	0	7
1991	2	8	3	3	1	2	1	20
1992	*14*	*13*	*14*	7	9	6	5	*68*
1993	8	2	4	*15*	5	7	7	48
1994	5	6	3	5	*14*	8	9	50
1995			2	2	0	*10*	8	22
1996				1	3	8	*10*	22
1997					1	8	3	12
1998						2	1	3
1999						4	0	4
1990–99	33	30	26	34	34	55	44	256

Source: See Table 1.

Until the beginning or middle of the 90s, polarisation processes created a spatial structure broadly unchanged up to the present. Its major features are the development gaps between the *capital and the country*, the *West-East* differentiation as well as the *mosaic-like* characteristics of *micro region* or

city-village differences. On all these factors settle – only partially modifying the basic scheme – the dynamic lines of *growth axes* connected primarily to previously constructed motorways with a starting point in the capital. Most research found practically the same spatial structures, even if the position of one or two regions was naturally moving. This basic scheme of spatial structure is presented by the multi-indicatory development analyses of the HCSO (*Faluvégi*, 2000), but a similar picture is also given by the micro region level analyses collectively evaluating the income and human resources, educational and health conditions (*Obádovics – Kulcsár*, 2003). Another recent research estimated (*Figure 1*) GDP output per micro-regions (for methodical details, see *Kiss*, 2003).

Figure 1: Spatial structure of estimated per capita GDP in micro-regions, 2000



Source: *Kiss,* 2003, Figure 3.3., p. 52.

Location and accessibility

Good location and favourable accessibility are basic factors of location choice. It plays an important role in running a business owing primarily to transportation costs, but indirectly to other factors as well. Although the "pathless and wireless" communications and connections have undoubtedly an increasing role in a modern global economy, the effect of location does not fade away, especially not in less developed countries, where even traditional contact channels are missing. Examining the influence of location and accessibility on spatial differentiation of economy, three typical interpretations can be separated.

1. The favourable traffic and network connections allow *fast and cost-saving travel and transport*. This approach is represented by traffic maps featuring the lines of the same travelling cost or time (isolines, *isochrones* in the latter case) around a selected or important centre. An extension to this approach is calculating time-distance between all settlements in a greater region – e.g. in a country – and then mapping the averaged values for all settlements. This scheme is presented in *Figure 2.*, which nicely indicates that according to this approach the central zone of the country is in the best position, with the situation becoming worse towards the peripheries.

Figure 2: Accessibility in time on public roads, 2000

Source: *Szalkai,* 2001, Map 5., p. 8.

These maps (similarly to the maps of railroad distances) reflect the radial, Budapest-centred basic structure of the national road- and railway network. This aspect of location and accessibility creates an excellent opportunity to model the effect of network-development conceptions, such as the plans of new roads and railways. A (long-time planned) cross-motorway or railway line detouring the capital would improve primarily the traffic position of peripheral regions in the country (for details see *Szalkai*, 2001).

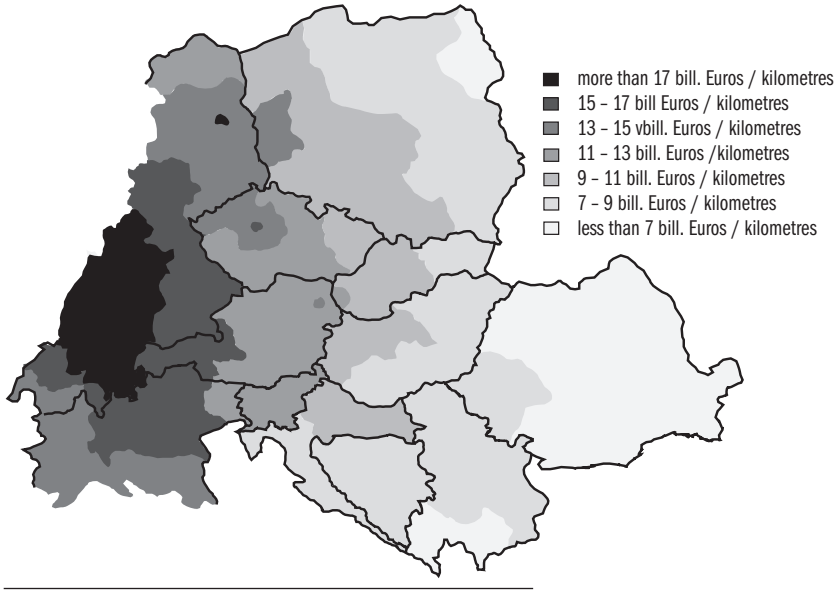
2. A specific feature of the above approach – though also a barrier in analysing wider economic processes – is that it assumes base points (settlements) with equal role and weight. In reality, *the economic, settlement space is far from homogenous*, since it includes smaller or greater populations or economic concentrations. In the regional organisation of the economy however the determining location factor is how near one locates to these. Only models fitting such an approach can give good explanations for the

spatial differentiation of the economy (thus we should hardly wonder that *Figure 2* shows, for example, almost no common feature with the spatial structure of development on *Figure 1*). Describing economic space as a *force field*, a regional experimenting method generally applied also in the international practice of regional analyses (belonging to the model-family called *social physics*) is the *model of regional potential* (*Nemes Nagy*, 1997). This generalises space on the basis of regional or settlement "masses" (usually the number of population, the production value, the absolute volume of GDP) and distances between regions. According to this model, the places and regions in the best position are those that also concentrate *high economic power* themselves and/or *are to be found near to most substantial centres of power*. The market targeted can be accessed from these places in the fastest way and also these places are rich in potential partners for co-operation. This is represented in *Figure 3*, depicting Hungary in a broader Central European space (for methodology and content details see *Tagai*, 2003). The centre-periphery differentiation as a central feature in Europe appears obviously on the map. Starting from the most Western regions of Germany and moving in an East-South-easterly direction, the economic field intensity gradually decreases. Among Hungarian regions it is the North-Western region that has the most favourable position. Spatial processes of the '90s unambiguously confirm that in the new regional differentiation, *proximity to the developed European economic space* had a decisive role (note for example that dynamic development in West Transdanubia originates in no way from the capital).

3. The third approach to the role of location is a certain combination of the above mentioned two theories. Here the focus is on the balance of the role of substantial and highly influencing spatial elements. Among these elements, borders deserve accentuated attention by embodying very strong development and diffusion gaps in many places. The East European transition created a completely new situation in their roles, for example in Hungary, border areas became dynamic zones, although in different measures and "colours", occasionally in different shades of "grey". It can be observed that the different forms of dynamics are the most obvious along the encountering lines ("stairs") of regions strongly *differing* in respect of development and structure. One such area is unambiguously the Western border zone of the country, and the least typical one is the North-Eastern one i.e. the bordering zone with Slovakia, where the adjoining regions of the two countries have approximately the same level of development and are equally struggling with depression. Also the influence of location, which is definitely favourable from an economic point of view, appears in the proximity of main traffic lines (mainly in the neighbourhood of *motorways* being constructed at a snail's pace). Some studies confirmed a dynamism-generating

power of main roads. However, this effect also relies on the fact that these routes exactly connect the (large) cities that are relatively stable anyway. Thus, location effects are combined with factors of settlement structure or urbanisation (*Nemes Nagy – Jakobi – Németh*, 2001, *Tóth*, 2002).

Figure 3: The economic field of force in East Central Europe, 2000



Source: *Tagai,* 2003*,* Figure 3., p. 17.

Differentiation of human capital

In empirical surveys analysing influences of versatile and multidimensional human capital, spatial studies typically should be satisfied with the quantitative indicator of *education*. This appears even with two components in the so-called human development index (*HDI*), a famous synthetic indicator of the UN (*Human Development…*, 2003). The indicator is also reviewed on the regional level in ever more countries. For all synthetic indices such as the different education indicators (average number of school years, share of attendance at different educational levels, share of people with a college degree or illiteracy) are so important, they can not demonstrate the role of finer relationships, subjective human factors or modern social networks. However, a low level of education defines the space in which an activity providing values that meet today's requirements can appear.

In Hungary, the spatial characteristics of education in the 90s are specific exceptions to the general polarising trend. Taking any education level into consideration, disparities are not larger than they were 15 years ago. *Formal education* is one of the spatially most balanced social factors. How-

ever, the so called "*settlement slope*" is a basic differentiating dimension even today: education characteristics are getting worse by moving from greater cities towards smaller villages. In this respect, regional differences are somewhat weaker with several large intellectual centres, university towns showing economic development despite being located in stagnating regions of the country. (*Figure 1.* also supports the notion that these large cities – e.g. Pécs, Szeged, Debrecen – stand out in their region in terms of economic activity, development or income). The indirect influence of the regional dimension – although it cannot be quantified – in most appreciated elements of education and qualification (command of language, computer studies, undertaking skills) shows the advantage of Budapest and the western regions. Also in most dynamic cities (in the capital, and in Győr and Székesfehérvár, which are treated as cities of this kind despite some recent signals of crisis) the diversified, easily convertible skills, the concentrations of efficient management knowledge are all important elements of an urban attracting force as *synergetic* power.

Factors of unemployment differentiation

The joint effects of the two great groups of factors on economic spatial structure can be analysed by regression models. By setting out part of a comprehensive analysis with such an aspect (*Nemes Nagy – Németh*, 2003), the Hungarian characteristics are presented on the level of 150 micro regions.

The dependent variable of the regression model was the estimated unemployment rate of micro regions in the period 1991–2001. Eight indicators were used as explanatory variables. Accessibility or location was described by the average road distance from the western border or Budapest. The human potential was measured by the share of the uneducated and the share of people with a college degree (based on data from the 1990 census, representing initial conditions). Other four indicators take the population-demographic characteristics into consideration (ageing indices with the share of old people and children, as well as ten years average of migrating indices, population density and the number of the urban population in 2000). As for the calculations, the so-called *backward elimination* method was applied in regression analysis. In order to illustrate the weight of the explanatory variable the so-called *beta parameters* are presented here: the greater their absolute value, the more important the role the given explanatory variable has in shaping unemployment, while the sign of the parameter indicates the direction of influence. The variables taken into account explain spatial differences of unemployment to a notable extent (the *determination coefficient,* R^2 varies between 0.65–0.8, which is considered to be high in cross-section analyses).

Our results show that until the middle of the decade the regional inequalities of unemployment on the micro-region level were mostly explained by the distance from the Western border, namely this "new" socio-economic feature was already strongly regionalised at the moment of appearance (*Table 3*) Beside the West-East division, however, the variable representing the lack of intellectual capital and also the share of uneducated persons became similarly important at this time in shaping regional inequalities. Namely, the farther away a micro region from the Western border and the higher the rate of uneducated people, the higher the unemployment in the region. The share of urban citizens and people with a college degree are significant variables in our model with an influencing force still high at the beginning of the decade, although weakening slowly of late. The standardised betas of both variables had a negative sign, therefore both a greater share of highly-qualified people and urban citizens are likely to reduce the average unemployment of a micro region.

Table 3: Regression analysis of factors influencing unemployment in micro-regions

Explanatory variables	Standardised regression parameters of the significant variables										
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Distance from western border	0.475	0.373	0.445	0.384	0.375	0.330	0.317	0.364	0.347	0.356	0.328
Share of uneducated persons	0.138	0.328	0.288	0.233	0.248	0.313	0.358	0.325	0.332	0.334	0.398
Share of high level graduated persons		-0.160	-0.206	-0.303	-0.231	-0.184	-0.093	-0.119	-0.107	-0.109	-0.146
Aging index	-0.176	-0.100	-0.122	-0.117	-0.162	-0.170	-0.140	-0.117	-0.089	-0.109	-0.117
Share of urban citizens	-0.251	-0.174	-0.137		-0.136	-0.171	-0.155	-0.117	-0.141	-0.122	
Migration balance	-0.234	-0.289	-0.230	-0.225	-0.257	-0.275	-0.289	-0.281	-0.283	-0.282	-0.258
Distance from Budapest		-0.198	-0.169								
Population density					0.084	0.089					
R^2	0.664	0.704	0.737	0.745	0.777	0.808	0.797	0.796	0.780	0.790	0.775
Adjusted R^2	0.652	0.689	0.724	0.736	0.766	0.799	0.788	0.788	0.771	0.781	0.766
Standard error	1.963	3.791	4.802	4.143	3.735	3.355	3.609	3.745	3.727	3.902	4.057

Source: *Nemes Nagy – Németh,* 2003, Table M1., p.48.

Two further demographic features are strongly connected to these factors both in context and impact: the migration balance as well as the ageing index. Both of them have unemployment-reducing effects. Considering its importance and influencing force, the migration balance is more relevant: beside the presence of uneducated population and the position in a West-East relation system, this variable has the greatest influence on regional heterogeneity of unemployment. On the one hand, the higher the migration gain in a micro-region, probably the lower the unemployment rate is of the given area. On the other hand, the ageing index has the opposite influence. This is not surprising: we have also hypothetically expected that the younger the age structure the population has, the smaller the problem of unemployment is in a micro region. Overall, results indicate that mi-

cro-regions having a more urbanised, educated population as well as more central functions were more able to cope with employment problems of the transition. Among them, regions with fast and easy access from the western border excel the most: the economy had the opportunity to switch quickly to the new system here, and also capital investment was tending to favour these areas the most.

Conclusion

Assuming that macro-regional traffic and communication networks will be broadened in the coming years, it can be expected that *human capital, education* and innovation skills will be even more decisive factors of regional development in Hungary.

The evolution of the nearly similar location and accessibility conditions may improve the use of the intellectual potential of the Eastern part of the country, and the international economic relationships in an Eastern or Southern direction may also have dynamism-generating effects. This does not mean that *location* is not a space-shaping factor any longer, but mostly only in local structures, and it would serve less and less as a source of strong macro-regional disadvantages.

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2.3 Spatial processes of Hungarian industry

György Barta

Slowing spatial differentiation

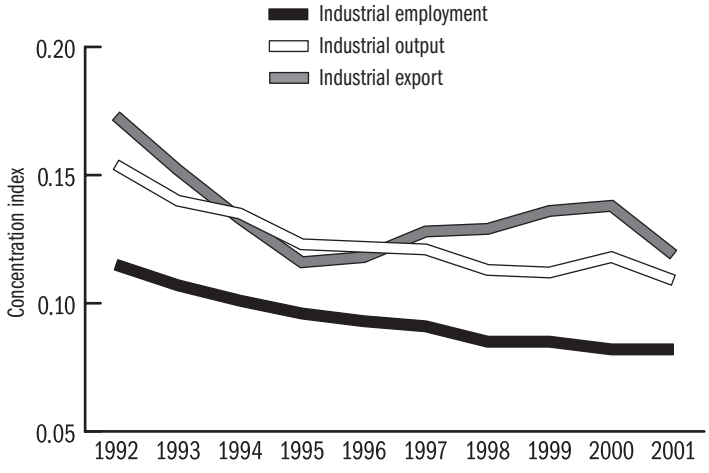
The role of industry in economic modernisation and particularly in economic growth has been greater in Hungary than in most Central and Eastern European countries. An important feature of the Hungarian economy is that industry remained its major driving force after 1990 as well. Manufacturing attracted the bulk of foreign direct investment, primarily in the first half of the '90s and has gone through a remarkable progress that is often considered to be one of the success stories of the transition. Two key developments have shaped the spatial structure of industry during this period: a dynamic growth of manufacturing industry and an ever increasing spatial inequality of production.

Differentiation of the spatial structure has been quite vigorous in Hungary. The West-East slope got steeper and also more determinant to inequality than the economic differentiation between the North and the South. According to the level of development and economic dynamism three major regions emerged: (i) dynamically developing North-West Hungary and greater Budapest, (ii) Northern and North-East Hungary, facing a deep recession of former heavy industries (including energy production) and a crisis in agriculture; and (iii) Southern Hungary, where slow and unbalanced modernisation has been taking place (*Beluszky* 2000).

Industry is the engine of economic development in the countryside. Despite the fact that the service sector has become dominant in the whole country with over a 50 per cent share in output and employment, there exists a strong correlation between the spatial share of industrial GDP and economic development of rural regions. The decreasing relative weight of Budapest in the country's industry – mainly in employment but also in industrial production and sales – fostered spatial equalisation (with the exception of exporting activity). As for the economy of the countryside, the spatial structure of industry has moved in the direction of more differentiation at the same time (*Figure 1 and 2*).

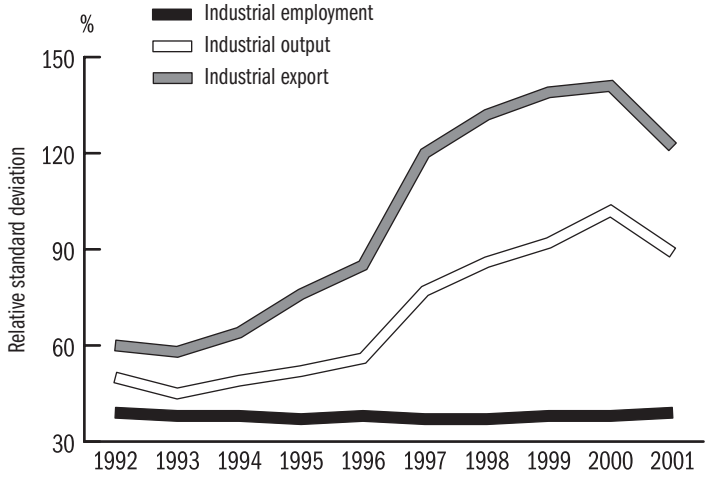
By the year 2000 regional differences in industry had significantly decreased in terms of employment, sales or exports, mainly as a result of an industrial decline in Budapest. As far as geographical features of production in the countryside are concerned, differentiation has also stalled due to a slowdown within the Northern Transdanubian area. There is no doubt that this process is undesirable both for national and regional development, since "the engine pulls with less power".

Figure 1: County level inequalities, shown by major indicators of Hungarian industry, headquarter level data (according to concentration index)



Source: *Statistical yearbooks of counties, HCSO, 1992–2001.*

Figure 2: County level inequalities as shown by major indicators of Hungarian industry, headquarter data (according to relative standard deviation)



Source: *Statistical yearbooks of counties, HCSO, 1992–2001.*

This chapter deals with two issues. First, we analyse how dynamic development and spatial differentiation of industry appeared at the firm level and what circumstances were motivating location decisions and spatial relationships among firms. Second, we discuss the development of new industrial areas as well as the concentration patterns of manufacturing.

New aspects of choosing location

The number of firms in industry has multiplied twentyfold since 1990. Privatisation and restructuring led to the disintegration of large enterprises. Some having changed profiles, reduced scales of production and altered the organisational structure thereby managing to adapt to the market economy. However, the majority of industrial firms of the '90s were actually newly established ones. Both our empirical results from analysing enterprises with more than one location and surveys of the industrial zones of Budapest suggest that approximately 20–25 per cent of the firms were able to survive the transition with greater or lesser changes. Accordingly, most of the currently active firms are new ones. Consequently, tens of thousands of industrial firms must have searched for a location in the '90s (*Barta* 2002).

Enterprises take various aspects into consideration when choosing a location. We grouped industrial firms according to the fashion of location choice. Primary factors yielding differentiation of these enterprise groups were size and ownership (foreign or domestic). Structural features were found to be less important. Accordingly, three groups of enterprises emerged:

- medium and large-sized foreign companies and their suppliers (foreign and domestic);
- large-sized domestic companies mainly with a network of small and medium-sized domestic suppliers;
- small and medium-sized companies – largely with domestic ownership.

In what follows we turn our attention to the first group since these enterprises had the most significant influence on altering the spatial structure of industry in the last decade.

There are two key aspects motivating foreign companies in choosing location: access to markets and production factors and favourable costs (*Quévit – Dicken*, 1994; and see chapters 2.1 and 2.4 in this volume). Foreign companies choose the *country* at first based on macroeconomic indicators, stability and business environment along with investment incentives (*Koltay*, 2003). Good access to markets is almost always a factor, the costs of production factors are mostly "country related" categories. Choosing a location *within the country* is in turn influenced by accessibility to production factors.

The list of regions attracting the most foreign direct investment in Hungary has hardly changed for the last decade. More than 80 per cent of FDI is concentrated in the Budapest agglomeration and in the Northern Transdanubia region. For foreign firms when choosing location the *geographical location and geopolitical position of the region* are both decisive factors. The areas close to the Western border and Budapest were favoured among for-

eign companies since this area has been part of an approximately 500km-wide zone along the EU-15 border that became attached to the Western European economic space. (This notion is supported by the geographical pattern of the contractual electronic firms of transnational companies presented on *Figure* 3.) In previous years, newly established foreign companies selected a location in this area even when signs of unsatisfied production factor (qualified labour) demand emerged. All of the four newly established car factories (Audi, Suzuki, Ford and Opel) settled in the North-Western part of the country, and three of these chose a location just 60–80 km away from the capital city. Also the majority of the supplier firms in the vehicle industry are situated in the North-Northwest of Hungary and the agglomeration around Budapest (*Figure* 4).

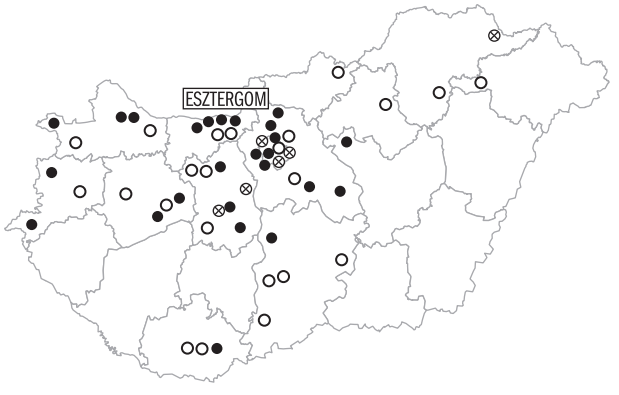
Figure 3: Contractual electronic manufacturing firms in Central and Eastern Europe, 2001

Source: *Kalotay*, 2003, table 3., pp. 46–48.

Improved accessibility of production centres and distribution hubs and a modernised transportation infrastructure will both lend the region an even more favourable position with its borders being pushed further away. According to some empirical studies, the incentive effects of motorways on the economy are perceptible in a 20–25 km zone adjacent to the actual motorway. Such an area would attract both new capital and a labour force and generate a multiplicative effect on economic development in the country

(*Bartha – Klauber*, 2000). This explains why Northern Transdanubia and Budapest being accessible via motorways, were so often chosen by foreign companies. It was also helped a lot by the fact that a new motorway route between these regions and Austria was speedily constructed

Figure 4: Shift in the supplier network of Suzuki between 1994 and 2000



Source: Collection of *Kovács, R.* and *Barta, Gy*.

Foreign companies employed the *younger and more qualified than average* labour and paid higher wages than state-owned companies (*Fazekas – Köllő*, 1998). This wage-difference can be partly explained by the age, gender and education composition of employees with higher productivity also being an important factor. The educational level of the population was higher in Budapest and Northern Transdanubia and consequently, this factor strengthened the spatial attractiveness of the area.

Further important determinants of location choice include *an already well developed local economy, an economic structure with an emphasis on manufacturing industry and traditions* and experience *in machinery production*. During the transition, Northern Transdanubia and Budapest were hurt less than other regions by the economic crisis and the recovery was also faster in this area. The local and the regional impact of *economic policy initiatives* are perhaps less important. The majority of customs-free zones were evidently concentrated in this region but regional concentration of firms was rather a result of individual corporate decisions. Surveys proved that the local corporate tax played no decisive role in attracting FDI or in creating jobs (*Keresztély – Gimesi*, 1999).

Agglomeration, networking, clusters in Hungarian industry

The long process of the evolution of industrial zones begins with the settlement of various companies in close proximity to each other (within a region). Agglomeration forces come into play, the local economy devel-

ops through new investment and jobs are created. This opens up the way for the formation of industrial cultures and the improvement of the living conditions of the region's population. The located companies are able to develop and integrate into the regional economy when the activities of economic agents become interrelated. These linkages then become stronger and become organised into *networks*. Geographic proximity is key to the evolution of networks. Networking can create clusters, complex systems of linkages among economic actors that provide various advantages of co-operation and competition for its participants. A continuous process can be captured here, starting with agglomeration forces and yielding at first networks and finally clusters. This process is not just long winding but its steps are interrelated and built on each other. Accordingly, no phase of this development process can be missed out. Clusters do not appear out of the blue. Networks and cluster initiatives have already occasionally emerged in the Hungarian economy but only in developed regions of the country. Elsewhere in Hungary, agglomeration forces have just appeared. There are several explanations for this.

During the socialist era, multi-locational companies dominated the economy, especially in industry. Company divisions were often concentrated in county-sized regions, and production sites were connected only to distant company headquarters, but not to each other. Division of labour or some sort of co-operation failed to evolve among plants of different companies. With the disintegration of large socialist (state-owned) companies, even these poor linkages within large firms disappeared.

Foreign companies entering Hungary after the political transformation found it hard to integrate into the Hungarian economy due primarily to significant differences in development and access to capital and productivity between foreign and domestic companies. As a result a dual economy evolved hampering the formation of economic districts.

Hungarian regional development policy provided no clear support for the evolution of industrial districts. On the one hand, the government's regional policy aims at reducing spatial inequality and thus, supports underdeveloped regions the most. On the other hand the development of economic zones is in contrast with the aims of spatial decentralisation and deconcentration. (This contradiction may at most be resolved by some sort of a concentrated decentralisation.) It is not by chance that before 1996 guidelines for special industrial zone construction were not put in force and the first programs for cluster-development were formulated at governmental level only in 2000.

The concentration of small and medium-sized companies in large cities

A large proportion of small and medium-sized companies meet public demand, providing services or work as a subcontractor for other firms. Cities, particularly bigger cities offer not only larger markets or a greater number of orders, but also conditions that are indispensable for operating enterprises (such as a large labour market, wide range of services, an abundance of and accessibility to information).

The measure of urban concentration of firms follows roughly the hierarchy of settlements. The enterprise-attracting ability of cities corresponds to the size and traditions of the city and regional specialities in the networks of settlements. As far as *firm density* (number of enterprises per capita) is concerned, Hungary is broken up into two parts along the Balassagyarmat-Békéscsaba line. Firm density is in connection with the economic development and dynamism of regions, as well as the specific structure of sectors. Since a large part of the small- and medium-sized companies are connected to real estate businesses, commerce, industry and construction, they have a strong presence in regions with a developed economy or tourism as well as in large cities.

Industrial clusters around larger companies

In Hungary the automotive industry offers the best example for agglomeration. There was no car manufacturing in Hungary before 1990, so it was multinational firms that established the first companies in this industry. The vehicle industry has become a crucial sector of the Hungarian economy for a decade. Approximately a hundred and fifty vehicle manufacturing firms have located in the small or large cities of Northern Transdanubia and the agglomeration area of Budapest. The most important centres are Győr, Budapest, Szentgotthárd and Esztergom but 40–45 settlements have also attracted companies operating in the vehicle industry.

Despite the multinational presence, supplier activity still stands at a rather low level. A supplier pyramid with four levels has been created with foreign car factories at the top. At the second level there are mainly foreign suppliers along with Hungarian integrator companies (Rába Rt., Imag-Ikarus etc.) and the third level is for the suppliers to the second level (mostly Hungarian medium and large companies: Bakony Művek Rt., MMG Automatikai Művek, Salgoglas Rt., etc.). We find small Hungarian companies at the bottom of the pyramid. Overall, the Hungarian supplier rate of foreign companies is remarkably low reaching just 10–20 per cent and in the case of multinational companies does not even exceed 10 per cent (*Kopasz*, 2001). The rate of domestic suppliers is hardly changing and in many cases, is even decreasing – by the emergence and settlement of foreign supplier networks.

The key exception is Suzuki, a Japanese car manufacturer that has created a wide supplier network. This is primarily due to the fact that Suzuki as a Hungarian car can only be exported to the EU if the Hungarian value added reaches the 50 per cent threshold with another 10 per cent being the supplier rate of the EU. To let the Hungarian suppliers attain this high rate, Suzuki provided notable help in transferring technology, acquiring and improving the machine stock and financing production. In recent years the number of suppliers has increased with the majority of the new suppliers coming from the agglomeration area of Budapest and the Northwestern part of the country (*Figure* 4).

Industrial parks, enterprise zones

In developed countries industrial parks were established *en masse* in the 1970s as a result of disintegration of Fordist multi-functional production structures in manufacturing. Masses of small- and medium-sized companies were searching for customers and an opportunity to become suppliers of large companies and to become active on the markets of large cities. Location choice was rather spontaneous but it gave rise to industrial parks in dynamic regions of the economy. New streams of urban development – the disintegration of urban functions in space – also assisted the evolution of industrial parks in suburban areas, where better conditions with lower prices were created for a modern economy.

The first industrial parks emerged in the first half of the 1990s in Hungary, as a result of the efforts of local governments and companies alike – for example in the cities of Győr and Székesfehérvár. At the governmental level, the plan for creating industrial parks appeared in 1996, yielding a steady rise in the number of industrial parks registered in Hungary (28 in 1997, 75 in 1998, 112 in 1999 and 145 in 2001). Nevertheless, a survey conducted in 2000 (*Laky*, 2000) reports that the number of industrial parks complying with the necessary conditions (at least 10 enterprises and 500 jobs created in the first five years) is only 20–25. Moreover, in most cases some companies were already operating on the actual location before creating the industrial park itself. Thus, the great and increasing number of industrial parks does not imply any accelerated spatial agglomeration of industry for the present. (Official figures should either be taken as tweaking statistical data or a desperate attempt by local governments to get access to all attainable state grants). At the moment numerous and evenly dispersed industrial parks in the country serve neither qualitative aim of economic development nor guidelines of regional development aiming at spatial equalisation. The plan for increasing the number of industrial parks at a rapid pace (250 industrial parks prior to 2010) or to build up networks among them is just too ambitious.

As for the plans set by enterprise zones, even less success can be found. In the second half of the 1990s, 11 zones were designated in Hungary – most of them in border regions or in areas that were lagging behind. Enterprise zones are designated areas created in order to develop the region with specific financial support schemes aimed at expanding production and services. For various reasons (underdeveloped economy, weak firm activity, low level of investment, as well as small and poorly organised state subsidies etc.) economic development has not accelerated in these regions: only two out of 11 such zones (the region of Záhony and the Zala Regional Zone) showed any results.

Cluster building

Clusters are spontaneous organisations with a bottom-up structure that were set up by agglomeration economies and co-operation among enterprises in geographical proximity. Spontaneous development created "cluster-embryos" at most, such as the one in Budapest on Óbuda, formerly "Shipyard" Island. (However, it seems that it was not able to fend off powerful investors.)

The encouragement of creating clusters by external devices lays within the remit of regional development policy. Indeed, the Pannon Automotive Industrial Cluster (PANAC) was established by the assistance of the Ministry of Economy in 2000 with the involvement of banks, large car manufacturers, a few suppliers and the West Transdanubian Regional Development Agency. PANAC was followed by other artificially created clusters in tourism, wood-work industry etc., but almost only in developed regions of the country. However, these clusters hardly presented any results: their organisation remained one-sided, the production co-operation hardly increasing over the past few years.

There are lots of unanswered questions in connection with the constructing of clusters. It is doubtful whether the Hungarian economy has achieved the phase of development that allows for cluster construction. Experts had also to question in the case of other countries if it is possible at all to substantially accelerate a bottom-up process by external supports.

New spatial structure of industry

Altering regional scales

Industry used to be fairly spread out in space, but regional differentiation has altered its structure. The three regions most developed industrially in the country – West and Central Transdanubia and the agglomeration area of Budapest – were producing two thirds of the industrial GDP in 2000. Regions of Southern Transdanubia, the Northern Great Plain and the Southern Great Plain contributed to industrial GDP by approximately 8

per cent each. This is barely exceeded by the output of the North Hungarian region, having suffered the greatest loss during transition, (*Table 1*).

Table 1: Regional division of industrial production

Region	1980 Adjusted national income	2000 Industrial GDP
West Transdanubia	9.8	17.4
Central Transdanubia	16.5	18.2
Central Hungary	30.6	29.4
South Transdanubia	7.4	7.1
North Hungary	17.9	10.3
North Great Plain	8.9	8.6
South Great Plain	9.2	8.7
Total	100.0	100.0

Source: *Regional Statistical Yearbook, 2000*. HCSO 2001, *Budapest; Regional Statistical Yearbook*. HCSO 1981, Budapest.

Regional division of industrial sectors

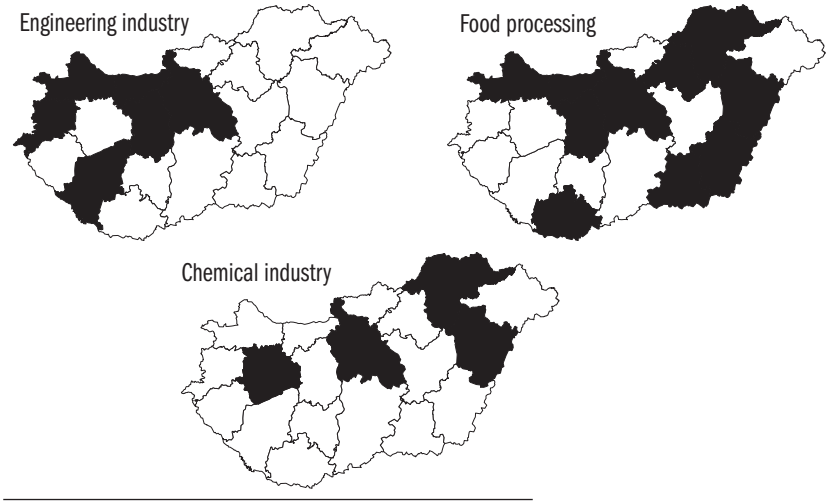
The sectoral structure of industry has radically changed over the last 10–12 years. The output in mining shrank to one third of its output a decade ago and production in textile and wearing apparel industries reached just two thirds of the 1990 level. Production in other sectors (the food industry, chemical industry, industry of non-metallic mineral products, metallurgy, electric energy industry) have also failed to reach their 1990 level. However, all these industries but mining have already passed through the worst period. In sharp contrast with traditional sectors, output in machinery equipment has risen more than fivefold since 1990. As for other branches, the wood, paper and printing industry managed to increase its share within industry (bar machinery) mainly due to the good performance of the printing industry.

The industrial structure of manufacturing is dominated by machinery (42 per cent), which, along with the food industry (15 per cent) and the chemical industry (14 per cent) provided almost three quarters of industrial production in 2001. As a result of differences in work intensity and productivity, shares of employment are somewhat different from shares of production. Accordingly, the above mentioned three sectors account for 59 per cent of employment. There are significant changes in the spatial location of industry, too.

Machinery, the chemical industry, the manufacture of metal products and the wood, paper and printing industries are highly concentrated in space. Sectors drawing on natural resources and raw materials in Hungary, such as food, textile and wearing apparel and non-metallic mineral industries are dispersed. The regional allocation of industrial sectors has altered over the years: machinery is now spread out more evenly in North

Transdanubia and the agglomeration area of Budapest as counties such as Komárom and Vas caught up with Budapest, Fejér and Győr-Moson-Sopron. Furthermore, Pest and Somogy joined the counties above as locations of machinery production. As opposed to this dispersion the spatial concentration of the food industry has been prevalent of late with 12 counties producing 84 per cent of the output compared with just 75 per cent three years ago. (*Figure 5*).

Figure 5: Regional structure of industrial sectors in 2001 (counties producing 83–88 per cent of production value)



Source: *Regional Statistical Yearbook, 2001*. HCSO

A majority of counties feature only a few dominant industries. A more diversified structure with considerable production in various sectors can only be found in Budapest and three counties: Pest, Győr-Moson-Sopron and Borsod-Abaúj-Zemplén. In various areas of the country, there is no notable industrial activity at all. Production districts are taking shape in some industrial sectors, such as machinery in Northern Transdanubia, the chemical industry in the agglomeration area of Budapest and Borsod-Abaúj-Zemplén and wood, paper and printing industries in the agglomeration area of Budapest.

The structure of Hungarian industry – compared with its former complexity – became even more one-sided. Machinery plays a dominant role in the new structure. This can be regarded as a positive change not just because of its progressive nature, but also because this structure better suits the circumstances of the country. On the one hand, machinery is already an industry complex in itself (the production of machines, equipment, the electronic industry, precision engineering and the vehicle industry form the

greatest part of the machinery industry in Hungary). On the other hand it contributes to the overall development of Hungarian industry by enhancing general productivity. Unfortunately, the spatial structure of industry moved to be less favourable. Not only did the spatial differentiation of development become strong, but industrial areas of various regions became impoverished and undiversified.

Industrial spaces, industrial concentrations and regional centres

Industrial zones and clusters as such have not yet evolved in Hungary and what we call industrial spaces are essentially spatial agglomerations of industry. These areas of concentrated activity include not only great city-centres but also smaller settlements in their area of agglomeration. Four spatial areas of industrial concentrations can be found – primarily on the basis of the scale of industrial concentrations – covering basically the whole Hungarian industry. These areas represent different types of industrial concentrations at the same time: the traditional (old-style) industrial cities, concentrations around large cities, the agglomeration of Budapest and the contiguous industrial region of Northern Transdanubia. Manufacturing companies, settled in cities belonging to these four types of structure, are responsible for two thirds of the manufacturing equity in Hungary. Furthermore, these firms are responsible for three quarters of the industrial exports (30 per cent from the agglomeration of Budapest, nearly 40 per cent from the cities of Northern Transdanubia; from another perspective, 60 per cent stems from the regional centres – including Budapest).

Traditional or *"survivor" industrial cities* include small and medium sized cities with an economy built on industrial monoculture that has still remained typical up to the present. The number of these cities is about two dozen including industrial towns that used to be the stronghold of communist industrialisation. Over the past few years, the number of such towns declined with the most important ones at the moment including Dunaújváros, Tiszaújváros, Kazincbarcika, Paks and Százhalombatta. Some of the towns have successfully pursued reforms after the political transformation mainly owing to their thriving industry (particularly in chemicals). Economic diversification of these cities is unfortunately not typical even today, but the reorganisation of some major companies, successful privatisation and investment mainly from foreign sources have strengthened the economic position of these cities. However, most of the traditional industrial cities had to face decline and atrophy (especially cities where key industries were mining and metallurgy).

Large cities are preferred areas of economy and industry. The industry of large cities incorporates many key elements of the economy: modern services, headquarters of big firms and often manufacturing production is lo-

cated in cities to make use of the labour pool, the proximity of business partners and a large consumer market. Moreover, it can be posited that the majority of small and medium-sized companies are concentrated in large cities. Two thirds of all firms are concentrated in county towns, of which more than 40 per cent may be found in Budapest alone. The largest cities play a role in concentrating enterprises in the region in the same way as Budapest does in the country. Debrecen has attracted nearly 70 per cent of firms in Hajdú-Bihar county, Szeged has two thirds of all those in Csongrád county, Pécs has 64 per cent of the firms of Baranya. The capability of attracting firms is somewhat weaker in Győr and Miskolc (since other important centres are operating in the respective regions, too). A strong relationship can be detected between size, competitiveness and the industrial and economic opportunities of cities. Large cities also attract most of the foreign direct investment, too. In 2000, investment into the 15 "most competitive" cities reached more than 70 per cent of all investment in the country (and this share is seen rising through time).

North Transdanubia. In comparison with other Hungarian regions, the economy developed dynamically in the four counties of North Transdanubia during the early nineties. Several key regional characteristic features of economic development emerged that are completely missing or not present at the same level or quality elsewhere. Among the favourable circumstances of economic development, a beneficial geopolitical, geographical position (namely the direct and strong economic linkage with the agglomeration of Budapest and with the Central European region), developed infrastructure and qualified labour pool related to manufacturing traditions should be emphasized. It should also be mentioned that this region has continuously benefited from central and local government incentives.

Foreign capital has been a decisive factor in investment since 1989. Investment was concentrated in manufacturing, more specifically, in machinery. Green-field investments brought in modern industries (vehicle industry and partly the electronic industry) that proved to be a driver for industry as a whole.

The economic evolution of the last 12 years has created new advantages in the region and a new economic structure has emerged. Recent tendencies imply that an industrial district is taking shape in the region covering ever more settlements. Note that 21–22 cities of the region already belong to the top 50 cities of the country in terms of the value of exports, and of the top five cities – Győr, Székesfehérvár, Szentgotthárd, Szombathely and Esztergom are responsible for more than 40 per cent of the county's exports. It makes the formation of industrial districts more difficult that local connections among companies are poor (first of all between large foreign

companies and domestically owned small and medium-sized companies) and the local diffusion of innovation is rather slow.

In the *agglomeration area of Budapest,* a complex set of developments are characterising industrial transformation. Although robust deindustrialisation is taking place in the capital, it is still the largest industrial concentration of the country with employment in industry reaching 100 thousand. Among the three key sectors – chemical industry, machinery and the food industry – machinery has been developing the most. Also the decisive role of Budapest is becoming stronger in the economy and industry. An effective division of labour is emerging between the agglomeration area of Budapest and the region of Northern Transdanubia. Multinational industrial companies located in North Transdanubia are consumers of the modern services of Budapest. The region of North Transdanubia and the agglomeration area of Budapest are transforming more and more into one continuous area that is part of a dynamically developing international region (a strip of some 500km) connected to the Western European economic space.

Regional centres of industry. In the last 10–12 years the competitiveness of regions and cities was measured mostly by the ability to attract capital from external sources. Successful regional strategies these days focus on attracting foreign capital, international tourism or gaining state sources. The ability to attract investment is well represented by the *concentration of medium and large-size companies in a settlement*. According to this, the key centres are:

- Budapest (in a leading position).
- Győr (having emerged as winner from a group of five, so called "counter-pole" after the political transformation).
- The group of county seats, along with Budaörs and Dunaújváros.
- Some medium sized cities in the agglomeration of Budapest: Budaörs, Gödöllő and Vác.
- Cities located in a 60–80 km neighbourhood around Budapest: Cegléd, Esztergom, Gyöngyös, Jászberény, Tata, Tatabánya.
- Old and new industrial cities apart from Dunaújváros: Tiszaújváros, Salgótarján, Ajka, Kazincbarcika, Orosháza, Esztergom, Mosonmagyaróvár.

The concentration of the headquarters of large companies in large cities functioning as regional-centres is strengthening these settlements. Budapest, Győr, Székesfehérvár, Szeged and Debrecen play such a role. One third of the large industrial companies (from the Top 100) have headquarters in Budapest, another third in the North Transdanubian region, followed by the Great Plain region with only a 20 per cent share. In Northern Hungary, which used to be a leading centre of industry in the eighties, there is no such outstanding centre at the moment.

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2.4 Spatial concentration of domestic and foreign investment enterprises in Hungary*

Károly Fazekas

Introduction

Large scale dispersion, polarisation and rank stability of regions in terms of their labour market performance is not a unique feature of Hungary or other transitional economies. A series of empirical studies revealed that the variation in unemployment or employment rates between regions within countries was considerably greater than disparities between countries and there was a tendency towards polarisation in the '90s. (*Taylor and Bradley* 1997, *Padoa Schioppa Kostoris* 1999, *Overman and Puga* 1999, 2002) Dispersion and polarisation are driven by changes in the spatial distribution of the labour force (demographic trends, migration patterns, participation decisions) or changes in the spatial distribution of employment.[11] Theoretical considerations of the *New Economic Geography* (*Fujita – Krugman – Venables*, 1999) and empirical studies (*Overman and Puga* 1999, *FKPS* 2002, *Suedekum* 2004) revealed that the polarisation of local labour markets (LLM) is mainly the result of employment changes as a consequence of agglomeration forces in economies (see also Chapter 2.1 on this).

Because of data constraints at the level of local labour markets most of the empirical studies on the spatial pattern of job creation deal with the NUTS-2 or NUTS-3 level of regions. One of the rare exceptions is the paper of *Peri and Cunat* (2001). They investigated the geographical determinants of job creation at the level of LLM in Italy between 1981–1996. They found that local agglomeration economies, in particular input-output linkages, social characteristics and the development of the local infrastructure were the most important determinants of the employment growth across Italian local labour markets.

Empirical evidence on the regional evolution of CEE labour markets shows similar scenarios. Increasing regional differences and polarisation are mainly determined by the changing spatial distribution of jobs on the labour market.[12] One of the main reasons for the dramatic change in the spatial distribution of firms and jobs in CEE countries lies, of course, in the different spatial allocation preferences of firms operating in a socialist planned economy and in a market economy. It is well known that full employment and scarcity of labour are the main features of the socialist regimes. (*Kornai* 1980) In the case of Hungary labour demand was evenly distributed across skill structures and across local labour markets. Increasing scarcity of labour had encouraged firms to establish affiliates even in the less developed regions where labour (although less educated) was available. In the first three years after the collapse of the socialist economy approxi-

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11 *Elhorst* (2003) provides an integrated overview of theoretical and empirical explanations used in applied literature on regional unemployment differentials.

12 As in other CEE countries internal migration flows have remained at a very low level in Hungary (*Burda and Profit* 1996, *Fidrmuc* 2001, *Rutkowski* 2001, *Kertesi and Köllő* 2001, *Cseres–Gergely* 2004) Using aggregate in and out migration data by settlements, *Kertesi* (2000) has proved that migration behaviour reacts to economic incentives. Regions with high unemployment rates have suffered substantial migration losses while those with a low level of unemployment had migration gains. The magnitude of this effect, however, is modest and likely to remain so in the near future. According to Kertesi's calculation even migration of a considerably higher level than the current figures would not lead to a sufficient narrowing of the regional unemployment rate differentials in the near future.

mately 1.5 million jobs (more than 30 per cent of the total) disappeared in Hungary. The high intensity of job destruction was then accompanied by dynamic job creation in the following years of recovery. (*Kőrösi* 2003) Research results show invariably that while the intensity of job destruction portrays an equal regional distribution, the intensity of job creation follows an uneven spatial pattern. (*Nemes-Nagy* 2000, 2001)

An important factor behind the changing location preferences of firms is the massive inflow of foreign direct investment and the fast increase of foreign firms' employment during the 90's. The sudden collapse of the socialist system offered a great opportunity for the CEE countries to attract a huge amount of FDI in a short period of time. These countries had a number of industrial regions where relatively cheap and highly qualified labour was available. From the host countries' point of view, foreign investments are assumed to play a crucial role in economic restructuring (*Barrell and Holland*, 2000, 2001). Foreign capital can decisively promote the economic restructuring of local economies through the provision of capital, modern technologies and work organisation practices. It is also a means for integration into the global economy and could provide positive spillovers of know-how for domestic firms in the region (*Schoors and van der Tol* 2001, *Sgard* 2001, *Günther* 2002, *Konings* 2000).

Table 1: Characteristics of foreign owned enterprises (FEs) in the corporate sector (All enterprises = 100%)

	FEs total	100% foreign ownership	Majority foreign ownership	Majority domestic ownership
Shares of FEs in the corporate sector				
Number of enterprises	8.1	5.4	1.6	1.2
Paid in capital	52.8	23.5	21.6	7.6
Value added	43.3	22.6	15.2	5.5
Net sales	46.8	25.9	14.7	6.2
Employees	25.0	13.9	8.2	2.9
Exports	83.0	n.a.	n.a.	n.a.
Average of FEs compared to the average of the corporate sector				
Value added/employees	173.4	163.2	185.2	188.3
Net sales/employees	187.5	187.1	179.8	211.0
Gross wages/employees	157.2	155.9	159.5	157.3

Note: Financial sector excluded.
Source: *HCSO* (2004).

Hungary has been quite successful in attracting FDI for the last ten years and several studies confirmed that FDI was the leading factor in the economic success of the recent years. (*Nemes-Nagy* 2000, 2001, Mickiewicz 2000) In 2002, 8.1 per cent of all Hungarian firms were foreign-owned en-

terprises (FE), together employing 25 per cent of the corporate sector. FEs were responsible for 46.8 per cent of net sales, 43.3 per cent of the value added and 83 per cent of net exports in the corporate sector (*HCSO* 2004). A large inflow of foreign FDI had a great impact on the labour market. During the years of post-transition economic recovery (1993–2002), corporate sector employment increased by 22 per cent, while more than two thirds of net job creation took place within the group of foreign enterprises.

The Core-Periphery concept used by the *New Economic Geography* models suggests that, in the presence of increasing returns and in the absence of congestion, local externalities and insufficient labour mobility, a stronger economic integration may widen regional gaps in terms of employment rates. Increasing flows of FDI are a crucial element of this process. Hence the allocation preferences of the foreign firms differ from those of the domestic enterprises (*Krugman*, 1991 a,b,c,; *Krugman and Venables* 1990). A massive increase of FDI in the world economy had a substantial impact on regional differences of the host countries and contributed to the regional polarisation process of recent years. The success of regions to attract FDI depends upon the competitive advantages of regions and is created and sustained by highly localised processes which are reinforced by the location capacity to attract resources from outside. Backward areas, not being attractive locations for foreign investors will suffer an increasing marginalisation. "The geographical polarisation of (local and foreign) productive activities, once it has occurred, tends to be stable and self-sustaining, thus making inversion somehow improbable and strengthening the coexistence of regional peripheries and centres within national borders." (*Iammarino – Santangelo* 2000).

Hungary together with nine other accession countries became a member of the European Union on the 1st of May 2004. We expect a further integration of accession countries to the enlarged EU economy and a further increase of FDI towards CEE regions. How would this process affect regional disparities of these countries? Which regions will be the winners and the losers in the years to come? Would these countries achieve a more balanced regional landscape within the enlarged European Union using the available community resources of regional development policy or should we expect a further widening of regional differences? Would the losers of the transition also become the losers of the accession or is there a real chance to stop the further deterioration of backward regions? These are crucial aspects of the possible impacts of EU enlargement and policy makers should find appropriate responses to mitigate the polarisation effects of increasing integration.

To find answers to these questions we will go, in the second part of this chapter, in some depth into the Hungarian empirical evidence. We offer

an analysis of the difference between the spatial distribution of foreign and domestic firms' employment in the last ten years. The impact of spatial concentration of foreign and domestic corporate employment in local labour markets will be measured and the most important explanatory factors of spatial concentration will be identified. The final part covers conclusions and a few policy relevant messages.

Spatial distribution of foreign and domestic firms' employment in Hungary

In the following part of the paper we will investigate the spatial distribution of corporate sector employment at foreign and domestic firms and will analyse the impact of the increasing share of foreign firms' employment on the regional differences and polarisation of local labour markets in Hungary.

Data

The micro-regional distribution of the corporate sector will be analysed using the IE-FDI Micro-regional Database of the IE–HAS. The source of this data is the firm level Balance-sheet Corporate Database of the HCSO.[13] This covers all incorporated firms and practically all firms employing more than five persons. In the IE-FDI Micro-regional Database a set of balance sheet data of all foreign and domestic enterprises[14] was *separately* aggregated at NUTS-4 level regions. Data covers all years between 1993 and 2002. We will use NUTS-4 region level labour market data and a set of NUTS-4 region level background variables. Labour market data is aggregated from three settlement level databases: (a) the Unemployment Register Database of the National Employment Office, (b) the TSTAR Database of the HCSO and the IE-HAS, (c) the Census Database of the HCSO.

In the existing HCSO-FDI Regional Database firms are classified into regions according to the location of the headquarters of the firms. This method, however, overestimates the spatial concentration of firms because premises located in different regions are taken into account as if they were located in the headquarters' region (*Hamar* 1999). Since the balance sheets of the firms contain the settlement code and the number of employees of each establishment of enterprises, this bias can be reduced by the re-distribution of firms' data between micro-regions in proportion to the branch's share in the total number of employees of the given firms.[15] Variables used in the following analysis are described in the Appendix.

Absolute spatial concentration of working age population, foreign and domestic firms' employment

Studies on spatial distribution of FDI (*Hamar* 1991, *Fazekas* 2001) revealed that FDI inflows were highly concentrated in certain regions so it

13 The Balance–sheet Corporate Database does not provide relevant data on the spatial distribution of employment in the financial sector, therefore this sector was excluded from the micro–regional data base.

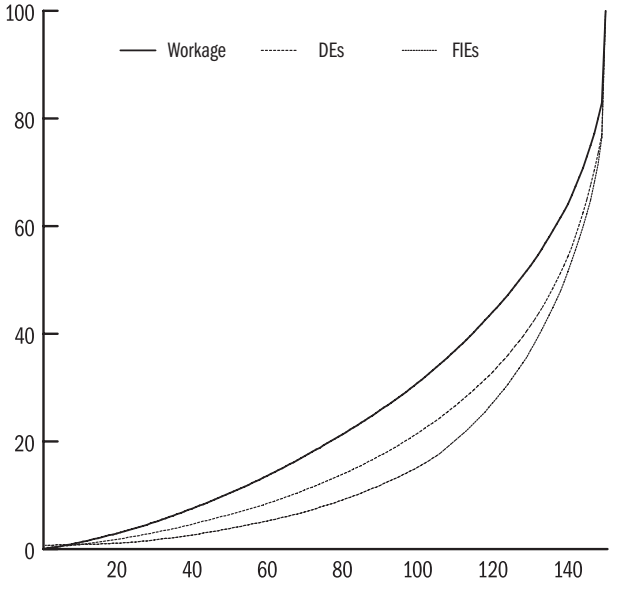
14 Classification of foreign and domestic enterprises follows international standards: firms with more than 10 per cent foreign share are regarded as foreign owned enterprises (FEs') The average share of foreign capital in FEs was 82.7 per cent in 2000.

15 We could not carry out this correction in the case of the financial sector hence firms operating in the financial sector were excluded from the micro–regional database.

comes as no surprise that the concentration of FEs' jobs is much higher than the concentration of working age population and higher than the concentration of DEs' employees (see Figure 1.). Nevertheless the difference between the concentration of jobs at FEs and DEs is not particularly high. The Gini coefficients of the working age population, DEs' employees and FEs' employees were 0.50, 0.63 and 0.70 in 2002. 17.1 per cent of the working age population, 23.0 per cent of the domestic firms' employment and 23.5 per cent of the foreign firms' employment were concentrated in one region: in the capital of the country. The top quartile of the micro-regions (37 regions) having the highest shares covered 61.1 per cent of the working age population. 73.3 per cent of jobs at DEs and 78.3 per cent of jobs at FEs in 2002.

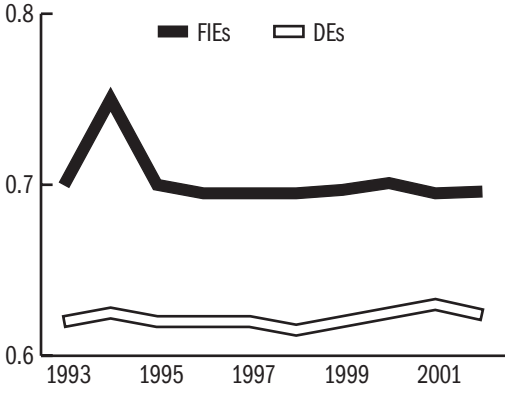
The time path of Gini coefficients shows that the difference between the degree of absolute spatial concentration of jobs at FEs and DEs has not changed and neither has the degree of concentration decreased over recent years (Figure 2.). However the difference between the shares of the top and bottom quartiles in the case of DEs' employment somewhat decreased over the years. The share of the top quartiles increased from 70.4 per cent to 73.3 per cent while the share of the bottom quartiles decreased from 4.4 per cent to 3.8 per cent between 1993 and 2002.

Figure 1: Spatial concentration of working age population, FEs' and DEs' emloyment in Hungary in 2000 (Lorenz curves)



Note: Financial sector excluded.
Source: *IE-FDI Database*.

Figure 2: Time path of spatial concentration of FEs' and DEs' employment (1993–2002) (Gini coefficients)



Note: Financial sector excluded
Source: *IE-FDI Database*.

Relative spatial concentration of FEs' and DEs' jobs

It is obvious that corporate jobs are concentrated in regions where a relatively large pool of working age population is available. Using relative concentration indices we could measure the difference between the spatial distribution of FEs' or DEs' jobs and the distribution of a benchmark variable (such as the working age population) by the following way:

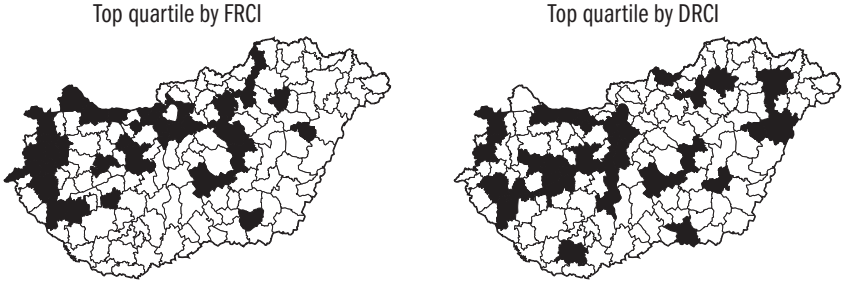
$$FRCI_i = (FL_i / \Sigma_i FL_i) / (WAPOP_i / \Sigma_i WAPOP_i)\ 0 < FRCI < \infty \quad (1)$$

$$DRCI_i = (DL_i / \Sigma_i DL_i) / (WAPOP_i / \Sigma_i WAPOP_i)\ 0 < DRCI < \infty \quad (2)$$

Where:
FL: Number of FEs' employees
DL: Number of DEs' employees
WAPOP: working age population
(i) = region

The indexes compare the share of FEs' and DEs' jobs located in micro-region *i* with the share of working age population located in region *i* in the year *t*. If $FRCI_i$ or $DRCI_i = 1$ in a micro-region it means that the share of FEs' or DEs' jobs located in the region matches that of the share of the working age population. When the regional FL or DL share is greater than the region's WAPOP share, the concentration of foreign jobs is greater than the concentration of the working age population. Conversely when $FRCI_i < 1$ or $DRCI_i < 1$ it means that the region's FL share or DL share is less than its share of working age population. The trend of FRCI or DRCI over time gives us a picture of the changing distribution of foreign or domestic firms' jobs at the level of micro-regions.

Figure 3: Top quartiles of micro-regions according to the relative concentration indexes of FEs' and DEs' jobs in 2002



FRCI = relative concentration index of FEs' jobs. DRCI = relative concentration index if DEs' jobs.
Note: Financial sector excluded.
Source: *IE-FDI Data Base*.

The correlation coefficient between the FEs' and DEs' concentration indices was 0.43 in 2002. It indicates that besides the degree of concentration there are certain differences between the spatial distribution of FEs' and DEs' employment. Figure 3 shows top quartiles of micro-regions according to their relative concentration indices in 2000. One can see that the relative concentration of FEs' jobs is the highest in most of the micro-regions along the Austrian border but also there are several regions of the top quarter in the eastern part of the country as well. The relative concentration of DEs' jobs does not show a clear east-west division.

Determinants of relative concentration of foreign and domestic firms

We can give a more detailed picture of the determinants of the spatial concentration of FEs' and DEs' jobs by estimating the *relative concentration* of jobs by regressions using selected explanatory variables. In the case of Hungary, a series of empirical studies revealed that regional differences in the unemployment rates of micro-regions have been determined by three main factors: the industrial past of the regions, the proximity to the western portals and the education level of the local labour force (*Fazekas* 2000, *Nemes-Nagy* 2004). Some papers (*Hamar* 1999) revealed that regions along the Austrian border attracted exceptionally high FDI inflows from Austria. Using the following four variables[16] as proxies of these factors we calculated repeated cross section regression estimation for the 1993–2000 period: EDU *(average number of completed school years in the local population, age 7+)* as a proxy of the education level of the local labour force, INDUSTRY *(average ratio of employees in industry in the working age population in 1990*) as a proxy of the industrial heritage of the region, ABORDER (a dummy variable to identify micro-regions along the Austrian border) as a proxy of special social and economic network existing between Austrian and Hun-

16 Variables used in the equations are described in Table A2 in the Appendix.

garian regions along the border, DISTANCE *(distance of the region's centre from the most important crossing point at the Austrian border*) as a proxy of the proximity of the region to the western portals.

This approach produces estimates of the changing explanatory power of each variable over the 10 years by the following way:

$$FRCI_{it} = \alpha_1 + \alpha_2 EDU_{it} + \alpha_2 INDUSTRY_{i,90} + \alpha_3 DISTANCE_i + \alpha_4 ABORDER_i + u \quad (3)$$

$$DRCI_{it} = \beta_1 + \beta_2 EDU_{it} + \beta_2 INDUSTRY_{i,90} + \beta_3 DISTANCE_i + \beta_4 ABORDER_i + z \quad (4)$$

Where:

FRCI = relative concentration index of FEs' jobs

DRCI = relative concentration index of DEs' jobs

EDU = average number of completed classes in the local population, age 7+

INDUSTRY = average ratio of employees in industry in 1990

DISTANCE = distance of the region's centre from the Austrian border on road (km)

ABORDER = dummy variable. Austrian border regions = 1, other regions = 0

α_k, β_k = regression coefficients

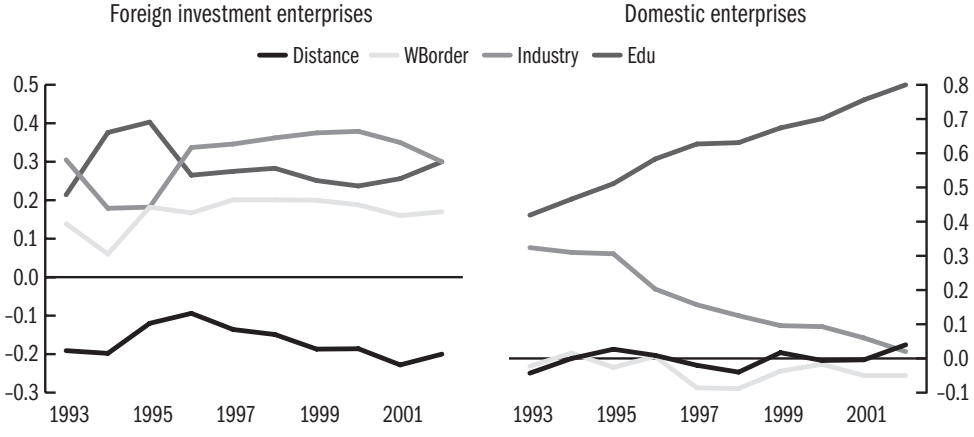
u, z = error terms

t, = years of observation (t = 1993–2002)

i = micro-regions (i = 1–150)

The objective of the multiple regression estimation was to discover whether explanatory variables are significant and to estimate the direction and the relative importance of each explanatory variable over recent years. We expect significant positive impact of EDU, INDUSTRY and ABORDER variables and significant negative impact of DISTANCE variable on the relative concentration of FEs' employment. We expect significant positive impact of EDU and INDUSTRY variables and do not expect significant impact of DISTANCE and ABORDER variables on the relative concentration of DEs' employment. The results of the estimations are summarised in Table A1 in the Appendix. Adjusted R^{2}-s are between 0.38 and 0.51 in the case of foreign firms and between 0.42 and 0.65 in the case of domestic enterprises. Figure 4. shows the time path of the standardised correlation coefficients in both groups. Our results correspond to most empirical studies on regional distribution of FDI in CEE countries. One can see that:

Figure 4: Time path of standardised coefficients of linear regression estimations of relative concentration indexes (1993–2002)



• EDUCATION had significant explanatory power over the years. Both FEs' and DEs' jobs are concentrated in regions with an educated local population.

• In the case of domestic firms, DISTANCE and ABORDER variables had no significant effects. The explanatory power of EDUCATION increased while the explanatory power of INDUSTRY decreased over the period and it had no significant effect in the latter years. This tendency corresponds to the changing sector composition (increasing share of service sector and decreasing share of industry) in the group of domestic firms.

• In the case of foreign firms, all four variables had significant effects on the relative concentration. FEs' jobs are concentrated in industrial regions close to the Western border. The BORDER dummy as well as the EDU variable had significant positive effect on the FEs' jobs concentration. Apart from the turbulent first period of transition, there were no major changes in the explanatory power of variables during recent years.

According to our evaluation, one of the most important messages of these results is that the education level of the local population is an important determinant of the spatial distribution of both FEs' and DEs' employment. Note that the effect of the EDU variable does capture the effects of a number of externalities offered by urbanised regions. Regions with a relatively highly educated population have a high share of the service sector, developed infrastructure, high geographical density of firms, high density of NGOs etc. These variables have no significant effect in addition to the EDU variable and when we replaced the EDU variable with any of them the explanatory power of the estimation decreased.

Impact of spatial concentration of foreign and domestic firms on labour market differences

Table 2. indicates that the spatial concentration of corporate sector employment in the developed urban centres has substantially increased labour market differences during recent years. Allocation preferences of foreign firms had a further important positive impact on these processes. Corporate employment rose by 404 thousand (22.2 per cent) or 6.6 per cent of the working age population in Hungary between 1993 and 2002. More than two thirds of net job creation was carried out by foreign firms. The number of FEs' employees increased by 91.1 per cent while the number of DEs' employees increased by 8.8 per cent.

Corporate employment expanded by 31 per cent in high employment regions and decreased by 4.6 per cent in low employment regions. These changes contributed to a 11.2 percentage points rise in employment rates in high employment regions and a 0.9 percentage point decline in low employment ones.

The vast majority (67 per cent) of the net increase happened within the foreign enterprise sector and 64 per cent of the increase of FEs' jobs was concentrated in the high employment regions. The number of FEs' jobs rose by 106 per cent in high employment regions and increased by 79.2 per cent in low employment ones. These changes contributed to a 7.1 percentage point rise in employment rates in high employment regions and a 1.6 percentage point gain in low employment ones.

The number of DEs' jobs increased by 13.8 per cent in high employment regions and decreased by 14.6 per cent in low employment ones. These changes increased the employment rate by 4.1 percentage point in high employment regions and decreased the employment rate by 2.5 percentage point in low employment ones.

Table 2: Changes of corporate employment in the low and in the high employment regions between 1993 and 2002

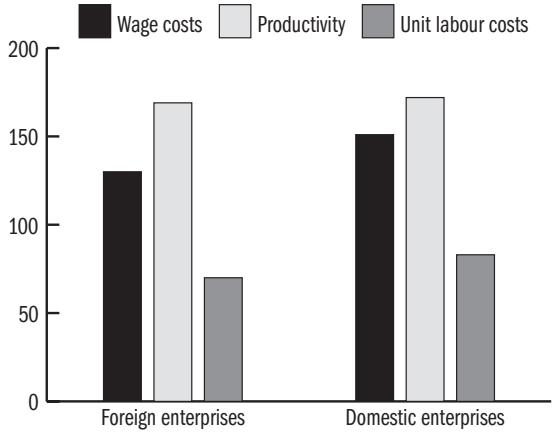
Quartiles of micro-regions according to the average of employment rates in 2000	Changes in the number of employees 1993 = 100%			Changes in the number of employees as a percentage of the working age population		
	DEs	FEs	Total	DEs	FEs	Total
Low employment regions						
Top quartile	–14.6	+79.2	–4.6	–2.5	+1.6	–0.9
High employment regions						
Bottom quartile	+13.8	+106.0	+30.9	+4.1	+7.1	+11.2
Country total	+8.8	+91.1	+22.2	+2.2	+4.4	+6.6

Note: Financial sector excluded.
Source: *IE-FDI Database*.

Why do not corporate jobs flow towards less developed regions in Hungary? – Regional differences in wages, productivity and unit labour costs of foreign and domestic firms

Despite the considerable efforts taken by regional policy to attract investment to low employment regions, the increasing scarcity of skilled labour in high employment regions[17] and the marked wage differences between high and low unemployment regions,[18] spatial concentration of FEs' and DEs' employment has not decreased over recent years, and corporate jobs have not moved towards low employment regions. On the contrary, of late, low employment regions have lost, while high employment regions have gained, corporate (mostly FEs') jobs.

Figure 5: Wage costs and productivity of firms settled in high employment regions compared to firms settled in low employment regions in manufacturing in 2002



Note: Firms settled in low employment regions = 100%.
Source: *IE-FDI micro-region data base*.

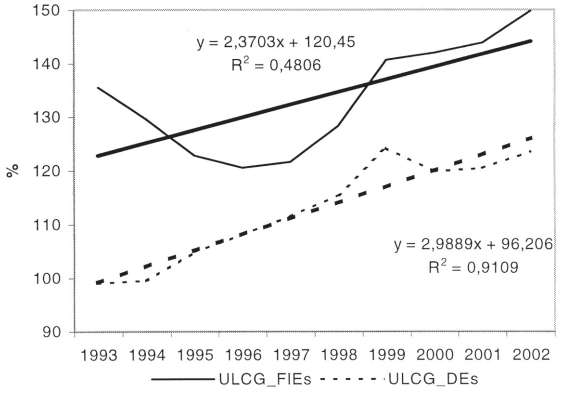
It is not difficult to understand the reluctance of firms to move towards less developed, low employment regions if we compare the regional differences of productivity and the unit labour costs of foreign and domestic firms. Figure 5 shows regional differences in wages, productivity and unit labour costs between firms in manufacturing operating in high and low employment regions. One can see that there are substantial regional differences in both groups. Wage costs are higher in high employment regions than in low employment ones. However, as a result of high productivity, the unit labour cost of firms operating in high employment regions is less than 80 per cent of those settled in low employment regions. Besides region-specific factors (proximity, density of firms, externalities offered by urban agglomerations etc) the regional productivity gap has been influenced by a

17 Regional unemployment/vacancy statistics shows increasing scarcity of (skilled) labour in the most developed regions and an increasing stock of job seekers in the depressed regions.

18 Empirical studies on regional wage differences revealed that due to the increasing regional differences in unemployment and vacancy rates, a regional wage curve was born in Hungary. The elasticity of wage with respect to the unemployment rate was found to be more or less the same as in established market economies. (*Köllő* 2002).

number of firm-specific factors, such as sector composition, technologies and the labour/capital ratio. Unfortunately, we do not have sufficient data to separate firm-specific and region-specific effects. Nevertheless, the time paths of regional gaps in the case of FEs and DEs reveal a striking tendency. Figure 6–7 shows that the regional gaps of productivity and unit labour costs between firms settled in high and low employment regions have substantially increased in both groups over the last ten years.

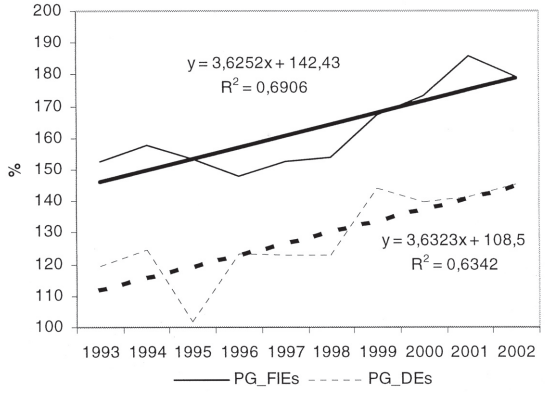
Figure 6: Time path of the unit labour cost gap between firms in manufacturing settled in low and high employment regions (1993–2002)



ULCG (Unit labour cost gap) = (Average unit labour costs of firms settled in low employment regions) / (average unit labour costs of firms settled in high employment regions) *100

Unit labour costs = net sales / total wage costs

Figure 7: Time path of the productivity gap between firms in manufacturing settled in low and high employment regions (1993–2002)



Productivity gap = (average productivity firms settled in high employment regions) / (average productivity of firms settled in low employment regions) *100

Productivity = net sales/employees

Factors behind the increasing wage, productivity and labour costs gap require a careful analysis which is beyond the scope of this paper. Nevertheless, we are convinced that an increasing return to agglomeration is an important element of these effects. Regional spillover effects between firms could be an important element of agglomeration effects. A number of empirical studies indicate that regional productivity differences are reinforced by regional spillover effects between foreign and domestic enterprises. (*Moretti* 2002) The higher the density of foreign firms in the high employment regions, the stronger the spillover effect towards domestic (and foreign) firms. As a consequence, productivity advantages are also abundant in these regions. According to empirical evidence from CEE countries and especially from Hungary, the increasing density of FEs has a significant positive effect on the productivity of domestic firms in the region (*Campos* 2001, *Sgard* 2001, *Schoors and van der Tol* 2002). This could be one of the explanations for the increasing regional productivity gap among firms.

Conclusions and policy implications

In the first part of the paper we described the polarisation and the increasing core-periphery division of local labour markets in Hungary during transition. The driving force of this process was the fast integration of the country into the world economy and a massive inflow of foreign direct investment into certain regions of the country. Foreign firms were responsible for the bulk of net job creation in recent years and the vast majority of net job creation within the foreign firm sector was concentrated in high employment regions.

Foreign employment is concentrated in industrial regions with a favourable geographical location, and a high level of urbanisation. Employment of domestic firms was also highly concentrated in urbanised regions. Both foreign and domestic firms exhibit stable spatial concentration and pattern of distribution. A large and increasing productivity gap between winner and loser regions is one of the explanations of this stability. Both foreign and domestic firms located in high employment regions are much more productive than firms located in low employment regions. Besides firm- and region specific factors, regional spillover effects between foreign and domestic firms could explain this tendency. Supply side alleviating mechanisms (migration, commuting) are too weak to stop or to decrease further polarisation of local labour markets.

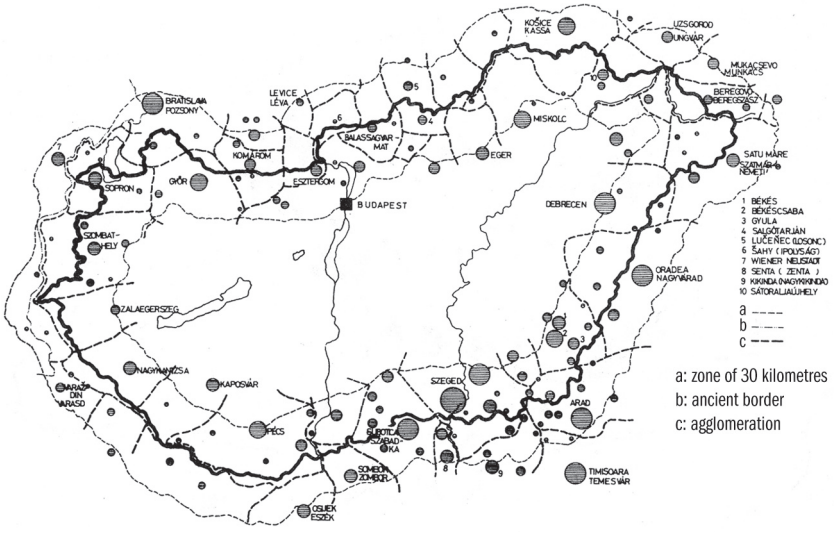
What can we expect in the future and what should be done to stop further deterioration of backward regions? The majority of studies on the impact of the EU accession forecast an increasing attractiveness of accession countries in terms of FDI inflows. Are there relevant policy options to avoid

the situation where further increase of FDI mimics the established pattern thus yielding ever rising regional differences and polarisation?

The second part of the paper demonstrated that the education level of the local population has a crucial impact on the competitiveness of local economies. Thus, one of the most important tasks is to raise education levels even in the remote rural territories of the country. It is a long term and costly program for central and local governments and requires a large scale development of the educational infrastructure. Analyses of the explanatory factors of the spatial concentration of FEs' jobs show that in addition to the education/urbanisation level and industrial past, the geographical location (i.e. distance from the EU borders) has a crucial impact on the attractiveness of regions. Distance could be decreased by the development of transport infrastructure and some urbanised South-Transdanubian, and East-Hungarian regions could be connected to the most developed Central-Hungarian and West-Transdanubian agglomerations. The most challenging questions for the policy makers: What can be done in the case of remote rural regions along the North-East, East, and Southern borders? How will the EU accession affect their position in the years to come?

If we take into consideration the spatial consequences of globalisation and agglomeration, there is no real possibility to stop the further deterioration of these regions. Nevertheless, let me finish this paper with a more optimistic picture. Figure 8. shows areas of influence of major cities in cross-border regions in Hungary. We can see that the present state borders deprive some remote rural regions from their historical urban centres.

Figure 8: Areas of influence of major cities in cross-border regions



Source: *Kovács* (1990).

Some of those cities like Kosice, Satu Mare, Oradea, Arad have a great potential to develop following the accession of their countries. Disappearing borders following the joining of the European Union offer a possibility for some remote Hungarian peripheral regions to access the developing local labour markets of urbanised regions located outside the existing border. On the other hand, in some developed border regions there are cities on the Hungarian side of the border (such as Pécs, Debrecen, Győr) which could have positive effects on backward rural regions situated in neighbouring accession countries.

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Appendix

Table A1: Results from the regression estimation

Dependant Variable = FRCI	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
A. Foreign firms										
DISTANCE	–0.217	–0.198	–0.120	–0.094	–0.136	–0.149	–0.187	–0.186	–0.228	–0.206
	–2.749	–2.499	–4.320	–1.213	–1.876	–2.141	–2.707	–2.715	–3.232	–2.909
	0.007	0.014	0.000	0.227	0.063	0.034	0.008	0.007	0.002	0.004
ABORDER	0.118	0.060	0.182	0.167	0.201	0.201	0.200	0.188	0.160	0.172
	1.613	0.806	2.591	2.297	2.949	3.071	3.066	2.822	2.408	2.566
	0.109	0.422	0.011	0.023	0.004	0.003	0.003	0.005	0.017	0.011
INDUSTRY	0.295	0.179	0.182	0.337	0.346	0.362	0.375	0.379	0.350	0.307
	3.844	2.339	2.506	4.509	4.955	5.409	5.646	5.597	5.186	4.518
	0.000	0.021	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EDU	0.232	0.376	0.403	0.265	0.275	0.283	0.51	0.237	0.256	0.301
	2.753	4.485	5.078	3.261	3.632	3.921	3.517	3.269	3.538	4.144
	0.007	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.001	0.000
Adjusted R^2	0.377	0.377	0.428	0.390	0.465	0.504	0.510	0.486	0.489	0.484
F	23.240	23.394	28.879	24.774	33.423	38.837	39.778	36.279	36.698	35.878
Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of observations	149	149	150	150	150	150	150	150	150	150
B. Domestic firms										
DISTANCE	–0.043	0.000	0.027	0.009	–0.020	–0.040	0.017	–0.006	–0.004	0.042
	–0.558	0.995	0.710	0.905	0.782	0.581	0.813	0.931	0.954	0.480
	0.578	0.006	0.373	0.119	–0.278	–.553	0.237	–0.086	–0.058	0.708
ABORDER	–0.023	0.016	–0.026	0.006	–0.086	–0.088	–0.037	–0.017	–0.050	–0.040
	–0.326	0.233	–0.392	0.087	–1.290	–1.302	0.561	–0.275	–0.837	–0.711
	0.745	0.816	0.695	0.931	0.199	0.195	0.576	0.783	0.404	0.478
INDUSTRY	0.324	0.310	0.306	0.203	0.157	0.125	0.096	0.093	0.060	0.018
	0.393	0.000	4.389	2.941	2.293	1.810	1.423	1.452	0.985	0.315
	0.000	0.708	0.000	0.004	0.023	0.072	0.157	0.149	0.326	0.753
EDU	0.419	0.466	0.511	0.583	0.627	0.631	0.674	0.701	0.756	0.819
	5.148	5.912	6.667	7.754	8.450	8.478	9.260	10.254	11.686	13.400
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R^2	0.418	0.457	0.476	0.483	0.485	0.474	0.492	0.547	0.593	0.645
F	27.760	32.180	34.830	35.600	36.140	34.530	36.830	45.600	54.930	65.880
Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of observations	150	150	150	150	150	150	150	150	150	150

Note: Coefficient cells consist of coefficients, t values and significance.

Table A2: Variables used in the analysis

Label	Content	Source
DISTANCE*(i)*	Average distance of the region's centre from the Austrian border on public road measured in km. *(i = 1–150)*	ANDROUTE Database
ABORDER*(i)*	Dummy variable. *(i = 1–150) (Austrian border regions = 1, other regions = 0)*	
INDUSTRY*(t,i)*	Average ratio of employees in industry in the working age population in year *t*, in the micro–region *i. (t = 90; i = 1–150)*	HCSO T–star
EDU*(t,i)*	Average number of completed classes in the local population, age 7+ in year *t,* in the micro–region *i. (t = 1990, 2000; i = 1–150)*	HCSO Census
FL*(t,i)*	Number of FEs employees in the micro–region in year *t,* in the micro–region *i. (t = 1993–2002; i = 1–150)*	IE FDI Database
DL*(t,i)*	Number of DEs' employees in the micro–region in year *t*, in the micro–region *i (t = 1993–2002; i = 1–150)*	IE FDI Database
WAPOP*(t,i)*	Working age (age 18–59) population of the micro–region in year *t* in the micro–region *i. (t = 1993–2002; i = 1–150)*	IE FDI Database
FWAGECOSTS*(t,i)*	Total wage costs of FEs settled in the micro–region in year *t. (t = 1993–2002; i = 1–150)*	IE FDI Database
DWAGECOSTS*(t,i)*	Total wage costs of DEs settled in the micro–region in year *t. (t = 1993–2002; i = 1–150)*	IE FDI Database
FSALES*(t,i)*	Total net sales of FEs settled in the micro–region in year *t (t = 1993–2002; i = 1–150)*	IE FDI Database
DSALES*(t,i)*	Total net sales of DEs settled in the micro–region in year *t (t = 1993–2002; i = 1–150)*	IE FDI Database

STATISTICAL DATA

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Data Sources

FH BT	NLC Wage Survey
FH REG	NLC unemployment register
FH SREG	NLC unemployment benefit register
FH PROG	NLC Short-term Labour Market Forecast Survey
KSH	Table compiled from regular publications
KSH IMS	CSO institution-based labour statistics
KSH MEF	CSO Labour Force Survey
KSH MEM	CSO Labour Force Account
MC	Microcensus
MNB	Hungarian National Bank
NSZ	Population Census
NYUFIG	Pension Administration
OM STAT	Ministry of Education, Educational Statistics
TB	Social security records

Table 1.1: Main economic indicators 1*

Year	GDP	Industrial production	Exports	Imports	Real earnings	Employ-ment
1989	100.7	95.0	100.3	101.1	99.7	98.2
1990	96.5	90.7	95.9	94.8	94.3	97.2
1991	88.1	81.6	95.1	105.5	93.0	92.6
1992	96.9	84.2	101.0	92.4	98.6	90.3
1993	99.4	103.9	86.9	120.9	96.1	93.8
1994	102.9	109.7	116.6	114.5	107.2	98.0
1995	101.5	104.6	108.4	96.1	87.8	98.1
1996	101.3	103.2	104.6	105.5	95.0	99.1
1997	104.6	111.1	129.9[b]	126.4[b]	104.9	100.1
1998	104.9	112.5	122.1[b]	124.9[b]	103.6	101.4
1999	104.2	110.4	115.9[b]	114.3[b]	102.5	103.2
2000	105.2	118.1	121.7[b]	120.8[b]	101.5	101.0
2001	103.8	103.6	107.7[b]	104.0[b]	106.4	100.3
2002	103.3[a]	102.6[a]	105.9[b]	105.1[b]	113.6	100.1

* Previous year = 100.
[a] Preliminary.
[b] Including free trade zones.
Source: Employment: 1989–1991: KSH MEM; 1992–: KSH MEF. Other data: KSH.

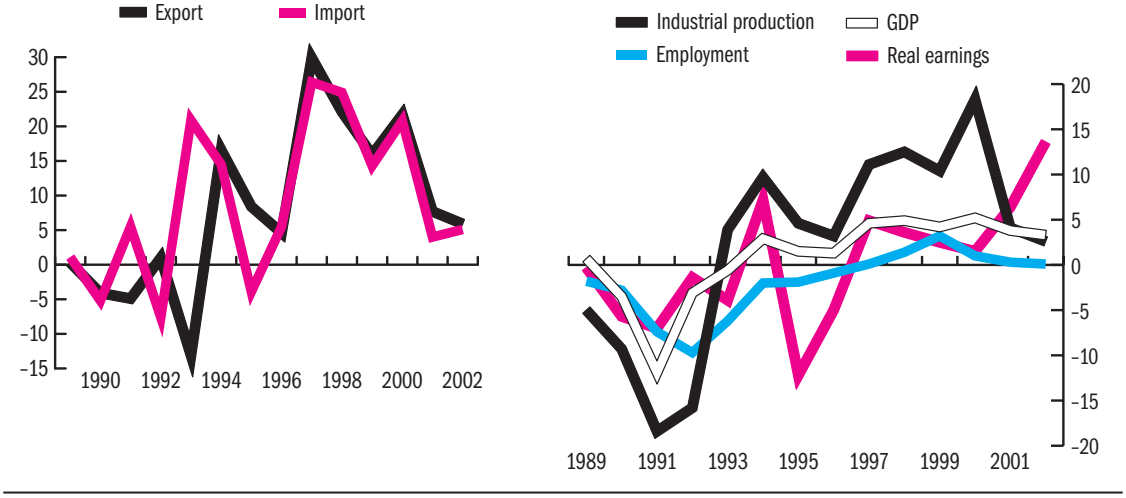


Figure 1.1: Annual changes of main economic indicators 1

Table 1.2: Main economic indicators 2*

Year	GDP deflator index	Consumer price index	Trade balance[1]/ GDP	Balance of current account[2]/ GDP	General government deficit[3]/ GDP	Gross foreign debt/GDP[4]
1989	118.8	117.0	...	...	2.8	...
1990	125.7	128.9	+2.6	+0.4	0.0	60.7
1991	125.4	135.0	-1.0	+0.8	2.1	62.7
1992	121.6	123.0	-0.3	+0.9	6.0	61.7
1993	121.3	122.5	-8.2	-9.0	4.2	66.6
1994	119.5	118.8	-6.5	-9.4	3.9	66.5
1995	125.5	128.2	-1.3	-5.5	6.6	71.5
1996	121.2	123.6	-1.1	-3.7	3.1	62.4
1997	118.5	118.3	+0.3	-2.1	4.8	54.6
1998	112.6	114.3	-2.1	-4.8	6.3	55.8
1999	108.3	110.0	-2.7	-5.1	3.7	64.2
2000	109.9	109.8	-3.8	-6.2	3.6	64.2
2001	108.6	109.2	-1.5	-3.4	3.0	64.9
2002	...	105.3	-2.2	-4.0	...	55.2[a]

* Previous year=100.
1 Goods and services.
2 1989–94: in convertible currency; 1995–: in convertible and non-convertible currency.
3 1995–98: excluding revenues from privatization.
4 Including owner credit.
[a] Preliminary.
Source: KSH. Balance of current account; MNB.

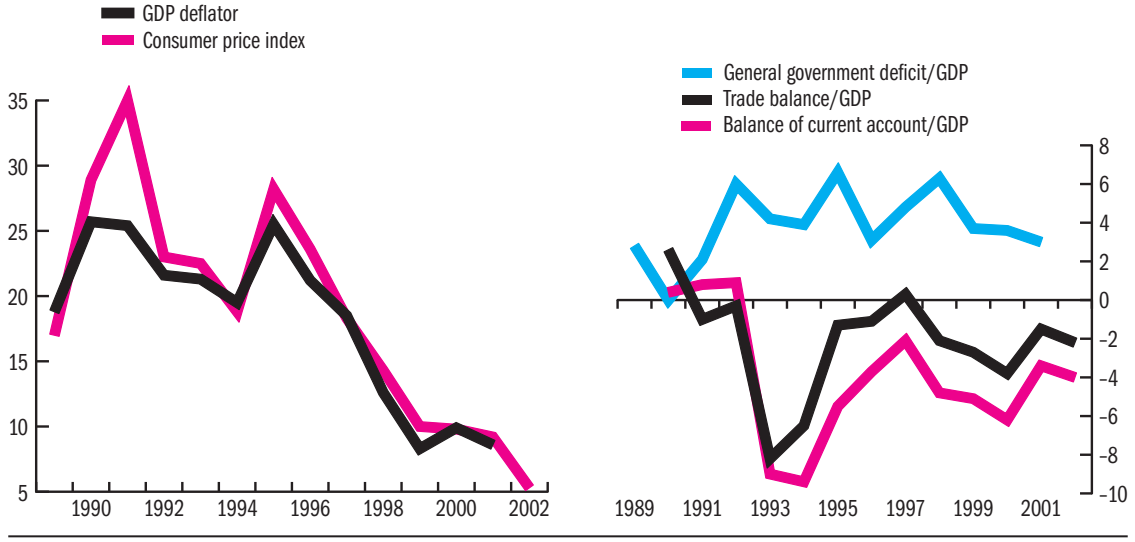


Figure 1.2: Annual changes of main economic indicators 2

Table 2.1: Population*

Year	In thousands	1992 = 100	Annual changes	Population 15–64 age	Dependency rate[1]
1980	10,709	103.6	–	6,500.0	0.58
1989	10,421	100.8	–	...	...
1990	10,375	100.4	–0.2	6,870.4	0.51
1991	10,373	100.0	0.0	6,909.5	0.50
1992	10,374	100.0	0.0	6,940.2	0.49
1993	10,365	99.9	–0.1	6,965.8	0.49
1994	10,350	99.8	–0.1	6,978.2	0.48
1995	10,337	99.6	–0.1	6,986.9	0.48
1996	10,321	99.5	–0.1	6,984.2	0.48
1997	10,301	99.3	–0.2	6,986.3	0.47
1998	10,280	99.1	–0.2	6,980.0	0.47
1999	10,253	98.8	–0.3	6,969.6	0.47
2000	10,221	98.5	–0.3	6,961.3	0.47
2001	10,200	98.3	–0.2	6,963.3	0.46
2002	10,175	98.1	–0.2	6,962.8	0.46

* 1st January.
1 (0–14 yers old + 65 years old and above) / (15–64 years old)
Note: Recalculated on the basis of Population Cenzus 2001.

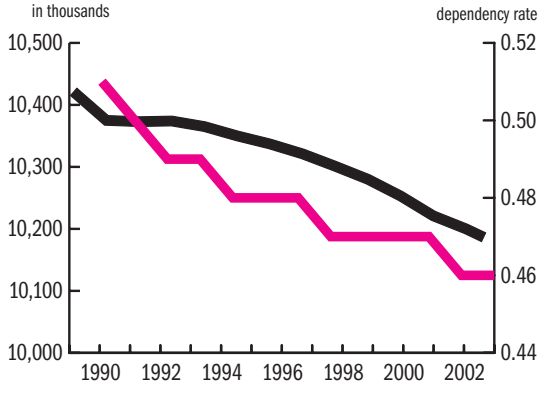


Figure 2.1: Population on 1st January

Table 2.2: Population by age groups – in thousands*

Year	0–14	15–24	25–54	55–64	65+	Total
			years old			
1980	2,341.2	1,464.4	4,399.8	1,054.7	1,449.4	10,709.5
1990	2,130.5	1,445.5	4,231.4	1,193.5	1,373.9	10,374.8
1991	2,068.0	1,510.3	4,223.1	1,176.0	1,395.7	10,373.2
1992	2,018.7	1,558.1	4,222.6	1,159.4	1,414.7	10,373.6
1993	1,972.3	1,587.0	4,230.4	1,148.5	1,426.9	10,365.0
1994	1,929.6	1,601.5	4,240.6	1,136.2	1,442.2	10,350.0
1995	1,891.7	1,610.1	4,250.6	1,126.2	1,458.0	10,336.7
1996	1,858.8	1,609.7	4,253.6	1,120.8	1,478.3	10,321.2
1997	1,824.4	1,607.2	4,260.3	1,118.9	1,490.5	10,301.2
1998	1,792.8	1,593.0	4,262.6	1,124.4	1,506.9	10,279.7
1999	1,762.4	1,573.2	4,268.5	1,127.9	1,521.4	10,253.4
2000	1,729.2	1,526.5	4,291.4	1,143.4	1,531.1	10,221.6
2001	1,692.0	1,480.1	4,338.5	1,144.7	1,545.0	10,200.3
2002	1,660.1	1,436.9	4,378.0	1,147.9	1,551.9	10,174.9
2003	1,633.7	1,392.5	4,390.8	1,166.1	1,559.2	10,142.4

* 1st January. Based on the Population census 2001.

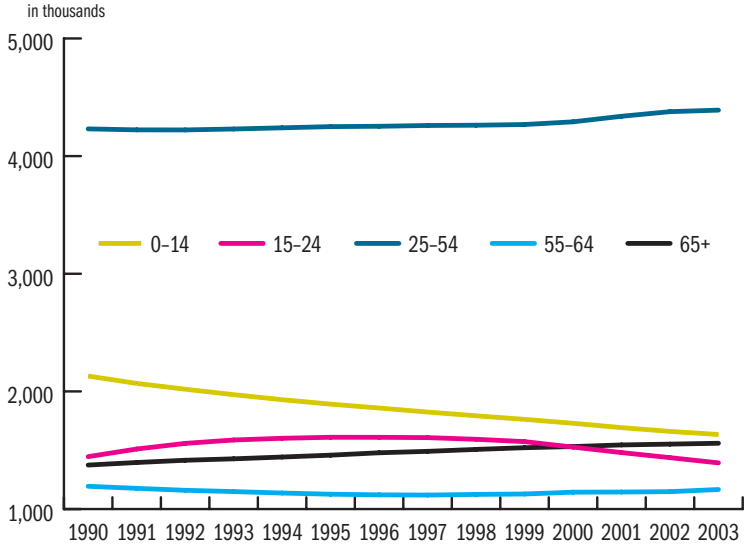


Figure 2.2: Population by age groups

Table 2.3: Male population by age groups – in thousands*

Year	0–14	15–24	25–59	60–64	65+	Total
			years old			
1980	1,205.4	749.9	2,475.6	170.5	587.3	5,188.7
1990	1,090.4	740.3	2,366.9	259.9	527.5	4,984.9
1991	1,057.9	773.4	2,355.5	258.5	534.5	4,979.8
1992	1,032.3	797.7	2,350.4	255.5	539.8	4,975.7
1993	1,008.7	812.2	2,349.0	253.9	542.5	4,966.3
1994	986.8	819.9	2,350.3	250.5	546.0	4,953.4
1995	967.4	824.0	2,353.3	246.1	550.8	4,941.6
1996	950.5	823.7	2,358.3	239.5	557.2	4,929.2
1997	933.0	822.4	2,366.2	233.9	560.5	4,916.0
1998	916.8	815.4	2,375.5	229.3	564.7	4,901.8
1999	901.5	805.0	2,383.2	226.1	568.6	4,884.4
2000	885.0	780.9	2,403.8	224.8	570.8	4,865.2
2001	865.7	757.0	2,425.2	228.9	574.2	4,851.0
2002	850.1	733.9	2,446.1	233.0	573.8	4,837.0
2003	836.8	711.3	2,456.5	239.9	574.0	4,818.5

* See: Table 2.2.

Table 2.4: Female population by age groups – in thousands*

Year	0–14	15–24	25–54	55–59	60+	Total
			years old			
1980	1,135.8	714.5	2,232.8	365.3	1,072.4	5,520.8
1990	1,040.1	705.2	2,144.4	327.6	1,172.5	5,389.9
1991	1,010.0	737.0	2,139.8	321.3	1,185.3	5,393.3
1992	986.5	760.4	2,138.1	318.1	1,194.9	5,397.9
1993	963.6	774.8	2,141.2	314.4	1,204.7	5,398.7
1994	942.8	781.6	2,146.2	313.1	1,212.9	5,396.6
1995	924.4	786.2	2,151.0	312.6	1,221.0	5,395.1
1996	908.3	786.0	2,152.4	316.4	1,228.8	5,392.0
1997	891.4	784.8	2,155.6	318.3	1,235.1	5,385.3
1998	876.0	777.6	2,156.0	324.4	1,243.9	5,378.0
1999	861.0	768.2	2,159.3	326.7	1,253.8	5,369.0
2000	844.3	745.6	2,170.5	334.8	1,261.3	5,356.5
2001	826.3	723.1	2,193.4	330.4	1,276.1	5,349.3
2002	810.0	703.0	2,211.6	328.6	1,284.7	5,337.9
2003*	796.9	681.2	2,217.4	330.7	1,297.8	5,323.9

* See: Table 2.2.

Table 3.1: Labour force participation of the population above 14 years*

Year	Population at working age								Population above working age			Total
	Em-ployed	Unem-ployed	Pen-sioner	Full time student	On child care leave	Other inactive	Inactive total	Total	Em-ployed	Unem-ployed	Pen-sioner, inactive	
1980	4,887.9	0.0	300.8	370.1	259.0	339.7	1,269.6	6,157.5	570.3	0.0	1,632.1	2,202.4
1990	4,534.3	62.4	284.3	548.9	249.7	297.5	1,380.4	5,977.1	345.7	0.0	1,944.9	2,290.6
1991	4,270.5	253.3	335.6	578.2	259.8	317.1	1,490.7	6,014.5	249.5	0.0	2,045.2	2,294.7
1992	3,898.4	434.9	392.7	620.0	262.1	435.9	1,710.7	6,044.0	184.3	9.8	2,101.7	2,295.8
1993	3,689.5	502.6	437.5	683.9	270.5	480.1	1,872.0	6,064.1	137.5	16.3	2,141.2	2,295.0
1994	3,633.1	437.4	476.5	708.2	280.9	540.7	2,006.3	6,076.8	118.4	11.9	2,163.8	2,294.1
1995	3,571.3	410.0	495.2	723.4	285.3	496.1	2,000.0	5,981.3	107.5	6.4	2,180.6	2,294.5
1996	3,546.1	394.0	512.7	740.0	289.2	499.4	2,041.3	5,981.4	102.1	6.1	2,184.6	2,292.8
1997	3,549.5	342.5	542.9	752.0	289.0	499.9	2,083.8	5,975.8	96.9	6.3	2,189.0	2,292.2
1998	3,608.5	305.5	588.8	697.0	295.5	565.7	2,147.0	6,061.0	89.3	7.5	2,197.6	2,294.4
1999	3,701.0	283.3	534.7	675.6	298.5	549.8	2,058.6	6,042.9	110.4	1.4	2,185.2	2,297.0
2000	3,745.9	261.4	517.9	721.7	281.4	571.4	2,092.4	6,099.7	130.3	2.3	2,268.0	2,400.6
2001	3,742.6	231.7	516.3	717.9	286.6	601.6	2,122.4	6,096.7	140.7	2.4	2,271.8	2,414.9
2002	3,719.6	235.7	507.1	738.3	286.8	593.0	2,125.2	6,080.5	164.1	3.2	2,263.9	2,431.2

* In thousands. Annual average figures.

Till 1999 updated figure based on 1990 population census since 2000 based on 2001 population census.

Note: "Employed" includes conscripts and working pensioner. Data on students for 1995–97 have been estimated using projected population weights. "Other inactive" is a residual category.

Source: Pensioners: 1980–91: NYUFIG, 1992–: KSH MEF. Child care recipients: TB. Unemployment: 1990–91: FH REG, 1992–: KSH MEF.

Table 3.2: Labour force participation of the population above 14 years – males*

Year	Population at working age								Population above working age			Total
	Em-ployed	Unem-ployed	Pen-sioner	Full time student	On child care leave	Other inactive	Inactive total	Total	Em-ployed	Unem-ployed	Pen-sioner, inactive	
1980	2,750.5	0.0	173.8	196.3	0.0	99.1	469.2	3,219.7	265.3	0.0	491.8	757.1
1990	2,524.3	37.9	188.4	284.2	1.2	80.3	554.1	3,116.3	123.7	0.0	665.5	789.2
1991	2,351.6	150.3	218.7	296.5	1.5	115.0	631.7	3,133.6	90.4	0.0	700.7	791.1
1992	2,153.1	263.2	252.0	302.4	1.7	174.8	730.9	3,147.2	65.1	3.2	722.1	790.4
1993	2,029.1	311.5	263.2	346.9	2.0	203.3	815.4	3,156.0	47.9	4.5	735.7	788.1
1994	2,013.4	270.0	277.6	357.1	3.7	239.6	878.0	3,161.4	41.6	3.8	740.0	785.4
1995	2,012.5	259.3	282.2	367.4	4.9	237.8	892.3	3,164.1	37.1	2.1	742.6	781.8
1996	2,007.4	242.4	291.9	372.8	3.3	248.3	916.3	3,166.1	28.9	1.3	746.3	776.5
1997	2,018.0	212.2	306.0	377.6	1.5	251.6	936.7	3,166.9	25.5	1.9	743.5	770.9
1998	2,015.5	186.5	345.4	350.4	1.0	264.2	961.0	3,163.0	26.2	2.8	737.3	766.3
1999	2,068.4	170.3	312.7	338.8	4.2	261.5	917.2	3,155.9	34.7	0.4	727.2	762.3
2000	2,086.0	158.2	315.2	358.2	4.1	261.7	939.2	3,183.4	39.8	0.7	758.8	799.3
2001	2,087.6	141.6	311.0	353.4	4.3	283.2	951.9	3,181.1	41.1	0.9	763.0	805.0
2002	2,080.4	137.3	307.5	370.3	5.0	273.4	956.2	3,173.9	45.2	0.7	764.4	810.3

* See: Table 3.1.

Table 3.3: Labour force participation of the population above 14 years – females*

Year	Population at working age								Population above working age			Total
	Em-ployed	Unem-ployed	Pen-sioner	Full time student	On child care leave	Other inactive	Inactive total	Total	Em-ployed	Unem-ployed	Pen-sioner, inactive	
1980	2,137.4	0.0	127.0	173.8	259.0	240.6	800.4	2,937.8	305.0	0.0	1,140.3	1,445.3
1990	2,010.0	24.5	95.8	264.7	248.5	217.3	826.3	2,860.8	222.0	0.0	1,279.4	1,501.4
1991	1,918.9	103.1	116.9	281.8	258.3	201.9	858.9	2,880.9	159.1	0.0	1,344.5	1,503.6
1992	1,745.3	171.7	140.8	317.6	260.4	261.1	979.9	2,896.9	119.2	6.6	1,379.6	1,505.4
1993	1,660.4	191.1	174.3	337.0	268.5	276.8	1,056.6	2,908.1	89.6	11.8	1,405.5	1,506.9
1994	1,619.7	167.4	198.9	351.1	277.2	301.1	1,128.3	2,915.4	76.8	8.1	1,423.8	1,508.7
1995	1,558.8	150.7	213.0	356.0	280.4	358.3	1,207.7	2,917.2	70.4	4.3	1,438.0	1,512.7
1996	1,538.7	151.6	220.7	367.2	285.9	351.1	1,224.9	2,915.2	73.2	4.8	1,438.3	1,516.3
1997	1,531.5	130.3	236.9	374.4	287.5	348.3	1,247.1	2,908.9	71.4	4.4	1,445.3	1,521.1
1998	1,593.0	119.0	243.4	346.6	294.5	301.5	1,186.0	2,898.0	63.1	4.7	1,460.3	1,528.1
1999	1,632.6	113.0	222.0	336.8	291.1	288.3	1,138.2	2,883.8	75.8	1.0	1,458.0	1,534.8
2000	1,659.9	103.2	202.7	363.5	277.3	309.7	1,153.2	2,916.3	90.5	1.6	1,509.2	1,601.3
2001	1,655.0	90.1	205.3	364.5	282.3	318.3	1,170.4	2,915.5	99.6	1.5	1,508.8	1,609.9
2002	1,639.2	98.4	199.6	368.0	281.8	319.6	1,169.0	2,906.6	118.9	2.5	1,499.5	1,620.9

* See: Table 3.1.

Table 3.4: Labour force participation of the population above 14 years – per cent*

Year	Population at working age								Population above working age			Total
	Em-ployed	Unem-ployed	Pen-sioner	Full time student	On child care leave	Other inactive	Inactive total	Total	Em-ployed	Unem-ployed	Pen-sioner, inactive	
1980	79.4	0.0	4.9	6.0	4.2	5.5	20.6	100.0	25.9	0.0	74.1	100.0
1990	75.9	1.0	4.8	9.2	4.2	5.0	23.1	100.0	15.1	0.0	84.9	100.0
1991	71.0	4.2	5.6	9.6	4.3	5.3	24.8	100.0	10.9	0.0	89.1	100.0
1992	64.5	7.2	6.5	10.3	4.3	7.2	28.3	100.0	8.0	0.4	91.5	100.0
1993	60.8	8.3	7.2	11.3	4.5	7.9	30.9	100.0	6.0	0.7	93.3	100.0
1994	59.8	7.2	7.8	11.7	4.6	8.9	33.0	100.0	5.2	0.5	94.3	100.0
1995	59.7	6.9	8.3	12.1	4.8	8.3	33.4	100.0	4.7	0.3	95.0	100.0
1996	59.3	6.6	8.6	12.4	4.8	8.3	34.1	100.0	4.5	0.3	95.3	100.0
1997	59.4	5.7	9.1	12.6	4.8	8.4	34.9	100.0	4.2	0.3	95.5	100.0
1998	59.5	5.0	9.7	11.5	4.9	9.3	35.4	100.0	3.9	0.3	95.8	100.0
1999	61.2	4.7	8.8	11.2	4.9	9.1	34.1	100.0	4.8	0.1	95.1	100.0
2000	61.4	4.3	8.5	11.8	4.6	9.4	34.3	100.0	5.4	0.1	94.5	100.0
2001	61.4	3.8	8.5	11.8	4.7	9.9	34.8	100.0	5.8	0.1	94.1	100.0
2002	61.2	3.9	8.3	12.1	4.7	9.8	35.0	100.0	6.7	0.1	93.1	100.0

* See: Table 3.1.

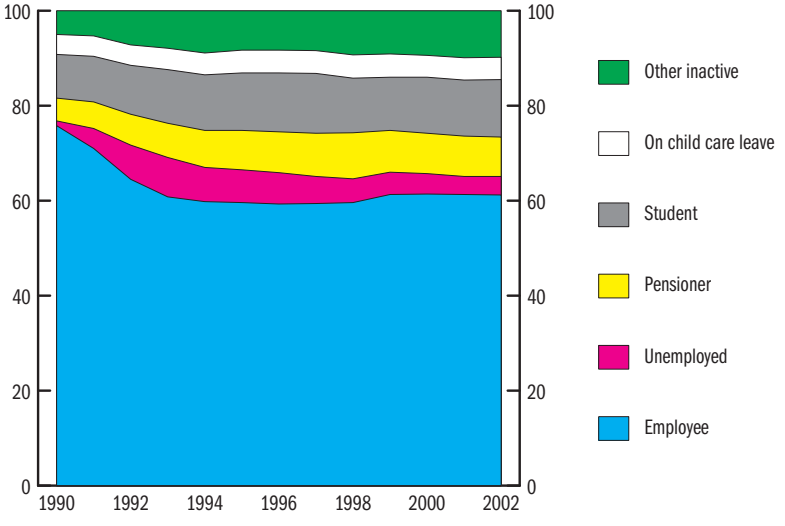


Figure 3.1: Labour force participation of population at working age, total

Table 3.5: Labour force participation of the population above 14 years – males, per cent*

Year	Population at working age								Population above working age			Total
	Em-ployed	Unem-ployed	Pen-sioner	Full time student	On child care leave	Other inactive	Inactive total	Total	Em-ployed	Unem-ployed	Pen-sioner, inactive	
1980	85.4	0.0	5.4	6.1	0.0	3.1	14.6	100.0	35.0	0.0	65.0	100.0
1990	81.0	1.2	6.0	9.1	0.0	2.6	17.8	100.0	15.7	0.0	84.3	100.0
1991	75.0	4.8	7.0	9.5	0.0	3.7	20.2	100.0	11.4	0.0	88.6	100.0
1992	68.4	8.4	8.0	9.6	0.1	5.6	23.2	100.0	8.2	0.4	91.4	100.0
1993	64.3	9.9	8.3	11.0	0.1	6.4	25.8	100.0	6.1	0.6	93.4	100.0
1994	63.7	8.5	8.8	11.3	0.1	7.6	27.8	100.0	5.3	0.5	94.2	100.0
1995	63.6	8.2	8.9	11.6	0.2	7.5	28.2	100.0	4.7	0.3	95.0	100.0
1996	63.4	7.7	9.2	11.8	0.1	7.8	28.9	100.0	3.7	0.2	96.1	100.0
1997	63.7	6.7	9.7	11.9	0.0	7.9	29.6	100.0	3.3	0.2	96.4	100.0
1998	63.7	5.9	10.9	11.1	0.0	8.4	30.4	100.0	3.4	0.4	96.2	100.0
1999	65.5	5.4	9.9	10.7	0.1	8.3	29.1	100.0	4.6	0.1	95.4	100.0
2000	65.5	5.0	9.9	11.3	0.1	8.2	29.5	100.0	5.0	0.1	94.9	100.0
2001	65.6	4.5	9.8	11.1	0.1	8.9	29.9	100.0	5.1	0.1	94.8	100.0
2002	65.5	4.3	9.7	11.7	0.2	8.6	30.1	100.0	5.6	0.1	94.3	100.0

* See: Table 3.1.

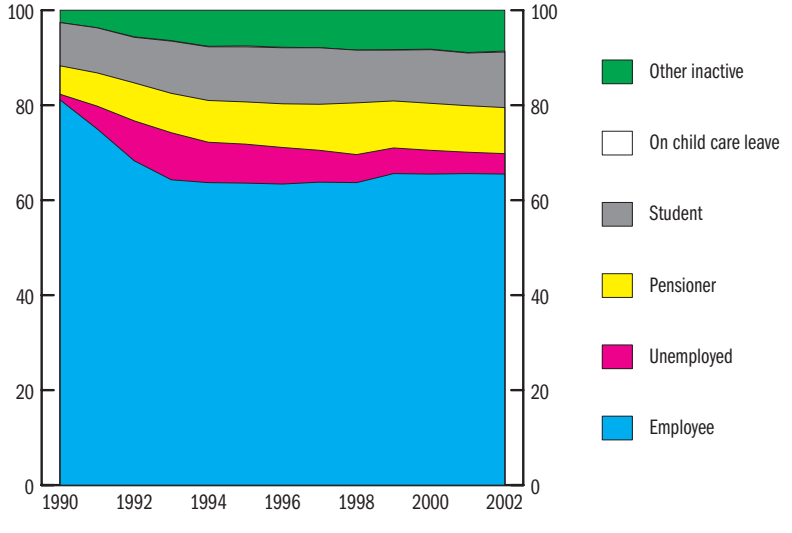


Figure 3.2: Labour force participation of population of working age, males

Table 3.6: Labour force participation of the population above 14 years – females, per cent*

Year	Population at working age								Population above working age			Total
	Em-ployed	Unem-ployed	Pen-sioner	Full time student	On child care leave	Other inactive	Inactive total	Total	Em-ployed	Unem-ployed	Pen-sioner, inactive	
1980	72.8	0.0	4.3	5.9	8.8	8.2	27.2	100.0	21.1	0.0	78.9	100.0
1990	70.3	0.9	3.3	9.3	8.7	7.6	28.9	100.0	14.8	0.0	85.2	100.0
1991	66.6	3.6	4.1	9.8	9.0	7.0	29.8	100.0	10.6	0.0	89.4	100.0
1992	60.2	5.9	4.9	11.0	9.0	9.0	33.8	100.0	7.9	0.4	91.6	100.0
1993	57.1	6.6	6.0	11.6	9.2	9.5	36.3	100.0	5.9	0.8	93.3	100.0
1994	55.6	5.7	6.8	12.0	9.5	10.3	38.7	100.0	5.1	0.5	94.4	100.0
1995	53.4	5.2	7.3	12.2	9.6	12.3	41.4	100.0	4.7	0.3	95.1	100.0
1996	52.8	5.2	7.6	12.6	9.8	12.0	42.0	100.0	4.8	0.3	94.9	100.0
1997	52.6	4.5	8.1	12.9	9.9	12.0	42.9	100.0	4.7	0.3	95.0	100.0
1998	55.0	4.1	8.4	12.0	10.2	10.4	40.9	100.0	4.1	0.3	95.6	100.0
1999	56.6	3.9	7.7	11.7	10.1	10.0	39.5	100.0	4.9	0.1	95.0	100.0
2000	56.9	3.5	7.0	12.5	9.5	10.6	39.5	100.0	5.7	0.1	94.2	100.0
2001	56.8	3.1	7.0	12.5	9.7	10.9	40.1	100.0	6.2	0.1	93.7	100.0
2002	56.4	3.4	6.9	12.7	9.7	11.0	40.2	100.0	7.3	0.2	92.5	100.0

* See: Table 3.1.

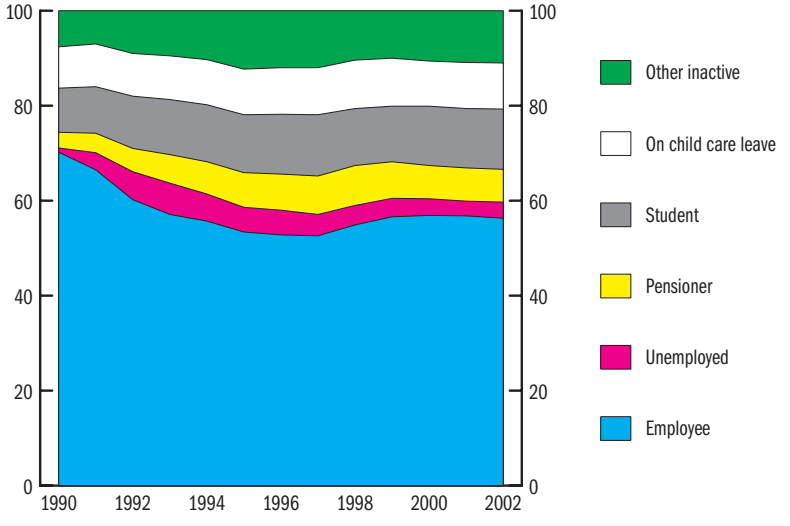


Figure 3.3: Labour force participation of population at working age, females

Table 3.7: Labour market status as reported by Labour Force Survay Respondents

	1999	2000	2001	2001*	2002*
Total					
In work	310.8	3,778.9	3,804.1	3,827.4	3,827.1
Unemployed	473.5	448.1	411.6	414.5	410.4
Student [pupils]	753.9	749.9	716.4	739.9	763.1
Pensioner	1,079.7	991.8	968.9	990.8	940.4
Disabled	195.5	223.8	245.4	251.0	284.4
On child care	289.0	272.4	280.1	272.3	278.3
Dependent	167.5	165.9	168.9	170.7	160.4
Out of work for other reason	113.1	133.6	181.8	184.7	185.7
Total	6,783.0	6,764.4	6,777.2	6,851.3	6,849.8
Males					
In work	2,042.7	2,075.4	2,091.8	2,089.5	2,090.2
Unemployed	286.1	270.4	255.7	255.2	239.3
Student [pupils]	375.9	371.4	353.0	363.6	380.9
Pensioner	426.4	388.6	377.3	386.3	368.1
Disable for work	106.0	120.4	133.1	134.2	148.1
On child care leave	3.9	3.8	4.0	4.0	4.9
Dependent	6.5	5.3	6.3	6.3	5.1
Out of work from other reason	67.4	77.6	99.9	100.8	101.2
Total	3,314.9	3,312.9	3,321.1	3,339.9	3,337.8
Females					
In work	1,668.1	1,703.5	1,712.3	1,737.9	1,736.9
Unemployed	187.4	177.7	155.9	159.3	171.1
Student [pupils]	378.0	378.5	363.4	376.3	382.2
Pensioner	653.3	603.2	591.6	604.5	572.3
Disabled	89.5	103.4	112.3	116.8	136.3
On child care	285.1	268.6	276.1	268.3	273.4
Dependent	161.0	160.6	162.6	164.4	155.3
Out of work for other reason	45.7	56.0	81.9	83.9	84.5
Total	3,468.1	3,451.5	3,456.1	3,511.4	3,512.0

* Data weighted on the bases of the 2001 Population Census. 2001 is existing as a "Janus year".

Source: KSH MEF,

Table 4.1: Employed of working age*

Year	In thousands	1992=100	Annual change	Empl. ratio[1]
1980	4,887.9	125.4	...	79.4
1990	4,534.3	116.3	...	75.9
1991	4,270.5	109.5	-5.8	71.0
1992	3,898.4	100.0	-8.7	64.5
1993	3,689.5	94.6	-5.4	60.8
1994	3,633.1	93.2	-1.5	59.8
1995	3,571.3	91.6	-1.7	58.7
1996	3,546.1	91.0	-0.7	58.3
1997	3,549.5	91.1	0.1	58.4
1998	3,608.5	92.6	1.7	59.5
1999	3,701.0	94.9	2.6	61.3
2000	3,721.7	95.5	0.6	62.1
2001	3,719.2	95.4	0.0	...
2001[a]	3,742.6	...	0.0	61.4
2002[a]	3,719.6	...	-0.6	61.2

* See note of Table 3.7.
1 Per cent of the same age group.
[a] Female aged 15–44, men aged 15–59, uncorrectied for changes in the retirement age.
Source: 1980–91: KSH MEM, 1992– KSH MEF.

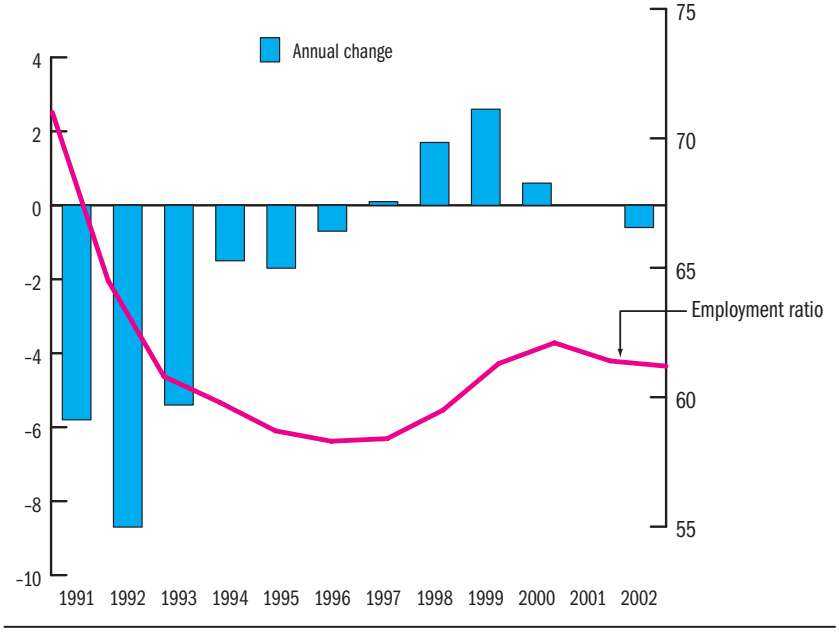


Figure 4.1: Employed of working age

Table 4.2: Employed above working age

Year	In thousands	1992=100	Annual change	Empl. ratio[1]
1980	570.3	309.4	...	25.9
1990	345.7	187.6	...	15.1
1991	249.5	135.4	-27.8	10.9
1992	184.3	100.0	-26.1	8.0
1993	137.5	74.6	-25.4	6.0
1994	118.4	64.2	-13.9	5.2
1995	107.5	58.3	-9.2	4.7
1996	102.1	55.4	-5.0	4.5
1997	96.9	52.6	-5.1	4.2
1998	89.3	48.5	-7.8	3.9
1999	110.4	59.9	23.6	4.8
2000	127.4	69.2	15.3	5.5
2001	140.3	76.1	10.2	...
2001[a]	140.7	...	...	6.2
2002[a]	164.1	...	16.6	6.7

1 Per cent of the population above working age. Working age defined ad females aged 15–54 and men aged 15–59.

[a] See note of Table 3.7.

Source: 1980–91: KSH MEM, 1992– KSH MEF.

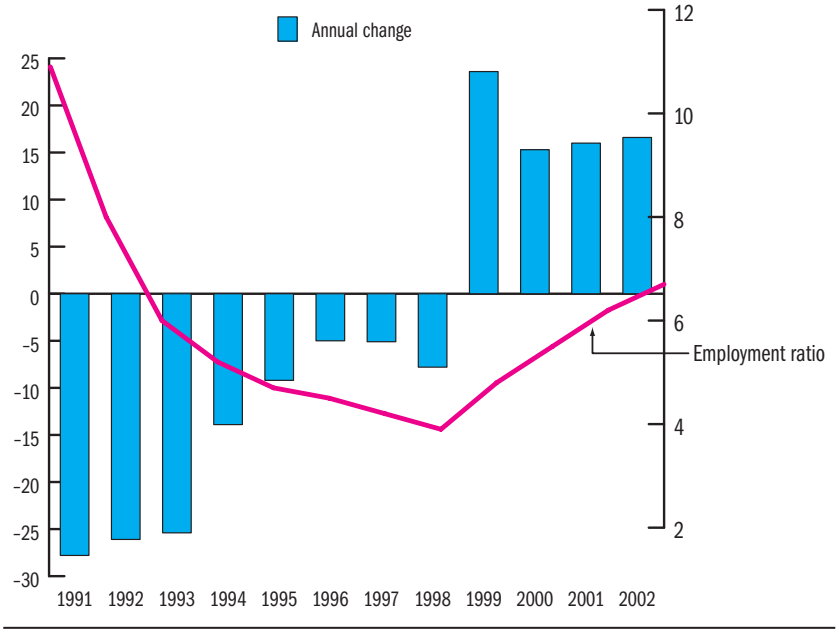


Figure 4.2: Employed above working age

Table 4.3: Employed

Year	In thousands	1992=100	Annual change	Empl. ratio[1]
1980	5,458.2	133.7	...	65.3
1990	4,880.0	119.5	...	59.0
1991	4,520.0	110.7	-7.4	54.4
1992	4,082.7	100.0	-9.7	49.0
1993	3,827.0	93.7	-6.3	45.8
1994	3,751.5	91.9	-2.0	44.8
1995	3,678.8	90.1	-1.9	43.9
1996	3,648.2	89.4	-0.8	43.6
1997	3,646.4	89.3	0.0	43.6
1998	3,697.8	90.6	1.4	44.3
1999	3,811.4	93.4	3.1	45.7
2000	3,849.1	94.3	1.0	46.2
2001	3,859.5	94.5	0.3	45.4
2001[a]	3,883.3	...	...	45.6
2002[a]	3,883.7	...	0.0	45.6

1 Per cent of the population above 15 year.
[a] See note of Table 3.7.
Source: 1980–91: KSH MEM, 1992– KSH MEF.

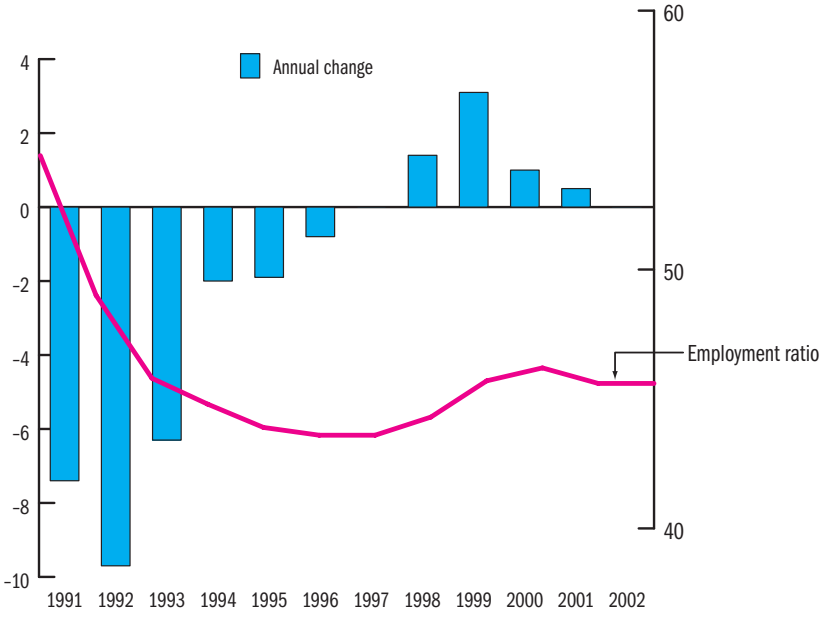


Figure 4.3: Employed

Table 4.4: Employed by gender

Year	Males		Females		Share of females
	In thousands	1992 = 100	In thousands	1992 = 100	
1980	3,015.8	136.0	2,442.4	131.0	44.7
1990	2,648.0	119.4	2,232.0	119.7	45.7
1991	2,442.0	110.1	2,078.0	111.5	46.0
1992	2,218.2	100.0	1,864.5	100.0	45.7
1993	2,077.0	93.6	1,750.0	93.9	45.7
1994	2,055.0	92.6	1,696.5	91.0	45.2
1995	2,049.6	92.4	1,629.2	87.4	44.3
1996	2,036.3	91.8	1,611.9	86.5	44.2
1997	2,043.5	92.1	1,602.9	86.0	44.0
1998	2,041.7	92.0	1,656.1	88.8	44.8
1999	2,103.1	94.8	1,708.4	91.6	44.8
2000	2,122.4	95.7	1,726.7	92.6	44.9
2001	2,130.6	96.1	1,728.9	92.7	44.8
2001[a]	2,128.7	96.0	1,754.6	94.1	45.2
2002[a]	2,125.6	95.8	1,758.1	94.3	45.3

[a] See note of Table 3.7.
Source: 1980–91: KSH MEM, 1992– : KSH MEF.

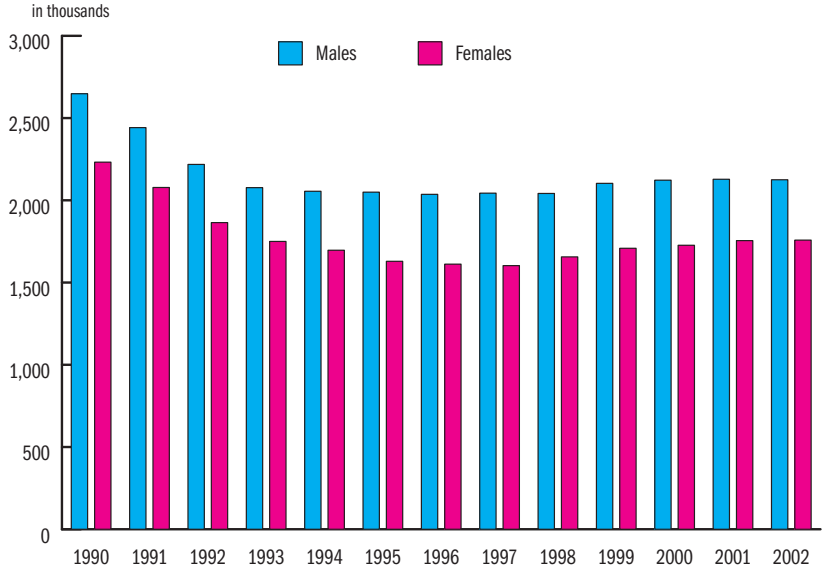


Figure 4.4: Employed by gender

Table 4.5: Composition of the employed by age groups – males, per cent

Year	15–19	20–24	25–49	50–54	55–59	60+	Total
	years old						
1980	5.1	12.6	55.4	10.2	8.0	8.7	100.0
1990	5.0	10.8	64.1	8.6	6.8	4.7	100.0
1991	4.5	10.9	65.3	8.9	6.7	3.7	100.0
1992	3.3	10.9	67.2	9.1	6.5	2.9	100.0
1993	2.9	11.1	68.3	9.2	6.1	2.3	100.0
1994	2.9	11.3	68.7	9.5	5.5	2.0	100.0
1995	2.8	11.3	68.8	9.7	5.6	1.8	100.0
1996	2.5	11.6	69.3	9.6	5.6	1.4	100.0
1997	2.3	12.3	68.9	9.9	5.4	1.2	100.0
1998	2.3	13.4	67.6	10.3	5.1	1.3	100.0
1999	1.9	13.2	67.1	10.5	5.6	1.6	100.0
2000	1.5	12.4	67.3	10.6	6.4	1.8	100.0
2001	1.1	10.9	68.3	11.0	6.9	1.8	100.0
2001[a]	1.2	10.4	68.6	11.1	6.7	2.0	100.0
2002[a]	0.9	9.4	69.4	11.3	6.9	2.1	100.0

[a] See note of Table 3.7.
Source: Census based estimates. 1992–: KSH MEF.

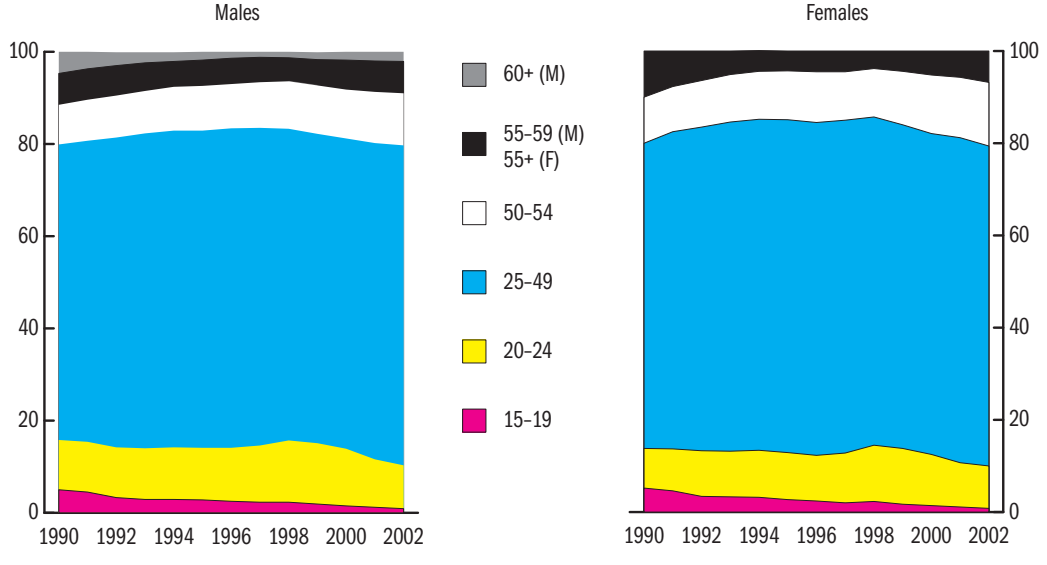


Figure 4.5: Employed by age, per cent

Table 4.6: Composition of the employed by age groups – females, per cent

Year	15–19	20–24	25–49	50–54	55+	Total
			years old			
1980	5.3	9.7	61.8	10.7	12.5	100.0
1990	5.2	8.6	66.2	10.0	10.0	100.0
1991	4.6	9.1	68.8	9.8	7.7	100.0
1992	3.4	9.9	70.2	10.1	6.4	100.0
1993	3.3	9.9	71.4	10.3	5.1	100.0
1994	3.2	10.2	71.8	10.4	4.5	100.0
1995	2.7	10.2	72.2	10.6	4.3	100.0
1996	2.4	9.9	72.2	11.0	4.5	100.0
1997	2.0	10.8	72.2	10.5	4.5	100.0
1998	2.3	12.2	71.2	10.5	3.8	100.0
1999	1.7	12.1	70.2	11.6	4.4	100.0
2000	1.4	11.1	69.6	12.7	5.2	100.0
2001	1.1	10.1	70.0	13.0	5.8	100.0
2001[a]	1.1	9.6	70.5	13.1	5.7	100.0
2002[a]	0.8	9.2	69.4	13.8	6.8	100.0

[a] See note of Table 3.7.
Source: 1980–91: Census based estimates. 1992–: KSH MEF.

Table 4.7: Composition of the employed by level of education – males, per cent

Year	8 grades of primary school or less	Vocational school	Secondary school	College, University	Total
1980	40.8	32.3	18.2	8.7	100.0
1990	37.6	30.5	20.1	11.8	100.0
1992	25.9	35.2	24.1	14.7	100.0
1993	24.0	36.2	25.1	14.7	100.0
1994	22.5	38.1	25.2	14.2	100.0
1995	21.3	38.5	25.5	14.7	100.0
1996	20.2	39.3	25.3	15.2	100.0
1997	20.1	39.4	26.5	14.1	100.0
1998	20.3	39.4	25.7	14.7	100.0
1999	16.8	41.5	26.8	14.9	100.0
2000	16.1	41.6	26.7	15.6	100.0
2001	15.7	42.7	26.0	15.6	100.0
2001[a]	15.6	42.8	26.0	15.6	100.0
2002[a]	14.6	43.2	26.4	15.8	100.0

[a] See note of Table 3.7.
Source: 1980–91: Census based estimates. 1992– : KSH MEF. Since 1999 slight changes carried out in the categorisation system.

Table 4.8: Composition of the employed by level of education – females, per cent

Year	8 grades of primary school or less	Vocational school	Secondary school	College, University	Total
1980	53.1	12.3	27.5	7.2	100.0
1990	43.4	13.4	31.4	11.8	100.0
1992	32.8	17.0	36.0	14.2	100.0
1993	31.1	17.9	35.9	15.1	100.0
1994	28.4	19.5	36.8	15.3	100.0
1995	26.5	20.1	37.1	16.3	100.0
1996	25.6	19.6	37.3	17.6	100.0
1997	25.1	20.6	37.9	16.4	100.0
1998	23.6	20.2	38.2	18.0	100.0
1999	20.6	20.3	40.6	18.5	100.0
2000	19.1	20.9	40.8	19.2	100.0
2001	19.0	21.2	40.4	19.4	100.0
2001[a]	19.1	21.3	40.3	19.3	100.0
2002[a]	18.5	21.5	40.2	19.8	100.0

[a] See note of Table 3.7.
Source: 1980–91: Census based estimates. 1992– : KSH MEF.

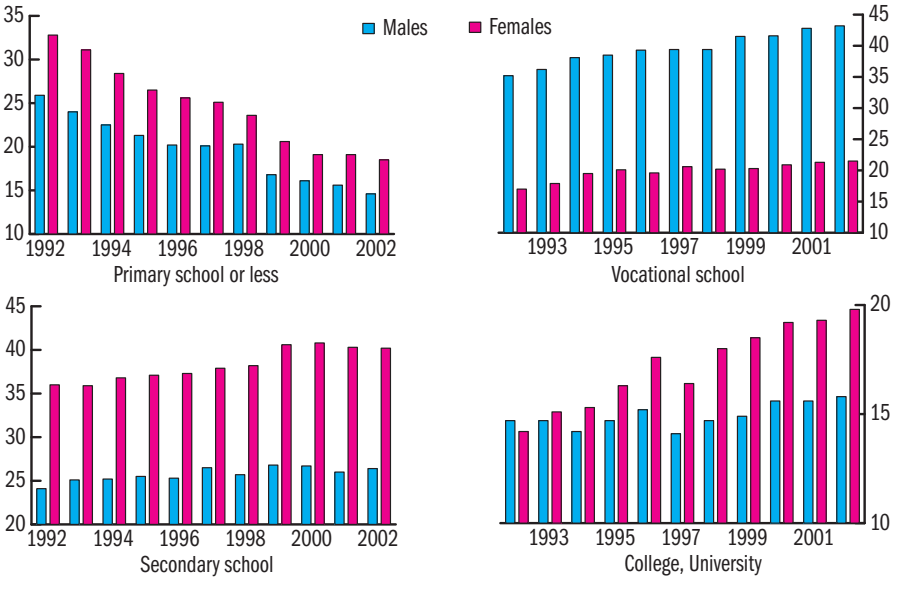


Figure 4.6: Employed by highest educational attainment and gender – per cent

Table 4.9: Employed by type of employment – in thousands

Year	Employees	Member of cooperative	Member of other partnership	Self employed and assisting family member	Total
1992	3,203.4	225.0	257.9	339.4	4,025.7
1993	3,087.6	134.1	197.1	351.5	3,770.3
1994	3,045.2	103.3	174.7	369.3	3,692.5
1995	2,978.9	84.2	167.9	391.8	3,622.8
1996	2,961.2	79.0	151.8	413.1	3,605.1
1997	2,989.7	68.9	137.4	414.3	3,610.3
1998	3,088.5	55.8	132.5	397.9	3,674.7
1999	3,201.3	42.5	111.8	435.9	3,791.5
2000	3,255.5	37.1	129.4	407.1	3,829.1
2001	3,296.3	30.7	119.1	398.4	3,844.5
2001[a]	3,313.6	31.4	118.9	404.4	3,868.3
2002[a]	3,337.2	22.5	109.9	401.0	3,870.6

[a] See note of Table 3.7.
Note: Conscripts are excluded.
Source: 1980–91: KSH MEM, 1992– KSH MEF.

Table 4.10: Composition by type of employment – per cent

Year	Employees	Member of cooperative	Member of other partnership	Self employed and assisting family member	Total
1992	79.6	5.6	6.4	8.4	100.0
1993	81.9	3.6	5.2	9.3	100.0
1994	82.5	2.8	4.7	10.0	100.0
1995	82.2	2.3	4.6	10.8	100.0
1996	82.1	2.2	4.2	11.5	100.0
1997	82.8	1.9	3.8	11.5	100.0
1998	84.0	1.5	3.6	10.8	100.0
1999	84.4	1.1	2.9	11.5	100.0
2000	85.0	1.0	3.4	10.6	100.0
2001	85.7	0.8	3.1	10.4	100.0
2001[a]	85.7	0.8	3.1	10.5	100.0
2002[a]	86.2	0.6	2.8	10.4	100.0

[a] See note of Table 3.7.
Note: See: Table 4.9.

Table 4.11: Employees by industry – per cent*

	1980	1990	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002[1]
Agriculture	18.0	15.8	10.3	8.2	7.6	6.9	7.1	6.6	6.3	5.8	5.2	4.9	4.8
Mining and quarrying	2.2	1.8	1.5	1.2	1.2	1.0	1.0	0.8	0.7	0.7	0.7	0.4	0.4
Manufacturing	29.2	29.5	27.5	25.9	24.7	24.3	24.7	25.1	26.0	26.0	25.9	26.5	26.4
Electricity; gas; steam; water supply	2.9	3.0	2.8	3.1	3.2	2.9	2.7	3.0	2.9	2.6	2.3	2.3	2.1
Construction	7.0	5.9	5.1	5.3	5.0	5.5	5.5	5.5	5.7	6.0	6.4	6.5	6.4
Wholesale and retail trade	8.7	8.9	10.5	10.8	10.9	10.7	11.5	12.0	11.4	12.3	13.0	13.1	13.1
Hotels and restaurants	2.3	2.4	2.5	2.6	2.5	2.9	2.8	3.0	3.0	3.3	3.2	3.5	3.4
Transport; storage; communication	7.4	6.7	8.2	8.9	8.4	8.6	8.6	8.4	8.3	8.3	8.3	8.3	8.1
Financial intermediation	1.1	1.4	1.8	2.1	2.1	2.5	2.5	2.5	2.3	2.2	2.2	2.1	2.0
Real estate; renting; business activities	3.2	2.9	3.3	3.7	3.2	3.4	3.2	3.7	4.0	4.5	5.0	5.4	5.5
Public administration; defence; compulsory social security	4.0	5.6	7.6	8.7	9.4	9.6	9.4	9.0	8.8	8.4	8.1	7.9	8.1
Education	6.0	7.1	8.4	10.0	9.9	10.1	9.8	9.1	9.2	9.0	9.1	8.9	9.1
Health and social work	5.3	5.5	6.3	7.1	7.0	6.9	6.8	7.1	7.1	6.9	6.8	6.6	6.7
Other	2.7	3.4	4.2	4.2	4.8	4.7	4.1	4.2	4.3	4.0	3.9	3.7	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Includes members of cooperatives and partnerships.
1 See: Table 4.1.
Source: 1980 –1990: 1980–1990: Census based estimates; 1992–: KSH MEF.

Table 4.12: Employees of the corporate sector by firm size – per cent

Year	Less than 20	20–49	0–249	250–999	More than 1000
	number of employees				
1995	0.1	6.3	31.1	29.9	32.7
1996	0.5	6.2	32.0	26.5	34.8
1997	0.5	6.5	34.3	25.0	33.8
1998	0.5	6.3	32.4	26.4	34.4
1999	0.6	7.5	34.2	25.5	32.3
2000	0.7	7.4	41.5	22.4	28.0
2001	0.9	9.6	38.5	23.0	28.0
2002	0.2	2.0	52.6	21.3	23.9

Note: 1995–1999: firms employing 10 or more workers; 2000–2002 firms employing 5 more workers.
Source: FH BT

Table 4.13: Employees of the corporate sector by the share of foreign ownership – per cent

Foreign Ownership	1997	1998	1999	2000	2001	2002
100%	12.2	14.4	17.1	17.5	19.0	17.7
Majority	12.3	13.9	13.5	11.7	11.0	9.2
Minority	7.3	7.6	6.0	5.3	4.9	3.6
0%	68.2	64.1	63.4	65.5	65.1	69.5

Note: 1997–1999: firms employing 10 or more workers; 2000–2002: firms employing 5 or more workers.
Source: FH BT.

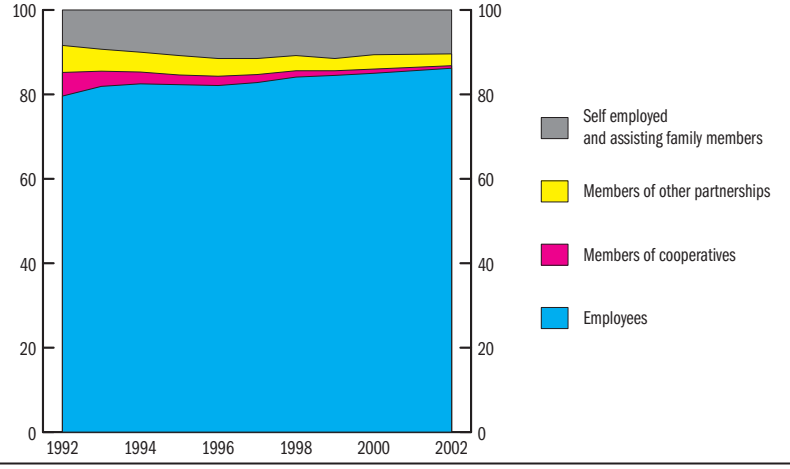


Figure 4.7: Ratio of employees, members of ooperatives, members of other partnerships, self-employed and assisting family members, per cent

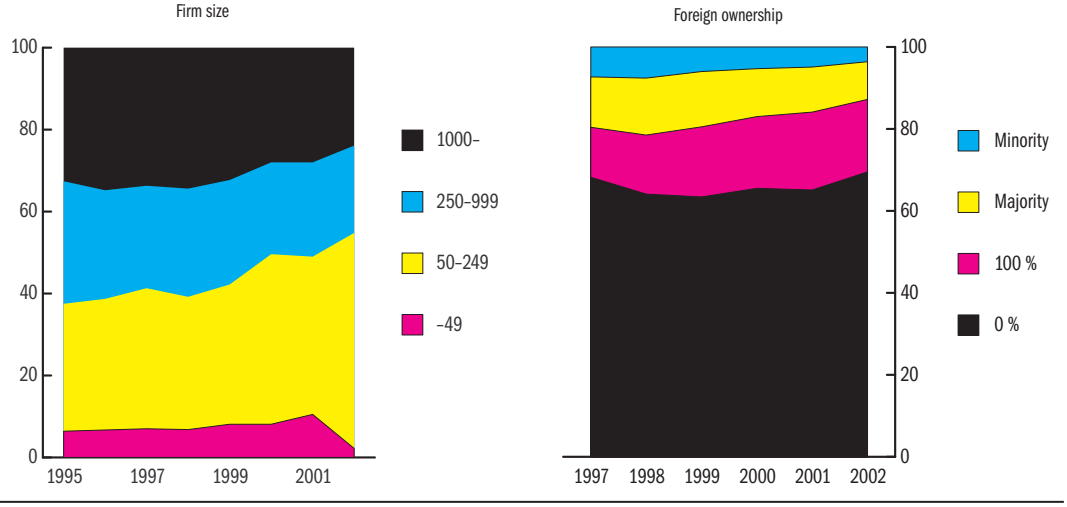


Figure 4.8: Employees of the corporate sector by firm size and by the share of foreign ownership

Table 5.1: Unemployment rate by age and gender and percentage of long term unemployed

Year	Unemployment rate			Of which	
	Males	Females	Together	15–24 ages	Long term unemployed[1]
1992	10.7	8.7	9.8	17.5	...
1993	13.2	10.4	11.9	21.3	...
1994	11.8	9.4	10.7	19.4	43.2
1995	11.3	8.7	10.2	18.6	50.6
1996	10.7	8.8	9.9	17.9	54.4
1997	9.5	7.8	8.7	15.9	51.3
1998	8.5	7.0	7.8	13.4	48.8
1999	7.5	6.3	7.0	12.4	49.5
2000	7.0	5.6	6.4	12.1	49.1
2001	6.3	5.0	5.7	10.8	46.7
2001[a]	6.3	5.0	5.7	10.9	46.7
2002[a]	6.1	5.4	5.8	12.3	44.9

1 Long term unemployed = 12 or more months without job.
[a] See note of Table 3.7.
Source: KSH MEF.

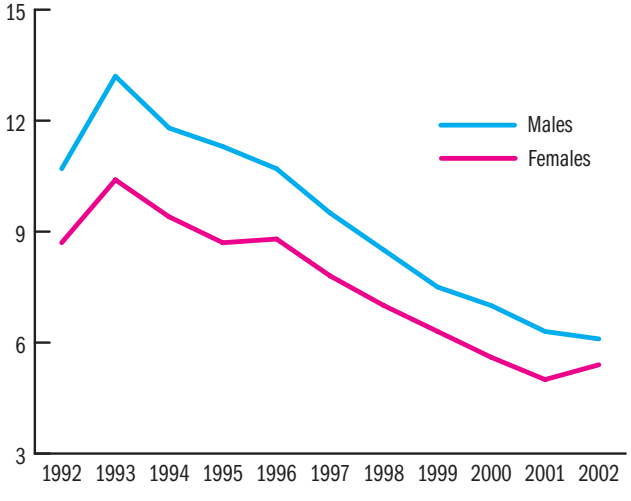


Figure 5.1: Unemployment rate by gender and length

Table 5.2: The distribution of unemployed by duration of job search – in thousands*

Year	Duration of job search								Total
	1-4 [<1]	5-14 [1-3]	15-26 [4-6]	27-51 [7-11]	52 [12]	53-78 [13-18]	79-104 [19-24]	105- [>24]	
	weeks [month]								
1992	43.9	90.9	96.4	110.7	10.6	41.7	38.4	-	432.6
1993	36.2	74.8	87.9	120.5	14.7	75.1	83.7	-	492.9
1994	30.5	56.5	65.0	91.9	8.4	63.0	73.8	40.4	429.5
1995	23.0	51.0	56.5	69.4	20.2	57.2	34.3	93.2	404.8
1996	19.9	46.4	49.3	61.5	18.2	56.1	37.1	100.2	388.7
1997	16.1	43.7	45.9	54.4	15.7	44.5	31.1	77.3	328.7
1998	12.9	44.2	44.5	45.7	16.0	39.0	27.6	63.5	293.4
1999	15.4	44.1	38.8	46.0	13.2	38.1	26.8	62.3	284.7
2000	16.7	38.5	35.1	42.8	12.7	36.9	23.6	55.4	261.3
2001	14.7	36.9	33.1	38.3	11.3	31.4	20.9	44.1	230.7
2001[a]	14.9	37.0	33.2	38.6	11.5	31.6	20.9	44.2	231.9
2002[a]	15.5	39.4	34.8	40.7	11.6	32.7	19.8	42.5	237.0

* Without those unemployed who will get a new job within 30 days.
[a] See note of Table 3.7.
Source: KSH MEF.

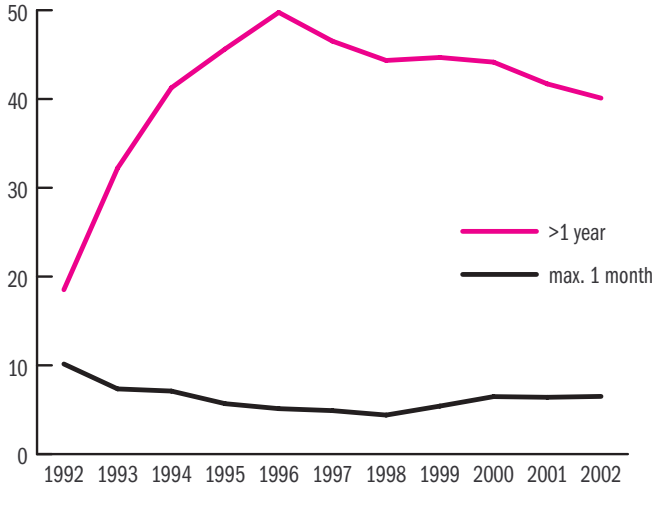
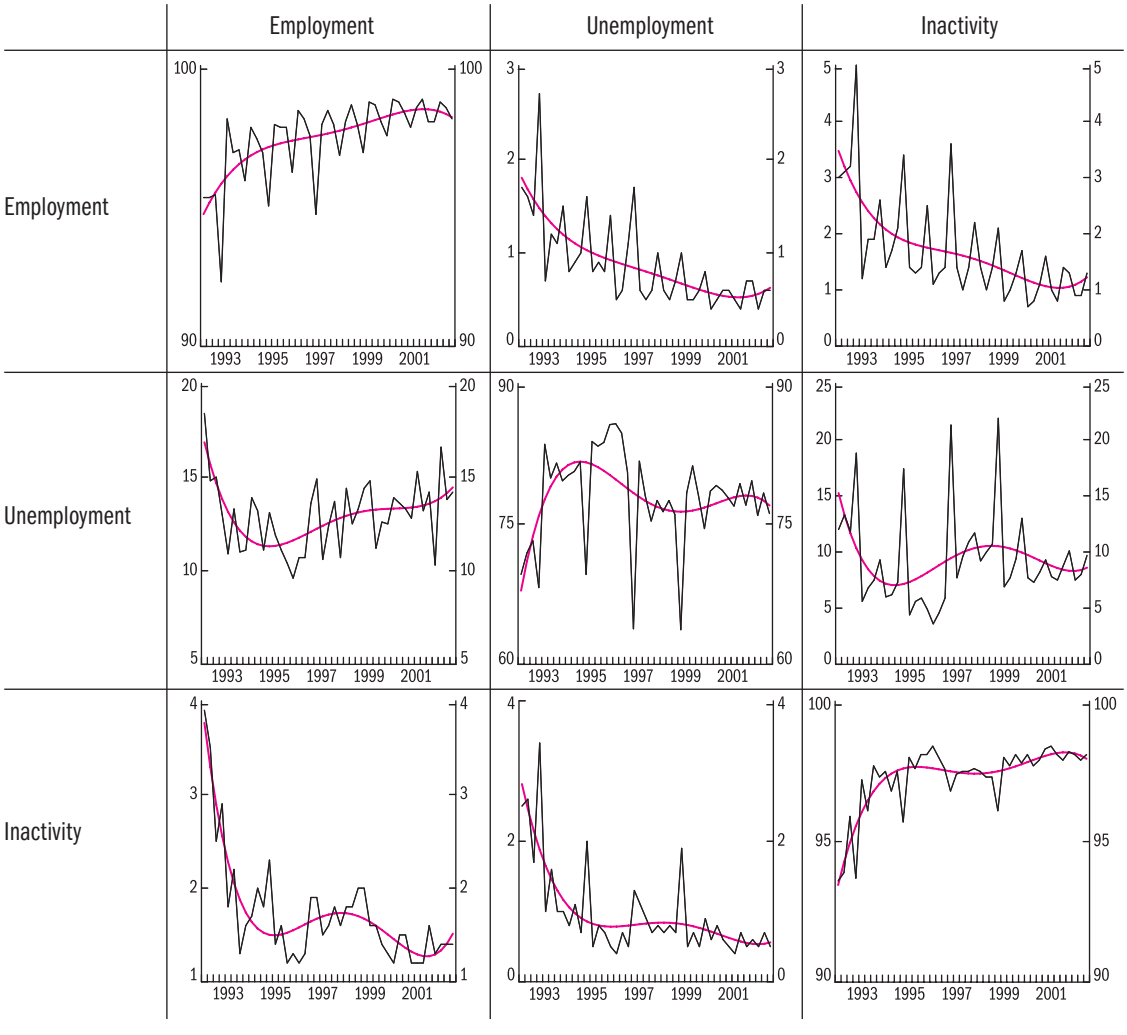


Figure 5.2: The distribution of unemployed by duration of job search – in thousands

Figure 5.3: Quarterly flows between labour market states, population between 15–74 years



The data refer to 15–74 aged cohorts observed in the LFS in two consecutive quarters. Red curves: smoothed with fourth degree polinomial.
Source: KSH MEF.

Table 5.3: Registered and LFS unemployment

Year	Registered unemployed		LFS unemployed total		LFS unemployed aged 15–24	
	In thousands	Per cent	In thousands	Per cent	In thousands	Per cent
1990	477.4	–	–	–		
1991	227.3	4.1	–	–		
1992	557.0	10.3	444.2	9.8	120.0	17.5
1993	671.8	12.9	518.9	11.9	141.3	21.3
1994	568.4	11.3	451.2	10.7	124.7	19.4
1995	507.7	10.6	416.5	10.2	114.3	18.6
1996	500.6	11.0	400.1	9.9	106.3	17.9
1997	470.1	10.5	348.8	8.7	95.8	15.9
1998	423.1	9.5	313.0	7.8	87.6	13.4
1999	409.5	9.7	284.7	7.0	78.6	12.4
2000	390.5	9.3	262.5	6.4	70.7	12.1
2001	364.1	8.5	232.9	5.7	55.7	10.8
2002	344.7	8.0	238.8	5.8	56.5	12.3

Note: The denominator of the unemployment rate is the economically active population on 1st January of the previous year.
Source: Registered unemployed: FH REG; LFS unemployed: KSH MEF.

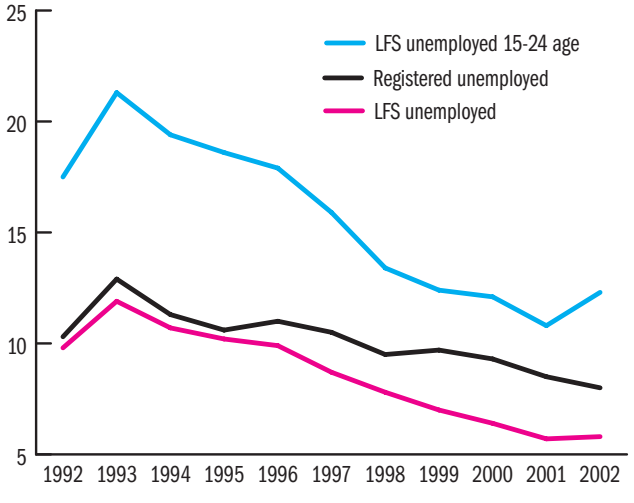


Figure 5.4: Registered and LFS, LFS 15–24 age unemployment rates

Table 5.4: Registered unemployed by economic activity as observed in the LFS

Year	Employed	Unemployed	Inactive	Total
1992	5.1	71.6	23.3	100.0
1993	10.0	63.6	26.4	100.0
1994	14.4	54.5	31.1	100.0
1995	11.8	53.7	34.5	100.0
1996	13.7	51.8	34.5	100.0
1997	18.7	44.1	37.2	100.0
1998	24.8	35.1	40.1	100.0
1999	6.7	55.8	37.5	100.0
2000	4.7	54.3	41.0	100.0
2001	6.5	45.2	48.3	100.0
2002[a]	4.4	47.4	48.2	100.0

[a] See: Table 4.1.

Note: The data refer to the population observed as registered unemployed in the LFS. Since 1999 serious methodology changes: people whose last contact with employment office was more then two months before were excluded.

Source: KSH MEF.

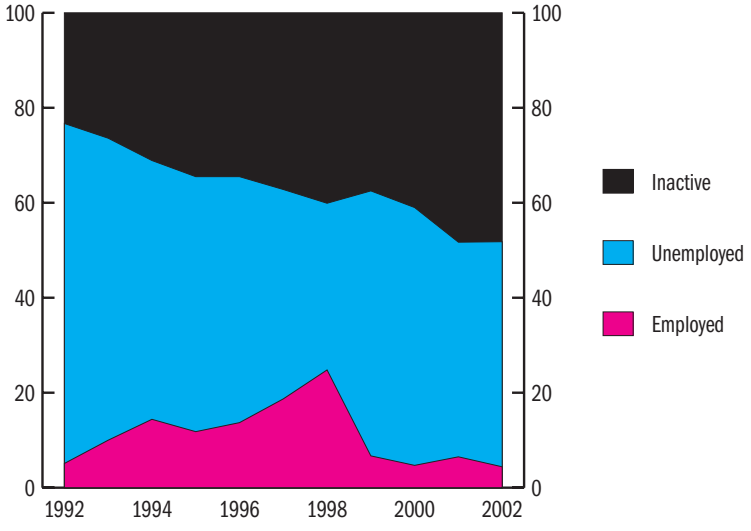


Figure 5.5: Registered unemployed by economic activity

Table 5.5: Selected time series of registered unemployment, yearly average – in thousands, per cent

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Unemployment rate	10.3	12.9	11.3	10.6	11.0	10.5	9.5	9.7	9.3	8.5	8.0
Registered unemployment	557.0	671.7	568.4	507.7	500.6	470.1	423.1	409.5	390.5	364.1	344.7
Of which:											
School-leavers	39.6	59.7	62.1	54.5	46.2	42.4	32.5	29.9	26.0	26.8	28.5
Non school-leavers	517.4	612.0	506.2	453.2	454.4	427.7	390.6	379.6	364.4	337.4	316.2
Males	328.0	395.3	333.0	293.8	284.1	267.1	233.4	221.4	209.7	196.4	184.6
Females	228.9	276.4	235.3	213.8	216.5	203.0	189.7	188.1	180.8	167.7	160.1
25 years old and younger	139.7	174.8	153.3	134.2	124.0	105.8	89.9	85.4	79.1	75.6	71.1
Manual workers	465.1	556.0	467.6	414.3	407.4	386.3	349.0	336.8	321.2	302.0	286.3
Non manual workers	91.9	115.8	100.7	93.4	93.2	83.8	74.1	72.7	69.3	62.1	58.4
Unemployment benefit recipients	412.9	404.8	228.9	182.8	171.7	141.7	130.7	140.7	131.7	119.2	114.9
Unemployment assistance recipients	18.4	89.3	190.3	210.0	211.3	201.3	182.2	148.6	143.5	131.2	113.4
Shares within registered unemployed											
School-leavers	7.1	8.9	10.9	10.7	9.2	9.0	7.7	7.3	6.7	7.3	8.3
Males	58.9	58.8	58.6	57.9	56.7	56.8	55.2	54.1	53.7	53.9	53.5
25 years old and younger	25.1	26.0	27.0	26.4	24.8	22.5	21.3	20.9	20.3	20.8	20.6
Manual workers	83.5	82.8	82.3	81.6	81.4	82.2	82.5	82.3	82.2	82.9	83.1
Inflow to the Register	–	48.6	42.3	45.7	52.8	56.1	55.4	57.2	54.1	57.0	56.0
Of which: school-leavers	–	7.6	7.8	8.0	7.5	9.2	9.8	9.3	8.0	7.8	7.8
Outflow from the Register	–	51.2	51.7	47.6	54.3	57.3	60.4	57.2	56.8	59.4	55.8
Of which: school-leavers	–	6.6	7.9	8.5	8.9	9.0	11.0	9.4	8.2	7.7	7.5

Note: from 2001 together with regular social allowance recipients.
Source: FH REG.

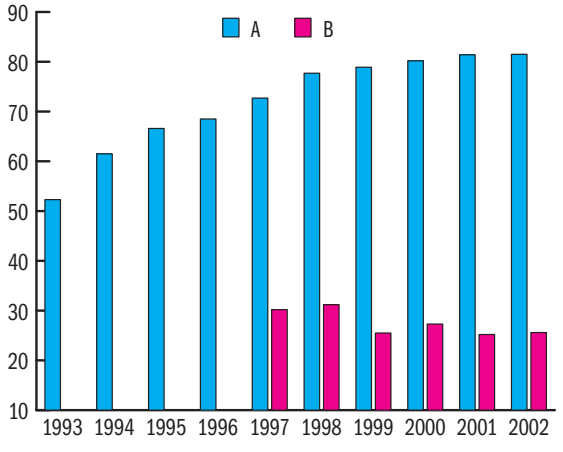


Figure 5.6: Long-term registered unemployment

A: Time since first registration exceeds 1 year; per cent of total registered unemployment.
B: Time since last registration exceeds 1 year; per cent of total registered unemployment.

Table 5.6: First-time entrants and re-entrants to the unemployment register, 2002 – in thousands

	January	February	March	April	May	June	July	August	September	Oktober	November	December	Monthly average
1995													
First-Time Entrants	20.0	18.5	15.6	15.8	13.8	17.9	27.9	16.9	16.4	15.5	12.9	12.4	17.0
Re-Entrants	36.3	24.6	18.8	20.8	18.0	23.3	35.3	24.8	35.2	27.3	40.3	40.0	28.7
Total Number of Entrants	56.3	43.0	34.4	36.6	31.8	41.2	63.2	41.7	51.6	42.8	53.2	52.4	45.7
1996													
First-Time Entrants	18.6	20.3	18.3	17.0	16.2	21.8	34.7	18.5	21.6	14.6	16.2	12.7	19.2
Re-Entrants	38.9	30.9	25.2	22.9	31.5	34.0	37.5	31.2	38.3	37.8	38.0	37.4	33.6
Total Number of Entrants	57.4	51.1	43.4	40.0	47.7	55.7	72.1	49.7	59.9	52.4	54.2	50.2	52.8
1997													
First-Time Entrants	18.1	20.7	15.3	13.6	13.7	20.6	27.2	17.6	18.3	13.6	14.5	10.5	17.0
Re-Entrants	56.7	47.5	36.3	32.5	30.0	32.5	34.3	32.5	36.9	36.9	47.5	46.5	39.2
Total Number of Entrants	74.8	68.3	51.6	46.1	43.7	53.1	61.4	50.1	55.2	50.5	62.0	57.0	56.1
1998													
First-Time Entrants	13.8	14.9	11.8	10.4	10.6	12.2	21.9	15.1	15.7	12.9	12.2	9.2	13.4
Re-Entrants	58.9	46.3	39.1	35.0	35.5	32.9	36.1	34.6	38.4	44.4	50.9	52.0	42.0
Total Number of Entrants	72.7	61.2	50.9	45.3	46.1	45.1	58.0	49.7	54.1	57.3	63.1	61.1	55.4
1999													
First-Time Entrants	12.7	12.5	11.1	10.2	10.3	10.6	21.0	14.7	16.9	12.3	11.6	9.8	12.8
Re-Entrants	59.7	47.2	42.4	39.8	38.7	35.9	40.2	39.8	42.5	43.3	49.6	53.9	44.4
Total Number of Entrants	72.4	59.6	53.5	50.0	48.9	46.5	61.2	54.5	59.4	55.7	61.1	63.7	57.2
2000													
First-Time Entrants	11.9	12.0	9.9	9.7	7.4	9.6	18.1	12.3	14.9	10.7	9.6	8.8	11.2
Re-Entrants	57.4	46.3	39.9	39.2	32.0	37.9	41.1	35.0	42.9	43.4	45.8	53.9	42.9
Total Number of Entrants	69.3	58.3	49.8	48.9	39.4	47.5	59.2	47.3	57.8	54.1	55.4	62.7	54.1
2001													
First-Time Entrants	11.2	12.9	9.9	9.7	8.3	10.9	15.8	11.5	15.9	10.6	9.6	8.7	11.2
Re-Entrants	57.5	53.7	42.0	42.9	38.5	42.3	52.7	22.9	46.6	45.8	46.1	57.7	45.8
Total Number of Entrants	68.7	66.6	51.9	52.6	46.8	53.2	68.5	34.4	62.5	56.4	55.7	66.4	57.0
2002													
First-Time Entrants	9.9	12.5	8.9	8.2	7.2	9.9	15.1	11.6	14.0	9.6	9.6	7.7	10.4
Re-Entrants	54.3	57.4	42.0	41.0	39.4	40.9	42.3	39.5	45.2	43.6	48.1	54.3	45.6
Total Number of Entrants	64.2	69.9	50.9	49.2	46.6	50.8	57.4	51.1	59.2	53.2	57.7	62.0	56.0

Source: FH REG.

Table 5.7: Monthly average of inflow of first time registered unemployed in 2001 by occupation (2 digit FEOR code)

Code	Occupational groups	Average monthly inflow		
		School-leavers	Non school-leavers	Together
01	Occupations of armed forces requiring higher (third-level) qualification	3.4	4.9	8.2
02	Occupations of armed forces requiring secondary-level qualification	14.1	13.1	27.2
03	Occupations of armed forces not requiring secondary-level qualification	2.7	4.8	7.5
11	Legislators; senior governm. officials; sen. officials of nation-wide spec.-interest organisations	0.5	0.6	1.0
12	Sen. officials of reg. and loc. self-governm.; public admin.; jurisdiction and spec.-interest orgs	1.0	3.5	4.5
13	Managers of businesses and budgetary institutions	51.7	143.2	194.9
14	General managers of small enterprises and budgetary institutions	3.3	15.3	18.5
21	Engineering and natural science professionals	144.7	98.1	242.8
22	Health professionals	5.6	13.1	18.7
23	Welfare and labour market service professionals	9.0	6.0	14.9
24	Teaching professionals	134.8	132.7	267.5
25	Business; legal and social science professionals	106.1	84.5	190.5
26	Cultural, sport, artistic and religious professionals	12.8	21.6	34.4
29	Professionals N.E.C.	0.8	5.5	6.2
31	Technicians and related associate professionals	228.3	163.0	391.3
32	Health associate professionals	25.3	118.0	143.2
33	Welfare and labour market services occupations	11.2	15.9	27.0
34	Teaching associate professionals	18.3	16.8	35.0
35	Legal; life and property protection services associate professionals	6.2	10.0	16.1
36	Business and financial intermediation clerks	130.0	242.8	372.7
37	Cultural, sport, artistic and religious associate professionals	6.7	17.5	24.1
39	Clerks N.E.C.	5.1	27.4	32.5
41	Office clerks	563.5	462.8	1,026.2
42	Management [consumer services] clerks	67.6	101.4	169.0
51	Wholesale and retail trade; hotels and restaurants workers	385.8	866.0	1,251.8
52	Transport; postal and communications workers	3.3	40.9	44.1
53	Non-material service workers	87.7	161.6	249.3
61	Skilled agricultural workers	42.3	95.5	137.8
62	Skilled forestry and game farming workers	5.5	13.9	19.4
63	Skilled fishery workers	0.4	2.2	2.5
64	Plant protection, plant health protection and soil conservation workers	0.7	0.2	0.9
71	Extraction workers	2.7	19.1	21.8
72	Food processing and related trades workers	30.5	113.1	143.6
73	Light industry workers	158.5	465.1	623.5
74	Steel and metal trades workers	184.5	514.2	698.6
75	Handicraft; miscellaneous industry and warehouse workers; laboratory assistants	12.2	101.1	113.3
76	Construction workers	131.8	288.3	420.0
81	Manufacturing machine operators	31.4	330.4	361.7
82	Other stationary-plant operators	13.9	57.6	71.5
83	Mobile-plant operators	22.8	274.5	297.3
91	Elementary services occupations [without agriculture]	912.1	1,385.4	2,297.5
92	Agricultural and forestry labourers	8.1	12.7	20.8
–	Unfilled	40.0	30.5	70.5
	Total	3,625.1	6,493.1	10,118.1

Source: FH-REG.

Table 5.8: Benefit receipt and participation in active labour market programs

Year	Unemployment benefit	Unemployment assistance	UA for school-leavers	Do not receive provision	Public work	Retraining	Wage subsidy	Other programmes	Total
1990									
In thousands	42.5	–	–	18.6	...	...	...	...	61.0
Per cent	69.6			30.4					100.0
1993									
In thousands	312.4	123.2	23.8	195.6	26.0	30.1	14.8	45.2	771.1
Per cent	40.5	16.0	3.1	25.4	3.4	3.9	1.9	5.9	100.0
1994									
In thousands	160.3	202.4	24.5	142.4	28.7	31.2	23.9	61.7	675.1
Per cent	23.7	30.0	3.6	21.1	4.3	4.6	3.5	9.1	100.0
1995									
In thousands	150.8	192.9	26.3	109.1	21.7	20.4	10.9	64.7	596.8
Per cent	25.3	32.3	4.4	18.3	3.6	3.4	1.8	10.8	100.0
1996									
In thousands	145.4	218.5	2.6	127.8	38.5	20.6	16.4	74.5	644.3
Per cent	22.6	33.9	0.4	19.8	6.0	3.2	2.5	11.6	100.0
1997									
In thousands	134.1	193.5	0.1	121.8	38.9	25.1	29.7	95.7	638.9
Per cent	21.0	30.3	0.0	19.1	6.1	3.9	4.6	15.0	100.0
1998									
In thousands	123.9	158.6	0.1	109.4	37.4	24.5	30.9	86.7	571.5
Per cent	21.7	27.7	0.0	19.1	6.5	4.3	5.4	15.2	100.0
1999									
In thousands	135.5	146.7	0.0	107.1	35.7	28.0	31.1	60.6	544.7
Per cent	24.9	26.9	0.0	19.7	6.6	5.1	5.7	11.1	100.0
2000									
In thousands	117.0	139.7[a]	0.0	106.5	26.7	25.3	27.5	73.5	516.2
Per cent	22.7	27.1	0.0	20.6	5.2	4.9	5.3	14.2	100.0
2001									
In thousands	111.8	113.2	0.0	105.2	29.0	30.0	25.8	37.2	452.2
Per cent	24.7	25.0	0.0	23.3	6.4	6.6	5.7	8.2	100.0
2002									
In thousands	104.8	107.6	–	115.3	21.6	23.5	21.2	32.8	426.8
Per cent	24.6	25.2	–	27.0	5.1	5.5	5.0	7.7	100.0

[a] Together with the number of regular social allowance recipients.

Note: October. The percentage ratios refer to the combined number of the registered unemployed and program participants.

Source: FH.

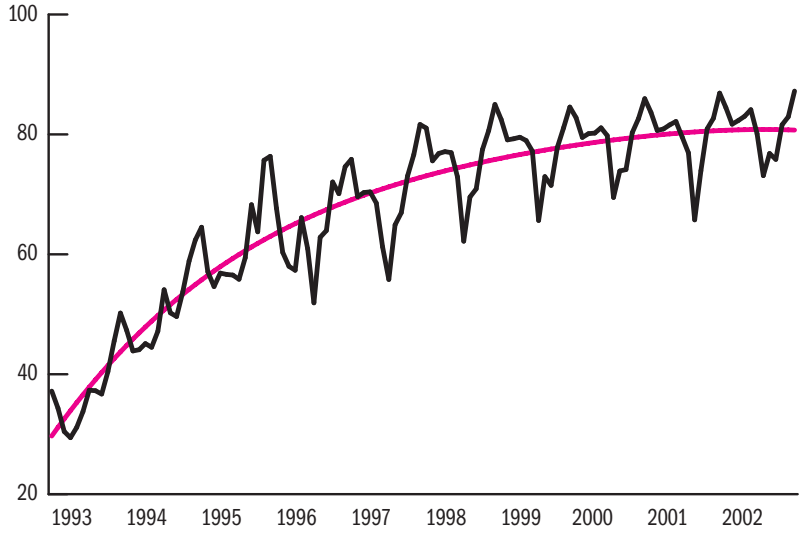


Figure 5.7: Ratio of re-entrants within the total inflow to the register

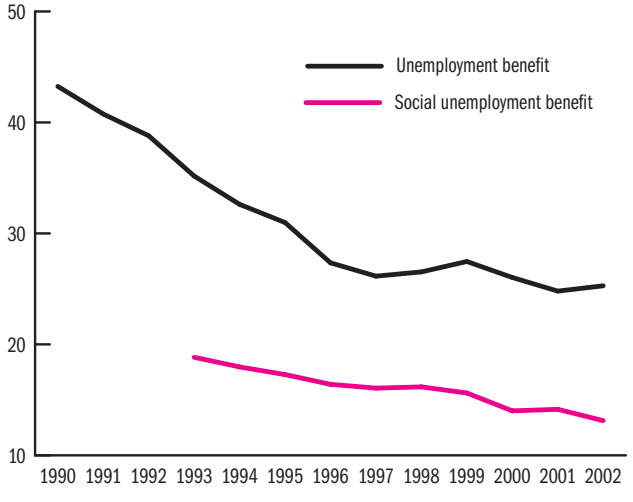


Figure 5.8: The ratio of average unemployment benefit, unemployment assistance and regular social allowance to average gross earnings

Table 5.9: Distribution of registered unemployed, unemployment benefit recipients and unemployment assistance by educational attainment

Educational attainment	Registered unemployed				Unemployment benefit				Unemployment assistance[1]			
	1995	1998	2001	2003	1995	1998	2001	2003	1995	1998	2001	2003
Max. 8 classes of primary school	43.6	40.9	42.3	42.8	36.9	32.0	29.7	29.7	56.8	50.0	55.5	59.9
Vocational school	34.5	36.0	34.2	33.1	36.6	39.5	40.7	40.4	30.6	34.3	30.0	28.5
Vocational secondary school	11.7	12.8	13.0	13.2	14.9	16.0	16.7	17.0	6.9	8.7	7.4	6.3
Grammar school	7.9	7.8	7.7	7.6	8.3	9.0	9.0	8.6	4.5	5.7	5.1	4.3
College diplom, BA	1.5	1.8	2.1	2.5	2.2	2.6	2.9	3.1	0.8	1.0	0.9	0.8
University diplom, MA	0.7	0.6	0.7	0.9	1.0	0.9	1.0	1.1	0.3	0.3	0.3	0.2
Total, per cent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
in thousands	482.7	406.4	359.6	336.2	164.1	121.3	110.3	99.0[a]	220.7	186.6	136.9	111.5

1 Recipients of regular social assistance are included since 2001.
[a] Since 2003 recipients of unemployment allowance before retirement are excluded
Note: On the closing date of June in every year.
Source: FH.

Table 6.1: Inactive population by gender*

Year	Males			Females		
	In thousands	1992 = 100	Inactivity ratio[1]	In thousands	1992 = 100	Inactivity ratio[1]
1980	961.0	66.1	24.2	1,940.7	82.3	44.3
1990	1,219.6	83.9	31.2	2,105.7	89.2	48.3
1991	1,332.4	91.7	33.9	2,203.4	93.4	50.3
1992	1,453.0	100.0	36.9	2,359.5	100.0	53.6
1993	1,551.1	106.8	39.3	2,462.1	104.3	55.8
1994	1,618.0	111.4	41.0	2,552.1	108.2	57.7
1995	1,634.9	112.5	41.4	2,645.7	112.1	59.7
1996	1,662.6	114.4	42.2	2,663.2	112.9	60.1
1997	1,680.2	115.6	42.7	2,692.4	114.1	60.8
1998	1,698.3	116.9	43.2	2,646.3	112.2	59.8
1999	1,644.4	113.2	42.0	2,596.2	110.0	58.8
2000	1,700.9	117.1	42.7	2,687.9	113.9	59.5
2001	1,718.7	118.3	43.1	2,707.3	114.7	59.8
2001[a]	1,714.9	...	43.0	2,679.2	...	59.2
2002[a]	1,720.6		43.2	2,668.5	...	58.9

* Population above 15 years of age.
1 Per cent of the population above 15 years of age.
[a] See note of Table 3.7.
Note: See notes at table 3.1.

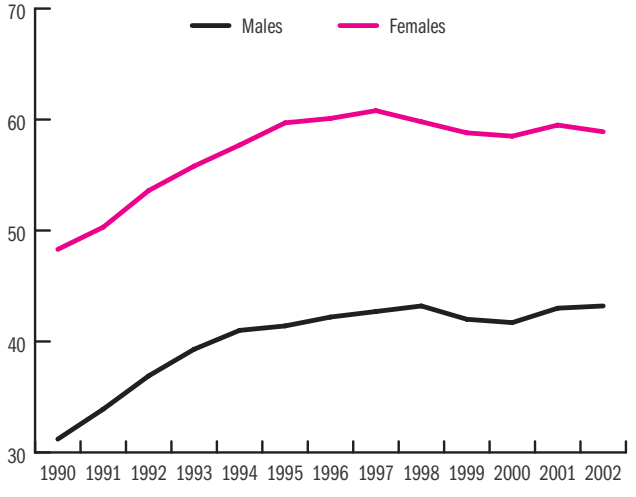


Figure 6.1: Inactive ratio by gender

Table 6.2: 15–54/15–59 years old inactive population by gender

Year	Males			Females		
	In thousands	1992 = 100	Inactivity ratio[1]	In thousands	1992 = 100	Inactivity ratio[1]
1980	469.2	64.2	14.6	800.4	81.7	27.2
1990	554.1	75.8	17.8	826.3	84.3	28.9
1991	631.7	86.4	20.2	858.9	87.7	29.8
1992	730.9	100.0	23.2	979.9	100.0	33.8
1993	815.4	111.6	25.8	1,056.6	107.8	36.3
1994	878.0	120.1	27.8	1,128.3	115.1	38.7
1995	892.3	122.1	28.2	1,207.7	123.2	41.4
1996	916.3	125.4	28.9	1,224.9	125.0	42.0
1997	936.7	128.2	29.6	1,247.1	127.3	42.9
1998	961.0	131.5	30.4	1,186.0	121.0	40.9
1999	917.2	125.5	29.1	1,138.2	116.2	39.5
2000	940.5	128.7	29.5	1,177.3	120.3	40.3
2001	949.2	129.8	29.8	1,199.7	122.4	41.1
2001[a]	951.9	...	29.9	1,170.4	...	40.1
2002[a]	956.2	...	30.1	1,169.0	...	40.2

1 Per cent of the working age population.
[a] See note of Table 3.7.
Source: 1980–91: KSH MEM; 1992– KSH MEF.

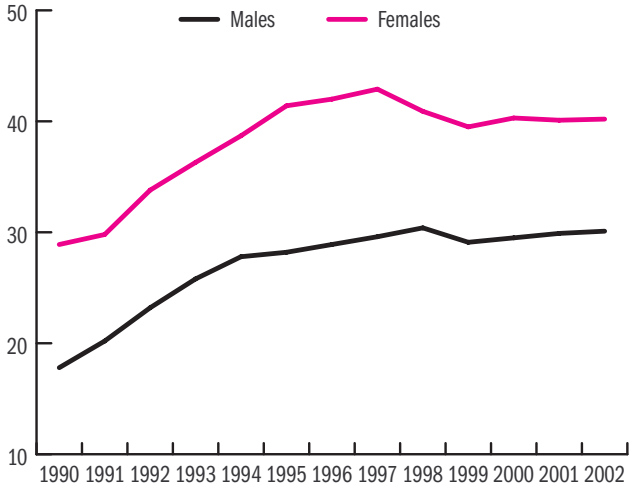


Figure 6.2: Inactivity ratio of working age population by gender

Table 7.1: Nominal and real earnings

Year	Gross earnings	Net earnings	Gross earning index	Net earnings index	Consumer price index	Real earnings index
	HUF		previous year = 100%			
1989	10,571	8,165	117.9	116.9	117.2	99.7
1990	13,446	10,108	128.6	121.6	128.9	94.3
1991	17,934	12,948	130.0	125.5	135.0	93.0
1992	22,294	15,628	125.1	121.3	123.0	98.6
1993	27,173	18,397	121.9	117.7	122.5	96.1
1994	33,939	23,424	124.9	127.3	118.8	107.2
1995	38,900	25,891	116.8	112.6	128.2	87.8
1996	46,837	30,544	120.4	117.4	123.6	95.0
1997	57,270	38,145	122.3	124.1	118.3	104.9
1998	67,764	45,162	118.3	118.4	114.3	103.6
1999	77,187	50,076	116.1	112.7	110.0	102.5
2000	87,645	55,785	113.5	111.4	109.8	101.5
2001	103,558	64,915	118.0	116.2	109.2	106.4
2002	122,453	77,607	118.3	119.6	105.3	113.6

Source: KSH IMS.

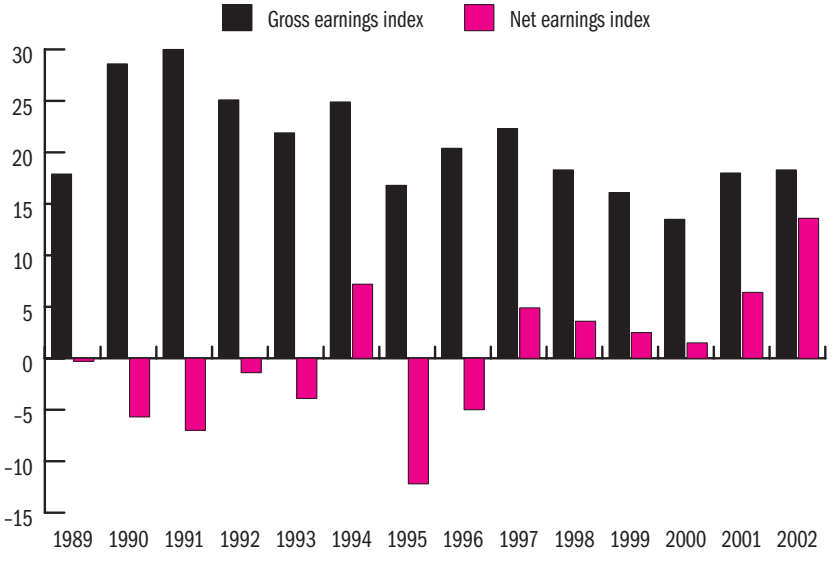


Figure 7.1: Change of gross real earnings and net real earnings

Table 7.2: Gross average earnings by industry – total*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Agriculture	19,230	24,641	29,873	35,073	42,216	48,762	53,521	59,246	72,116	84,240
Mining and quarrying	36,611	43,245	50,765	60,102	76,952	84,977	95,762	112,914	126,796	138,578
Manufacturing	26,317	32,500	38,797	47,178	57,597	67,169	76,335	88,136	101,119	113,659
Electricity; gas; steam and water supply	34,202	41,958	50,805	62,525	75,729	90,305	104,543	119,539	135,682	155,404
Construction	24,053	30,301	32,544	38,407	46,884	54,123	56,753	64,259	79,719	86,191
Wholesale and retail trade	27,294	32,930	36,311	45,463	53,733	62,688	66,913	77,758	90,596	106,530
Hotels and restaurants	23,298	28,040	29,370	35,267	41,012	46,437	50,067	56,593	68,120	81,069
Transport; storage and communication	28,208	35,511	41,437	51,513	63,288	76,108	88,238	98,815	114,447	130,582
Financial intermediation	52,881	62,643	71,194	88,759	114,083	142,432	165,327	189,444	215,970	241,273
Real estate; renting; business activities	31,434	38,275	41,716	51,733	61,146	81,125	89,399	101,019	121,821	133,762
Public administration, defence; compulsory social security	33,550	40,048	45,861	53,523	65,329	75,671	92,821	103,428	131,724	167,841
Education	24,495	31,912	34,866	38,996	49,460	59,822	72,869	81,204	97,647	128,665
Health,and,social,work	22,624	29,446	32,462	37,530	45,376	52,781	59,105	68,304	78,850	103,188
Other	27,794	34,635	39,884	47,857	54,533	63,896	71,199	79,820	91,677	111,567
Total	27,173	33,939	38,900	46,837	57,270	67,764	77,187	87,645	103,553	122,453

* HUF/month, per capita.

Note: The data refer to full-time employees in the budget sector and firms employing at least 20 workers [1993–94], 10 workers [1995–98] and 5 workers [1999–], respectively.

Source: KHS, IMS.

Table 7.3: Gross average earnings by industry – manual workers*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Agriculture	16,544	20,988	25,085	29,679	35,667	41,115	45,548	50,256	61,628	72,104
Mining and quarrying	31,883	37,057	43,054	50,888	64,751	72,065	80,365	93,827	105,141	117,031
Manufacturing	21,689	26,451	31,454	38,280	46,254	53,908	60,846	69,644	79,701	89,693
Electricity; gas; steam and water supply	28,350	34,482	41,551	50,979	61,586	72,890	83,874	94,811	107,785	122,014
Construction	19,789	24,689	26,760	31,257	37,174	42,937	45,069	50,995	60,880	70,060
Wholesale and retail trade	18,270	21,821	24,041	29,279	34,502	39,344	42,105	47,097	57,977	69,861
Hotels and restaurants	17,509	20,547	21,590	26,124	30,560	34,683	37,460	43,185	52,903	63,693
Transport; storage and communication	24,015	29,976	34,087	41,678	49,879	59,222	66,555	72,989	83,995	94,609
Financial intermediation	32,197	36,944	41,443	47,583	65,962	75,118	78,210	80,054	91,678	106,423
Real estate, renting, business activities	19,418	23,015	25,760	31,604	36,083	43,468	46,486	52,693	63,414	73,224
Public administration, defence; compulsory social security	24,072	28,200	31,101	35,276	41,341	47,429	59,498	62,460	78,548	104,885
Education	15,121	18,068	19,758	23,129	28,262	33,886	40,759	45,125	53,943	69,468
Health and social work	18,135	20,776	22,649	26,566	32,264	37,308	42,211	49,029	57,046	74,167
Other	20,250	23,951	27,427	33,237	38,670	44,675	49,170	54,369	64,618	77,575
Total	20,856	25,507	29,203	35,305	42,419	49,423	55,218	61,930	72,626	84,696

* HUF/month, per capita. See note of Table 7.2.

Source: KHS, IMS.

Table 7.4: Gross average earnings by industry – non-manual workers*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Agriculture	28,751	37,213	46,536	54,398	66,041	77,811	83,534	92,018	108,454	125,076
Mining and quarrying	59,776	72,363	86,851	101,708	130,340	138,398	158,687	186,241	210,590	220,839
Manufacturing	42,115	53,464	64,638	79,225	99,868	118,989	135,325	158,394	183,055	203,115
Electricity; gas; steam and water supply	49,451	61,254	73,525	89,634	107,484	128,646	147,268	168,042	187,650	213,493
Construction	40,883	51,837	54,733	64,371	80,924	92,179	97,216	109,064	138,896	138,765
Wholesale and retail trade	41,017	46,808	54,043	67,030	81,262	97,009	102,890	123,195	139,124	158,593
Hotels and restaurants	34,679	42,503	46,812	54,839	66,337	76,985	88,168	97,173	112,104	130,510
Transport; storage and communication	36,158	45,380	54,068	67,556	84,329	101,707	120,085	136,670	158,007	181,799
Financial intermediation	54,108	64,137	72,644	90,338	115,222	143,947	167,244	192,129	218,801	244,252
Real estate; renting; business activities	42,777	53,550	57,607	72,247	88,999	118,360	127,674	142,280	170,435	180,997
Public administration, defence; compulsory social security	39,662	47,769	55,321	66,081	82,634	98,028	117,573	129,679	165,102	206,680
Education	28,000	36,792	40,092	44,196	54,448	64,813	79,344	87,983	105,549	139,017
Health and social work	27,169	34,238	37,488	43,046	51,704	60,113	66,801	76,896	88,339	115,463
Other	37,360	46,722	53,381	62,830	71,432	83,599	94,482	108,976	123,172	150,961
Total	36,832	45,336	52,250	62,309	77,202	92,711	106,962	121,779	143,753	169,862

* HUF/month, per capita. See note of Table 7.2.
Source: KHS, IMS.

Table 7.5: Gross average earnings distribution by industry*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Agriculture	70.8	72.6	76.8	74.9	73.7	72.0	69.3	67.6	69.6	68.8
Mining and quarrying	134.7	127.4	130.5	128.3	134.4	125.4	124.1	128.8	122.9	113.2
Manufacturing	96.8	95.8	99.7	100.7	100.6	99.1	98.9	100.6	97.7	92.8
Electricity; gas; steam and water supply	125.9	123.6	130.6	133.5	132.2	133.3	135.4	136.4	131.0	126.9
Construction	88.5	89.3	83.7	82.0	81.9	79.9	73.5	73.3	77.0	70.4
Wholesale and retail trade	100.4	97.0	93.3	97.1	93.8	92.5	86.7	88.7	87.5	87.0
Hotels and restaurants	85.7	82.6	75.5	75.3	71.6	68.5	64.9	64.6	65.8	66.2
Transport; storage and communication	103.8	104.6	106.5	110.0	110.5	112.3	114.3	112.7	110.5	106.6
Financial intermediation	194.6	184.6	183.0	189.5	199.2	210.2	214.2	216.1	208.6	197.0
Real estate; renting; business activities	115.7	112.8	107.2	110.5	106.8	119.7	115.8	115.3	117.6	109.2
Public administration, defence; compulsory social security	123.5	118.0	117.9	114.3	114.1	111.7	120.3	118.0	127.2	137.1
Education	90.1	94.0	89.6	83.3	86.4	88.3	94.4	92.7	94.3	105.1
Health and social work	83.3	86.8	83.4	80.1	79.2	77.9	76.6	77.9	76.1	84.3
Other	102.3	102.1	102.5	102.2	95.2	94.3	92.2	91.1	88.5	91.1

* National average = 100. See note of Table 7.2.
Source: KHS, IMS.

Table 7.6: The composition of full-time employees and average earnings by gender in major branches of the economy in 2002

	Males		Females		Together		Female/ male earnings ratio
	Composition	Average earning	Composition	Average earning	Composition	Average earning	
	%	HUF/person, month	%	HUF/person, month	%	HUF/person, month	%
Agriculture	7.0	81,116	2.0	75,381	4.6	79,888	92.9
Fishing	0.1	72,567	0.0	69,469	0.0	72,316	95.7
Mining and quarrying	0.6	135,266	0.1	124,149	0.4	133,725	91.8
Manufacturing	32.3	128,658	23.2	96,326	27.9	115,646	74.9
Electricity; gas; steam; water supply	4.2	160,738	1.4	133,644	2.9	154,152	83.1
Construction	8.2	88,917	1.2	98,094	4.8	90,098	111.2
Wholesale and retail trade	10.4	103,499	10.5	92,693	10.4	98,237	89.6
Hotels and restaurants	1.8	95,397	2.3	75,766	2.1	84,580	79.4
Transport; storage and communication	12.3	133,901	6.0	126,489	9.3	131,584	94.5
Financial intermediation	1.2	342,321	3.3	197,039	2.2	237,033	57.6
Real estate; renting; business activities	5.8	149,785	5.3	120,700	5.6	136,467	80.6
Public administration and defence; compulsory social security	4.9	183,448	12.2	142,784	8.4	154,995	77.8
Education	4.9	128,997	17.8	103,624	11.1	109,382	80.3
Health and social work	3.6	106,241	12.3	89,998	7.8	93,845	84.7
Other	2.7	120,793	2.3	104,677	2.5	113,597	86.7
Total	100.0	126,312	100.0	108,455	100.0	117,672	85.9

Source: FH-BT.

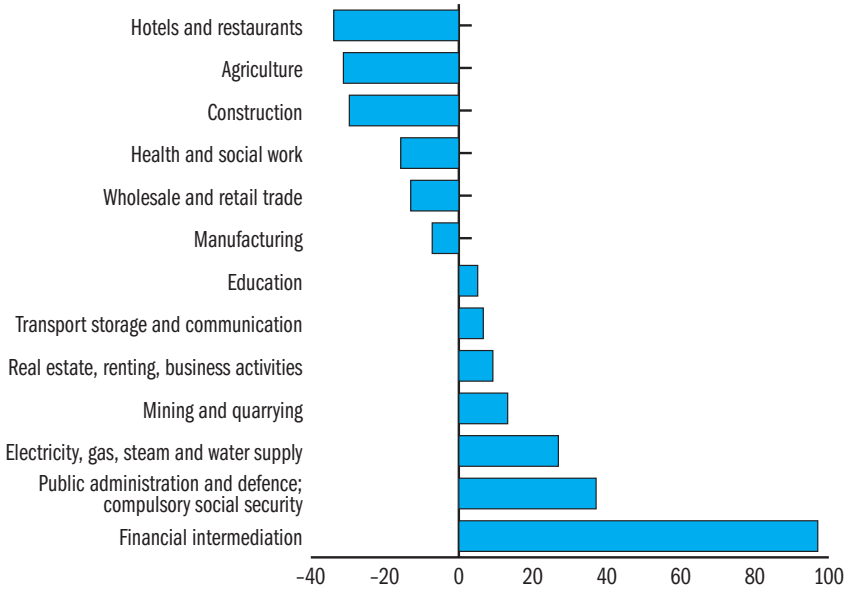


Figure 7.2: Gross real earnings as a percentage of national average industry, 2002

Table 7.7: The composition of full-time employees and average earnings in the economy by gender and level of education in 2002

	Males		Females		Together		Female/ male earnings ratio
	Composition	Average earning	Composition	Average earning	Composition	Average earning	
	%	HUF/person, month	%	HUF/person, month	%	HUF/person, month	%
Primary school 0–7 classes	0.5	75,121	0.5	63,123	0.5	69,335	84.0
Finished primary school (8 classes)	14.8	80,855	19.1	68,997	16.9	74,375	85.3
Vocational school (2 yrs)	2.6	85,695	2.3	78,565	2.4	82,458	91.7
Vocational school (3 yrs)	39.4	90,169	15.3	72,080	27.8	85,335	79.9
Vocational secondary school	14.7	117,862	21.8	103,842	18.1	109,693	88.1
General secondary school	5.5	120,851	14.6	105,787	9.9	110,130	87.5
Technical secondary school	5.1	149,472	2.5	129,796	3.8	143,374	86.8
College	8.5	220,089	17.1	149,289	12.7	173,902	67.8
University	8.7	294,181	6.8	225,677	7.8	265,383	76.7
Total	100.0	126,312	100.0	108,455	100.0	117,672	85.9

Source: FH-BT.

Table 7.8: The composition of full-time employees and average earnings in the budgetary sector by gender and level of education in 2002

	Males		Females		Together		Female/ male earnings ratio
	Composition	Average earning	Composition	Average earning	Composition	Average earning	
	%	HUF/person, month	%	HUF/person, month	%	HUF/person, month	%
Primary school 0–7 classes	0.3	68,113	0.4	60,624	0.4	62,184	89.0
Finished primary school (8 classes)	11.2	76,223	15.8	64,516	14.6	66,838	84.6
Vocational school (2 yrs)	1.0	80,216	1.5	84,800	1.4	83,938	105.7
Vocational school (3 yrs)	16.9	78,300	6.9	72,708	9.5	75,283	92.9
Vocational secondary school	11.7	101,752	19.7	97,183	17.6	97,973	95.5
General secondary school	7.7	109,960	13.7	99,507	12.1	101,228	90.5
Technical secondary school	1.7	125,448	1.0	131,392	1.2	129,221	104.7
College	22.1	174,581	30.9	133,211	28.6	141,478	76.3
University	27.4	220,580	10.1	190,911	14.6	205,385	86.5
Total	100.0	144,319	100.0	111,258	100.0	119,831	77.1

Source: FH-BT.

Table 7.9: The composition of full-time employees and average earnings in the competitive sector by gender and level of education in 2002

	Males		Females		Together		Female/ male earnings ratio
	Composition	Average earning	Composition	Average earning	Composition	Average earning	
	%	HUF/person, month	%	HUF/person, month	%	HUF/person, month	%
Primary school 0–7 classes	0.6	75,769	0.6	64,442	0.6	71,241	85.1
Finished primary school (8 classes)	15.4	81,409	21.6	71,495	17.8	76,807	87.8
Vocational school (2 yrs)	2.8	86,007	2.9	76,143	2.9	82,183	88.5
Vocational school (3 yrs)	43.2	90,939	21.8	71,927	35.0	86,413	79.1
Vocational secondary school	15.2	119,929	23.5	108,093	18.3	114,128	90.1
General secondary school	5.2	123,516	15.3	110,046	9.1	114,805	89.1
Technical secondary school	5.7	150,665	3.5	129,439	4.9	144,763	85.9
College	6.3	246,417	6.6	206,969	6.4	230,909	84.0
University	5.6	353,416	4.2	288,967	5.1	332,985	81.8
Total	100.0	123,332	100.0	106,320	100.0	116,821	86.2

Source: FH-BT.

Table 7.10: Wages, sales prices and productivity in industry

Year	Average gross earnings	Producer price index	Index of productivity	Real earnings deflated with the producer prices
1989	118.6	115.4	100.7	102.8
1990	123.0	122.0	95.0	100.8
1991	127.6	132.6	93.7	96.2
1992	124.4	112.3	95.3	110.8
1993	124.9	110.8	113.4	112.7
1994	123.3	111.3	115.7	110.8
1995	121.1	128.9	110.9	93.9
1996	121.7	121.8	107.5	99.9
1997	121.8	120.4	113.8	101.2
1998	116.6	111.3	111.9	104.8
1999	115.5	105.1	109.9	109.9
2000	115.0	111.7	116.7	103.0
2001	114.4	105.2	105.5	108.7
2002	112.5	98.2	104.2	114.8

Source: KSH IMS. Prices and productivity: KSH.

Table 7.11: Minimum wage

Date	Monthly average (HUF)	Average gross earnings = 100
1992. (01.01.)	8,000	35.8
1993. (02.01.)	9,000	33.1
1994. (02.01.)	10,500	30.9
1995. (03.01.)	12,200	31.4
1996. (02.01.)	14,500	31.0
1997. (01.01.)	17,000	29.7
1998. (01.01.)	19,500	28.8
1999. (01.01.)	22,500	29.1
2000. (01.01.)	25,500	29.1
2001. (01.01.)	40,000	38.6
2002. (01.01.)	50,000	40.8
2003. (01.01.)	50,000	38.3[a]

[a] Jan.-June monthly average.
Source: KSH.

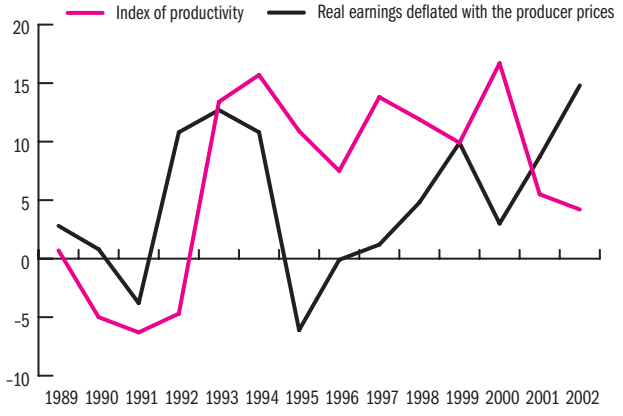


Figure 7.3: Index of productivity and real earnings deflated by the producer price index

Figure 7.4: Minimum wage, average gross earnings = 100

Table 7.12: National wage agreements*

Year	Recommendation		Actual indexes	
	Minimum	Maximum	Public sector	Corporate sector
1992	113.0	128.0	120.1	126.6
1993	110.0–113.0	125.0	114.4	125.1
1994	113.0–115.0	121.0–123.0	127.0	123.4
1995	–	–	110.7	119.7
1996	113.0	124.0	114.6	123.2
1997	114.0	122.0	123.2	121.8
1998	113.5	116.0	118.0	118.5
1999	112.0	115.0	119.2	114.8
2000	108.5	111.0	112.3	114.2
2001	...	...	122.9	116.3
2002	108.0	110.5	129.2	113.3

* Gross average wage increase: actual rates and recommendations by the Council of the Reconciliation of Interests.
Source: Ministry of Employment Policy and Labour.

Table 7.13: Industrial and firm-level wage agreements

Year	Branch		Corporate	
	Number	In thousand	Number	In thousand
1992	24	874.5	391	567.0
1993	12	232.1	394	592.4
1994	12	207.6	490	555.6
1995	7	88.0	816	490.9
1996	12	201.0	594	512.7
1997	12	210.0	598	488.3
1998	33	342.0	843	651.0
1999	41	328.8	827	387.5
2000	...	...	...	...
2001	...	...	...	...
2003	18	76.1	532	280.0

Note: 1992–97: 1992–97: reported wage agreements; 1998–1999: collective agreements containing wage agreements.
Source: Ministry of Employment Policy and Labour.

Table 7.14: The inequality of individuals' per capita household income – selected indicators

	1962	1967	1972	1977	1982	1987	1992	1996	2001
P10	–	57	56	61	62	61	60	48	50
P90	175	165	165	161	162	173	183	191	184
P50/P10		1.8	1.8	1.6	1.6	1.6	1.7	2.1	2.0
P90/p50	1.8	1.6	1.7	1.6	1.6	1.7	1.8	1.9	1.8
P90/P10	–	2.89	2.94	2.65	2.61	2.81	3.07	3.95	3.7
S1	3.6	4.1	4.0	4.5	4.9	4.5	3.8	3.2	3.2
S5+S6	18.0	18.7	18.6	18.7	18.6	17.9	17.4	17.5	17.5
S10	20.8	19.1	19.7	18.6	18.6	20.9	22.7	24.3	24.3
S10/S1	5.8	4.7	4.9	4.1	3.8	4.6	6.0	7.5	7.7
Robin Hood	18.5	16.0	17.6	15.0	14.9	17.0	18.5	20.7	20.9
Éltetõ–Frigyes	2.09	1.92	1.96	1.84	1.82	2.00	2.13	2.32	2.34
Gini	0.257	0.227	0.236	0.214	0.209	0.244	0.266	0.300	0.304

Notes: The measures are based on the variation of per capita household income of individuals.
p10: Upper break point of the lowest decile, per cent of the median. p90: Lower break point of the highest decile, per cent of the median. S1, S10: Income of the lowest/highest decile, per cent of the population's total income. Robin Hood index: Income to be transferred from high-income to low-income deciles in order to achieve perfect equality, per cent of the population's total income. High income: decile with a share higher than 1/10. Éltetõ-Frigyes index: Ratio of incomes above the average to incomes lower than the average. Gini coefficient: Index of concentration ranging from 0 (all incomes are equal) to 1 (all incomes owned by a single person).
Source of the table: Tóth István György (2003) Jövedelem egyenlõtlenségek: tényleg növekszenek vagy csak úgy látjuk? *Közgazdasági Szemle,* No. 3. pp. 209–234. Source of the data: –1987: Atkinson–Micklewright (1992) Economic Transformation in Eastern Europe and the Distribution of Income, Cambridge University Press, Table HI1; 1992–1996: MHP I–VI.; 2001: Tárki Háztartás Monitor.

Table 7.15: Percentage of low paid workers* by gender, age groups, level of education and industries

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
By genders											
Males	14.07	16.93	16.05	15.20	15.55	18.08	18.11	18.84	22.06	20.65	22.28
Females	25.22	21.27	25.63	24.75	26.46	25.72	25.86	26.41	26.81	24.96	22.46
Together	19.40	19.22	20.78	19.94	21.01	21.87	22.00	22.67	24.39	22.79	22.37
By age groups											
–24	40.64	39.59	42.41	40.18	37.78	39.14	37.71	37.91	37.01	35.47	37.58
25–54	17.09	16.85	18.65	17.96	19.43	20.19	20.57	21.32	22.84	21.93	21.78
55+	11.32	12.74	11.38	10.27	11.00	11.84	12.68	17.18	19.84	18.08	16.21
By level of education											
1–8 classes of primary school	34.66	0.00	40.37	37.60	40.12	40.60	42.94	43.94	43.40	40.36	38.3
Vocational schools	21.37	0.00	25.85	24.66	23.74	27.01	26.91	28.64	31.20	29.35	32.14
Secondary schools	11.70	0.00	12.02	12.93	13.08	13.97	14.16	15.41	18.82	17.96	16.47
Higher education	2.26	0.00	1.93	3.09	3.21	3.03	3.41	3.22	4.67	4.66	3.58
By industries											
Agriculture	39.91	31.94	38.42	32.10	30.06	36.65	36.67	38.08	38.02	34.27	37.88
Manufacturing	15.46	16.35	18.92	16.35	15.82	18.53	18.91	18.91	20.02	19.14	19.41
Construction	15.90	15.70	23.27	23.52	26.73	32.73	32.61	36.67	42.93	41.65	44.84
Trade	27.86	25.09	30.41	31.92	31.68	35.96	37.72	36.78	42.78	41.27	43.96
Transport and communication	9.77	8.61	10.33	8.58	8.48	8.76	8.82	8.98	11.33	10.58	10.46
Finance and business services	12.35	14.17	16.43	17.94	17.04	19.88	19.92	21.08	25.26	22.57	20.69
Public administration	15.80	17.54	16.40	17.00	25.93	18.98	15.54	15.98	13.69	13.79	9.27
Education	21.70	21.23	19.02	20.62	25.55	21.69	23.19	23.83	21.49	22.62	16.03
Health	20.06	28.94	21.64	25.15	25.93	24.13	25.78	28.04	26.72	19.92	16.11

* Percentage of those who earn less than 2/3 of the median earning.

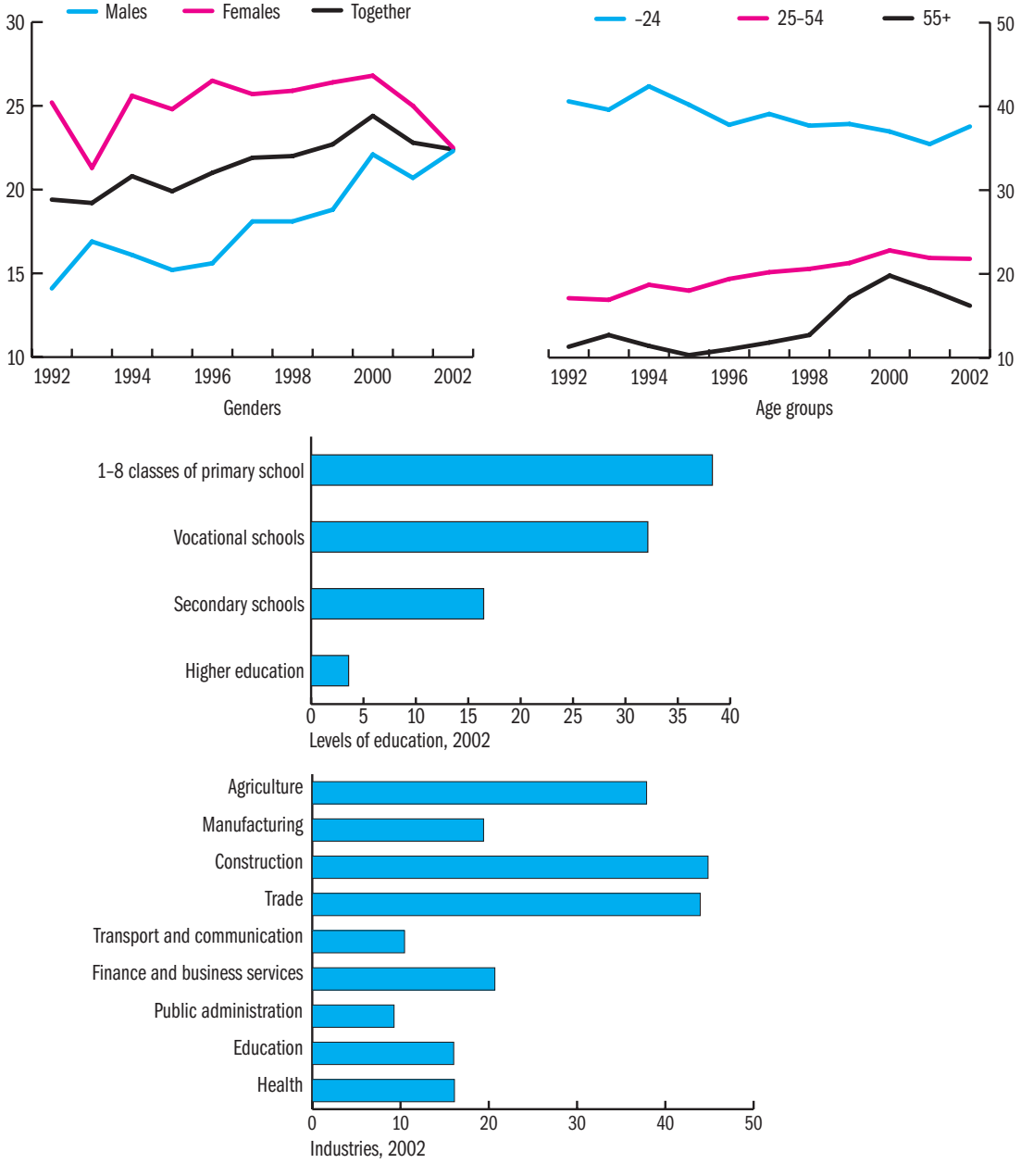


Figure 7.5: The composition of low paid workers by gender, age groups, level of education and industries

Table 7.16: The differentiation of gross monthly earnings by genders and for all persons, ratios of deciles, 1992–2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Males and females together											
D9/D5	2.00	2.04	2.08	2.08	2.10	2.17	2.18	2.22	2.29	2.26	2.33
D5/D1	1.79	1.77	1.88	1.86	1.90	1.92	1.93	1.97	2.15	1.87	1.75
D9/D1	3.58	3.61	3.91	3.88	4.01	4.17	4.21	4.38	4.92	4.24	4.09
Males											
D9/D5	2.00	2.07	2.13	2.12	2.14	2.23	2.25	2.32	2.13	2.40	2.50
D5/D1	1.80	1.81	1.88	1.86	1.89	2.01	2.00	2.08	2.39	2.04	1.81
D9/D1	3.59	3.74	4.00	3.93	4.04	4.48	4.50	4.82	5.08	4.89	4.52
Females											
D9/D5	1.93	2.00	2.00	1.99	2.00	2.02	2.03	2.04	2.09	2.03	2.15
D5/D1	1.71	1.73	1.81	1.82	1.83	1.82	1.83	1.87	1.97	1.75	1.70
D9/D1	3.31	3.47	3.63	3.61	3.66	3.66	3.71	3.80	4.12	3.56	3.66

Source: FH-BT.

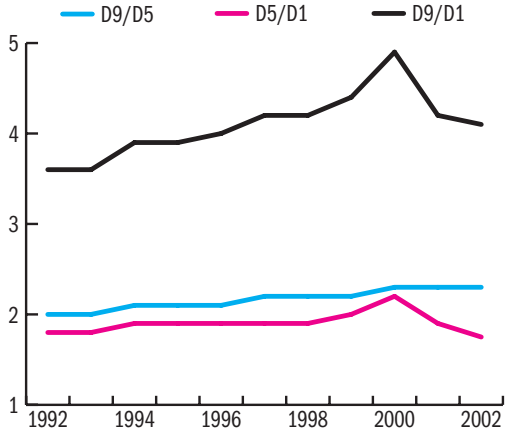


Figure 7.6: The differentiation of gross monthly earnings, 1992–2001

Table 8.1: School leavers by level of education

Year	Primary school	Vocational school[1]	Secondary school	College and university
1980	119,809	49,232	43,167	14,859
1989	170,891	53,724	52,573	15,699
1990	164,614	54,933	53,039	15,963
1991	158,907	59,302	54,248	16,458
1992	151,287	66,261	59,646	16,201
1993	144,200	66,342	68,607	16,223
1994	136,857	62,902	68,604	18,041
1995	122,333	57,057	70,265	20,024
1996	120,529	54,209	73,413	22,128
1997	116,708	46,868	75,564	24,411
1998	113,651	42,866	77,660	25,338
1999	114,302	38,822	73,965	27,049
2000	114,250	35,500[a]	72,200[a]	28,300[a]
2001	114,200[a]	33,500[a]	70,441	29,746
2002	113,923	26,941	69,612	30,785

1 Vocational and specialized secondary schools.

[a] Estimated data.

Note: Primary school: completed the 8th grade. Other levels: received certificate. Excludes special schools.

Source: OM STAT.

Table 8.2: Pupils/students entering the school system, by level of education

Year	Primary school	Vocational school[1]	Secondary school	College and university
1980	171,347	60,865	57,213	17,886
1989	128,542	91,767	84,140	20,704
1990	125,665	87,932	83,939	22,662
1991	126,258	83,967	85,054	25,385
1992	129,852	79,391	86,675	30,192
1993	125,679	76,977	87,657	35,005
1994	126,032	77,146	87,392	37,934
1995	123,997	65,352	82,665	42,433
1996	124,554	58,822	84,773	44,698
1997	127,214	53,083	84,395	45,669
1998	125,875	39,965	86,868	48,886
1999	121,424	33,570	89,184	51,586
2000	117,000	33,900[a]	90,800[a]	54,100[a]
2001	112,144	34,210	92,393	56,709
2002	112,345	33,497	94,256	57,763

1 Vocational and specialized secondary schools.
[a] Estimated data.
Note: Excludes special schools.
Source: OM STAT.

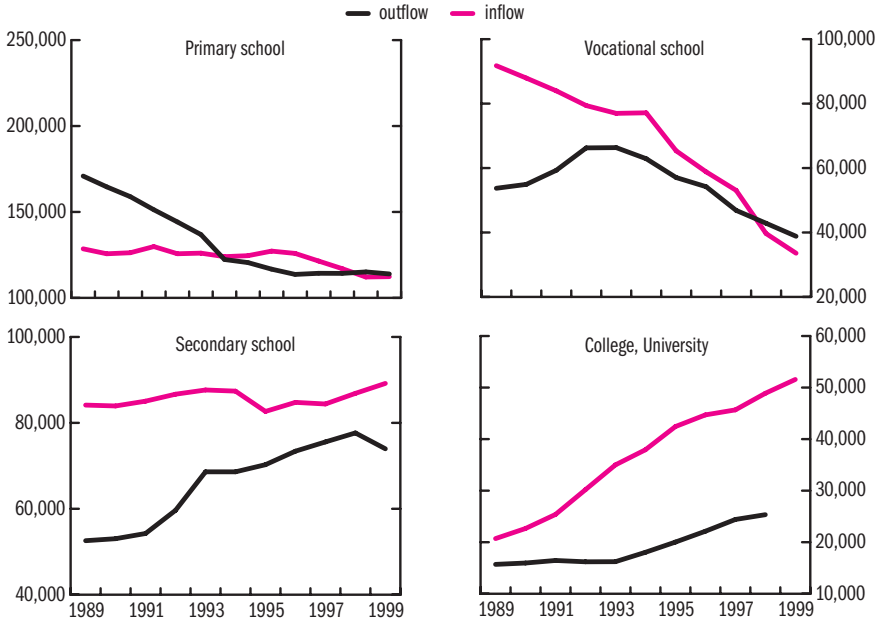


Figure 8.1: Flows of the educational system by level

Table 8.3: The number of full time pupils/students by level of education

Year	Primary school	Vocational school[1]	Secondary school	College and university
1980/81	1,162,203	162,709	203,238	64,057
1989/90	1,183,573	213,697	273,511	72,381
1990/91	1,130,656	222,204	291,872	76,601
1991/92	1,081,213	221,720	309,351	83,191
1992/93	1,044,164	211,833	322,954	92,328
1993/94	1,009,416	198,859	330,586	103,713
1994/95	985,291	185,751	337,317	116,370
1995/96	974,806	172,599	349,299	129,541
1996/97	965,998	158,407	361,395	142,113
1997/98	963,997	143,911	368,645	152,889
1998/99	964,248	128,203	376,626	163,100
1999/2000	960,601	117,038	386,579	171,516
2001/2002	905,932	123,954	420,889	184,071
2002/2003	893,261	123,341	426,384	193,155

1 Vocational and specialized secondary schools.
Note: Excludes special schools.
Source: OM STAT.

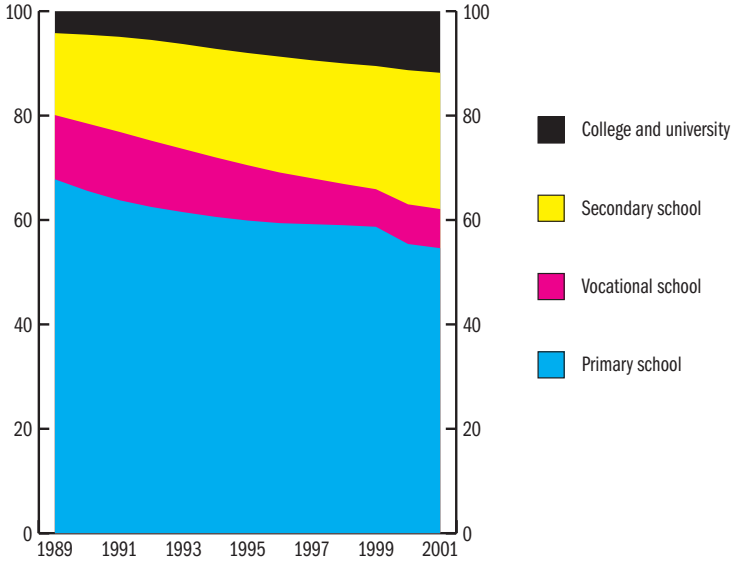


Figure 8.2: The percentage of sharing the pupils/students in the educational system

Table 9.1: Registered vacancies*

Year	Vacancies	Registered unemployed	Vacancies per 100 unemployed
1989	60,429	23,760	254.3
1990	31,228	47,739	65.4
1991	14,343	227,270	6.3
1992	21,793	556,965	3.9
1993	34,375	671,745	5.1
1994	35,569	568,366	6.3
1995	28,680	507,695	5.6
1996	38,297	500,622	7.6
1997	42,544	470,112	9.0
1998	46,624	423,121	11.0
1999	51,438	409,519	12.6
2000	50,000	390,492	12.8
2001	45,194	364,140	12.4
2002	44,603	344,715	12.9

* Monthly average stock figures.
Source: FH.

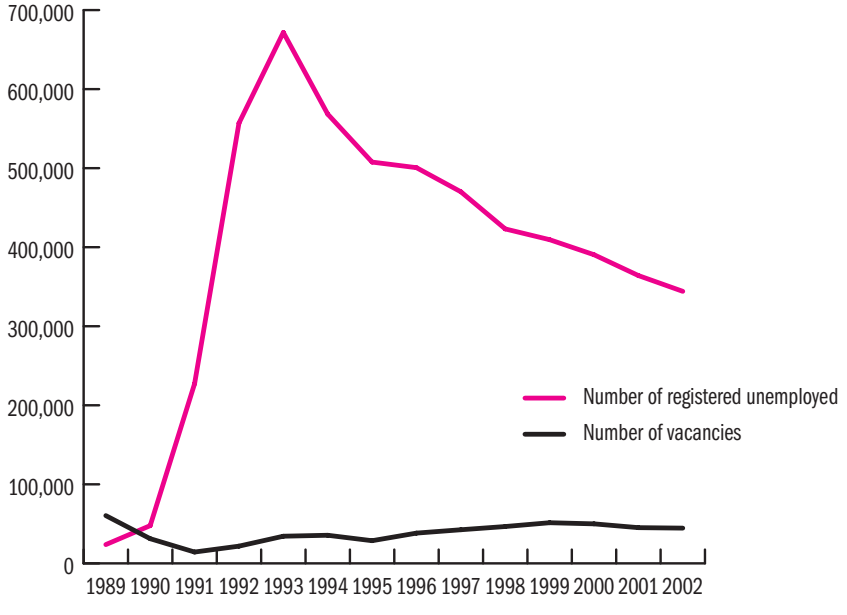


Figure 9.1: Number of registered vacancies and registered unemployed

Table 9.2: Average monthly inflow to reported vacancies in 2001 and 2002 by occupation (2 digit FEOR code)

Code	Occupational groups	2001	2002	Index, 2002/2001
01	Occupations of armed forces requiring higher [third-level] qualification	1.2	0.3	21.4
02	Occupations of armed forces requiring secondary-level qualification	108.8	53.6	49.3
03	Occupations of armed forces not requiring secondary-level qualification	132.8	105.9	79.8
11	Legislators; senior governm. officials; senior officials of nation-wide spec.-interest orgs	–	–	–
12	Sen. officials of regional and local self-governm.; public admin.; jurisdiction and spec.-interest orgs	0.6	0.1	13.8
13	Managers of businesses and budgetary institutions	93.0	88.0	94.6
14	General managers of small enterprises and budgetary institutions	5.1	7.5	147.7
21	Engineering and natural science professionals	131.7	97.5	74.0
22	Health professionals	35.7	27.8	77.8
23	Welfare and labour market service professionals	15.8	7.7	48.7
24	Teaching professionals	166.9	126.8	76.0
25	Business; legal and social science professionals	194.8	205.0	105.3
26	Cultural, sport, artistic and religious professionals	12.1	9.7	80.1
29	Professionals N.E.C.	2.5	3.4	137.6
31	Technicians and related associate professionals	167.8	154.1	91.9
32	Health associate professionals	157.5	153.6	97.6
33	Welfare and labour market services occupations	33.1	44.5	134.3
34	Teaching associate professionals	23.1	24.3	105.1
35	Legal; life and property protection services associate professionals	13.5	7.1	52.5
36	Business and financial intermediation clerks	321.3	255.7	79.6
37	Cultural, sport, artistic and religious associate professionals	10.5	13.6	129.4
39	Clerks N.E.C.	7.0	7.5	106.0
41	Office clerks	392.4	385.3	98.2
42	Management [consumer services] clerks	147.2	182.1	123.8
51	Wholesale and retail trade; hotels and restaurants workers	1,182.5	1,131.2	95.7
52	Transport; postal and communications workers	93.9	46.9	50.0
53	Non-material service workers	394.2	353.0	89.6
61	Skilled agricultural workers	254.2	304.4	119.8
62	Skilled forestry and game farming workers	31.5	18.1	57.4
63	Skilled fishery workers	2.1	0.9	39.9
64	Plant protection, plant health protection and soil conservation workers	1.5	1.0	66.7
71	Extraction workers	306.6	41.9	13.7
72	Food processing and related trades workers	629.7	820.7	130.4
73	Light industry workers	1,594.9	1,467.9	92.1
74	Steel and metal trades workers	1,446.0	1,297.5	89.8
75	Handicraft; miscellaneous industry and warehouse workers; laboratory assistants	208.1	265.4	127.6
76	Construction workers	1,311.0	1,229.7	93.8
81	Manufacturing machine operators	1,120.6	1,331.6	118.9
82	Other stationary-plant operators	124.3	125.1	100.7
83	Mobile-plant operators	537.4	633.0	117.8
91	Elementary services occupations [without agriculture]	4,351.0	4,035.6	92.8
92	Agricultural and forestry labourers	123.4	94.3	76.5
Total		15,886.0	15,157.8	95.5

Source: FH-REG.

Table 9.3: Firms intending to increase/decrease their staff*

Year	Half year	Intending to decrease	Intending to increase
1992	I.	36.1	10.2
	II.	36.0	15.4
1993	I.	34.7	23.6
	II.	28.5	22.3
1994	I.	24.5	29.1
	II.	21.0	29.7
1995	I.	30.1	32.9
	II.	30.9	27.5
1996	I.	32.9	33.3
	II.	29.4	30.4
1997	I.	29.6	39.4
	II.	30.7	36.8
1998	I.	23.4	42.7
	II.	28.9	37.1
1999	I.	25.8	39.2
	II.	28.8	35.8
2000	I.	24.4	41.0
	II.	27.2	36.5
2001	I.	25.3	40.0
	II.	28.6	32.6
2002	I.	25.6	39.2
	II.	27.9	35.4

* In the period of the next half year after the interview date, in the sample of FH PROG.
Source: FH PROG.

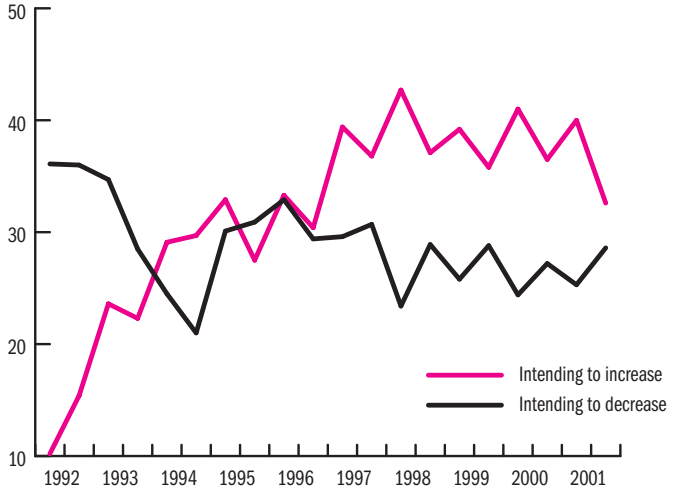


Figure 9.2: Firms intending to increase/decrease their staff

Table 9.4: Firms expecting increasing/decreasing orders*

Year	Half year	Orders	
		increasing	decreasing
1992	I.	27.2	40.1
	II.	21.0	38.2
1993	I.	31.8	36.0
	II.	35.9	33.0
1994	I.	38.7	24.8
	II.	45.6	21.7
1995	I.	40.9	23.8
	II.	47.2	20.7
1996	I.	39.8	24.4
	II.	45.5	21.0
1997	I.	42.7	19.4
	II.	47.5	16.7
1998	I.	46.1	15.2
	II.	47.5	18.0
1999	I.	38.7	21.9
	II.	42.2	20.2
2000	I.	38.9	18.3
	II.	49.1	14.9
2001	I.	44.1	16.2
	II.	44.4	19.1
2002	I.	39.5	18.8
	II.	40.2	19.5

* See Table 9.3.
Source: FH PROG.

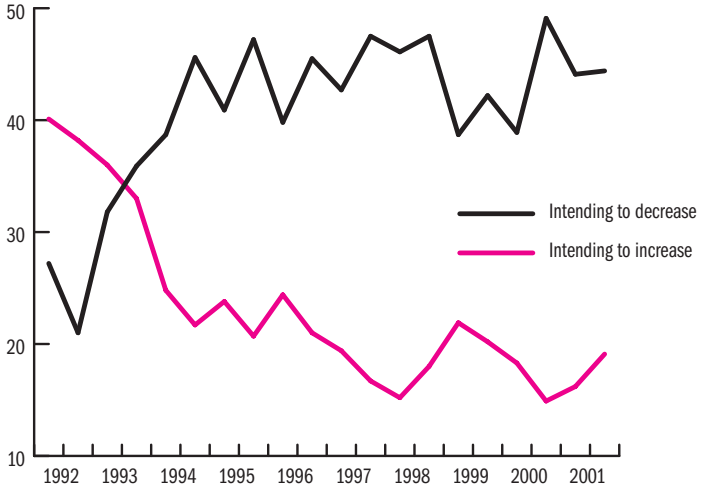


Figure 9.3: Firms expecting increasing/decreasing orders

Table 9.5: Firms activating new capacities*

Year	Half year	Building only	Building and/or machinery	Total
1992	I.	...	10.2	10.2
	II.	3.0	11.4	14.4
1993	I.	3.4	14.1	17.5
	II.	3.0	14.7	17.7
1994	I.	3.6	17.7	21.3
	II.	4.1	17.4	21.5
1995	I.	4.2	18.4	22.6
	II.	4.4	18.8	23.2
1996	I.	3.6	20.2	23.8
	II.	4.2	19.5	23.7
1997	I.	3.9	19.2	23.1
	II.	4.7	21.1	25.8
1998	I.	4.4	20.9	25.3
	II.	5.4	23.6	29.0
1999	I.	4.7	20.5	25.2
	II.	5.2	20.9	26.1
2000	I.	4.6	21.1	25.7
	II.	4.4	23.9	28.3
2001	I.	4.0	21.9	25.9
	II.	4.7	22.9	27.6
2002	I.	3.4	22.6	26.0
	II.	3.3	22.8	26.1

* See Table 9.3.
Source: FH PROG.

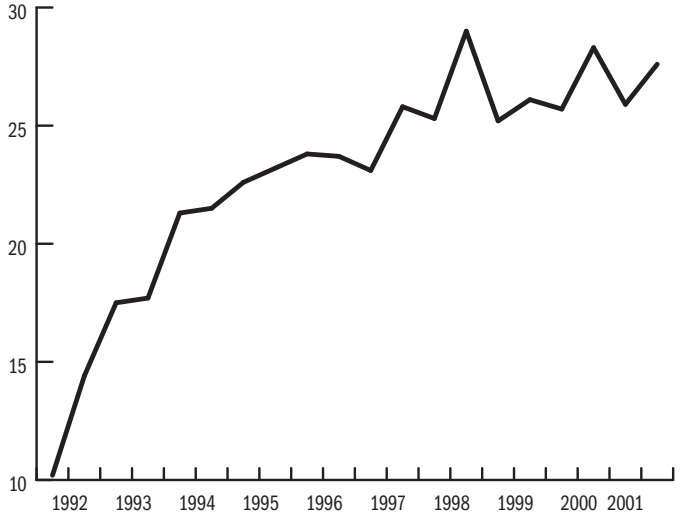


Figure 9.4: Firms activating new capacities

Table 10.1: Regional inequalities: labour force participation rates*

Year	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
1992	74.4	72.5	75.1	71.8	68.4	67.1	71.9	71.8
1993	71.7	70.3	74.4	68.7	66.6	63.6	68.5	69.3
1994	69.5	68.5	72.9	67.2	63.8	61.8	66.6	67.3
1995	68.3	67.0	70.6	62.5	62.8	60.1	65.8	65.6
1996	68.4	65.8	71.4	62.7	61.4	58.8	64.5	65.0
1997	67.2	65.1	70.8	62.5	60.0	57.3	64.6	64.1
1998	67.2	66.8	72.5	63.5	59.6	57.9	64.7	64.7
1999	69.3	69.3	72.8	64.2	61.3	60.0	65.1	66.2
2000	69.8	69.2	72.5	64.9	61.5	59.8	65.1	66.4
2001	69.9	69.2	71.9	63.5	60.8	59.6	65.7	66.2
2001[a]	69.8	68.8	71.8	63.3	60.9	59.4	65.3	66.0
2002[a]	69.7	69.5	72.5	62.4	61.1	58.8	64.2	65.4

* Comparable working age population. Male: 15–59, female: 15–54 years.
[a] See note of Table 3.7.
Source: KSH MEF.

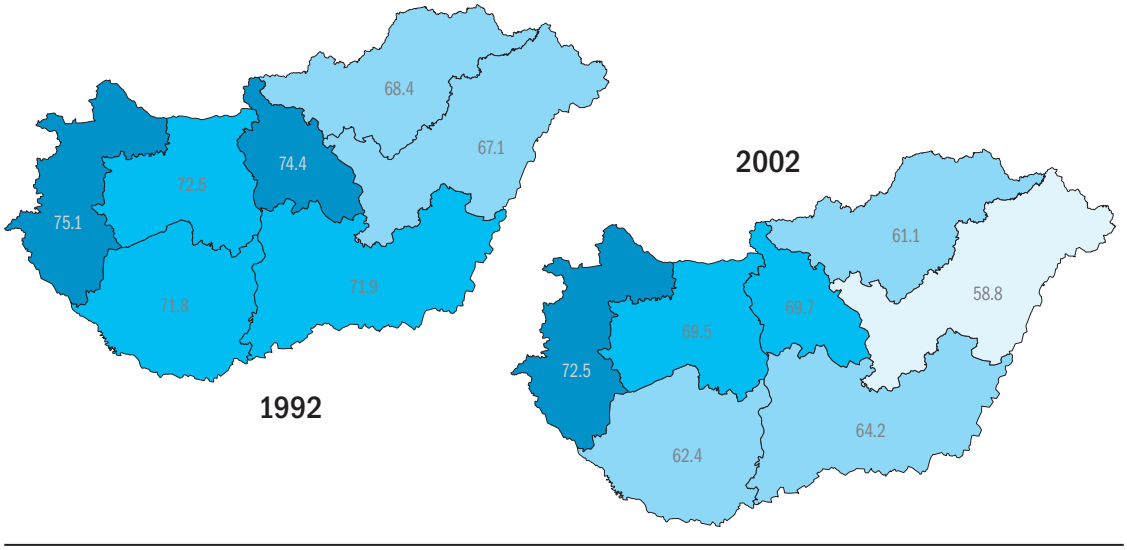


Figure 10.1: Regional inequalities: labour force participation rates in NUTS-2 level regions

Table 10.2: Regional inequalities: employment ratio*

Year	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
1992	68.7	63.9	69.5	64.7	58.6	58.6	64.4	64.5
1993	64.6	61.4	67.9	59.8	55.7	54.0	60.0	60.8
1994	63.3	61.0	67.3	59.1	54.0	53.2	59.6	59.9
1995	63.1	59.5	65.6	54.5	52.5	51.7	59.6	58.7
1996	62.7	58.8	66.3	56.7	51.7	51.0	59.1	58.3
1997	62.5	59.7	66.5	56.3	51.5	50.4	59.8	58.4
1998	63.4	62.3	68.2	57.5	52.3	51.4	60.1	59.6
1999	65.6	65.0	69.5	58.8	54.1	53.7	64.3	61.5
2000	66.0	65.8	69.4	59.7	55.1	54.2	61.7	62.0
2001	66.8	66.1	68.8	58.5	55.5	54.8	62.0	62.3
2002	66.9	65.9	69.5	57.3	55.6	54.1	60.1	61.9

* Working age population.
Source: KSH MEF.

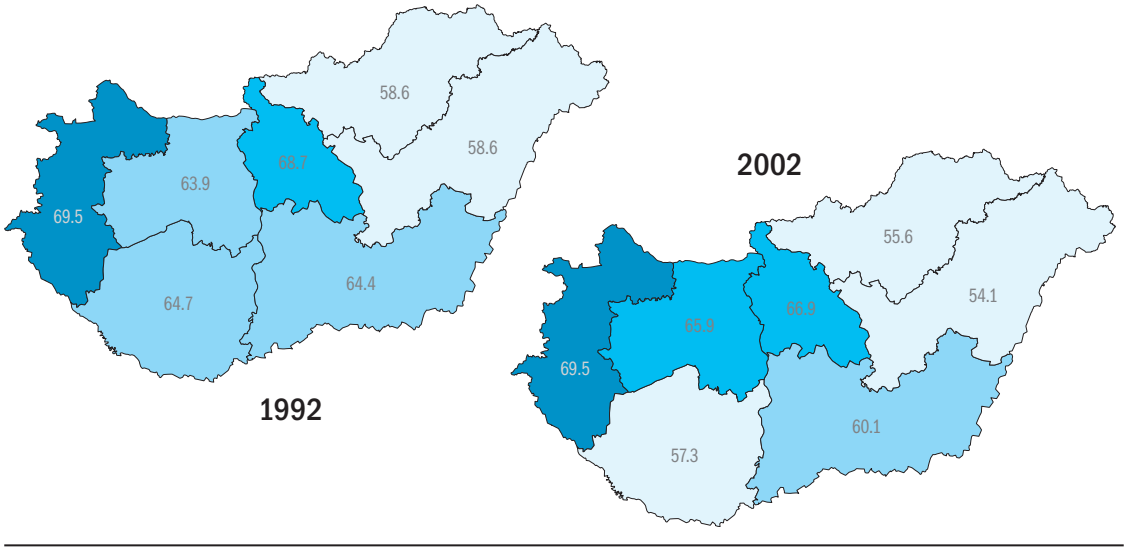


Figure 10.2: Regional inequalities: employment ratio in NUTS-2 level regions

Table 10.3: Regional inequalities: LFS-based unemployment rate*

Year	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
1992	7.4	11.7	7.3	9.6	14.0	12.5	10.2	9.9
1993	9.9	12.6	9.0	12.8	16.1	14.8	12.4	12.1
1994	8.8	10.7	7.7	12.0	15.2	13.8	10.5	10.8
1995	7.4	11.0	6.9	12.1	16.0	13.8	9.3	10.3
1996	8.2	10.4	7.1	9.4	15.5	13.2	8.4	10.0
1997	7.0	8.1	6.0	9.9	14.0	12.0	7.3	8.8
1998	5.7	6.8	6.1	9.4	12.2	11.1	7.1	7.8
1999	5.2	6.1	4.4	8.3	11.6	10.2	5.8	7.0
2000	5.3	4.9	4.2	7.8	10.1	9.3	5.1	6.4
2001	4.3	4.3	4.2	7.8	8.5	7.8	5.4	5.7
2001[a]	4.3	4.3	4.1	7.7	8.5	7.8	5.4	5.7
2002[a]	4.1	5.2	4.1	8.0	9.0	8.0	6.4	6.0

* Population.aged 15–74. Excluding conscripts.
[a] See note of Table 3.7.
Source: KSH MEF.

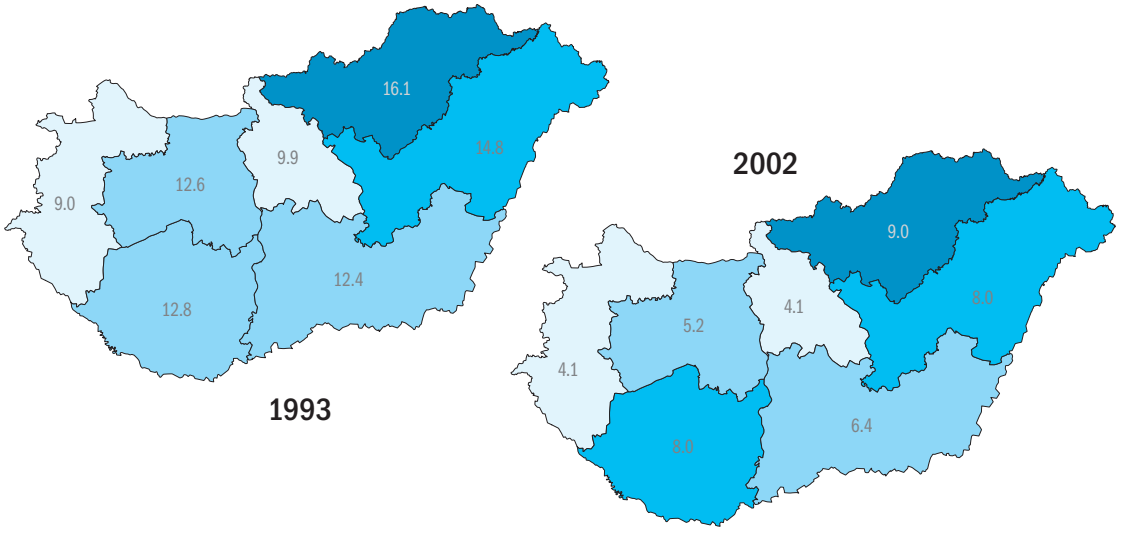


Figure 10.3: Regional inequalities: LFS-based unemployment rates in NUTS-2 level regions

Table 10.4: Regional inequalities: registered unemployment rate*

Year	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
1991	1.7	3.7	2.8	4.8	7.0	6.5	5.2	4.1
1992	5.7	10.4	7.2	10.8	15.7	15.0	12.2	10.3
1993	8.0	12.8	9.1	13.1	19.1	18.2	14.7	12.9
1994	6.6	11.5	8.5	11.9	16.6	16.9	12.9	11.3
1995	6.3	10.6	7.6	11.7	15.6	16.1	11.5	10.6
1996	6.4	10.7	8.0	12.6	16.7	16.8	11.3	11.0
1997	5.6	9.9	7.3	13.1	16.8	16.4	11.0	10.5
1998	4.7	8.6	6.1	11.8	16.0	15.0	10.1	9.5
1999	4.5	8.7	5.9	12.1	17.1	16.1	10.4	9.7
2000	3.8	7.5	5.6	11.8	17.2	16.0	10.4	9.3
2001	3.2	6.7	5.0	11.2	16.0	14.5	9.7	8.5
2002	2.8	6.6	4.9	11.0	15.6	13.3	9.2	8.0

* The denominator of the ratio is the active population on January 1st of the previous year.
Source: FH REG.

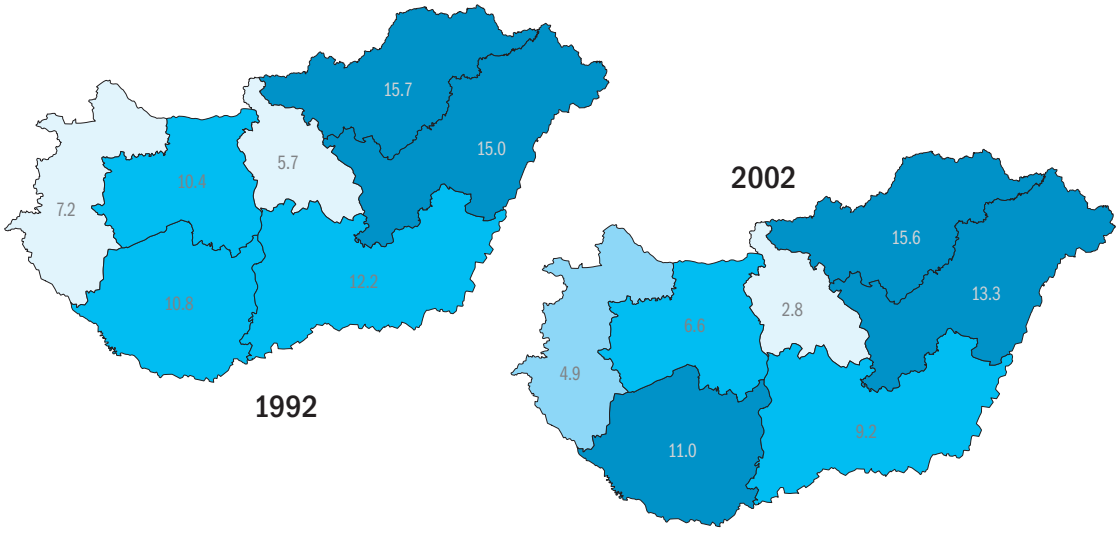


Figure 10.4: Regional inequalities: registered unemployment rate in NUTS-2 level regions

Table 10.5: Employment and unemployment according to ILO standard at the level of counties and micro regions in 2002

Micro region	Unemployed	Employed	15–64 age population	Inactive	Unemployment rate	Employment ratio	Participation ratio
Budapest	27,444	735,960	1,208,914	445,510	3.6	60.9	63.1
Baranya megye							
Komlói	1,415	12,290	29,574	15,869	10.3	41.6	46.3
Mohácsi	1,412	20,171	36,097	14,514	6.5	55.9	59.8
Pécsi	759	6,046	10,428	3,623	11.2	58.0	65.3
Pécsváradi	1,013	4,676	9,273	3,584	17.8	50.4	61.4
Sásdi	1,379	12,528	25,042	11,135	9.9	50.0	55.5
Sellyei	1,501	9,182	19,363	8,680	14.1	47.4	55.2
Siklósi	3,444	73,659	143,073	65,970	4.5	51.5	53.9
Szigetvári	202	4,167	7,540	3,171	4.6	55.3	57.9
Total	11,125	142,719	280,390	126,546	7.2	50.9	54.9
Bács-Kiskun megye							
Bácsalmási	2,102	30,259	51,966	19,605	6.5	58.2	62.3
Bajai	688	7,492	12,187	4,007	8.4	61.5	67.1
Jánoshalmi	1,718	22,545	38,286	14,023	7.1	58.9	63.4
Kalocsai	3,632	57,826	115,599	54,141	5.9	50.0	53.2
Kecskeméti	1,367	22,593	39,550	15,590	5.7	57.1	60.6
Kiskőrösi	1,032	20,847	34,708	12,829	4.7	60.1	63.0
Kiskunfélegyházi	1,050	17,635	32,388	13,703	5.6	54.4	57.7
Kiskunhalasi	478	6,626	11,593	4,489	6.7	57.2	61.3
Kiskunmajsai	1,008	10,676	21,290	9,606	8.6	50.1	54.9
Kunszentmiklósi	473	7,198	11,422	3,751	6.2	63.0	67.2
Total	13,548	203,697	368,989	151,744	6.2	55.2	58.9
Békés megye							
Békéscsabai	3,251	54,397	115,504	57,856	5.6	47.1	49.9
Mezőkovácsházi	1,898	17,133	31,280	12,249	10.0	54.8	60.8
Orosházai	1,181	23,019	42,908	18,708	4.9	53.6	56.4
Sarkadi	929	8,728	17,225	7,568	9.6	50.7	56.1
Szarvasi	873	14,293	28,348	13,182	5.8	50.4	53.5
Szeghalmi	2,001	15,345	31,923	14,577	11.5	48.1	54.3
Total	10,133	132,915	267,188	124,140	7.1	49.7	53.5
Borsod-Abaúj-Zemplén megye							
Edelényi	7,806	91,368	194,894	95,720	7.9	46.9	50.9
Encsi	1,894	10,223	23,471	11,354	15.6	43.6	51.6
Kazincbarcikai	2,142	10,172	22,036	9,722	17.4	46.2	55.9
Mezőkövesdi	2,708	21,960	45,350	20,682	11.0	48.4	54.4
Miskolci	933	14,988	30,509	14,588	5.9	49.1	52.2
Ózdi	3,030	24,732	49,477	21,715	10.9	50.0	56.1
Sárospataki	1,049	8,654	18,532	8,829	10.8	46.7	52.4
Sátoraljaújhelyi	1,635	14,255	28,707	12,817	10.3	49.7	55.4
Szerencsi	3,013	18,500	41,940	20,427	14.0	44.1	51.3
Szikszói	1,030	5,975	12,851	5,846	14.7	46.5	54.5
Tiszaújvárosi	1,550	14,827	32,432	16,055	9.5	45.7	50.5
Total	26,790	235,654	500,199	237,755	10.2	47.1	52.5

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Micro region	Unemployed	Employed	15–64 age population	Inactive	Unemployment rate	Employment ratio	Participation ratio
Csongrád megye							
Csongrádi	644	9,697	16,681	6,340	6.2	58.1	62.0
Hódmezővásárhelyi	1,556	23,363	40,915	15,996	6.2	57.1	60.9
Kisteleki	579	6,960	12,882	5,343	7.7	54.0	58.5
Makói	1,499	20,117	33,366	11,750	6.9	60.3	64.8
Mórahalmi	614	6,120	11,703	4,969	9.1	52.3	57.5
Szegedi	4,449	72,689	147,344	70,206	5.8	49.3	52.4
Szentesi	987	18,361	30,707	11,359	5.1	59.8	63.0
Total	10,328	157,307	293,598	125,963	6.2	53.6	57.1
Fejér megye							
Bicskei	562	13,324	24,489	10,603	4.0	54.4	56.7
Dunaújvárosi	3,072	46,405	76,264	26,787	6.2	60.8	64.9
Enyingi	1,179	10,186	16,406	5,041	10.4	62.1	69.3
Gárdonyi	558	11,612	24,175	12,005	4.6	48.0	50.3
Móri	683	11,350	19,934	7,901	5.7	56.9	60.4
Sárbogárdi	1,587	12,227	19,910	6,096	11.5	61.4	69.4
Székesfehérvári	3,912	68,277	115,546	43,357	5.4	59.1	62.5
Total	11,553	173,381	296,724	111,790	6.2	58.4	62.3
Győr-Moson-Sopron megye							
Csornai	845	17,098	24,416	6,473	4.7	70.0	73.5
Győri	3,655	73,610	124,845	47,580	4.7	59.0	61.9
Kapuvári	581	12,935	17,396	3,880	4.3	74.4	77.7
Mosonmagyaróvári	1,297	32,178	50,952	17,477	3.9	63.2	65.7
Soproni	1,170	39,550	64,766	24,046	2.9	61.1	62.9
Téti	736	13,298	21,117	7,083	5.2	63.0	66.5
Total	8,284	188,669	303,492	106,539	4.2	62.2	64.9
Hajdú-Bihar megye							
Balmazújvárosi	1,032	10,871	20,097	8,194	8.7	54.1	59.2
Berettyóújfalui	2,103	23,578	43,595	17,914	8.2	54.1	58.9
Debreceni	6,024	100,413	203,527	97,090	5.7	49.3	52.3
Hajdúböszörményi	1,345	20,049	40,343	18,949	6.3	49.7	53.0
Hajdúszoboszlói	741	11,551	23,352	11,060	6.0	49.5	52.6
Polgári	549	5,393	9,673	3,731	9.2	55.8	61.4
Püspökladányi	1,870	18,315	34,947	14,762	9.3	52.4	57.8
Total	13,664	190,170	375,534	171,700	6.7	50.6	54.3
Heves megye							
Egri	1,624	33,789	66,573	31,160	4.6	50.8	53.2
Füzesabonyi	1,437	12,448	23,364	9,479	10.3	53.3	59.4
Gyöngyösi	985	12,207	24,595	11,403	7.5	49.6	53.6
Hatvani	1,456	28,707	52,175	22,012	4.8	55.0	57.8
Hevesi	1,017	20,431	38,667	17,219	4.7	52.8	55.5
Pétervásári	787	8,279	14,583	5,517	8.7	56.8	62.2
Total	7,306	115,861	219,957	96,790	5.9	52.7	56.0

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Micro region	Unemployed	Employed	15–64 age population	Inactive	Unemployment rate	Employment ratio	Participation ratio
Komárom-Esztergom megye							
Dorogi	664	16,184	27,966	11,118	3.9	57.9	60.2
Esztergomi	958	23,294	38,337	14,085	4.0	60.8	63.3
Kisbéri	446	9,219	14,470	4,805	4.6	63.7	66.8
Komáromi	624	17,430	28,942	10,888	3.5	60.2	62.4
Oroszlányi	593	12,295	19,831	6,943	4.6	62.0	65.0
Tatabányai	733	14,153	27,638	12,752	4.9	51.2	53.9
Tatai	1,468	35,899	63,190	25,823	3.9	56.8	59.1
Total	5,486	128,474	220,374	86,414	4.1	58.3	60.8
Nógrád megye							
Balassagyarmati	852	15,333	29,175	12,990	5.3	52.6	55.5
Bátonyterenyei	1,049	9,532	18,269	7,688	9.9	52.2	57.9
Pásztói	716	12,468	23,009	9,825	5.4	54.2	57.3
Rétsági	456	8,648	17,587	8,483	5.0	49.2	51.8
Salgótarjáni	2,737	25,442	47,212	19,033	9.7	53.9	59.7
Szécsényi	670	7,028	13,612	5,914	8.7	51.6	56.6
Total	6,480	78,451	148,864	63,933	7.6	52.7	57.1
Pest megye							
Aszódi	688	18,447	25,931	6,796	3.6	71.1	73.8
Budaörsi	3,276	61,628	81,684	16,780	5.0	75.4	79.5
Ceglédi	1,012	18,919	29,176	9,245	5.1	64.8	68.3
Dabasi	1,938	30,710	81,723	49,075	5.9	37.6	39.9
Dunakeszi	857	17,010	27,912	10,045	4.8	60.9	64.0
Gödöllői	1,921	34,838	53,953	17,194	5.2	64.6	68.1
Gyáli	2,089	49,450	82,846	31,307	4.1	59.7	62.2
Monori	371	6,948	8,530	1,211	5.1	81.5	85.8
Nagykátai	1,706	36,203	52,310	14,401	4.5	69.2	72.5
Pilisvörösvári	2,199	46,444	90,361	41,718	4.5	51.4	53.8
Ráckevei	844	25,731	43,770	17,195	3.2	58.8	60.7
Szentendrei	1,741	43,537	68,352	23,074	3.8	63.7	66.2
Szobi	921	30,788	59,601	27,892	2.9	51.7	53.2
Váci	1,181	27,439	48,646	20,026	4.1	56.4	58.8
Total	20,744	448,092	754,795	285,959	4.4	59.4	62.1
Somogy megye							
Barcsi	1,353	9,551	18,261	7,357	12.4	52.3	59.7
Csurgói	731	6,990	12,461	4,740	9.5	56.1	62.0
Fonyódi	656	3,781	19,243	14,806	14.8	19.6	23.1
Kaposvári	3,246	44,317	85,557	37,994	6.8	51.8	55.6
Lengyeltóti	500	4,353	7,915	3,062	10.3	55.0	61.3
Marcali	1,027	12,184	21,395	8,184	7.8	56.9	61.7
Nagyatádi	1,316	11,080	19,334	6,938	10.6	57.3	64.1
Siófoki	1,061	16,463	33,780	16,256	6.1	48.7	51.9
Tabi	653	6,479	11,058	3,926	9.2	58.6	64.5
Total	10,543	115,198	229,004	103,263	8.4	50.3	54.9

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Micro region	Unemployed	Employed	15–64 age population	Inactive	Unemployment rate	Employment ratio	Participation ratio
Szabolcs-Szatmár megye							
Baktalórántházi	933	6,603	16,594	9,058	12.4	39.8	45.4
Csengeri	639	4,539	9,481	4,303	12.3	47.9	54.6
Fehérgyarmati	1,468	12,240	26,240	12,532	10.7	46.6	52.2
Kisvárdai	2,063	22,815	47,237	22,359	8.3	48.3	52.7
Mátészalkai	2,259	19,653	46,046	24,134	10.3	42.7	47.6
Nagykállói	971	10,063	21,825	10,791	8.8	46.1	50.6
Nyírbátori	1,751	13,933	29,633	13,949	11.2	47.0	52.9
Nyíregyházi	4,167	68,073	152,050	79,810	5.8	44.8	47.5
Tiszavasvári	977	9,239	19,102	8,886	9.6	48.4	53.5
Vásárosnaményi	1,655	10,034	25,257	13,568	14.2	39.7	46.3
Total	16,883	177,192	393,465	199,390	8.7	45.0	49.3
Jász-Nagykun-Szolnok megye							
Jászberényi	1,457	30,206	58,817	27,154	4.6	51.4	53.8
Karcagi	2,223	26,483	51,862	23,156	7.7	51.1	55.4
Kunszentmártoni	1,632	14,266	26,754	10,856	10.3	53.3	59.4
Szolnoki	2,351	42,507	84,605	39,747	5.2	50.2	53.0
Tiszafüredi	2,123	14,176	27,050	10,751	13.0	52.4	60.3
Törökszentmiklósi	1,492	16,251	31,599	13,856	8.4	51.4	56.2
Total	11,278	143,889	280,687	125,520	7.3	51.3	55.3
Tolna megye							
Bonyhádi	874	11,742	21,200	8,584	6.9	55.4	59.5
Dombóvári	1,165	12,606	24,146	10,375	8.5	52.2	57.0
Paksi	1,232	16,850	34,512	16,430	6.8	48.8	52.4
Szekszárdi	2,908	32,048	62,071	27,115	8.3	51.6	56.3
Tamási	1,758	15,538	28,459	11,163	10.2	54.6	60.8
Total	7,937	88,784	170,388	73,667	8.2	52.1	56.8
Vas megye							
Celldömölki	662	11,581	17,904	5,661	5.4	64.7	68.4
Csepregi	247	4,819	7,846	2,780	4.9	61.4	64.6
Kőszegi	446	9,420	15,414	5,548	4.5	61.1	64.0
Körmendi	495	7,314	12,453	4,644	6.3	58.7	62.7
Őriszentpéteri	236	3,910	4,684	538	5.7	83.5	88.5
Sárvári	821	17,226	25,430	7,383	4.5	67.7	71.0
Szentgotthárdi	461	6,397	10,615	3,757	6.7	60.3	64.6
Szombathelyi	2,209	50,684	80,820	27,927	4.2	62.7	65.4
Vasvári	501	7,386	9,907	2,020	6.4	74.6	79.6
Total	6,078	118,737	185,073	60,258	4.9	64.2	67.4
Veszprém megye							
Ajkai	1,266	26,279	41,027	13,482	4.6	64.1	67.1
Balatonalmádi	437	10,124	17,681	7,120	4.1	57.3	59.7
Balatonfüredi	346	9,125	15,478	6,007	3.7	59.0	61.2
Pápai	1,528	25,864	42,653	15,261	5.6	60.6	64.2
Sümegi	506	6,671	11,111	3,934	7.1	60.0	64.6
Tapolcai	704	15,886	25,653	9,063	4.2	61.9	64.7
Várpalotai	979	15,275	26,634	10,380	6.0	57.4	61.0

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Micro region	Unemployed	Employed	15–64 age population	Inactive	Unemployment rate	Employment ratio	Participation ratio
Veszprémi	1,327	33,657	61,294	26,310	3.8	54.9	57.1
Zirci	495	10,469	18,102	7,138	4.5	57.8	60.6
Total	7,588	153,350	259,633	98,695	4.7	59.1	62.0
Zala megye							
Keszthelyi	669	18,057	32,813	14,087	3.6	55.0	57.1
Lenti	314	11,943	15,333	3,076	2.6	77.9	79.9
Letenyei	496	7,564	12,346	4,286	6.2	61.3	65.3
Nagykanizsai	1,813	36,085	57,823	19,925	4.8	62.4	65.5
Zalaegerszegi	1,626	44,603	74,271	28,042	3.5	60.1	62.2
Zalaszentgróti	353	8,531	12,477	3,593	4.0	68.4	71.2
Total	5,271	126,783	205,063	73,009	4.0	61.8	64.4

Source: FH.
Note: N = 15–64 age population. Corrected synthetic regression estimation.

Table 10.6: Annual average registered unemployment rate by counties

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budapest	0.1	1.2	4.6	6.6	5.9	5.7	5.7	4.8	4.0	3.7	3.0	2.6	2.2
Baranya	1.1	5.1	11.2	13.2	11.7	11.8	12.2	13.3	11.8	11.6	11.6	11.1	11.2
Bács-Kiskun	1.1	5.9	13.4	16.0	13.1	11.0	10.9	10.7	9.7	10.0	10.0	9.3	8.8
Békés	1.1	7.4	13.3	16.3	15.1	14.0	14.0	13.5	13.0	13.0	13.1	11.9	11.2
Borsod-Abaúj-Zemplén	2.3	8.0	16.7	20.2	17.5	16.7	18.0	19.0	17.9	19.5	20.3	19.0	19.1
Csongrád	1.0	4.8	9.8	11.7	10.8	9.9	9.3	9.2	8.1	8.5	8.6	8.3	8.1
Fejér	1.0	4.1	10.1	12.5	11.3	10.6	10.4	9.4	8.4	8.3	7.2	6.4	6.4
Győr-Moson-Sopron	0.5	2.9	6.9	8.2	7.7	6.8	7.4	6.4	5.1	4.8	4.6	4.1	4.0
Hajdú-Bihar	0.9	5.0	11.5	16.6	15.3	14.2	15.6	15.0	14.0	15.6	14.7	13.6	12.8
Heves	1.6	6.4	12.7	15.2	13.9	12.5	13.6	12.1	11.7	12.3	12.0	10.6	9.8
Jász-Nagykun-Szolnok	1.6	7.0	14.4	17.1	15.8	14.6	14.8	14.8	13.5	13.7	13.4	11.5	10.2
Komárom-Esztergom	1.0	4.1	11.5	14.4	12.6	11.3	12.0	11.4	9.8	10.1	8.3	7.0	6.7
Nógrád	2.4	9.8	16.8	21.3	17.2	16.3	17.0	16.3	15.6	16.2	14.9	14.3	13.8
Pest	0.5	4.4	8.1	11.0	8.1	7.6	7.8	7.3	6.3	6.0	5.2	4.4	3.7
Somogy	1.4	5.2	9.2	11.6	10.9	11.2	12.5	12.7	11.3	12.2	11.9	11.6	11.5
Szabolcs-Szatmár-Bereg	2.6	10.7	18.9	20.6	19.3	19.3	19.7	18.9	17.2	18.7	19.5	17.8	16.7
Tolna	1.6	6.5	12.1	14.7	13.4	12.2	13.4	13.5	12.3	12.9	11.8	11.0	10.0
Vas	0.4	2.9	7.3	9.1	8.3	7.2	7.2	6.7	5.6	5.6	5.2	4.9	4.5
Veszprém	0.9	4.9	9.9	11.9	10.9	10.0	9.9	9.2	7.9	8.2	7.2	6.9	6.6
Zala	0.8	3.9	7.7	10.3	9.8	9.2	9.8	9.2	8.1	7.7	7.2	6.5	6.4
Country	1.0	4.1	10.3	12.9	11.3	10.6	11.0	10.5	9.5	9.7	9.3	8.5	8.0

Source: FH REG.

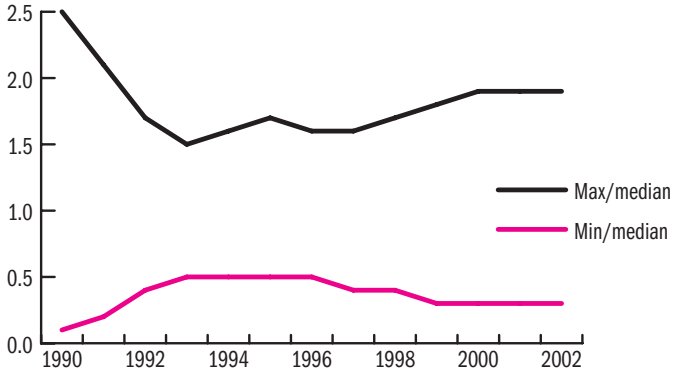

Figure 10.5: Regional inequalities: unemployment rates in the counties

Table 10.7: Average monthly earnings in Budapest and the counties

County	1994		1996		1998		2000		2001		2002	
	HUF/ month	%	HUF/ month	%	HUF/ month	%	HUF/ month	%	HUF/ month	%	HUF/ month	%
Budapest	45,180	126.8	60,870	127.8	90,949	131.0	121,450	134.4	140,312	135.4	157,624	134.0
Baranya	32,445	91.1	43,955	92.3	63,391	91.3	76,243	84.4	89,479	86.4	100,142	85.1
Bács-Kiskun	30,124	84.6	40,477	85.0	57,325	82.6	71,141	78.8	83,432	80.5	97,645	83.0
Békés	30,725	86.3	40,428	84.9	57,433	82.7	69,552	77.0	79,718	76.9	93,643	79.6
Borsod-Abaúj-Zemplén	32,260	90.6	41,512	87.1	61,295	88.3	78,136	86.5	89,223	86.1	102,497	87.1
Csongrád	33,057	92.8	42,855	90.0	60,780	87.6	79,857	88.4	90,367	87.2	100,371	85.3
Fejér	37,068	104.1	50,129	105.2	73,592	106.0	94,758	104.9	108,290	104.5	119,613	101.7
Győr-Moson-Sopron	34,666	97.3	47,327	99.4	68,684	98.9	87,334	96.7	103,371	99.8	116,470	99.0
Hajdú-Bihar	31,978	89.8	42,517	89.3	58,907	84.9	74,922	82.9	87,352	84.3	98,118	83.4
Heves	33,033	92.7	43,699	91.7	62,163	89.6	83,440	92.4	92,861	89.6	106,287	90.3
Komárom-Esztergom	33,648	94.5	46,139	96.9	66,564	95.9	84,382	93.4	98,494	95.1	109,108	92.7
Nógrád	29,023	81.5	38,287	80.4	53,855	77.6	67,368	74.6	80,158	77.4	94,603	80.4
Pest	32,417	91.0	46,009	96.6	67,768	97.6	87,311	96.6	103,871	100.3	117,276	99.7
Somogy	29,791	83.6	41,151	86.4	56,888	82.0	68,725	76.1	80,440	77.6	90,561	77.0
Szabolcs-Szatmár-Bereg	30,675	86.1	39,441	82.8	56,218	81.0	71,403	79.0	79,937	77.2	95,491	81.2
Jász-Nagykun-Szolnok	30,554	85.8	41,807	87.8	59,441	85.6	75,121	83.2	89,393	84.3	100,761	85.6
Tolna	33,729	94.7	44,220	92.8	61,594	88.7	78,544	86.9	90,583	87.4	106,992	90.9
Vas	30,443	85.5	41,668	87.5	60,840	87.6	83,040	91.9	92,492	89.3	101,461	86.2
Veszprém	33,142	93.0	43,578	91.5	63,474	91.4	79,868	88.4	91,189	88.0	100,040	85.0
Zala	32,307	90.7	43,314	90.9	61,866	89.1	78,237	86.6	89,252	86.1	97,372	82.7
Total	35,620	100.0	47,633	100.0	69,415	100.0	90,338	100.0	103,610	100.0	117,672	100.0

Source: FH BT.

Table 10.8: Regional inequalities: gross monthly earnings*

Year	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
HUF/person, monthly								
1989	11,719	10,880	10,108	10,484	10,472	9,675	9,841	10,822
1992	27,172	22,174	20,975	19,899	20,704	19,563	20,047	22,465
1993	32,450	26,207	24,627	25,733	24,011	24,025	23,898	26,992
1994	43,010	34,788	32,797	31,929	31,937	31,131	31,325	35,620
1995	46,992	38,492	36,394	35,383	35,995	34,704	33,633	40,190
1996	58,154	46,632	44,569	43,015	41,439	41,222	41,208	47,559
1997	70,967	56,753	52,934	51,279	51,797	50,021	50,245	58,022
1998	86,440	68,297	64,602	60,736	60,361	58,208	58,506	69,415
1999	101,427	77,656	74,808	70,195	70,961	68,738	68,339	81,067
2000	114,637	87,078	83,668	74,412	77,714	73,858	73,591	90,338
2001	132,136	100,358	96,216	86,489	88,735	84,930	84,710	103,610
2002	149,119	110,602	106,809	98,662	102,263	98,033	97,432	117,672
Per cent								
1989	108.3	100.5	93.4	96.9	96.8	89.4	90.9	100.0
1992	121.0	98.7	93.4	88.6	92.2	87.1	89.2	100.0
1993	120.2	97.1	91.2	95.3	89.0	89.0	88.5	100.0
1994	120.7	97.7	92.1	89.6	89.7	87.4	87.9	100.0
1995	116.9	95.8	90.6	88.0	89.6	86.4	83.7	100.0
1996	122.3	98.1	93.7	90.4	87.1	86.7	86.6	100.0
1997	122.3	97.8	91.2	88.4	89.3	86.2	86.6	100.0
1998	124.5	98.4	93.1	87.5	87.0	83.9	84.3	100.0
1999	125.1	95.8	92.3	86.6	87.5	84.8	84.3	100.0
2000	126.9	96.4	92.6	82.4	86.0	81.8	81.5	100.0
2001	127.5	96.9	92.9	83.8	85.6	82.0	81.8	100.0
2002	126.7	94.0	90.8	83.8	86.9	83.3	82.8	100.0

* Gross monthly earnings, May.

Note: The data refer to full-time employees in the budget sector and firms employing at least 20 workers [1992–94], 10 workers [1995–98] and 5 workers [1999–2001], respectively.

Source: FH BT.

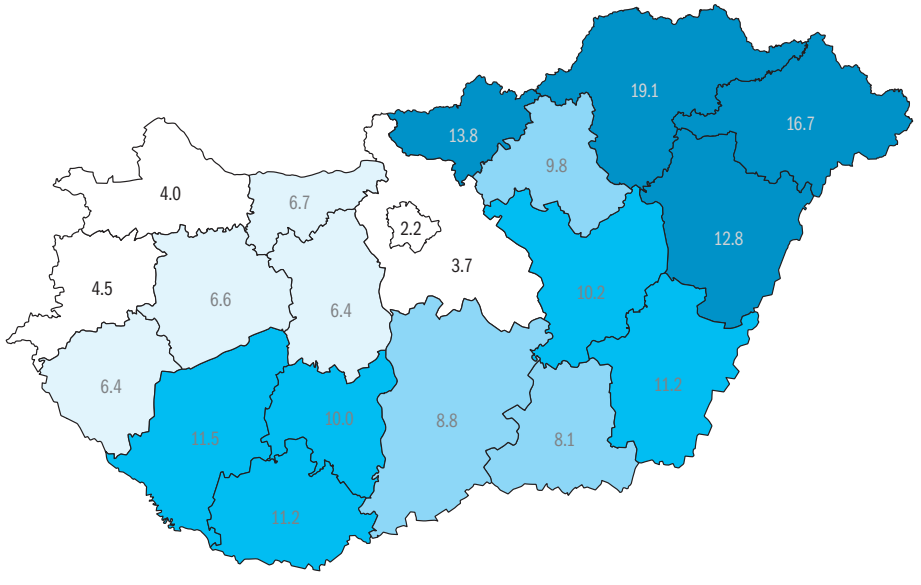

Figure 10.6: Average of registered unemployment rate by counties, 2002

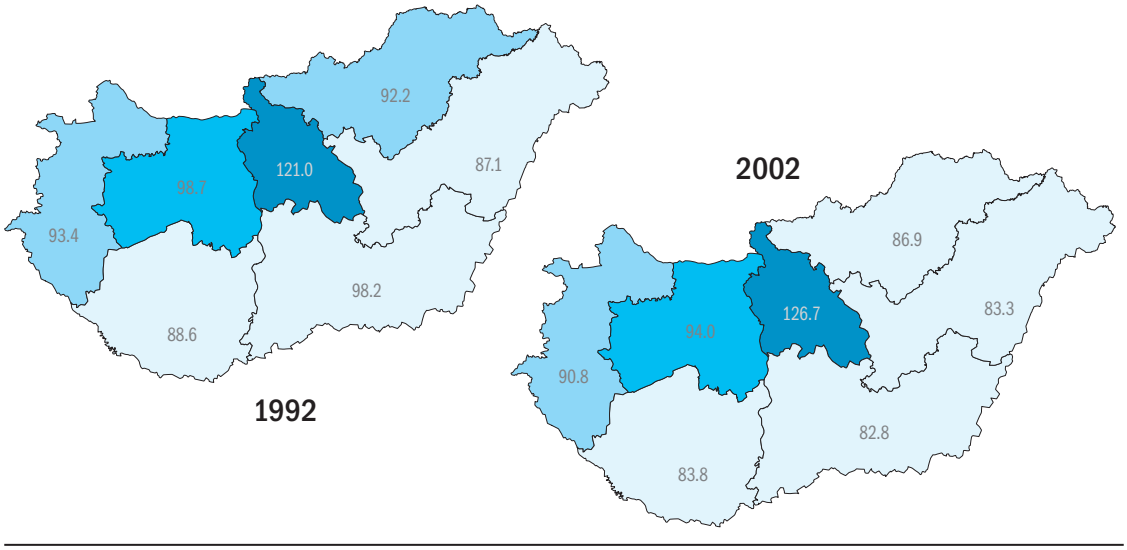

Figure 10.7: Regional inequalities: earnings

Table 10.9: Regional inequalities: gross domestic product

Year	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain	Total
Per capita, 1000 HUF								
1994	619	367	428	357	296	314	354	425
1995	792	497	565	448	400	391	457	549
1996	993	621	710	541	467	476	549	676
1997	1,254	807	885	653	566	581	655	841
1998	1,474	978	1 102	770	678	675	761	997
1999	1,710	1,051	1,275	859	731	707	819	1,113
2000	2,014	1,255	1,468	957	827	815	918	1,290
2001	2,304	1,360	1,518	1,097	956	967	1,045	1,458
Per cent								
1994	145.6	86.4	100.7	84.0	69.6	73.9	83.3	100.0
1995	144.3	90.5	102.9	81.6	72.9	71.2	83.2	100.0
1996	146.9	91.9	105.0	80.0	69.1	70.4	81.2	100.0
1997	149.1	96.0	105.2	77.6	67.3	69.1	77.9	100.0
1998	147.8	98.1	110.5	77.2	68.0	67.7	76.3	100.0
1999	153.6	94.4	114.5	77.2	65.7	63.5	73.6	100.0
2000	156.1	97.3	113.9	74.2	64.1	63.2	71.2	100.0
2001	158.0	93.3	104.2	75.2	65.6	66.3	71.7	100.0

Source: KSH.

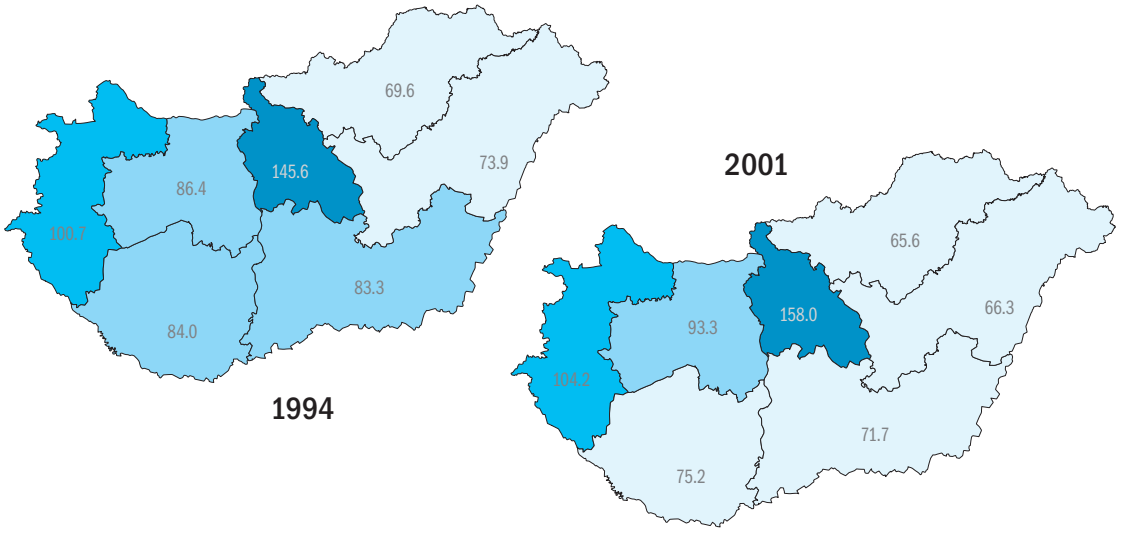

Figure 10.8: Regional inequalities: gross domestic product

Table 11.1: Work permits issued to foreign citizens

Year	Number of workpermits issued during the year	Number of work permits valid at the last day of the year
1989	25,259	...
1990	51,946	...
1991	41,724	33,352
1992	24,621	15,727
1993	19,532	17,620
1994	24,756	20,090
1995	26,085	21,009
1996	20,296	18,763
1997	24,244	20,382
1998	26,310	22,466
1999	34,138	28,469
2000	40,203	35,014
2001	47,269	38,623
2002	49,779	42,700

Source: FH, based on the reports of the regional labour centres.

Figure 11.1: Work permit issued to foreign citiziens

Table 12.1: Strikes

Year	Number of strikes	Number of involved persons	Hours lost, in thousands
1991	3	24,148	76
1992	4	1,010	33
1993	5	2,574	42
1994	4	31,529	229
1995	7	172,048[a]	1,708[a]
1996	8	4,491	19
1997	5	853	15
1998	7	1,447	3
1999	5	16,685	242
2000	5	26,978	1,192
2001	6	21,128	61
2002	4	4,573	9

[a] Teachers strikes number partly estimated.
Source: KSH.

Table 13.1.1.1: Persons in employment by aggregated major groups of occupations, age groups and sex, 1980

Aggregated major groups of occupations	Total	Age groups					
		15–29	30–39	40–49	50–59	60– 64	65–
Leading intellectuals	733,385	170,949	243,174	180,390	128,461	6,781	3,630
Other intellectuals	817,163	296,037	252,659	163,964	98,713	3,539	2,251
Services workers	391,145	136,226	102,260	85,418	59,919	3,155	4,167
Skilled agricultural and forestry workers	273,263	50,761	53,560	76,158	76,107	5,894	10,783
Craft and related trades workers	2,098,097	820,270	532,219	451,430	276,221	8,368	9,589
Other occupations	752,602	176,669	153,127	207,051	182,411	13,105	20,239
Total	5,065,655	1,650,912	1,336,999	1,164,411	821,832	40,842	50,659
Males							
Leading intellectuals	431,395	79,611	138,016	108,500	96,443	5,883	2,942
Other intellectuals	223,122	63,478	64,108	47,151	45,530	1,992	863
Services workers	119,492	44,766	26,456	21,482	24,061	1,280	1,447
Skilled agricultural and forestry workers	160,625	33,411	28,821	39,212	48,206	3,772	7,203
Craft and related trades workers	1,563,633	637,542	394,764	310,077	209,329	5,872	6,049
Other occupations	367,567	119,155	73,630	82,200	84,171	3,734	4,677
Total	2,865,834	977,963	725,795	608,622	507,740	22,533	23,181
Females							
Leading intellectuals	301,990	91,338	105,158	71,890	32,018	898	688
Other intellectuals	594,041	232,559	188,551	116,813	53,183	1,547	1,388
Services workers	271,653	91,460	75,804	63,936	35,858	1,875	2,720
Skilled agricultural and forestry workers	112,638	17,350	24,739	36,946	27,901	2,122	3,580
Craft and related trades workers	534,464	182,728	137,455	141,353	66,892	2,496	3,540
Other occupations	385,035	57,514	79,497	124,851	98,240	9,371	15,562
Total	2,199,821	672,949	611,204	555,789	314,092	18,309	27,478

Table 13.1.1.2: Persons in employment by aggregated major groups of occupations, age groups and sex, 1990

Aggregated major groups of occupations	Total	Age groups					
		15–29	30–39	40–49	50–59	60– 64	65–
Leading intellectuals	733,915	114,681	245,553	247,603	117,096	6,581	2,401
Other intellectuals	767,673	214,672	253,292	216,478	80,612	1,712	907
Services workers	389,879	142,698	117,501	91,571	36,377	985	747
Skilled agricultural and forestry workers	181,019	39,631	52,784	48,334	37,194	1,568	1,508
Craft and related trades workers	1,817,942	568,082	573,938	433,493	239,077	2,057	1,295
Other occupations	634,544	150,880	178,934	181,347	118,235	3,095	2,053
Total	4,524,972	1,230,644	1,422,002	1,218,826	628,591	15,998	8,911
Males							
Leading intellectuals	381,566	49,387	116,981	130,107	77,454	5,612	2,025
Other intellectuals	168,514	42,148	49,547	46,998	28,795	714	312
Services workers	133,787	54,124	39,297	26,244	13,512	366	244
Skilled agricultural and forestry workers	118,652	30,085	33,656	27,425	25,389	942	1,155
Craft and related trades workers	1,377,683	444,987	431,000	311,700	187,644	1,482	870
Other occupations	332,718	102,521	91,445	77,174	59,254	1,271	1,053
Total	2,512,920	723,252	761,926	619,648	392,048	10,387	5,659
Females							
Leading intellectuals	352,349	65,294	128,572	117,496	39,642	969	376
Other intellectuals	599,159	172,524	203,745	169,480	51,817	998	595
Services workers	256,092	88,574	78,204	65,327	22,865	619	503
Skilled agricultural and forestry workers	62,367	9,546	19,128	20,909	11,805	626	353
Craft and related trades workers	440,259	123,095	142,938	121,793	51,433	575	425
Other occupations	301,826	48,359	87,489	104,173	58,981	1,824	1,000
Total	2,012,052	507,392	660,076	599,178	236,543	5,611	3,252

Table 13.1.1.3: Persons in employment by aggregated major groups of occupations, age groups and sex, 2001

Aggregated major groups of occupations	Total	Age groups					
		15–29	30–39	40–49	50–59	60– 64	65–
Leading intellectuals	755,200	133,725	190,621	239,467	165,732	15,870	9,785
Other intellectuals	750,493	206,763	185,455	221,588	127,066	5,767	3,854
Services workers	581,909	216,830	146,582	144,249	68,425	3,430	2,393
Skilled agricultural and forestry workers	115,519	23,552	27,746	37,145	22,885	2,156	2,035
Craft and related trades workers	1,161,460	328,889	297,648	349,609	177,167	5,012	3,135
Other occupations	325,688	79,110	77,570	102,905	60,686	3,108	2,309
Total	3,690,269	988,869	925,622	1,094,963	621,961	35,343	23,511
Males							
Leading intellectuals	382,350	65,984	94,502	110,388	93,352	11,018	7,106
Other intellectuals	192,177	62,110	48,325	44,271	33,458	2,451	1,562
Services workers	276,422	115,495	71,283	56,586	30,290	1,704	1,064
Skilled agricultural and forestry workers	86,422	19,698	21,099	25,795	16,761	1,539	1,530
Craft and related trades workers	902,959	251,542	234,582	263,572	146,341	4,464	2,458
Other occupations	162,626	57,233	43,921	37,242	22,111	1,194	925
Total	2,002,956	572,062	513,712	537,854	342,313	22,370	14,645
Females							
Leading intellectuals	372,850	67,741	96,119	129,079	72,380	4,852	2,679
Other intellectuals	558,316	144,653	137,130	177,317	93,608	3,316	2,292
Services workers	305,487	101,335	75,299	87,663	38,135	1,726	1,329
Skilled agricultural and forestry workers	29,097	3,854	6,647	11,350	6,124	617	505
Craft and related trades workers	258,501	77,347	63,066	86,037	30,826	548	677
Other occupations	163,062	21,877	33,649	65,663	38,575	1,914	1,384
Total	1,687,313	416,807	411,910	557,109	279,648	12,973	8,866

Table 13.1.2.1: Persons in employment by aggregated major groups of occupations and highest educational attainment, 1980

Aggregated major groups of occupations	Total	General (primary) school		Secondary school		
		Less than 8th grade	8th grade	Without final examination, with certificate of profession	With final examination	Higher education (university, college, etc.)
Leading intellectuals	733,385	10,612	72,532	25,169	252,369	372,703
Other intellectuals	817,163	16,021	205,838	44,352	519,417	31,535
Services workers	391,145	59,061	182,631	99,404	48,775	1,274
Skilled agricultural and forestry workers	273,263	143,027	105,891	15,887	7,830	628
Craft and related trades workers	2,098,097	336,932	894,986	635,026	225,826	5,327
Other occupations	752,602	370,793	329,674	34,434	16,949	752
Total	5,065,655	936,446	1,791,552	854,272	1,071,166	412,219
Males						
Leading intellectuals	431,395	7,314	39,519	13,640	146,573	224,349
Other intellectuals	223,122	6,540	36,269	11,707	148,937	19,669
Services workers	119,492	18,256	46,942	32,416	21,025	853
Skilled agricultural and forestry workers	160,625	85,276	56,897	11,717	6,181	554
Craft and related trades workers	1,563,633	223,216	585,380	564,511	185,858	4,668
Other occupations	367,567	170,363	157,444	26,821	12,342	597
Total	2,865,834	510,965	922,451	660,812	520,916	250,690
Females						
Leading intellectuals	301,990	3,298	33,013	11,529	105,796	148,354
Other intellectuals	594,041	9,481	169,569	32,645	370,480	11,866
Services workers	271,653	40,805	135,689	66,988	27,750	421
Skilled agricultural and forestry workers	112,638	57,751	48,994	4,170	1,649	74
Craft and related trades workers	534,464	113,716	309,606	70,515	39,968	659
Other occupations	385,035	200,430	172,230	7,613	4,607	155
Total	2,199,821	425,481	869,101	193,460	550,250	161,529

Table 13.1.2.2: Persons in employment by aggregated major groups of occupations and highest educational attainment, 1990

Aggregated major groups of occupations	Total	General (primary) school		Secondary school		
		Less than 8th grade	8th grade	Without final examination, with certificate of profession	With final examination	Higher education (university, college, etc.)
Leading intellectuals	733,915	734	34,660	25,156	212,918	460,447
Other intellectuals	767,673	2,278	129,346	75,489	516,345	44,215
Services workers	389,879	8,797	147,165	143,514	83,639	6,764
Skilled agricultural and forestry workers	181,019	34,677	97,332	33,702	13,363	1,945
Craft and related trades workers	1,817,942	78,961	744,989	742,985	238,965	12,042
Other occupations	634,544	109,880	355,747	82,193	57,302	29,422
Total	4,524,972	235,327	1,509,239	1,103,039	1,122,532	554,835
Males						
Leading intellectuals	381,566	549	18,731	15,095	109,226	237,965
Other intellectuals	168,514	866	19,739	15,191	111,685	21,033
Services workers	133,787	3,752	41,901	51,629	33,166	3,339
Skilled agricultural and forestry workers	118,652	23,537	57,190	26,759	9,543	1,623
Craft and related trades workers	1,377,683	52,001	477,164	643,443	195,074	10,001
Other occupations	332,718	61,253	155,625	55,389	34,838	25,613
Total	2,512,920	141,958	770,350	807,506	493,532	299,574
Females						
Leading intellectuals	352,349	185	15,929	10,061	103,692	222,482
Other intellectuals	599,159	1,412	109,607	60,298	404,660	23,182
Services workers	256,092	5,045	105,264	91,885	50,473	3,425
Skilled agricultural and forestry workers	62,367	11,140	40,142	6,943	3,820	322
Craft and related trades workers	440,259	26,960	267,825	99,542	43,891	2,041
Other occupations	301,826	48,627	200,122	26,804	22,464	3,809
Total	2,012,052	93,369	738,889	295,533	629,000	255,261

Table 13.1.2.3: Persons in employment by aggregated major groups of occupations and highest educational attainment, 2001

Aggregated major groups of occupations	Total	General (primary) school		Secondary school		
		Less than 8th grade	8th grade	Without final examination, with certificate of profession	With final examination	Higher education (university, college, etc.)
Leading intellectuals	755,200	223	12,809	31,565	190,214	520,389
Other intellectuals	750,493	543	71,992	83,181	498,682	96,095
Services workers	581,909	2,700	121,466	226,490	208,737	22,516
Skilled agricultural and forestry workers	115,519	4,691	49,053	36,547	20,548	4,680
Craft and related trades workers	1,161,460	8,153	309,111	608,992	224,325	10,879
Other occupations	325,688	13,198	158,552	77,577	55,095	21,266
Total	3,690,269	29,508	722,983	1,064,352	1,197,601	675,825
Males						
Leading intellectuals	382,350	139	7,381	23,141	100,907	250,782
Other intellectuals	192,177	177	12,937	28,694	109,081	41,288
Services workers	276,422	1,216	49,352	115,481	95,911	14,462
Skilled agricultural and forestry workers	86,422	3,531	33,852	30,432	14,799	3,808
Craft and related trades workers	902,959	5,129	196,387	513,974	178,627	8,842
Other occupations	162,626	7,312	58,900	45,381	33,373	17,660
Total	2,002,956	17,504	358,809	757,103	532,698	336,842
Females						
Leading intellectuals	372,850	84	5,428	8,424	89,307	269,607
Other intellectuals	558,316	366	59,055	54,487	389,601	54,807
Services workers	305,487	1,484	72,114	111,009	112,826	8,054
Skilled agricultural and forestry workers	29,097	1,160	15,201	6,115	5,749	872
Craft and related trades workers	258,501	3,024	112,724	95,018	45,698	2,037
Other occupations	163,062	5,886	99,652	32,196	21,722	3,606
Total	1,687,313	12,004	364,174	307,249	664,903	338,983

Table 13.1.3: Persons in employment by major groups of occupations, occupations 1980–2001

Major groups of occupations, major occupations	1980	1990	2001	1980	1990	2001
	Number of persons			Percentages		
Legislators; senior government officials; leaders of interest groups and managers of firms						
Legislators; senior government officials; leaders of interest groups on national level	7,357	3,394	2,695	0.1	0.1	0.1
Leaders of the local government; justice and leaders of interest groups	11,450	7,712	9,392	0.2	0.2	0.3
Managers of business organisations; budgetary institutions	325,568	332,110	203,685	6.4	7.3	5.5
General managers of small enterprises	...	...	83,991	...	...	2.3
Together	344,375	343,216	299,763	6.8	7.6	8.1
Professionals						
Technical and natural science professionals	85,569	75,043	85,636	1.7	1.7	2.3
Human health and related professionals	54,146	29,032	50,032	1.1	0.6	1.4
Professionals in social work	...	...	5,695	...	...	0.2
Teaching professionals	132,381	151,285	181,179	2.6	3.3	4.9
Economic; legal and social science professionals	75,020	104,076	90,880	1.5	2.3	2.5
Professionals in cultural, artistic and religious activities	30,486	30,076	38,542	0.6	0.7	1.0
Other professionals	11,408	1,187	3,473	0.2	0.0	0.1
Together	389,010	390,699	455,437	7.7	8.6	12.3
Technicians and associate professionals						
Technicians and other technical occupations	174,691	140,973	117,219	3.4	3.1	3.2
Human health associate professionals	52,424	92,572	109,111	1.0	2.0	3.0
Associate professionals in social and labour market activities	...	...	18,475	...	...	0.5
Teaching associate professionals	17,321	22,886	12,838	0.3	0.5	0.3
Legal; life and property protection services associate professionals	5,339	4,417	12,957	0.1	0.1	0.4
Business and financial institution associate professionals	179,268	186,992	241,323	3.5	4.1	6.5
Associate professionals in cultural, artistic and religious activities	15,747	13,773	16,646	0.3	0.3	0.5
Other technicians; associate professionals	26,433	27,839	12,331	0.5	0.6	0.3
Together	471,223	489,452	540,900	9.3	10.8	14.7
Office and management [customer service] clerks						
Office clerks	291,925	224,602	157,145	5.8	5.0	4.
Management [customer service] clerks	54,015	53,619	52,448	1.1	1.2	1.4
Together	345,940	278,221	209,593	6.8	6.1	5.7
Services workers						
Wholesale and retail trade; hotel and restaurant workers	225,603	264,086	363,704	4.5	5.8	9.9
Transport; post and communication workers	50,301	41,565	48,635	1.0	0.9	1.3
Other services workers	115,241	84,228	169,570	2.3	1.9	4.6
Together	391,145	389,879	581,909	7.7	8.6	15.8
Skilled agricultural and forestry workers						
Skilled agricultural workers	254,639	162,951	104,190	5.0	3.6	2.8
Workers in forestry and hunting	14,539	14,973	9,800	0.3	0.3	0.3
Fisheries' workers	1,716	1,768	928	0.0	0.0	0.0
Plant protection; amelioration and similar workers	2,369	1,327	601	0.0	0.0	0.0
Together	273,263	181,019	115,519	5.4	4.0	3.1

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Major groups of occupations, major occupations	1980	1990	2001	1980	1990	2001
	Number of persons			Percentages		
Craft and related trades workers						
Mining; quarrying workers	45,140	26,632	6,245	0.9	0.6	0.2
Food processing and related trades workers	38,064	39,993	44,601	0.8	0.9	1.2
Light industry workers	227,053	179,965	131,670	4.5	4.0	3.6
Steel and metal industry workers	587,342	516,387	317,682	11.6	11.4	8.6
Workers in handicrafts; other industries; storage	187,459	166,442	66,987	3.7	3.7	1.8
Construction workers	337,652	298,613	176,739	6.7	6.6	4.8
Together	1,422,710	1,228,032	743,924	28.1	27.1	20.2
Plant and machine operators and assemblers; vehicle drivers						
Machine operators in manufacturing industries	224,332	192,320	183,299	4.4	4.3	5.0
Machine operators of other non-mobile machinery	83,448	72,846	36,232	1.6	1.6	1.0
Vehicle drivers	367,607	324,744	198,005	7.3	7.2	5.4
Together	675,387	589,910	417,536	13.3	13.0	11.3
Elementary occupations						
Elementary; service type occupations	603,481	482,362	248,300	11.9	10.7	6.7
Elementary occupations in agriculture and forestry	149,121	36,932	7,762	2.9	0.8	0.2
Together	752,602	519,294	256,062	14.9	11.5	6.9
Armed forces	...	115,250	69,626	...	2.5	1.9
Total	5,065,655	4,524,972	3,690,269	100.0	100.0	100.0

Table 13.1.4: Persons in employment by sections of industry, industry, 1980–2001

Sections of industry, selected industry	1980	1990	2001	1980	1990	2001
	Number of persons			Percentages		
Agriculture. hunting and forestry	958,369	699,258	203,106	18.9	15.5	5.5
Mining and quarrying	126,010	91,925	7,992	2.5	2.0	0.2
Manufacturing						
Production of foods and beverages	201,149	199,915	135,194	4.0	4.4	3.7
Manufacture of tobacco products	6,025	4,778	1,750	0.1	0.1	0.0
Manufacture of textiles	126,832	86,348	34,311	2.5	1.9	0.9
Manufacture of wearing apparel; dressing and dyeing of fur	213,341	150,162	113,163	4.2	3.3	3.1
Manufacture of wood and wood products	19,017	16,831	30,548	0.4	0.4	0.8
Manufacture of pulp; paper; paper board and articles	16,317	14,317	10,876	0.3	0.3	0.3
Publishing	30,888	31,913	32,375	0.6	0.7	0.9
Manufacture of petroleum products; coke and basic chemicals	80,329	71,656	50,590	1.6	1.6	1.4
Manufacture of rubber and plastic products	25,725	30,155	36,584	0.5	0.7	1.0
Manufacture of other non-metallic mineral products	75,078	58,174	34,349	1.5	1.3	0.9
Manufacture of basic metals	107,591	77,621	26,218	2.1	1.7	0.7
Manufacture of fabricated metal pr.; exc. mach.; equip.	61,932	49,513	60,099	1.2	1.1	1.6
Manufacture of machinery and equipment n.e.c.	137,188	131,590	74,415	2.7	2.9	2.0
Manufacture of office machine and computers	57,150	42,821	37,510	1.1	0.9	1.0
Manufacture of electrical machinery and apparatus	65,286	47,178	68,626	1.3	1.0	1.9
Manufacture of radio; TV and comm. equipment	101,570	75,852	53,352	2.0	1.7	1.4
Manufacture motor vehicles; trailers; semi-trailers and transport equipment	87,482	54,646	50,851	1.7	1.2	1.4
Manufacture of furniture; manufacturing n.e.c.	76,003	50,698	44,071	1.5	1.1	1.2
Recycling	...	...	1,987	...	...	0.1
Together	1,488,903	1,194,168	896,869	29.4	26.4	24.3
Electricity; gas and water supply						
Electricity; gas and steam	55,916	60,693	46,937	1.1	1.3	1.3
Production; treatment and distribution of water	51,196	50,239	24,437	1.0	1.1	0.7
Together	107,112	110,932	71,374	2.1	2.5	1.9
Construction	402,119	315,814	236,380	7.9	7.0	6.4
Wholesale and retail trade. repair of goods						
Sale of motor vehicle; motorcycle parts and accessories; automotive fuels	140,565	141,520	189,173	2.8	3.1	5.1
Retail trade	310,674	323,636	331,504	6.1	7.2	9.0
Together	451,239	465,156	520,677	8.9	10.3	14.1
Hotels; restaurants	112,739	107,698	133,953	2.2	2.4	3.6
Transport; storage; post; telecommunication						
Land transport; transport via pipelines	323,446	288,187	179,757	6.4	6.4	4.9
Water transport; aviation	10,777	11,265	5,268	0.2	0.2	0.1
Auxiliary activities in transportation	18,627	25,255	34,009	0.4	0.6	0.9
Post; telecommunication	66,584	73,636	69,904	1.3	1.6	1.9
Together	419,434	398,343	288,938	8.3	8.8	7.8

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Sections of industry, selected industry	1980	1990	2001	1980	1990	2001
	Number of persons			Percentages		
Financial intermediation						
Financial intermediation without insurance	23,368	34,868	42,664	0.5	0.8	1.2
Insurance and pension funding, without compulsory social security	7,194	10,656	22,570	0.1	0.2	0.6
Activities auxiliary to financial intermediation	...	...	4,444	...	...	0.1
Together	30,562	45,524	69,678	0.6	1.0	1.9
Real estate; renting and business activities						
Real estate services	36,485	36,187	25,092	0.7	0.8	0.7
Renting	881	1,808	4,718	0.0	0.0	0.1
Computer techniques	10,976	14,267	32,179	0.2	0.3	0.9
Research; development	20,642	23,820	10,180	0.4	0.5	0.3
Activities auxiliary to business activities	71,352	77,093	206,969	1.4	1.7	5.6
Together	140,336	153,175	279,138	2.8	3.4	7.6
Public administration and defence; compulsory social security	195,406	250,998	279,789	3.9	5.5	7.6
Education	248,585	273,635	309,512	4.9	6.0	8.4
Health; social work	189,166	235,575	241,636	3.7	5.2	6.5
Sewage and refusal disposal; sanitation and similar activities	11,092	11,695	17,089	0.2	0.3	0.5
Activities in corporate [interest] federation	48,954	22,922	21,528	1.0	0.5	0.6
Entertainment; cultural and sport activities	54,532	64,776	63,406	1.1	1.4	1.7
Other services	60,146	76,342	45,955	1.2	1.7	1.2
Private households with employed persons	2,384	3,264	1,773	0.0	0.1	0.0
Extra-territorial organisations and bodies	18,567	3,772	1,476	0.4	0.1	0.0
Total	5,065,655	4,524,972	3,690,269	100.0	100.0	100.0

Table 13.1.5.1: Persons in employment by aggregated major groups of occupations and regions, 1980

Aggregated major groups of occupations	Total	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
Leading intellectuals	733,385	291,151	68,073	63,390	63,908	79,380	85,192	82,291
Other intellectuals	817,163	328,647	77,968	70,052	69,603	90,299	91,497	89,097
Services workers	391,145	111,116	41,574	39,988	41,495	51,435	53,700	51,837
Skilled agricultural and forestry workers	273,263	19,733	22,083	28,489	36,531	29,619	63,915	72,893
Craft and related trades workers	2,098,097	579,261	252,539	206,654	205,678	293,267	286,492	274,206
Other occupations	752,602	170,134	78,458	78,804	81,209	98,202	129,637	116,158
Total	5,065,655	1,500,042	540,695	487,377	498,424	642,202	710,433	686,482
Percentages								
Leading intellectuals	14.5	19.4	12.6	13.0	12.8	12.4	12.0	12.0
Other intellectuals	16.1	21.9	14.4	14.4	14.0	14.1	12.9	13.0
Services workers	7.7	7.4	7.7	8.2	8.3	8.0	7.6	7.6
Skilled agricultural and forestry workers	5.4	1.3	4.1	5.8	7.3	4.6	9.0	10.6
Craft and related trades workers	41.4	38.6	46.7	42.4	41.3	45.7	40.3	39.9
Other occupations	14.9	11.3	14.5	16.2	16.3	15.3	18.2	16.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.5.2: Persons in employment by aggregated major groups of occupations and regions, 1990

Aggregated major groups of occupations	Total	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
Leading intellectuals	733,915	278,486	70,936	66,645	64,261	80,172	89,449	83,966
Other intellectuals	767,673	282,864	77,907	70,573	67,475	86,849	93,323	88,682
Services workers	389,879	117,528	41,969	41,587	40,363	46,134	51,699	50,599
Skilled agricultural and forestry workers	181,019	16,424	15,329	18,765	23,996	16,165	37,574	52,766
Craft and related trades workers	1,817,942	477,407	225,041	190,558	173,958	250,851	263,194	236,933
Other occupations	634,544	172,410	70,876	63,321	67,272	77,430	93,740	89,495
Total	4,524,972	1,345,119	502,058	451,449	437,325	557,601	628,979	602,441
Percentages								
Leading intellectuals	16.2	20.7	14.1	14.8	14.7	14.4	14.2	13.9
Other intellectuals	17.0	21.0	15.5	15.6	15.4	15.6	14.8	14.7
Services workers	8.6	8.7	8.4	9.2	9.2	8.3	8.2	8.4
Skilled agricultural and forestry workers	4.0	1.2	3.1	4.2	5.5	2.9	6.0	8.8
Craft and related trades workers	40.2	35.5	44.8	42.2	39.8	45.0	41.8	39.3
Other occupations	14.0	12.8	14.1	14.0	15.4	13.9	14.9	14.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.5.3: Persons in employment by aggregated major groups of occupations and regions, 2001

Aggregated major groups of occupations	Total	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
Leading intellectuals	755,200	310,420	74,103	68,135	61,818	73,372	86,532	80,820
Other intellectuals	750,493	291,920	80,709	74,365	62,712	74,814	84,769	81,204
Services workers	581,909	186,065	64,647	65,590	54,992	60,623	74,914	75,078
Skilled agricultural and forestry workers	115,519	11,720	11,085	12,470	13,078	8,028	19,681	39,457
Craft and related trades workers	1,161,460	275,208	177,406	158,200	111,717	137,629	153,259	148,041
Other occupations	325,688	87,309	38,865	36,603	32,479	37,554	46,603	46,275
Total	3,690,269	1,162,642	446,815	415,363	336,796	392,020	465,758	470,875
Percentages								
Leading intellectuals	20.5	26.7	16.6	16.4	18.4	18.7	18.6	17.2
Other intellectuals	20.3	25.1	18.1	17.9	18.6	19.1	18.2	17.2
Services workers	15.8	16.0	14.5	15.8	16.3	15.5	16.1	15.9
Skilled agricultural and forestry workers	3.1	1.0	2.5	3.0	3.9	2.0	4.2	8.4
Craft and related trades workers	31.5	23.7	39.7	38.1	33.2	35.1	32.9	31.4
Other occupations	8.8	7.5	8.7	8.8	9.6	9.6	10.0	9.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.6.1: Persons in employment by aggregated branches of industry and regions, 1980

Aggregated sections of industry	Total	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
Agriculture; forestry	958,369	127,375	96,522	100,447	119,384	102,332	199,024	213,285
Mining; manufacturing; construction	2,124,144	646,108	262,845	205,734	193,652	316,903	254,342	244,560
Other industries	1,983,142	726,559	181,328	181,196	185,388	222,967	257,067	228,637
Total	5,065,655	1,500,042	540,695	487,377	498,424	642,202	710,433	686,482
Percentages								
Agriculture; forestry	18.9	8.5	17.9	20.6	24.0	15.9	28.0	31.1
Mining; manufacturing; construction	41.9	43.1	48.6	42.2	38.9	49.3	35.8	35.6
Other industries	39.1	48.4	33.5	37.2	37.2	34.7	36.2	33.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.6.2: Persons in employment by aggregated branches of industry and regions, 1990

Aggregated sections of industry	Total	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
Agriculture; forestry	699,258	91,472	73,883	74,535	86,614	75,686	137,166	159,902
Mining; manufacturing; construction	1,712,839	480,487	224,165	175,994	156,870	250,972	222,382	201,969
Other industries	2,112,875	773,160	204,010	200,920	193,841	230,943	269,431	240,570
Total	4,524,972	1,345,119	502,058	451,449	437,325	557,601	628,979	602,441
Percentages								
Agriculture; forestry	15.5	6.8	14.7	16.5	19.8	13.6	21.8	26.5
Mining; manufacturing; construction	37.9	35.7	44.6	39.0	35.9	45.0	35.4	33.5
Other industries	46.7	57.5	40.6	44.5	44.3	41.4	42.8	39.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.6.3: Persons in employment by aggregated branches of industry and regions, 2001

Aggregated sections of industry	Total	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
Agriculture; forestry	203,106	17,406	23,032	23,406	27,769	16,482	36,132	58,879
Mining; manufacturing; construction	1,212,615	292,738	193,970	170,019	110,129	146,078	150,890	148,791
Other industries	2,274,548	852,498	229,813	221,938	198,898	229,460	278,736	263,205
Total	3,690,269	1,162,642	446,815	415,363	336,796	392,020	465,758	470,875
Percentages								
Agriculture; forestry	5.5	1.5	5.2	5.6	8.2	4.2	7.8	12.5
Mining; manufacturing; construction	32.9	25.2	43.4	40.9	32.7	37.3	32.4	31.6
Other industries	61.6	73.3	51.4	53.4	59.1	58.5	59.8	55.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.7.1: Persons in employment by aggregated major groups of occupations and type of localities, 1980

Aggregated major groups of occupations	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
Leading intellectuals	733,385	599,426	241,432	186,947	171,047	133,959
Other intellectuals	817,163	667,165	261,094	213,919	192,152	149,998
Services workers	391,145	266,025	76,868	82,321	106,836	125,120
Skilled agricultural and forestry workers	273,263	82,261	4,771	13,953	63,537	191,002
Craft and related trades workers	2,098,097	1,311,154	352,053	381,958	577,143	786,943
Other occupations	752,602	391,474	92,659	104,873	193,942	361,128
Total	5,065,655	3,317,505	1,028,877	983,971	1,304,657	1,748,150
Percentages						
Leading intellectuals	14.5	18.1	23.5	19.0	13.1	7.7
Other intellectuals	16.1	20.1	25.4	21.7	14.7	8.6
Services workers	7.7	8.0	7.5	8.4	8.2	7.2
Skilled agricultural and forestry workers	5.4	2.5	0.5	1.4	4.9	10.9
Craft and related trades workers	41.4	39.5	34.2	38.8	44.2	45.0
Other occupations	14.9	11.8	9.0	10.7	14.9	20.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.7.2: Persons in employment by aggregated major groups of occupations and type of localities, 1990

Aggregated major groups of occupations	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
Leading intellectuals	733,915	600,398	225,916	194,666	179,816	133,517
Other intellectuals	767,673	608,766	214,944	201,154	192,668	158,907
Services workers	389,879	273,511	82,122	84,854	106,535	116,368
Skilled agricultural and forestry workers	181,019	64,861	4,349	12,650	47,862	116,158
Craft and related trades workers	1,817,942	1,129,054	286,974	329,414	512,666	688,888
Other occupations	634,544	383,901	103,133	111,946	168,822	250,643
Total	4,524,972	3,060,491	917,438	934,684	1,208,369	1,464,481
Percentages						
Leading intellectuals	16.2	19.6	24.6	20.8	14.9	9.1
Other intellectuals	17.0	19.9	23.4	21.5	15.9	10.9
Services workers	8.6	8.9	9.0	9.1	8.8	7.9
Skilled agricultural and forestry workers	4.0	2.1	0.5	1.4	4.0	7.9
Craft and related trades workers	40.2	36.9	31.3	35.2	42.4	47.0
Other occupations	14.0	12.5	11.2	12.0	14.0	17.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.7.3: Persons in employment by aggregated major groups of occupations and type of localities, 2001

Aggregated major groups of occupations	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
Leading intellectuals	755,200	614,843	231,277	199,470	184,096	140,357
Other intellectuals	750,493	580,498	204,535	188,267	187,696	169,995
Services workers	581,909	409,351	116,010	130,027	163,314	172,558
Skilled agricultural and forestry workers	115,519	43,336	3,198	8,586	31,552	72,183
Craft and related trades workers	1,161,460	695,477	140,675	216,327	338,475	465,983
Other occupations	325,688	202,128	50,323	63,107	88,698	123,560
Total	3,690,269	2,545,633	746,018	805,784	993,831	1,144,636
Percentages						
Leading intellectuals	20.5	24.2	31.0	24.8	18.5	12.3
Other intellectuals	20.3	22.8	27.4	23.4	18.9	14.9
Services workers	15.8	16.1	15.6	16.1	16.4	15.1
Skilled agricultural and forestry workers	3.1	1.7	0.4	1.1	3.2	6.3
Craft and related trades workers	31.5	27.3	18.9	26.8	34.1	40.7
Other occupations	8.8	7.9	6.7	7.8	8.9	10.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.8.1: Persons in employment by aggregated sections of industry and type of localities, 1980

Aggregated sections of industry	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
Agriculture; forestry	958,369	327,269	40,925	56,520	229,824	631,100
Mining; manufacturing; construction	2,124,144	1,500,233	438,067	460,649	601,517	623,911
Other industries	1,983,142	1,490,003	549,885	466,802	473,316	493,139
Total	5,065,655	3,317,505	1,028,877	983,971	1,304,657	1,748,150
Percentages						
Agriculture; forestry	18.9	9.9	4.0	5.7	17.6	36.1
Mining; manufacturing; construction	41.9	45.2	42.6	46.8	46.1	35.7
Other industries	39.1	44.9	53.4	47.4	36.3	28.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.8.2: Persons in employment by aggregated sections of industry and type of localities, 1990

Aggregated sections of industry	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
Agriculture; forestry	699,258	262,967	29,122	50,715	183,130	436,291
Mining; manufacturing; construction	1,712,839	1,203,323	314,329	380,996	507,998	509,516
Other industries	2,112,875	1,594,201	573,987	502,973	517,241	518,674
Total	4,524,972	3,060,491	917,438	934,684	1,208,369	1,464,481
Percentages						
Agriculture; forestry	15.5	8.6	3.2	5.4	15.2	29.8
Mining; manufacturing; construction	37.9	39.3	34.3	40.8	42.0	34.8
Other industries	46.7	52.1	62.6	53.8	42.8	35.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.1.8.3: Persons in employment by aggregated sections of industry and type of localities, 2001

Aggregated sections of industry	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
Agriculture; forestry	203,106	76,188	3,880	15,721	56,587	126,918
Mining; manufacturing; construction	1,212,615	776,241	158,657	252,649	364,935	436,374
Other industries	2,274,548	1,693,204	583,481	537,414	572,309	581,344
Total	3,690,269	2,545,633	746,018	805,784	993,831	1,144,636
Percentages						
Agriculture; forestry	5.5	3.0	0.5	2.0	5.7	11.1
Mining; manufacturing; construction	32.9	30.5	21.3	31.4	36.7	38.1
Other industries	61.6	66.5	78.2	66.7	57.6	50.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.2.1: Persons in employment by means of transport and aggregated branches of industry

Means of transport	Total	Agriculture, forestry	Mining, manufacturing, construction	Other industries
Number of persons				
No daily travel; or walking only for work	711,600	57,744	158,107	495,749
Travelling	2,978,669	145,362	1,054,508	1,778,799
Of which:				
Using one mean of transport				
using local public transport				
– on fixed drive-way	81,034	155	12,030	68,849
– bus	410,146	6,058	142,408	261,680
Using local public transport together	491,180	6,213	154,438	330,529
– long-distance bus	384,019	11,158	197,418	175,443
– car	870,595	48,901	289,981	531,713
– train	77,557	833	23,136	53,588
– motorcycle; bicycle	482,856	55,941	184,188	242,727
– other mean of transport	75,006	9,640	48,566	16,800
Using only one mean of transport together	2,381,213	132,686	897,727	1,350,800
Using several means of transport	494,529	7,453	125,067	362,009
Total	3,690,269	203,106	1,212,615	2,274,548
Percentages				
No daily travel; or walking only for work	19.3	28.4	13.0	21.8
Travelling	80.7	71.6	87.0	78.2
Of which:				
Using one mean of transport				
using local public transport				
– on fixed drive-way	2.2	0.1	1.0	3.0
– bus	11.1	3.0	11.7	11.5
Using local public transport together	13.3	3.1	12.7	14.5
– long-distance bus	10.4	5.5	16.3	7.7
– car	23.6	24.1	23.9	23.4
– train	2.1	0.4	1.9	2.4
– motorcycle; bicycle	13.1	27.5	15.2	10.7
– other mean of transport	2.0	4.7	4.0	0.7
Using only one mean of transport together	64.5	65.3	74.0	59.4
Using several means of transport	13.4	3.7	10.3	15.9
Total	100.0	100.0	100.0	100.0

Table 13.2.2: Persons in employment by means of transport used to travel to work and aggregated major groups of occupations

Means of transport	Leading intellectuals	Other intellectuals	Service workers	Skilled agricultural and forestry	Craft and related trades	Other
Number of persons						
No daily travel; or walking only for work	142,257	136,276	160,255	45,659	157,257	69,896
Travelling	612,943	614,217	421,654	69,860	1,004,203	255,792
Of which:						
Using one mean of transport						
using local public transport						
– on fixed drive-way	22,770	26,770	13,850	159	10,652	6,833
– bus	68,437	115,741	59,492	3,034	122,609	40,833
Using local public transport together	91,207	142,511	73,342	3,193	133,261	47,666
– long-distance bus	38,430	73,222	42,089	4,562	186,623	39,093
– car	285,080	146,349	127,652	24,079	253,351	34,084
– train	9,065	15,079	14,645	477	30,627	7,664
– motorcycle; bicycle	46,825	66,835	76,666	25,379	199,410	67,741
– other mean of transport	4,626	7,768	2,856	4,668	47,570	7,518
Using only one mean of transport together	475,233	451,764	337,250	62,358	850,842	203,766
Using several means of transport	119,206	143,971	69,641	4,493	116,967	40,251
Total	755,200	750,493	581,909	115,519	1,161,460	325,688
Percentages						
No daily travel; or walking only for work	18.8	18.2	27.5	39.5	13.5	21.5
Travelling	81.2	81.8	72.5	60.5	86.5	78.5
Of which:						
Using one mean of transport						
using local public transport						
– on fixed drive-way	3.0	3.6	2.4	0.1	0.9	2.1
– bus	9.1	15.4	10.2	2.6	10.6	12.5
Using local public transport together	12.1	19.0	12.6	2.8	11.5	14.6
– long-distance bus	5.1	9.8	7.2	3.9	16.1	12.0
– car	37.7	19.5	21.9	20.8	21.8	10.5
– train	1.2	2.0	2.5	0.4	2.6	2.4
– motorcycle; bicycle	6.2	8.9	13.2	22.0	17.2	20.8
– other mean of transport	0.6	1.0	0.5	4.0	4.1	2.3
Using only one mean of transport together	62.9	60.2	58.0	54.0	73.3	62.6
Using several means of transport	15.8	19.2	12.0	3.9	10.1	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.2.3: Persons in employment by aggregated sections of industry and length of daily travel

Aggregated sections of industry	Total	No daily travel	–15	16–30	31–60	61–90	91–120	121–	Variable
			minutes travel daily						
Number of persons									
Agriculture; forestry	203,106	42,623	26,838	67,525	45,611	5,249	7,041	2,928	5,291
Mining; manufacturing; construction	1,212,615	48,072	111,574	330,072	378,132	96,009	134,237	79,036	35,483
Other industries	2,274,548	139,232	319,008	636,848	606,902	170,684	205,749	127,827	68,298
Total	3,690,269	229,927	457,420	1,034,445	1,030,645	271,942	347,027	209,791	109,072
Percentages									
Agriculture; forestry	100.0	21.0	2.6	33.2	22.5	2.6	3.5	1.4	2.4
Mining; manufacturing; construction	100.0	4.0	2.9	27.2	31.2	7.9	11.1	6.5	2.8
Other industries	100.0	6.1	3.0	28.0	26.7	7.5	9.0	5.6	2.8
Total	100.0	6.2	3.0	28.0	27.9	7.4	9.4	5.7	2.8

Table 13.2.4: Persons in employment by aggregated major groups of occupations and length of daily travel

Aggregated major groups of occupations	Total	No daily travel	–15	16–30	31–60	61–90	91–120	121–	Variable
			minutes travel daily						
Number of persons									
Leading intellectuals	755,200	35,633	111,442	213,870	206,066	62,285	65,529	39,552	20,823
Other intellectuals	750,493	27,600	83,443	204,526	221,228	66,516	79,704	49,092	18,384
Services workers	581,909	59,023	96,815	169,381	139,299	33,237	43,709	26,233	14,212
Skilled agricultural and forestry workers	115,519	37,991	10,512	29,945	24,362	3,086	4,550	1,964	3,109
Craft and related trades workers	1,161,460	55,619	112,775	317,283	348,775	86,051	124,783	74,612	41,562
Other occupations	325,688	14,061	42,433	99,440	90,915	20,767	28,752	18,338	10,982
Total	3,690,269	229,927	457,420	1,034,445	1,030,645	271,942	347,027	209,791	109,072
Percentages									
Leading intellectuals	100.0	4.7	2.8	28.3	27.3	8.2	8.7	5.2	14.8
Other intellectuals	100.0	3.7	2.4	27.3	29.5	8.9	10.6	6.5	11.1
Services workers	100.0	10.1	2.4	29.1	23.9	5.7	7.5	4.5	16.6
Skilled agricultural and forestry workers	100.0	32.9	2.7	25.9	21.1	2.7	3.9	1.7	9.1
Craft and related trades workers	100.0	4.8	3.6	27.3	30.0	7.4	10.7	6.4	9.7
Other occupations	100.0	4.3	3.4	30.5	27.9	6.4	8.8	5.6	13.0
Total	100.0	6.2	3.0	28.0	27.9	7.4	9.4	5.7	12.4

Table 13.2.5: Number of persons in employment by means of transport and regions

Means of transport	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
No daily travel; or walking only for work	164 668	100 958	80 833	83 301	89 389	96 754	95 697
Travelling	997,974	345,857	334,530	253,495	302,631	369,004	375,178
Of which:							
Using one mean of transport							
using local public transport							
– on fixed drive-way	65,659	175	91	184	4,868	3,387	6,670
– bus	112,656	56,882	47,000	46,783	55,547	53,766	37,512
Using local public transport together	178,315	57,057	47,091	46,967	60,415	57,153	44,182
– long-distance bus	38,837	77,433	64,802	46,343	70,809	45,685	40,110
– car	306,479	99,795	104,531	80,509	77,041	100,807	101,433
– train	29,015	7,826	7,885	5,657	8,864	12,513	5,797
– motorcycle; bicycle	44,115	39,880	73,336	38,765	40,474	106,216	140,070
– other mean of transport	10,065	26,239	8,120	9,106	7,562	7,768	6,146
Using only one mean of transport together	606,826	308,230	305,765	227,347	265,165	330,142	337,738
Using several means of transport	353,325	26,061	19,098	17,253	28,080	26,556	24,156
Total	1,162,642	446,815	415,363	336,796	392,020	465,758	470,875

Table 13.2.6: Persons in employment by length of daily travel and regions

Length of daily travel	Central Hungary	Central Trans-danubia	Western Trans-danubia	Southern Trans-danubia	Northern Hungary	Northern Great Plain	Southern Great Plain
No daily travel for work	70,756	24,266	22,598	20,873	17,951	29,509	43,974
Length of daily travel							
–15 minutes	77,029	55,036	63,844	55,445	52,295	74,062	79,709
16–30 minutes	214,073	136,814	136,874	109,540	119,429	155,883	161,832
31–60 minutes	329,595	131,520	114,123	94,709	113,987	126,447	120,264
61–90 minutes	136,161	26,901	22,905	17,578	25,372	23,349	19,676
91–120 minutes	174,511	37,319	28,673	20,435	33,228	29,912	22,949
120– minutes	114,495	23,073	12,944	9,594	22,447	15,967	11,271
Variable	46,022	11,886	13,402	8,622	7,311	10,629	11,200
Travelling daily together	1,091,886	422,549	392,765	315,923	374,069	436,249	426,901
Total	1,162,642	446,815	415,363	336,796	392,020	465,758	470,875

Table 13.2.7: Persons in employment by length of daily travel and types of localities

Length of daily travel	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
No daily travel for work	229,927	143,728	41,582	42,281	59,865	86,199
Length of daily travel						
–15 minutes	457,420	311,250	39,351	98,734	173,165	146,170
16–30 minutes	1,034,445	752,807	122,363	280,645	349,799	281,638
31–60 minutes	1,030,645	739,889	238,492	272,313	229,084	290,756
61–90 minutes	271,942	187,765	105,403	39,599	42,763	84,177
91–120 minutes	347,027	216,473	114,211	36,364	65,898	130,554
120– minutes	209,791	117,983	51,820	17,039	49,124	91,808
Variable	109,072	75,738	32,796	18,809	24,133	33,334
Travelling daily together	3,460,342	2,401,905	704,436	763,503	933,966	1,058,437
Total	3,690,269	2,545,633	746,018	805,784	993,831	1,144,636

Table 13.2.8: Persons in employment by means of transport and types of localities

Means of transport	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
No daily travel; or walking only for work	711,600	511,882	92,295	178,883	240,704	199,718
Travelling	2,978,669	2,033,751	653,723	626,901	753,127	944,918
Of which:						
Using one mean of transport						
using local public transport						
– on fixed drive-way	81,034	80,217	65,162	14,208	847	817
– bus	410,146	394,460	92,492	242,416	59,552	15,686
Using local public transport together	491,180	474,677	157,654	256,624	60,399	16,503
– long-distance bus	384,019	103,503	1,922	16,550	85,031	280,516
– car	870,595	626,181	188,590	208,567	229,024	244,414
– train	77,557	36,126	5,095	3,717	27,314	41,431
– motorcycle; bicycle	482,856	300,605	4,275	65,834	230,496	182,251
– other mean of transport	75,006	33,387	2,619	7,908	22,860	41,619
Using only one mean of transport together	2,381,213	1,574,479	360,155	559,200	655,124	806,734
Using several means of transport	494,529	386,731	267,946	46,785	72,000	107,798
Total	3,690,269	2,545,633	746,018	805,784	993,831	1,144,636

Table 13.3.1: Persons in employment of non-agricultural occupations aged 15 years and over by age groups and the time spent for agricultural activity

Age groups (years)	Total	No agricultural activity performed	Agricultural activity performed						
			Total	Less than 90 days			90 days or more		
				total	–29	30–89	total	90–179	180–
Number of persons									
15–29	2,241,350	1,986,642	254,708	208,727	121,533	87,194	45,981	21,252	24,729
30–39	1,281,845	1,041,285	240,560	183,608	89,371	94,237	56,952	25,330	31,622
40–49	1,496,164	1,155,865	340,299	252,571	109,674	142,897	87,728	38,675	49,053
50–59	1,291,133	992,540	298,593	211,379	82,901	128,478	87,214	39,891	47,323
60–69	1,022,390	769,424	252,966	169,828	63,070	106,758	83,138	39,555	43,583
70–	1,054,978	892,013	162,965	114,622	49,027	65,595	48,343	22,318	26,025
Total	8,387,860	6,837,769	1,550,091	1,140,735	515,576	625,159	409,356	187,021	222,335
Percentages									
15–29	100.0	88.6	11.4	9.3	5.4	3.9	2.1	0.9	1.1
30–39	100.0	81.2	18.8	14.3	7.0	7.4	4.4	2.0	2.5
40–49	100.0	77.3	22.7	16.9	7.3	9.6	5.9	2.6	3.3
50–59	100.0	76.9	23.1	16.4	6.4	10.0	6.8	3.1	3.7
60–69	100.0	75.3	24.7	16.6	6.2	10.4	8.1	3.9	4.3
70–	100.0	84.6	15.4	10.9	4.6	6.2	4.6	2.1	2.5
Total	100.0	81.5	18.5	13.6	6.1	7.5	4.9	2.2	2.7

Table 13.3.2: Persons in employment of non-agricultural occupations aged 15 years and over by aggregated sections of industry and the time spent for agricultural activity

Aggregated sections of industry	Total	No agricultural activity performed	Agricultural activity performed						
			Total	Less than 90 days			90 days or more		
				total	–29	30–89	total	90–179	180–
Number of persons									
Agriculture; forestry	101,170	40,728	60,442	27,399	10,447	16,952	33,043	5,959	27,084
Mining; manufacturing; construction	1,208,098	964,860	243,238	197,077	94,849	102,228	46,161	23,242	22,919
Other industries	2,265,482	1,896,247	369,235	294,235	140,755	153,480	75,000	37,243	37,757
Total	3,574,750	2,901,835	672,915	518,711	246,051	272,660	154,204	66,444	87,760
Percentages									
Agriculture; forestry	100.0	40.3	59.7	27.1	10.3	16.8	32.7	5.9	26.8
Mining; manufacturing; construction	100.0	79.9	20.1	16.3	7.9	8.5	3.8	1.9	1.9
Other industries	100.0	83.7	16.3	13.0	6.2	6.8	3.3	1.6	1.7
Total	100.0	81.2	18.8	14.5	6.9	7.6	4.3	1.9	2.5

Table 13.3.3: Persons in employment of non-agricultural occupations aged 15 years and over by economic activity and the time spent for agricultural activity

Economic activity	Total	No agricultural activity performed	Agricultural activity performed						
			Total	Less than 90 days			90 days or more		
				total	–29	30–89	total	90–179	180–
Number of persons									
Person in employment[a]	3,574,750	2,901,835	672,915	518,711	246,051	272,660	154,204	66,444	87,760
Unemployed	416,210	332,257	83,953	60,230	26,050	34,180	23,723	11,611	12,112
Beneficiary of child-care allowance	293,404	250,194	43,210	33,821	16,989	16,832	9,389	4,778	4,611
Old-age pensioner on own right	2,600,797	2,069,558	531,239	367,273	144,995	222,278	163,966	78,715	85,251
Pensioner on derivative right	167,081	135,758	31,323	23,018	10,510	12,508	8,305	3,924	4,381
Other inactive earner	243,503	187,612	55,891	34,294	14,115	20,179	21,597	8,015	13,582
Dependent	1,092,115	960,555	131,560	103,388	56,866	46,522	28,172	13,534	14,638
Total	8,387,860	6,837,769	1,550,091	1,140,735	515,576	625,159	409,356	187,021	222,335
Percentages									
Person in employment[a]	100.0	81.2	18.8	14.5	6.9	7.6	4.3	1.9	2.5
Unemployed	100.0	79.8	20.2	14.5	6.3	8.2	5.7	2.8	2.9
Beneficiary of child-care allowance	100.0	85.3	14.7	11.5	5.8	5.7	3.2	1.6	1.6
Old-age pensioner on own right	100.0	79.6	20.4	14.1	5.6	8.5	6.3	3.0	3.3
Pensioner on derivative right	100.0	81.3	18.7	13.8	6.3	7.5	5.0	2.3	2.6
Other inactive earner	100.0	77.0	23.0	14.1	5.8	8.3	8.9	3.3	5.6
Dependent	100.0	88.0	12.0	9.5	5.2	4.3	2.6	1.2	1.3
Total	100.0	81.5	18.5	13.6	6.1	7.5	4.9	2.2	2.7

[a] Without skilled agricultural and forestry workers.

Table 13.3.4: Persons in employment of non-agricultural occupations aged 15 years and over by aggregated major groups of occupations and the time spent for agricultural activity

Major groups of occupations	Total	No agricultural activity performed	Agricultural activity performed						
			Total	Less than 90 days			90 days or more		
				total	–29	30–89	total	90–179	180–
Number of persons									
Leading intellectuals	755,200	638,771	116,429	90,595	46,020	44,575	25,834	9,817	16,017
Other intellectuals	750,493	628,442	122,051	98,487	47,675	50,812	23,564	11,526	12,038
Services workers	581,909	488,556	93,353	72,777	34,429	38,348	20,576	10,121	10,455
Craft; related trades workers	1,161,460	897,464	263,996	199,918	93,399	106,519	64,078	25,984	38,094
Other occupations	325,688	248,602	77,086	56,934	24,528	32,406	20,152	8,996	11,156
Total	3,574,750	2,901,835	672,915	518,711	246,051	272,660	154,204	66,444	87,760
Percentages									
Leading intellectuals	100.0	84.6	15.4	12.0	6.1	5.9	3.4	1.3	2.1
Other intellectuals	100.0	83.7	16.3	13.1	6.4	6.8	3.1	1.5	1.6
Services workers	100.0	84.0	16.0	12.5	5.9	6.6	3.5	1.7	1.8
Craft and related trades workers	100.0	77.3	22.7	17.2	8	9.2	5.5	2.2	3.3
Other occupations	100.0	76.3	23.7	17.5	7.5	10	6.2	2.8	3.4
Total	100.0	81.2	18.8	14.5	6.9	7.6	4.3	1.9	2.5

Table 13.3.5: Persons in employment of non-agricultural occupations aged 15 years and over by the time spent for agricultural activity and regions

Agricultural activity	Total	Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain
Number of persons								
No agricultural activity performed	6,837,769	2,273,514	694,527	607,719	599,959	799,162	962,710	900,178
Agricultural activity performed	1,550,091	155,875	227,916	220,204	214,274	250,551	272,455	208,816
–29 days	515,576	46,996	71,935	75,853	62,601	98,537	101,192	58,462
30–89 days	625,159	59,405	94,195	91,672	89,883	101,882	106,121	82,001
Less than 90 days together	1,140,735	106,401	166,130	167,525	152,484	200,419	207,313	140,463
90–179 days	187,021	21,138	27,590	25,604	27,795	24,482	30,512	29,900
180– days	222,335	28,336	34,196	27,075	33,995	25,650	34,630	38,453
90 days or more together	409,356	49,474	61,786	52,679	61,790	50,132	65,142	68,353
Total	8,387,860	2,429,389	922,443	827,923	814,233	1,049,713	1,235,165	1,108,994
Percentages								
No agricultural activity performed	81.5	93.6	75.3	73.4	73.7	76.1	77.9	81.2
Agricultural activity performed	18.5	6.4	24.7	26.6	26.3	23.9	22.1	18.8
–29 days	6.1	1.9	7.8	9.2	7.7	9.4	8.2	5.3
30–89 days	7.5	2.4	10.2	11.1	11.0	9.7	8.6	7.4
Less than 90 days together	13.6	4.4	18.0	20.2	18.7	19.1	16.8	12.7
90–179 days	2.2	0.9	3.0	3.1	3.4	2.3	2.5	2.7
180– days	2.7	1.2	3.7	3.3	4.2	2.4	2.8	3.5
90 days or more together	4.9	2.0	6.7	6.4	7.6	4.8	5.3	6.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.3.6: Persons in employment of non-agricultural occupations aged 15 years and over by the time spent for agricultural activity and types of localities

Agricultural activity	Total	Towns (urban areas)				Villages (rural areas)
		Together	Budapest	Towns of county rights	Other towns	
Number of persons						
No agricultural activity performed	6,837,769	4,508,962	1,512,608	1,498,177	1,899,756	1,927,228
Agricultural activity performed	1,550,091	461,803	34,493	213,655	349,119	952,824
–29 days	515,576	149,004	12,632	68,186	112,009	322,749
30–89 days	625,159	176,477	11,225	82,626	137,980	393,328
Less than 90 days together	1,140,735	325,481	23,857	150,812	249,989	716,077
90–179 days	187,021	60,028	4,450	27,789	43,338	111,444
180– days	222,335	76,294	6,186	35,054	55,792	125,303
90 days or more together	409,356	136,322	10,636	62,843	99,130	236,747
Total	8,387,860	4,970,765	1,547,101	1,711,832	2,248,875	2,880,052
Percentages						
No agricultural activity performed	81.5	90.7	97.8	87.5	84.5	66.9
Agricultural activity performed	18.5	9.3	2.2	12.5	15.5	33.1
–29 days	6.1	3.0	0.8	4.0	5.0	6.1
30–89 days	7.5	3.6	0.7	4.8	6.1	13.7
Less than 90 days together	13.6	6.5	1.5	8.8	11.1	24.9
90–179 days	2.2	1.2	0.3	1.6	1.9	3.9
180– days	2.7	1.5	0.4	2.0	2.5	4.4
90 days or more together	4.9	2.7	0.7	3.7	4.4	8.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.4.1.1: Population by ethnicity and economic activity, population of Hungary, total

Nationality	Total	Economic activity			
		Person in employment	Unemployed	Inactive earner	Dependent
Population total	10,198,315	3,690,269	416,210	3,305,541	2,786,295
Of which:					
– does not wish to answer	543,317	200,183	22,652	130,987	189,495
– unknown; no answer	27,220	7,897	569	6,699	12,055
– answers given to the question	9,627,778	3,482,189	392,989	3,167,855	2,584,745
Of which:					
– Hungarian	9,416,045	3,435,423	375,110	3,103,830	2,501,682
Ethnic minorities native in Hungary, of which:					
– Bulgarian	1,358	613	35	381	329
– Gipsy, Romany	189,984	19,227	22,492	53,326	94,939
– Greek	2,509	893	89	797	730
– Croatian	15,597	5,984	468	6,274	2,871
– Polish	2,962	1,465	107	584	806
– German	62,105	25,046	1,545	23,696	11,818
– Armenian	620	299	18	152	151
– Rumanian	7,995	3,069	371	2,664	1,891
– Ruthene	1,098	487	43	334	234
– Serbian	3,816	1,417	126	1,194	1,079
– Slovakian	17,693	6,141	487	8,244	2,821
– Slovenian	3,025	1,235	75	1,220	495
– Ukrainian	5,070	2,227	204	1,385	1,254

Table 13.4.1.2: Population by ethnicity and economic activity, Budapest

Nationality	Total	Economic activity			
		Person in employment	Unemployed	Inactive earner	Dependent
Population total	1,777,921	746,018	50,038	556,574	425,291
Of which:					
– does not wish to answer	135,924	58,528	4,039	31,568	41,789
– unknown; no answer	11,151	4,141	138	2,925	3,947
– answers given to the question	1,630,846	683,349	45,861	522,081	379,555
Of which:					
– Hungarian	1,603,511	671,851	44,686	516,341	370,633
Ethnic minorities native in Hungary, of which:					
– Bulgarian	784	363	18	209	194
– Gipsy, Romany	12,266	3,005	1,090	2,897	5,274
– Greek	1,522	557	43	472	450
– Croatian	769	387	12	173	197
– Polish	1,185	593	25	227	340
– German	7,014	3,460	189	1,848	1,517
– Armenian	364	178	9	92	85
– Rumanian	1,205	655	45	187	318
– Ruthene	430	223	13	97	97
– Serbian	996	420	20	178	378
– Slovakian	1,528	707	46	488	287
– Slovenian	359	166	8	117	68
– Ukrainian	1,425	654	45	361	365

Table 13.4.1.3: Population by ethnicity and economic activity, towns with county rights

Nationality	Total	Economic activity			
		Person in employment	Unemployed	Inactive earner	Dependent
Population total	2,033,919	805,784	73,862	587,573	566,700
Of which:					
– does not wish to answer	105,766	42,233	4,308	22,231	36,994
– unknown; no answer	4,304	997	77	771	2,459
– answers given to the question	1,923,849	762,554	69,477	564,571	527,247
Of which:					
– Hungarian	1,900,294	755,502	67,706	558,298	518,788
Ethnic minorities native in Hungary, of which:					
– Bulgarian	203	82	4	60	57
– Gipsy, Romany	17,191	2,494	1,958	4,425	8,314
– Greek	406	117	10	131	148
– Croatian	1,824	879	48	484	413
– Polish	616	316	31	105	164
– German	8,638	3,895	210	2,675	1,858
– Armenian	131	59	5	28	39
– Rumanian	821	340	44	204	233
– Ruthene	178	80	9	49	40
– Serbian	696	272	20	168	236
– Slovakian	2,683	1,013	65	1,276	329
– Slovenian	369	169	6	132	62
– Ukrainian	1,071	483	45	270	273

Table 13.4.1.4: Population by ethnicity and economic activity, other towns

Nationality	Total	Economic activity			
		Person in employment	Unemployed	Inactive earner	Dependent
Population total	2,761,040	993,831	118,426	875,597	773,186
Of which:					
– does not wish to answer	139,903	49,754	6,138	33,229	50,782
– unknown; no answer	5,473	1,399	140	1,286	2,648
– answers given to the question	2,615,664	942,678	112,148	841,082	719,756
Of which:					
– Hungarian	2,563,339	932,115	107,372	825,535	698,317
Ethnic minorities native in Hungary, of which:					
– Bulgarian	193	85	9	59	40
– Gipsy, Romany	52,159	4,728	6,227	14,474	26,730
– Greek	182	91	2	45	44
– Croatian	2,313	1,078	70	754	411
– Polish	599	317	26	106	150
– German	15,358	6,746	368	5,541	2,703
– Armenian	72	35	4	17	16
– Rumanian	1,992	921	102	532	437
– Ruthene	229	92	11	71	55
– Serbian	954	375	39	351	189
– Slovakian	4,100	1,473	77	1,955	595
– Slovenian	834	389	22	338	85
– Ukrainian	1,394	639	55	352	348

Table 13.4.1.5: Population by ethnicity and economic activity, villages, rural areas

Nationality	Total	Economic activity			
		Person in employment	Unemployed	Inactive earner	Dependent
Population total	3,625,435	1,144,636	173,884	1,285,797	1,021,118
Of which:					
– does not wish to answer	161,724	49,668	8,167	43,959	59,930
– unknown; no answer	6,292	1,360	214	1,717	3,001
– answers given to the question	3,457,419	1,093,608	165,503	1,240,121	958,187
Of which:					
– Hungarian	3,348,901	1,075,955	155,346	1,203,656	913,944
Ethnic minorities native in Hungary, of which:					
– Bulgarian	178	83	4	53	38
– Gipsy, Romany	108,368	9,000	13,217	31,530	54,621
– Greek	399	128	34	149	88
– Croatian	10,691	3,640	338	4,863	1,850
– Polish	562	239	25	146	152
– German	31,095	10,945	778	13,632	5,740
– Armenian	53	27	.	15	11
– Rumanian	3,977	1,153	180	1,741	903
– Ruthene	261	92	10	117	42
– Serbian	1,170	350	47	497	276
– Slovakian	9,382	2,948	299	4,525	1,610
– Slovenian	1,463	511	39	633	280
– Ukrainian	1,180	451	59	402	268

Table 13.4.2: Persons in employment by ethnicity, aggregated major groups of occupations, aggregated branches of industry

Nationality	Aggregated major groups of occupations						Aggregated sections of industry		
	Leading intellectuals	Other intellectuals	Services workers	Skilled agricultural and forestry workers	Craft and related trades workers	Other occupations	Agriculture, forestry	Mining, manufacturing, construction	Other industries
Population total	755,200	750,493	581,909	115,519	1,161,460	325,688	203,106	1,212,615	2,274,548
Of which:									
– does not wish to answer	40,521	41,074	34,616	4,702	60,285	18,985	8,244	63,942	127,997
– unknown; no answer	1,449	1,285	1,258	181	1,552	2,172	294	1,730	5,873
– answers given to the question	713,230	708,134	546,035	110,636	1,099,623	304,531	194,568	1,146,943	2,140,678
Of which:									
– Hungarian	701,991	701,284	538,650	108,827	1,086,364	298,307	191,528	1,131,274	2,112,621
Ethnic minorities native in Hungary, of which:									
– Bulgarian	266	120	98	29	79	21	35	95	483
– Gipsy, Romany	637	984	2,229	1,229	7,833	6,315	1,759	8,867	8,601
– Greek	300	227	164	14	147	41	14	184	695
– Croatian	1,310	1,061	989	228	1,900	496	518	1,872	3,594
– Polish	512	374	236	12	254	77	27	371	1,067
– German	7,934	5,309	3,088	703	6,748	1,264	1,556	8,315	15,175
– Armenian	157	62	46	1	24	9	1	51	247
– Rumanian	591	382	452	256	1,083	305	302	1,156	1,611
– Ruthene	203	110	62	12	70	30	19	97	371
– Serbian	511	300	247	55	236	68	72	251	1,094
– Slovakian	1,517	1,125	817	313	1,801	568	536	1,869	3,736
– Slovenian	211	208	187	39	462	128	58	480	697
– Ukrainian	534	449	380	46	654	164	70	727	1,430

Table 13.5.1: Disabled persons by type of disability and economic activity, total

Type of disability	Total	Person in employment	Unemployed	Inactive earners			Dependents
				Together	Of which:		
					Pensioners, rentiers on own right	Disability pensioners, rentiers	
Limitation of motion	209,931	13,193	2,667	182,657	90,880	76,941	11,414
Lack of upper or lower limb[s]	15,051	1,122	213	13,036	6,770	5,797	680
Other deficiencies in body	26,578	3,253	903	19,860	7,901	10,531	2,562
Together	251,560	17,568	3,783	215,553	105,551	93,269	14,656
Amblyopia	55,115	8,634	1,632	37,441	23,230	8,832	7,408
Blind in one eye	18,482	1,641	698	14,697	9,095	3,995	1,446
Blind	9,443	543	78	7,922	4,317	2,771	900
Together	83,040	10,818	2,408	60,060	36,642	15,598	9,754
Mental deficiency	56,963	3,992	671	26,903	4,869	18,845	25,397
Weak of hearing	44,679	4,777	922	35,243	25,355	5,749	3,737
Deaf; deaf and dumb; dumb	8,886	1,090	153	6,123	2,567	3,044	1,520
Defective speech	7,300	1,164	333	3,809	1,820	1,534	1,994
Other	124,578	12,397	3,436	95,124	30,314	58,752	13,621
Total	577,006	51,806	11,706	442,815	207,118	196,791	70,679

Table 13.5.2: Disabled persons by type of disability and economic activity, males

Type of disability	Total	Person in employment	Unemployed	Inactive earners			Dependents
				Together	Of which:		
					Pensioners, rentiers on own right	Disability pensioners, rentiers	
Limitation of motion	95,149	7,379	1,732	81,484	36,664	43,470	4,554
Lack of upper or lower limb[s]	11,427	920	175	9,939	5,049	4,772	393
Other deficiencies in body	15,139	2,223	676	10,773	3,935	6,398	1,467
Together	121,715	10,522	2,583	102,196	45,648	54,640	6,414
Amblyopia	21,374	4,637	943	12,495	7,767	4,131	3,299
Blind in one eye	9,630	1,150	562	7,163	4,386	2,477	755
Blind	3,943	321	48	3,206	1,789	1,391	368
Together	34,947	6,108	1,553	22,864	13,942	7,999	4,422
Mental deficiency	31,408	2,443	479	14,296	2,124	10,970	14,190
Weak of hearing	22,231	3,168	644	16,680	12,841	3,410	1,739
Deaf; deaf and dumb; dumb	4,611	690	105	3,020	1,240	1,682	796
Defective speech	4,794	890	265	2,271	1,036	1,041	1,368
Other	63,162	7,279	2,141	46,319	12,963	31,837	7,423
Total	282,868	31,100	7,770	207,646	89,794	111,579	36,352

Table 13.5.3: Disabled persons by type of disability and economic activity, females

Type of disability	Total	Person in employment	Unemployed	Inactive earners			Dependents
				Together	Of which:		
					Pensioners, rentiers on own right	Disability pensioners, rentiers	
Limitation of motion	114,782	5,814	935	101,173	54,216	33,471	6,860
Lack of upper or lower limb[s]	3,624	202	38	3,097	1,721	1,025	287
Other deficiencies in body	11,439	1,030	227	9,087	3,966	4,133	1,095
Together	129,845	7,046	1,200	113,357	59,903	38,629	8,242
Amblyopia	33,741	3,997	689	24,946	15,463	4,701	4,109
Blind in one eye	8,852	491	136	7,534	4,709	1,518	691
Blind	5,500	222	30	4,716	2,528	1,380	532
Together	48,093	4,710	855	37,196	22,700	7,599	5,332
Mental deficiency	25,555	1,549	192	12,607	2,745	7,875	11,207
Weak of hearing	22,448	1,609	278	18,563	12,514	2,339	1,998
Deaf; deaf and dumb; dumb	4,275	400	48	3,103	1,327	1,362	724
Defective speech	2,506	274	68	1,538	784	493	626
Other	61,416	5,118	1,295	48,805	17,351	26,915	6,198
Total	294,138	20,706	3,936	235,169	117,324	85,212	34,327

Table 14.1: Employment rate and unemployment rate of population aged 15–64 by sex in the countries of the European Union, Hungary and the candidate countries, in 2002 – per cent*

Country	Employment rate			Unemployment rate		
	Males	Females	Together	Males	Females	Together
Austria	75.3	61.1	68.2	4.1	4.5	4.3
Belgium	68.1	51.1	59.7	6.6	8.2	7.3
Denmark	80.2	72.6	76.4	4.4	4.6	4.5
United Kingdom	77.7	65.3	71.5	5.6	4.5	5.1
Finland	70.9	67.3	69.1	9.1	9.1	9.1
France	69.6	56.4	62.9	7.8	9.9	8.7
Greece	71.7	42.7	56.9	6.6	15.0	10.0
Netherlands	82.9	65.9	74.5	2.5	3.0	2.7
Ireland	74.7	55.2	65.0	4.6	4.0	4.4
Luxembourg	75.5	51.5	63.6	2.1	3.9	2.8
Germany	71.8	58.8	65.4	8.7	8.3	8.6
Italy	68.9	41.9	55.4	7.0	12.2	9.0
Portugal	76.3	61.2	68.6	4.2	6.1	5.1
Spain	72.8	44.0	58.4	8.0	16.4	11.3
Sweden	75.5	72.5	74.0	5.3	4.5	4.9
European Union	72.9	55.5	64.2	6.9	8.7	7.7
Hungary	62.9	49.8	56.2	6.1	5.4	5.8
Bulgaria	54.1	48.2	51.1	18.7	17.4	18.1
Cyprus	78.8	59.0	68.5	2.9	5.0	3.8
Czech Republic	74.0	57.2	65.6	5.9	9.0	7.3
Estonia	66.2	57.6	61.7	9.8	8.4	9.1
Poland	57.0	46.7	51.7	19.1	20.9	19.9
Latvia	63.6	57.6	60.5	13.7	11.8	12.8
Lithuania	64.3	57.2	60.6	13.3	13.0	13.1
Romania	64.5	52.8	58.6	7.3	6.6	7.0
Slovakia	61.9	51.2	56.5	18.4	18.8	18.6
Slovenia	68.7	59.8	64.3	5.7	6.4	6.0

* Weighted on the basis of 1990 Population Census.
Source: New Cronos.

Table 14.2: Composition of employed population 2002, 15–64 ages – per cent

Country	Self employed	Part time	Fix term contr.	Service	Industry	Agriculture
Hungary	18.3	3.6	7.3	60.1	34.0	6.0
Czech Republic	16.0	4.9	8.9	...	...	...
Poland	28.1	10.8	15.4	52.0	28.6	19.3
Slovenia	16.0	6.1	14.2	52.4	38.0	9.5
Slovak Republic	8.6	1.9	4.9	59.6	33.9	6.4
EU-15 average	14.6	18.1	13.0	71.0	25.9	4.1
Ireland	17.6	16.5	5.4	65.0	28.1	6.9
Portugal	26.9	11.2	21.7	53.8	33.8	12.4
Spain	15.8	7.9	31.0	64.7	29.4	5.9
Italy	25.4	8.6	9.9	66.1	29.2	4.7
Greece	41.8	4.5	11.2	60.0	23.8	16.2

Source: Employment in Europe 2003. Recent Trends and Prospects. European Commission, Luxembourg, 2003.

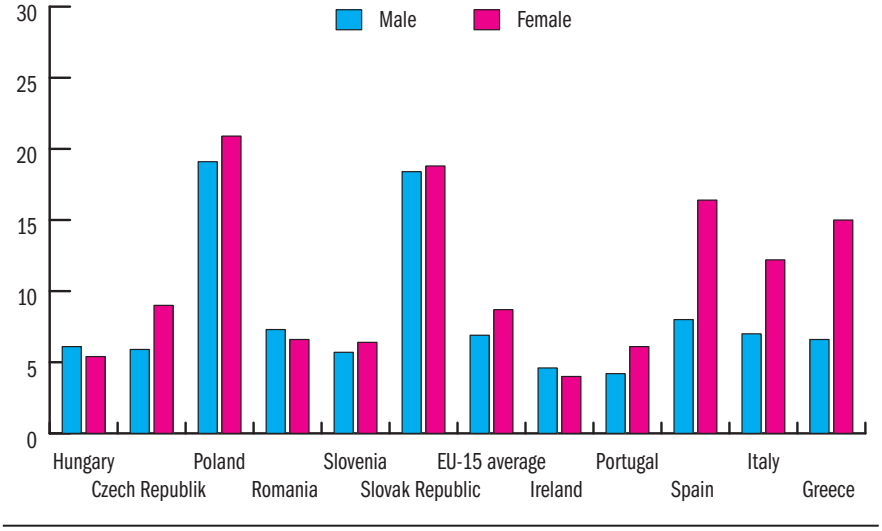

Figure 14.1: Composition of unemployed population in some European countries, by gender, 2002

Table 14.3: Real Labour Cost Index, 1997–2001*

Country	Real labour cost				
	1997	1998	1999	2000	2001
EU–15 average	101.2	102.2	103.7	105.2	106.5
Belgium	101.0	102.2	103.7	101.9	103.9
Denmark	101.9	105.0	107.3	108.3	110.4
Germany	100.4	101.6	103.0	104.4	104.6
Spain	102.7[a]	104.2[a]	105.2[a]	102.3[a]	104.4[a]
France	100.7	101.7	104.1	106.8	109.4
Ireland	103.3[a]	105.6[a]	108.7[a]	110.6[a]	115.8[a]
Italy	101.5	97.9	96.6	96.2	95.5
Luxemburg	101.2	102.6	104.5	105.4	108.0
Netherlands	101.0	103.5	104.7[a]	107.3[a]	107.2[a]
Austria	100.7	102.1	104.9	105.1	105.5
Portugal	100.9	100.4	102.0	102.9	102.1
Finland	100.9	103.6	105.7	106.5[a]	108.6[a]
Sweden	102.7	106.5	109.7	113.5	115.8
United Kingdom	102.7	106.6	109.5	113.2	116.7
United States	100.8	102.8	...	...	...
Hungary	101.1	104.4	105.6	107.5	109.2

* C to K industry and services.
[a] Provisional value.
Note: 1996=100,0
Source: New Cronos – Hungarian data source: institutional labour statistical surveys.

Table 14.4: Nominal Labour Cost Index 1997–2001*

Country	Nominal labour cost				
	1997	1998	1999	2000	2001
EU-15 average	102.9	105.3	108.2	111.9[a.b]	115.9[a.b]
Belgium	102.5	104.6	107.5	108.4	113.2
Denmark	103.9	108.5	113.1	117.3	122.3
Germany	101.9	103.8	105.8	109.5	112.3
Spain	104.6[a]	108.1[a]	111.5[a]	112.3[a]	117.8[a]
France	102.0	103.6	106.8	111.4	116.2
Ireland	104.6[a]	109.3[a]	115.2[a]	123.0[a]	134.3[a]
Italy	103.5	101.8	102.1	104.3	105.9
Luxemburg	102.6	105.0	108.0	113.1	118.7
Netherlands	102.9	107.3	110.7[a]	116.2[a]	122.0[a]
Austria	101.9	104.2	107.6	109.9	112.8
Portugal	102.8	104.6	108.5	112.6	116.6
Finland	102.1	106.3	109.8	113.9[a]	119.2[a]
Sweden	104.6	109.6	113.5	118.9	124.6
United Kingdom	104.5	110.2	114.7	119.6	124.8
United States	103.1	106.8	110.2	115.2	120.0
Hungary	119.6	141.2	157.2	175.7	195.0

* C to K industry and services.
[a] Provisional value.
[b] Note: 1996=100,0
Source: New Cronos – Hungarian data source: institutional labour statistical surveys.

Table 14.5: Real gross earnings index 1997–2001

Country	Real gross earnings				
	1997	1998	1999	2000	2001
EU-15 average	101.2	102.6	104.3	105.2	106.5
Belgium	100.4	101.1	101.2	101.3	101.8
Denmark	101.9	105.0	107.2	108.1	110.2
Germany	100.0	101.4	103.4	103.8	104.1
Greece	104.2	106.3	...	...	...
Spain	101.4	101.8	101.6[a]	100.3[a]	100.9[a]
France	100.9	102.0	103.0	103.0	103.8
Ireland	103.1	105.6	108.7	110.4	114.9
Italy	102.5	102.9	103.1	102.4	102.5
Luxemburg	101.5	102.7	104.7	105.5	108.2
Netherlands	101.5	104.5	106.3	108.4	109.5
Austria	100.6	102.0	104.0	104.1	104.5
Portugal	102.1	...	...	...	...
Finland	101.5	103.9	105.5	106.9	109.1
Sweden	102.3	106.0	111.5	113.3	115.3
United Kingdom	103.3	106.1	110.1	115.1	120.4
Hungary	103.4	107.0	113.0	116.8	126.2

[a] Provisional value.
Note: 1996=100,0
Source: New Cronos – Hungarian data source: institutional labour statistical surveys.

Table 14.6: Nominal gross earnings index 1997–2001

Country	Nominal gross earnings				
	1997	1998	1999	2000	2001
EU-15 average	102.9[a.b]	105.7[a.b]	108.7[a.b]	112.0[a]	116.0[a]
Belgium	101.9	103.6	104.8	107.7	110.9
Denmark	103.9	108.4	113.0	117.1	122.0
Germany	101.5	103.6	106.3	108.9	111.8
Greece	109.9	...	...	...	...
Spain	103.3[a]	105.5[a]	107.7[a]	110.0[a]	113.8[a]
France	102.2	104.0	105.7	107.6	110.3
Ireland	104.4	109.2	115.2	123.2	133.2
Italy	104.4	106.9	108.9	111.0	113.7
Luxemburg	102.8	105.1	108.3	113.3	118.9
Netherlands	103.3	108.4	112.5	117.4	124.6
Austria	101.8	104.1	106.7	108.8	111.8
Portugal	...	...	...	...	...
Finland	102.7	106.5	109.6	114.3	119.9
Sweden	104.2	109.1	115.3	118.7	124.1
United Kingdom	105.2	109.7	115.4	121.6	128.8
Hungary	122.3	144.7	168.0	190.7	225.0

[a] Provisional value.
[b] Estimated value.
Note: 1996 = 100.
Source: New Cronos – Hungarian data source: institutional labour statistical surveys.

Table 14.7: Monthly statutory minimum wage rates, full-time adult employees, aged 23+*

Country	In local currency	In euros (updated 24.09.2003)	Average gross earnings = 100	Date effective[1]
Belgium		1,233.54	51	01.06.2003
Bulgaria	110 levs	56.60	52	17.12.2002
Czech Republic	6,200 koruna	194.50	50	01.01.2003
Estonia	2,236 kroons	142.90	58	01.01.2003
France		1,215.11	...	28.06.2003
Greece		504.83	45	01.01.2003
Hungary	50,000 forints	197.80	50	01.01.2003
Ireland		1,100.67	63	01.10.2002
Latvia	72.63 lats	113.40	61	01.01.2003
Lithuania	450 lita	130.30	54	01.09.2003
Luxembourg		1,368.74	52	01.01.2003
Malta	230.23 lira	542.40	73	01.01.2003
Netherlands		1,264.80	51	01.07.2003
Poland	800 zloty	178.50	40	01.01.2003
Portugal		356.6	55	01.01.2003
Romania	2,500,000 leu	65.60	47	01.01.2003
Russian Federation	450 rubles	12.90	20	01.05.2002
Slovakia	5,570 koruna	135.10	43	01.10.2002
Slovenia	103,643 tolars	442.60	47	01.12.2002
Spain	451.2 pes		26	01.01.2003
Ukraine	185 hryvnia	30,40	62	01.01.2003
United Kingdom	780 pounds sterling	1,124.90	45	01.10.2003

* Where official rates are expressed by the hour or week, they have been converted to monthly rates on the basis of a 40-hour week or 52-week year. Minimum wage figures exclude any 13th or 14th month payments that may be due under national legislation, custom or practice.

1 Minimum wage levels last updated.

Source: FedEE review of minimum wage rates http://www.fedee.com/minwage.html. Copyright: FedEE Services Ltd, 2003.

DESCRIPTION OF THE MAIN DATA SOURCES

1. CSO Labour Force Survey

The Hungarian Central Statistical Office has been conducting a new statistical survey since January 1992 – using the experience of the pilot survey carried out in 1991 – to obtain ongoing information on the labour force status of the Hungarian population.

The Labour Force Survey (LFS) is a household survey which provides quarterly information on the non-institutional population aged 15–74. The aim of the survey is to observe employment and unemployment according to the international statistical recommendation based on the concepts and definitions recommended by the ILO independently from the existing national labour regulations or their changes.

In international practice, the labour force survey is a widely used statistical tool to provide simultaneous, comprehensive and systematic monitoring of employment, unemployment and underemployment. The survey techniques minimise the subjective bias in classification (since people surveyed are classified by strict criteria) and provide freedom to also consider national characteristics.

In the LFS the population surveyed is divided into two main groups according to the economic activity performed by them during the reference week (the week running from Monday to Sunday which contains the 12th day of the month):

– economically active persons (labour force) and
– economically inactive persons.

The group of economically active persons consists of those being in the labour market either as employed or unemployed during the reference week.

The definitions used in the survey follow the ILO recommendations. According to this those designated employed are persons aged 15–74 who, during the reference week:

– worked one hour or more for pay, profit or payment in kind in a job or in a business (including on a farm),
– worked one hour or more without payment in a family business or on a farm (i.e. unpaid family workers),
– had a job from which they were temporarily absent during the survey week.

Persons on child-care leave are classified according to their activity. Conscripts are considered as economically active persons, exceptions are marked in the footnotes of the table.

From the survey's point of view the activities below are not considered as work:

– work done without payment for another household or institute (voluntary work),
– building or renovating of an own house or flat,
– housework,
– work in the garden or on own land for self-consumption.

Unemployed persons are persons aged 15–74 who:

– were without work, i.e. neither had a job nor were at work (for one hour or more) in paid employment or self-employment during the reference week
– had actively looked for work at any time in the four weeks up to the end of the reference week,
– were available for work within two weeks following the reference week or were waiting to start a new job within 30 days.

Active job search includes: contacting a public or private employment office to find a job, applying to an employer directly, inserting or answering advertisements, asking friends, relatives or other methods.

The labour force (i.e. economically active population) comprises employed and unemployed persons.

Persons are defined economically inactive (i.e. not in the labour force) if they were neither employed nor unemployed, as defined.

Passive unemployed (known as "discouraged persons" according to the ILO concepts) are persons aged 15–74 who desire a job but have given up any active search for work, because they do not believe that they are able to find any.

The Labour Force Survey is based on a multi-stage stratified sample design. The stages of sampling are defined as follows: primary sampling units (PSUs) are enumeration districts (EDs) and secondary sampling units (SSUs) are dwellings in settlements with 15,000 or more inhabitants, while PSUs are settlements, SSUs are EDs and ultimate sampling units are dwellings in all other cases.

The sampling frame or address register of the LFS consists of 12,775 sample units (SUs), covers 751 settlements of the country, and contains about 626,000

addresses. The quarterly sample of the LFS is selected from the address register. From each of the 12,775 SU's, three addresses are selected by simple random sampling. The interviewers visit one address in each SU during one month. The main indicators of the labour market are representative for regions.

The LFS sample is basically a sample of dwellings, and in each sampled dwelling, labour market information is collected from each household and from each person aged 15–74 living there. For 1998, the quarterly sample contains about 32,000 households and 65,000 persons. The sample has a simple rotation pattern: any household entering the sample at some time is expected to provide labour market information for six consecutive quarters, then leaves the sample permanently. The samples of two consecutive periods tend to be less than 5/6, which would be obtained at a 100 per cent response rate.

In the LFS sample design strata are defined in terms of geographic units, size categories of settlements and area types such as city centres, outskirts, etc.

2. CSO Labour Force Accounting Census

Before the publication of the Labour Force Survey the annual Labour Force Account gave a view of the total labour force in the period between the two census.

The Labour Force Account, as its name shows, is a balance-like account which compares the labour supply (human resources) to the labour demand at an ideal moment (1 January). Population is taken into account by economic activity with a differentiation between those of working age and the population outside of the working age.

Source of data: Annual labour survey on employment on 1th January of enterprises with more than 20 employees and of all government institutions, labour force survey, census, tax records and social security records, and company registry. The number of persons employed in small enterprises having a legal entity is based on estimation. Data on unemployment comes from the registration system of the National Employment Service.

Source of the labour force: working age population, active earners out of working age and employed pensioners.

3. CSO Institution-Based Labour Statistics

The source of data is the monthly (annual) institutional labour statistical survey. The survey range covers enterprises with at least 5 employees, and public and social insurance and non-profit institutions irrespective of the staff numbers of employees.

The earnings relate to the full-time employees on every occasion. The potential elements of the prevailing monthly average earnings are: basic wages, bonuses, allowances (including miner's loyalty bonus, any Széchenyi-grant), payments for time not worked, bonuses, premiums, wages and salaries for the 13th and more months.

Net average earnings are calculated by deducting from the gross average earnings the actual personal income tax, employee's social security contributions , etc., according to the actual rates (i.e. taking into account the threshold concerning the social security contribution).It does not take into account the impact of the new tax allowance related to the number of children.

The personal income tax is calculated by the actual withholding rate applied by the employers when paying out monthly earnings.

The difference between the gross and the net (after-tax) income indexes depends on eventual annual changes in the tax table (tax brackets) and in the tax allowances .

The change of net earnings is estimated as the ratio of net income index and the consumer price index above 100 per cent in the same period.

Non-manual workers are persons with occupations classified by the ISCO-88 in major groups 1-4., manual workers are persons with occupations classified in major groups 5-9. since 1st January 1994. Census data were used for the estimation of the employment data in 1980 and 1990. The aggregate economic data are based on national account statistics, the consumer's and producer's price statistics and industrial surveys. A detailed description of the data sources are to be found in the relevant publications of the Statistics Office.

4. Unemployment Register Database

The other main source of unemployment data in Hungary – and in most of the developed countries – is the huge database containing so called administrative records which are collected monthly and include the individual data of the registered unemployed.

The register actually contains all job seekers, but out of them, at a given point of time, only those are regarded as registered unemployed who:

– had themselves registered with a local office of the National Employment Office as unemployed (i. e.

he/she has got no job but wishes to work, for which they seek assistance from the labour market organisation).
– at the point of time in question (on the closing days of the individual months), the person is not a pensioner or a full-time student, and is ready to co-operate with the local employment office in order to become employed (i. e. he/she accepts the job or training offered to him/her, and keeps the appointments made with the local employment office's placement officer/counsellor).

If a person included in the register is working under any subsidised employment programme on the closing day, or is a participant of a labour market training programme, or has a short-term, temporary job her/his unemployed status is suspended.

If the client is not willing to co-operate with the local office he/she is removed from the register of the unemployed.

The data – i. e. the administrative records of the register – allow not only for the identification of date related data but also for monitoring flows: inflow as well as outflow.

Based on the records of the labour force needs reported to the Employment Office, the stock and flow data of vacancies are statistically processed each month.

Furthermore, detailed monthly statistics of participation in the different active programmes, number of participants and their inflow and outflow are prepared monthly, based on the support amounts actually paid.

The very detailed monthly statistics – in a breakdown of country, region, county, local employment office service delivery area and community – build on the secondary processing of administrative records that are generated virtually as the rather important and useful "by-products" of the accomplishment of the National Employment Office's main functions (such as placement services, payment of benefits, active programme support, etc.).

The Employment Office (and its predecessors, i. e. OMK (National Labour Centre), OMMK and OMKMK) has published the key figures of these statistics on a monthly basis since 1989. The more detailed reports which also contain data by local office service delivery area are published by the County/Metropolitan (Budapest) Labour Centres.

The denominators of the unemployment rates calculated for the registered unemployed are the economically active population data published by the Central Statistical Office's labour market account, and its breakdown by region and county.

The number of the registered unemployed and the registered unemployment rate are obviously different from the figures of the Central Statistical Office's labour force survey. It is mainly the different conceptual approach and the fundamentally different monitoring/measuring methods that account for this variance.

5. Short-Term Labour Market Forecast Database

At the initiative and under the co-ordination of the Employment Office (and its legal predecessors), the employment organisation has conducted the so called short prognosis survey since 1991, twice a year, in March and September. The survey uses an enormous sample obtained by interviewing over 4,500 employers.

The interview focuses on the companies' projections of their material and financial processes, their development and human resource plans, and they are also asked about their concrete lay-off or recruitment plans as well as their expected need for any active labour market programmes.

The surveys are processed in a breakdown of service delivery area, county and country, providing useful information at all levels for the planning activities of the employment organisation.

The prognosis survey provides an opportunity and possibility for the counties and Budapest to analyse in greater depth (also using information from other sources) the major trends in their respective labour markets, to make preparations for tackling problems that are likely to occur in the short term, and to effectively meet the ever-changing needs of their clients.

The forecast is only one of the outputs of the short term prognosis. Further very important "by-products" include regular and personal liaison with companies, the upgraded skills of the placement officers and other administrative personnel, enhanced awareness of the local circumstances, and the adequate orientation of labour market training programmes in view of the needs identified by the surveys.

The prognosis surveys are occasionally supplemented with supplementary surveys to obtain some further useful information that is used by researchers and

the decision-makers of employment and education/training policy.

6. Wage Survey Database

The Employment Office (and its legal predecessors) has conducted since 1992, once a year, a representative survey to investigate individual wages and earnings. The survey uses an enormous sample and is conducted at the request of the Ministry of Economic Affairs (formerly: Ministry of Labour and Ministry of Social and Family Affairs).

The reference month of data collection is the month of May every year, but for the calculation of the monthly average of irregularly paid benefits (beyond the base wage/salary), the total amount of such benefits received during the previous year is used.

In the competitive sector, initially data collection only covered companies of over 20 persons; in this group it is incumbent on all companies to provide information, but the sample only includes employees born on certain days.

Data collection has covered companies of 10-19 since 1996, and companies of 5-9 have been covered since 1999, where the companies actually involved in data collection are selected at random (ca. 20 per cent) and the selected ones have to provide information about all their full-time employees.

Data on basic wages and earnings structure can only be retrieved from these surveys in Hungary, thus it is practically these huge, annually generated databases that can serve as the basis of the wage reconciliation negotiations conducted by the social partners.

In the budgetary sector all budgetary institutions provide information, regardless of their size, in a way that the decisive majority of the local budgetary institutions – the ones that are included in the TAKEH central payroll accounting system - provide fully comprehensive information, and the remaining budgetary institutions provide information only about their employees who were born on certain days (regarded as the sample).

Data has only been collected on the professional members of the armed forces since 1999.

Prior to 1992, such data collection took place every three years, thus we are in possession of an enormous data base of the years of 1983, 1986 and 1989.

Of the employees included in the sample, the following data are available:

– the sector the employer operates in, headcount, employer's local unit, type of entity, ownership structure
– employee's wage category, job, male/female, age, educational background.

Based on the huge databases which include the data by individual, the data is analysed every year in the following way:

Standard data analysis, as agreed upon by the social partners, used for wage reconciliation negotiations (which is received by every confederation participating in the negotiations)

Model calculations to determine the expected impact of the rise of the minimum wage

Analyses to meet the needs of the Wage Policy Department, Ministry of Economic Affairs, for the comparison and presentation of wage ratios (total national economy, competitive sector, budgetary sector, regional volume)

The entire database is adopted every year by the Central Statistical Office, which enables the Office to also provide data for certain international organisations, (e. g. ILO and OECD). The Employment Office also provides regularly special analyses for the OECD.

The database containing the data by individual allows for a.) the analysis of data for groups of people determined by any combination of pre-set criteria, b.) the comparison of real basic wage and earnings, with special regard to the composition of the different groups analysed, as well as c.) the analysis of the spread and differentiation level of the basic wages and earnings.

7. Unemployment Benefit Register

The recipients' fully comprehensive registry is made up, on the one hand, of the accounting records containing the disbursed unemployment benefits (unemployment benefit, school leavers' unemployment benefit and pre-retirement unemployment benefit) and, on the other hand, of the so-called master records containing the particulars of benefit recipients. This register allows for the accurate tracking of the recipients' benefit related events, the exact date of their inclusion in and removal from the system, as well as why they have been removed from it (e. g. got a job, eligibility period expired, were excluded, joined an active labour market programme, etc.)

This huge database allows for reporting for any point of time the detailed data of persons who received ben-

efits on a given day, in a breakdown of country, region, county and local office service delivery area. In order to align these data with the closing day statistics of the registered unemployed, these monthly statistics are also completed by the 20th of each month.

In addition, the monthly statistics also contain information of the so-called temporary recipients, e.g. the number of those who have received benefits on any day of the month between the previous month's and the given month's closing day. Of course, data indicating inflows and outflows are reported here.

It is an important and rather useful aspect from a research perspective that, in addition to the standard closing day statistics, groups defined by any criteria can be tracked in the benefit register, e. g. inflow samples can be taken of newly registered persons for different periods, and through tracking them in the registry system the benefit allocation patterns of different cohorts can be compared.

The detailed data of unemployment benefit recipients have been available from the benefit register since January 1989. The first two years had a different benefit allocation system, and the current system, which has been modified several times since then, was implemented by the Employment of 1991 (Act IV).

For the period of between 1991 and 1996, the register also contains the stock and flow data of the recipients of school leavers' unemployment benefit. Since 1997 the system has also contained the recipients of pre-retirement unemployment benefit.

In addition to headcount data, the benefit register can also monitor the average duration of the period of benefit allocation and the average monthly amount of the benefits allocated.

The key data regarding benefits are published by the Employment Office in the monthly periodical Labour Market Situation. In addition, time series data is published annually in the Time Series of the Unemployment Register, always covering the last six years in the form of a monthly breakdown.

8. HCSO Census Data

The largest data collection of the Central Statistical Office is the population and housing census, covering the entire population of the country. The reference date of the last census was 0 o'clock on February 1, 2001. The census data published refer to this survey, though regarding the most important characteristics, with the help of the data of the 1980 and the 1990 census respectively, it is possible to study the changes occurred in the last decades. The data of the previous censuses – within certain limits – have been adjusted according to the concepts of the last census (e.g. the data on employment, employers of the 1980 and the 1990 census are reflecting to the definitions, registers of 2001).

The data refer to the resident population of the census in general, while in some cases to the respective groups of population (e.g. persons in employment, engaged in non-agricultural activities, aged 15 years and older). Resident population of the census means the group of persons staying in fact on the place of the enumeration, those who live their everyday life there, can be contacted on the given address, spend most of their night-rests on that place, go to work or to school from that place. This grouping is basically in line with the concept of resident population of the 1980 and 1990 censuses, where the intent for the official registration had been regarded as a matter of fact of a valid official registration. The census 1990 defined the resident population on the basis of the registered addresses (of the population).

As far as the economic activity of the population is concerned, the census applies the concepts of the International Labour Organization (ILO), while – due to the limits in the size and time of the enumeration – the issue of unemployment cannot be studied as deeply as the continuous labour survey does it. In the frame of the labour force survey the unemployment rate is based on a well-defined set of data, by putting on several related questions. A person for example, spending the term of notice at his employer is regarded as person in employment even if he declares himself as unemployed. This correction cannot be made in the case of the census, as – due to the limits in scope – the subject of the notice have not been raised. As the information on unemployment in case of the census is based on the biased judgement of the individuals, there might be some differences against the findings of the labour survey.

The grouping system of the occupations at the census 2001 is based on the nomenclature of the Hungarian Standard Classification of Occupations (further FEOR-93), being in force as from 1997. As to basic principles and structure, it follows the internation-

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