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The Impact of Changes in Competitiveness on Labour-market and Human-resource Development. The Case of Hungary

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SUMMARY

The concept of the competitiveness of a country's economy is closely linked to the labour market. The most obvious and best known reason for this is that labour productivity is a key factor in shaping competitiveness. At the same time, changes in competitiveness (for example in branches) may induce considerable labour reallocation, job destruction and/or job creation, wage push or wage increase, productivity changes, *etc.* The history of the economic transformation in the Central and Eastern European (CEE) accession countries provides ample evidence of this. The changes are reflected in marked shifts not only in labour demand, but on the supply side. Shifts in the educational composition of the workforce indicate response by the population to changes in demand and in expectations of the future.

The employment fall in Hungary (and most CEE countries) was accompanied by a major shift, mainly out of agriculture, but also from industry to services. The trend continued. Agriculture's share of employment almost halved between 1992 and 2000 (from over 10 to 5–6 per cent). Industry's share fell too, but much less (from almost 30 to 27 per cent) over the same period. The gain in employment was in the service sector, whose share of employment rose from 54 to 60 per cent. Growth of industrial production became significant as early as 1994, but employment was still declining in the sector, so that labour productivity increased to a marked extent.

Changes in the structure of employment in manufacturing show a major reallocation of labour from collapsing SOEs to newly established private (foreign or domestic) firms. This is also evident on a micro level, where data show, even in the second half of the 1990s, an intensive process of job destruction and job creation behind stagnating (or just slightly increasing) employment on a macro level.

The productivity of the Hungarian economy as a whole seems to have recovered very quickly from the recession (including the severe downturn in output in 1991), more than doubling in real terms between 1992 and 1997. The recovery and improving efficiency were undoubtedly due to a large extent to the large inflow of foreign direct investment (FDI), but in the 1992–2000 period, productivity increased markedly in sectors where employment declined. This applies above all to agriculture, where employment fell continuously and productivity grew by more than 60 per cent over that period. Productivity increased even more (doubled) in industry, where job losses were more moderate, and output also steeply increased. The productivity growth was a much smaller 14 per cent in services and even negative (-5 per cent) in construction, the two sectors recording an increase in employment from 1995 onwards, relative to the 1992 level.

Tensions of the labour market were eased by foreign-owned firms, which took an increasing share in employment. Their outstanding role in improving competitiveness and efficiency is apparent in a number of performance indicators that compare foreign and domestic firms in general. Labour productivity (value added per employee) in 2000, for instance, in the foreign-owned non-financial business sector was 2.6 times higher than that of comparable Hungarian companies, though wage costs were also higher, at 1.9 times. The difference varied strongly between sectors, of course, from 1.5 (mining and quarrying) to 5.7 (transport and communications).

Although a 10–15-year period could in principle be too short to show major changes on the supply side, the data demonstrated that the transition period is an exception in this respect. Papers on labour supply invariably concluded that major changes had also occurred in the

skill pattern, for two reasons. (i) Job destruction was concentrated on low-skilled jobs during the early transition, when net job destruction characterized the labour market, so that unskilled workers left the labour market on a massive scale. (This was facilitated by some measures, such as early retirement schemes.) (ii) Large-scale labour reallocations across industries meant there was a major shift towards skill-intensive jobs, partly due to the emerging more skill-intensive industries, while returns to skill in terms of earnings increased strongly during the transition period. Foreign capital again played a decisive role in this respect. Its inflow brought major demand for skilled labour. This demand initially met inelastic supply, which explains the increasing skill premium in earnings. Technological innovation also contributed to skill premium through foreign ownership. The data showed that the increasing demand for skills arising in the second half of the 1990s can be attributed increasingly to skill-biased technological changes, which can be regarded as a worldwide trend, not a special feature of the transition.

The studies agree that corporate labour-market behaviour in Hungary has now become similar to that of developed market economies; although unsettled tendencies can be observed in some respects, especially in domestically owned firms. Foreign-owned companies seem to show more stable, less extreme behaviour. Unskilled labour has the highest elasticity for substitution.

Census data, presented in the paper, confirm the main trend suggested by the Labour Force Survey: a shift towards higher occupational groups. This shift can be explained largely by major sectoral changes. The sections of certain sectors that expanded were mainly ones where highly skilled jobs are dominant. A good example is financial services (NACE 9), whose employment share almost doubled (from 1 per cent in 1990 to over 1.8 per cent in 2001). Even in 1990, over 90 per cent of the section's employees were highly skilled (belonging to the first four occupational groups, *i.e.* non-manual workers), and this structure remained into the 21st century.

As with occupational groups, there was a shift towards higher educational attainment in the labour force associated with the structural transformation – mainly unskilled or low-skilled workers left the labour market when the transition from a planned to a market economy began and mass unemployment emerged. Educational attainment was also raised by education policies of successive governments since the early 1990s. Secondary schooling expanded and there was a conscious policy of raising the number of students in higher education. Partly because of this and partly due to spontaneous developments, the educational attainment of the whole population improved.

Comparing the labour-market positions of the employed and unemployed in Hungary, a clear picture emerges, similar to the one in other countries. People less exposed to unemployment (or inactivity, also relevant in the Hungarian context) have highest qualifications. However, there are problems with vocational education. Men who have vocational schooling are in a worse position than those who only have primary schooling. The situation is similar with women: it is not the least qualified who are most exposed to unemployment, but those who have completed only secondary school. It is also clear that a high share of women with some kind of qualification are also unemployed. (Almost a third of unemployed women have secondary educational attainment and many also have a further qualification.) This calls attention to the need to improve the vocational education system by adjusting it to changing labour-market requirements.

Although employees with higher qualifications (especially tertiary education) can feel relatively secure on the labour market, there are some signs that this situation is changing. Higher education has expanded rapidly and it is hotly debated whether this will lead to over-education and higher unemployment among young graduates.

INTRODUCTION – THEORETICAL CONSIDERATIONS*

The concept of the competitiveness of a country's economy is closely linked not only to trade performance, but to the labour market. The most obvious and best known reason for this is that labour productivity is a key factor in shaping competitiveness. But if competitiveness is considered in a static way, it is questionable whether or to what extent the labour market (using such traditional macro-indicators as level of economic activity, unemployment, employment, *etc.*) could autonomously influence it. At the same time, changes in competitiveness (for example in branches) may induce considerable labour reallocation, job destruction and/or job creation, wage push or wage increase, productivity changes, *etc.* The history of the economic transformation in the Central and Eastern European (CEE) accession countries provides ample evidence of this.

Competitiveness as a concept can appear in a variety of contexts, so that confusion about it (as mentioned in Anna Wziątek-Kubiak 2003) is understandable and it is measured in various ways. The concept is mostly understood in Hungary in terms of comparisons across countries, for which measures of international competitiveness are mainly applied. The international cost competitiveness of a product depends on domestic costs, including labour costs, nominal exchange rate (Oblath and Richter 2002) and the costs of main trading partners. It is worth emphasizing the role of the last. Competitiveness calls for more than efficiency in the production process and related costs, for it can be attained only if the market values the product, as reflected in foreign-trade performance (exports and imports, market share). However, this component of competitiveness is not considered in a paper that focuses on the labour market.

Analytically, it seems useful to distinguish between the impacts of labour-market and human-resource development on competitiveness and the influence changes in competitiveness have on the labour market itself, including reallocation of labour. For the former can be measured quite easily with macroeconomic indicators, such as the relationship between output and employment, or unit labour costs – UCL, *i.e.* labour costs per unit of output. The latter can be analysed in two aspects, using a macro and a micro-level approach. The macro-level aspects have been mentioned (reallocation of labour by branches because of changing competitiveness). At the micro level, it becomes important if competitiveness is seen in a more dynamic way to analyse corporate labour-market adjustment – the extent to which labour on a corporate level can respond to competitive pressures and how it can do so. Empirically, this can be done by measuring wage elasticity, wage push associated with unemployment in certain regions, *etc.*

Changes in competitiveness are reflected in marked shifts not only in labour demand, but on the supply side. Shifts in the educational composition of the workforce indicate response by the population to changes in demand and in expectations of the future.

This paper covers both the macro and micro-level approaches. So it begins by analysing the competitiveness of the

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economy over the transition period and its impacts on the labour market. The next section is mainly concerned with the micro-economic approach, so that the responsiveness of wages and employment and the prospective consequences of that are examined. The third section investigates the impacts of competitiveness on human-resource development. It examines the issue in terms of two topics: shifts in the main occupational groups by main sectors, and changes in workforce educational attainment. The fourth section deals with the impacts that qualifications and educational level have on labour-market position. Finally, some conclusions are drawn.

Before exploring the big changes in competitiveness, let us elucidate them with some of the main macroeconomic and labour-market trends in the economy in the last decade.

Main macroeconomic trends and the labour market in the 1990s

Hungary, like other CEE countries, underwent deep economic recession after the political changes: GDP fell by 18 per cent between 1989 and 1993, accompanied by sharp falls in output and investment. Declining output, leading to a drastic fall in employment in the early 1990s, was caused by contraction of foreign and domestic demand and the collapse of giant state-owned enterprises (SOEs). The labour force shrank by over 1.5 million between 1988 and 1997, and unemployment rose rapidly in the early 1990s. Registered unemployed peaked in early 1993 at 663,000, an unemployment rate of 13.2 per cent. Although unemployment fell again after 1993, as production started to expand *(Table 1)*, it still did not mean the labour-market imbalances had eased to any great extent. The ratio of the inactive to the population continued to increase and employment fell significantly, by over 200,000, even in 1994. Table 1 summarizes the trends in the main macroeconomic indicators in the 1990s, showing that employment stagnated up to 1998. However, the fall in unemployment has continued. It now stands at less than 260,000, bringing much lower unemployment rates.

Table 1 and *Figure 1* show the Hungarian economy has been growing rapidly since 1997, producing annual growth rates twice the EU average.

The favourable developments in the economy in the late 1990s meant that the labour-market indicators also showed signs of improvement. Employment increased at a moderate rate initially, by over 50,000, and then more conspicuously, by more than 110,000, although that still meant a rise of only 3.1 per cent, as Table 1 shows. However, the recent rise in employment has yet to compensate for the drop at the beginning of the transition period. Employment is still well below its pre-transition level and even that of 1992, as *Figure 2* shows.

Despite clear recent improvement in the labour market, Hungary's labour-force participation (an activity rate of some 59 per cent) is less favourable than that of most EU member-states and lowest among the CEE countries. The employment rate, at 57 per cent, is still over 7 percentage points below the EU average.

Changes in competitiveness and the labour market on a macro level

The employment fall in Hungary (and most CEE countries) was accompanied by

a major shift, mainly out of agriculture, but also from industry to services (*Table A2* in the Appendix). The trend continued. Agriculture's share of employment almost halved between 1992 and 2000 (from over 10 to 5–6 per cent). Industry's share fell too, but much less (from almost 30 to 27 per cent) over the same period. The gain in employment was in the service sector, whose share of employment rose from 54 to 60 per cent. *Table 1* shows growth of industrial production significant as early as 1994, but employment was still declining in the sector, so that labour productivity increased to a marked extent.

Changes in the structure of employment in manufacturing show a major reallocation of labour[1] from collapsing SOEs to newly established private (foreign or domestic) firms. This is also evident on a micro level, where data show, even in the second half of the 1990s, an intensive process of job destruction and job creation behind stagnating (or just slightly increasing) employment on a macro level (Kőrösi and Surányi 2002).

The productivity of the Hungarian economy as a whole seems to have recovered very quickly from the recession (including the severe downturn in output in 1991), more than doubling in real terms between 1992 and 1997 (Fazekas 2002). The recovery and improving efficiency were undoubtedly due to a large extent to the large inflow of foreign direct investment (FDI), but in the 1992–2000 period, productivity increased markedly in sectors where employment declined. This applies above all to agriculture, where employment fell continuously and productivity grew by more than 60 per cent over that period. Productivity increased even more (doubled) in industry, where job losses were more moderate, and output also steeply increased. The productivity growth was a much smaller 14 per cent in services and even negative (-5 per cent) in construction, the two sectors recording an increase in employment from 1995 onwards, relative to the 1992 level (Oblath and Richter 2002).

Tensions of the labour market were eased by foreign-owned firms, which took an increasing share in employment.[2] Their outstanding role in improving competitiveness and efficiency is apparent in a number of performance indicators that compare foreign and domestic firms in general. Labour productivity (value added per employee) in 2000, for instance, in the foreign-owned non-financial business sector was 2.6 times higher than that of comparable Hungarian companies, though wage costs were also higher, at 1.9 times. The difference varied strongly between sectors, of course, from 1.5 (mining and quarrying) to 5.7 (transport and communications) (Fazekas 2002; *Table A1*).

The large reallocation of labour within manufacturing leads to the assumption that the most changes occurred there. It is therefore worth investigating (at NACE two-digit level) the extent to which the changes contributed to improvements in competitiveness. Foreign firms dominate manufacturing in both employment and sales. For example, 63 per cent of employment in foreign firms was in the sector in 2000, whereas manufacturing accounted for only 37 per cent of total employment *(Table 2)*. The respective shares of sales were 53 per cent and 36 per cent. Foreign companies employed 47 per cent of the labour force in manufacturing, as opposed to 34 per cent in the economy as a whole.

It is clear from Table 2 that two industries – electrical and optical equipment (DL) and transport equipment (DM)

[1] This is the sector where most of the labour reallocation occurred.

[2] It continued to increase slightly, as did the share of employment in 100 per cent foreign-owned firms: from 31.8 and 12.2 per cent respectively in 1997 to 34.9 and 19.0 per cent respectively in 2001. (Source: Employment Office, Budapest, 2002.)

– played an outstanding role,[3] and in them, unsurprisingly, foreign firms are over-represented, employing 70.1 per cent of the workforce in the former and 58.1 per cent in the latter. These industries are also important within the foreign-owned manufacturing sector, employing more than a third of its labour force. As for trade performance with EU countries, electrical and optical equipment attained a trade surplus for the first time in 1997, also the year when its productivity rose above the average for manufacturing. With transport equipment, trade surplus was attained a year earlier. (In all other industries, the trade surplus, where it exists, is much smaller (*e.g.* food products, textiles, and wood products). Those in trade deficit still suffer structural weaknesses (chemicals, machinery and equipment).[4]

Looking at exports to the EU 15 at NACE 3-digit level, it is clear that within transport equipment, motor vehicles had the highest competitive gain in 1995–2000 according to shift-and share analysis by Oblath and Richter 2002. *Table A3* ranks the sub-sectors by their competitive gains. Foreign companies have been contributing about 75 per cent of exports since the late 1990s, and so it is not surprising to find foreign capital dominant in all the sub-sectors (NACE-3-digit level). Although FDI accounted for 75.7 per cent of the paid-in capital in motor vehicles, it exceeded 90 per cent in most other winning sub-sectors. The picture with the losers is less clear, but even there, foreign capital plays a decisive role. The losers tend to belong to labour and energy-intensive sub-sectors (*e.g.* food, textiles, refined petroleum, *etc.*), as Oblath and Richter 2002 conclude.

The shift and share analysis was applied to the manufacturing exports to the EU 15 by Hungary and by all the ten candidate countries. This showed that about two-thirds of the export increment could be attributed to the competitive component, *i.e.* competitive gains achieved to the detriment of other exporters to the EU 15. These findings appear in *Table A4* to be in line with those of Havlik 2000 for the CEE 3 (the Czech Republic, Hungary and Poland) over the period 1993–7. The findings for the CEE 3 for 1995–2000, unlike those for 1989–92, showed Hungary having competitive gains playing the biggest role in export growth to the EU 15 (78.2 per cent as opposed to 59.4 per cent for Poland and 72.6 per cent for the Czech Republic).[5]

SOME MAIN FEATURES OF LABOUR-MARKET ADJUSTMENT ON THE MICRO LEVEL

Ample evidence has been provided so far that changes in competitiveness are accompanied by major transformation on the labour market. It is also important how the labour market reacts to these changes – whether it is flexible enough to improve competitiveness further.[6] Although labour-market flexibility, as a concept, most often refers to smooth adjustment on the macro-level, in the following part of the paper those findings will be briefly described, which are results of analyses of changes on the micro-level.

[3] This echoes the findings of Landesmann 2000: the highest productivity in 1991–8 was in these industries in the Czech Republic, Hungary and Poland (Wziatek-Kubiak 2003).

[4] The conclusions reached by Freudenberg and Lemoine 1999 for 1993–6 remain valid. (They showed similar developments in chemicals for the Czech Republic and Slovakia, and in machinery equipment for Poland. Quoted by Wziątek-Kubiak 2003.)

[5] See Table A5 in Wziątek-Kubiak 2003, p. 33.

[6] Understandably, therefore, labour-market flexibility features among the eight criteria for grading competitiveness (*Global competitiveness report 1996*, quoted by Wziątek-Kubiak 2003, p. 3).

From the point of view of competitiveness, examining labour demand is of special importance since it is related closely to productive efficiency. Supply side should not be ignored either, since this can also effectively contribute to labour adjustment. In Hungary, several studies dealt with labour supply and some analysed changes in corporate labour demand as well.

Although a 10–15-year period could in principle be too short to show major changes on the supply side, the data demonstrated that the transition period is an exception in this respect. Papers on labour supply (Kertesi and Köllő 2001, Kézdi 2002, Galasi 2004, *etc.*) invariably concluded that major changes had also occurred in the skill pattern, for two reasons. (i) Job destruction was concentrated on low-skilled jobs during the early transition, when net job destruction characterized the labour market, so that unskilled workers left the labour market on a massive scale. (This was facilitated by some measures, such as early retirement schemes.) (ii) Large-scale labour reallocations across industries (mentioned before) meant there was a major shift towards skill-intensive jobs, partly due to the emerging more skill-intensive industries, while returns to skill in terms of earnings increased strongly during the transition period.[7] Foreign capital again played a decisive role in this respect. Its inflow brought major demand for skilled labour. As Kézdi 2002 pointed out, this demand initially met inelastic supply, which explains the increasing skill premium in earnings.[8] Kézdi 2002 also finds that technological innovation contributed to skill premium through foreign ownership. The data showed that the increasing demand for skills arising in the second half of the 1990s can be attributed increasingly to skill-biased technological changes, which can be regarded as a worldwide trend, not a special feature of the transition.

The studies agree that corporate labour-market behaviour in Hungary has now become similar to that of developed market economies; although unsettled tendencies can be observed in some respects, especially in domestically owned firms. Foreign-owned companies seem to show more stable, less extreme behaviour (Kőrösi 2002). Kertesi and Köllő (2002) found that unskilled labour has the highest elasticity for substitution.

In the next section, shifts in skill pattern are presented in more detail, with data by main sectors and branches. The Labour Force Survey has data on the employment pattern of occupational groups by main sectors (agriculture, industry and services). However, the censuses provide even more detailed data according to the 15 NACE sections. So data from both sources will be analysed. The second part of the section examines changes in educational attainment, based mainly on the Labour Force Survey.

SHIFTS IN MAIN OCCUPATIONAL GROUPS BY MAIN SECTORS AND SECTIONS

It has been mentioned that employment underwent an adjustment process of great importance in the years since the transition from a planned to a market economy began, whereby its structure is has been transformed. This applies both on a macro level – shifts in employment pattern between the three major sectors (agriculture, industry, services, for which see in detail Fóti 2003, for example) and

[7] This was especially characteristic of young cohorts (Kertesi and Köllő 2002.). They concluded in another paper that young and educated workers are paid increasing wages: 'They are estimated to yield higher productivity returns, especially in a modern environment.'

[8] This is confirmed by Galasi 2004, who found similar developments for graduates up to the late 1990s.

perhaps still more among the 15 (NACE) sections. Changes in occupational groups within them can indicate well the major adjustment processes that have taken place there

Table 3 shows a shift towards occupations requiring higher qualifications. Although the share of the first group (legislators, senior officials and managers) decreased slightly, the proportion of the professionals increased, mainly through their rise in services (from 16.5 to 17.4 per cent).[9] The next occupational group, which can also be considered qualified, likewise gained share, while occupational groups calling for lower qualifications can be regarded as 'losers'. The share of clerks (simple non-manual jobs) is declining, as are elementary occupations in each of the sectors.

Gender could also influence shifts in occupational pattern, so that breaking the figures down into male and female gives a more detailed idea of events in the 1990s in this respect. Table 2 shows that the share of the first group dropped mainly in agriculture, which is in line with the overall decline of the sector in that period. Although the proportion fell slightly in industry as well, a slight absolute increase of 3000 is apparent (from 57,800 to 61,100 – *Tables A5* and *A6*).[10] This slight increase in industry is presumably due mainly to rising numbers at plants and units within the sector. For example, the number of suppliers to multinationals was rising in that period, as was the number of domestic small and medium-sized enterprises (SMEs). Although the share of professionals among males dropped slightly, the absolute number stagnated (182,700 in 1994 and 182,000 in 1999). But in industry, the share of professionals increased, which meant over 6000 more professionals were employed in the sector in 1999 than in 1994. It can be assumed that this was again due to expanding activity by companies in foreign ownership. (Other research[11] revealed that these employ more highly qualified people than the average Hungarian firm does, while FDI is playing a dominant role in manufacturing.)

With women *(Table 5)*, the changes in occupational pattern by main sectors differ slightly from those found with men. For instance, the share of professionals increased in their case, and when the sectors are examined, it turns out that this comes from an increase in their share in services and not in industry, as with men. The share of female professionals also grew in agriculture, but against a considerable fall in the total number of female employees in the sector (from 92,400 to 65,800), so that there was a decrease in absolute terms (from 1900 to 1700), which robs it of significance. Although the share of unskilled workers increased with women as it did with men, there were some important gender differences in the trends with less qualified jobs. For example, the share of craft workers and workers stagnated with men, but decreased in the case of women.

Overall, the general tendency towards more qualified jobs is clearer with women than with men. This applies specifically to the professionals group, where women managed to increase their share by 1.7 percentage points, while its share among men dropped by 0.3 percentage points. However, men kept their traditionally high share among craft workers and workers, while that of women decreased. Interestingly, machine operators and assemblers increased their share in general. Again, the importance

[9] The number in the first occupational group fell to a lesser extent (about 12,000) than the number in the second group increased (30,000). See Tables I and II in the Appendix.

[10] As mentioned in the Introduction, employment increased at the end of the 1990s. Although the growth was smaller in 1999 than in the previous year, it amounted to more than 50,000 and was due to an employment increase in industry and services, whereas in agriculture, there had been a decline of over 20,000 (Tables A5 and A6).

[11] See, for example, Fóti 1996.

of FDI can provide at least part of the explanation, as many assembly plants were being set up in Hungary in that period (1994–9), and it became an activity typical of foreign-owned companies. It is highly questionable whether the increasing share of this occupational group could be seen as a sign of improvement in competitiveness. But declining proportions of clerks (office workers – in the case of women, a fall of over 50,000) clearly points to computerization and technological upgrading making simple office jobs redundant.

Information about shifts in occupational groups by main sectors over the last decade comes not only from the Labour Force Survey, but from census data. These are not exposed to sample errors, but cannot reflect changes within the decade interval between censuses, so that shifts cannot be linked to various phases of economic development in the 1990s. However, they allow deeper analysis of the NACE sections.

Census data confirm the main trend suggested by the Labour Force Survey: a shift towards higher occupational groups. Each of the first three occupational groups show an increase (from 7.6 to 8.1, 8.6 to 12.3 and 10.8 to 14.7 per cent, respectively). This tendency is so clear that even the decrease in the fourth group (from 6.1 to 5.7 per cent) could offset it. Overall, the share of non-manual workers (first four groups) increased from 33.1 to 40.8 per cent. (The rise in the first three groups, 27.0 to 34.2 per cent, was even more pronounced.) This shift can be explained largely by major sectoral changes. The main features of this structural transformation (a shift from agriculture and from industry to services, see, for example, Fóti 2003) are well known, but it is worth pointing out the order of magnitude in some cases. For example, the number of employees in mining (NACE section 2) stands at less than 10 per cent of its previous level, falling from 91,925 jobs to 7992 (see Tables A3 and A4).

Furthermore, the sections of certain sectors that expanded were mainly ones where highly skilled jobs are dominant. A good example is financial services (NACE 9), whose employment share almost doubled (from 1 per cent in 1990 to over 1.8 per cent in 2001). Even in 1990, over 90 per cent of the section's employees were highly skilled (belonging to the first four occupational groups, *i.e.* non-manual workers), and this structure remained into the 21st century.

Tables 6 and *7* show that the occupational pattern changed markedly in agriculture, due partly to spontaneous developments, but also to changes in statistical categorization.[12] Employees in non-agricultural workshops belonging to agricultural cooperatives under the planned economy were counted as working in agriculture, which accounts for the high number and share of craftsmen and workers (occupational group 7). After the early 1990s, however, they were included in the statistics under manufacturing.

The same tables show the share of the first occupational group (legislators and managers) increased in manufacturing (NACE 3) construction (NACE 5), and hotels and restaurants (NACE 7), while in wholesale trade and repair (NACE 6) it rose very slightly. These branches consist mainly of small firms, as more detailed data (with two-digit occupational groups) confirm.[13]

[12] This gives grounds for caution with direct data comparisons for agriculture in 1990 and 2001.

[13] The more detailed categories distinguish between managers of bigger and smaller organizations. If these LFS data for 1994 and 1999 are compared, the tendency towards a growing number and share of such managers occurs precisely in the branches mentioned. See CSO, 2003, Occupational Structure, 1994-1999.

CHANGES IN THE EDUCATIONAL ATTAINMENT OF THE WORKFORCE

As with occupational groups, there was a shift towards higher educational attainment in the labour force associated with the structural transformation – mainly unskilled or low-skilled workers left the labour market when the transition from a planned to a market economy began and mass unemployment emerged. Educational attainment was also raised by education policies of successive governments since the early 1990s. Secondary schooling expanded and there was a conscious policy of raising the number of students in higher education.[14] (Their number more than doubled between 1989 and 2000, from 72,000 to 171,000.) Partly because of this and partly due to spontaneous developments, the educational attainment of the whole population improved.

Table 8 shows an expansion mainly in primary and secondary schooling, although the share of those with a tertiary educational attainment also increased. (The shares were also influenced by demographic developments.[15])

With the educational attainment of the labour force, there is an even clearer shift towards higher education. Census data were also indicative in this regard. The share of employees with a tertiary education rose from 12.6 per cent in 1990 to 18.3 per cent in 2001, while the number who had completed a secondary education rose from 24.8 to 32.5+ per cent in the same period. (This involved a rise in absolute numbers for both groups[16] at a time when total employment fell.) Labour Force data show that the shift towards tertiary educational attainment was an ongoing process in the 1990s *(Table 9)*.

It can be seen that the number of employees with a tertiary education was rising almost continually, and the same applied to secondary attainment (completing secondary, vocational or post-secondary studies). The number of employees with an educational attainment of *gimnázium* (academically oriented secondary school) or primary school fell, however. It may seem surprising that the number completing vocational school increased in a period general believed in Hungary to have brought adverse structural changes for this kind of school. However, the increase is not great and there are problems with vocational training. Managers of multinationals in Hungary, for example, complain of a shortage of skilled workers. These problems are not reflected by the statistics.

Unsurprisingly, the census data on educational attainment (census) confirm the findings mentioned already when occupational pattern by NACE sections was examined. Between 1990 and 2001, it was in financial services (NACE 9) where the absolute number of employees with tertiary education increased to a considerable extent (from 7340 to 21,290), and the number of those who completed secondary school also rose, but more moderately (from 31,218 to 41,478). Meanwhile the number of employees with an educational attainment of primary school or less dropped from about 5000 to 3000, a fact that shows an upgrading process occurring in the section. Less pronounced,

[14] The aim was to avert and prevent youth unemployment by reducing the labour supply, while improving the ability of the labour force to adjust easily to changing demand.

[15] Hungary's population is ageing, like that of most European countries. The shares in Table 8 reflect a relatively high proportion of elderly people, whose educational attainment is lower than that of their juniors. Thus the population shows lower attainment than the labour force.

[16] From 554,835 to 675,825 for the first group and 1,122,532 to 1,197,601 for the second.

but similar developments can be seen in real estate and business activities (NACE 10). The number of employees doubled in the same period (42,058 to 85,077), but total employment almost doubled as well (153,175 to 279,138), and the number of those with primary school or less did not fall, so that the increase in the share of employees with a tertiary education was smaller. (Tables 4 and 5 show the share of service workers and other salesmen – occupational group 5 – increased considerably, from 8 to 23 per cent.)

THE IMPACTS OF QUALIFICATIONS AND EDUCATIONAL ATTAINMENT ON LABOUR-MARKET POSITION

Comparing the labour-market positions of the employed and unemployed in Hungary, a clear picture emerges, similar to the one in other countries. People less exposed to unemployment (or inactivity, also relevant in the Hungarian context) have highest qualifications. *Table 10* shows a very low share of these among the unemployed. However, there are problems with vocational education, as mentioned before. (Apprentice school is a special type of vocational training, so that its numbers and shares can be added to vocational schools.) Men who have vocational schooling are in a worse position than those who only have primary schooling. The situation is similar with women: it is not the least qualified who are most exposed to unemployment, but those who have completed only secondary school. It is also clear that a high share of women with some kind of qualification are also unemployed. (Almost a third of unemployed women have secondary educational attainment and many also have a further qualification.) This calls attention to the need to improve the vocational education system by adjusting it to changing labour-market requirements.

Although employees with higher qualifications (especially tertiary education) can feel relatively secure on the labour market, there are some signs that this situation is changing. Higher education has expanded rapidly and it is hotly debated whether this will lead to over-education and higher unemployment among young graduates. An anecdotal evidence suggests they find jobs with much more difficulty than they did, especially the beginning of the transition period, when their chances on the labour market looked much better.

CONCLUSIONS

The paper demonstrated that foreign capital has played a decisive role in improving competitiveness and in restructuring the economy in general. The importance of foreign investment is also clear in terms of employment. Although inactivity is still very high in Hungary, even compared with other CEE countries, FDI has certainly helped to ease tension on the labour market. Its key role in creating jobs in the corporate sector is especially obvious: 80 per cent of the net increase of corporate jobs can be found within the foreign-enterprise sector (Fazekas 2003).

Rapid devaluation of obsolete skills and increasing return to education might have also helped improve competitiveness although these processes reinforced mutually each other (similar developments can be observed in other CEE-countries as well). Skill-biased technological development, introduced mainly by foreign enterprises, may have played also an important role for the country to reach the present position. It seems, however, that the inflow of foreign capital has slowed

recently. It remains to be seen whether the current level of competitiveness could be sustained in the future.

It has been shown that the economic transformation had precipitated major shifts, since the early 1990s, in sectoral structure and in occupational groups and the educational pattern of the labour force. These undoubtedly point in one direction, towards modernization of the economy. But it is still questionable whether or to what extent the developments can improve competitiveness further, in the future. The changes so far have obviously been influenced by strong competitive pressures, mainly from EU member-states, including such major trading partners as Germany, Austria and Italy, as well as from the world economy.

It was pointed out, however, that the changes related primarily to structural changes. For example, the shift towards higher occupational groups and higher educational attainment could be regarded as a sign of sectoral shifts rather than of competitive pressures as such. These sectoral shifts can be attributed in many cases more to transitions from a planned to a market economy, than to improving competitiveness. For example, expansion of financial services, a prerequisite for developing a market economy, in itself led to greater demand for highly skilled labour, while obsolete industries with many unskilled employees were collapsing at the same time. Thus the significant shifts in occupations and educational attainment that occurred during the decade of transition are the result of specific circumstances of transformation, rather than improvement of competitiveness as such.

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Table 1
Major macroeconomic indicators, 1990-2003, % change over previous year

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Real GDP growth	-3.5	-11.9	-3.1	-0.6	2.9	1.5	1.3	4.6	4.9	4.4	5.2	3.8	3.5	3.0
Private consumption	3.6	-5.9	0.0	1.9	-0.2	-7.1	-3.4	1.7	4.9	4.6	5.0	5.9	9.3	…
Fixed capital investment	-7.1	-10.4	-2.6	2.0	12.5	-4.3	6.7	9.2	13.3	5.9	7.7	3.1	1.9	9.2
Exports of goods & services	-5.3	-13.9	2.1	-10.1	13.7	13.4	7.4	26.4	16.7	13.1	21.8	9.1	5.9†	9.1
Imports of goods & services	-4.3	-6.1	0.2	12.6	5.7	-0.7	5.7	24.6	22.8	12.3	21.1	6.3	5.1†	10.1
Consumer price inflation (average)	28.9	35.0	23.0	22.5	18.8	28.2	23.6	18.3	14.3	10.0	9.8	9.2	5.3	4.7
Net real wages	-3.7	-7.0	-1.4	-3.9	5.2	-12.2	-5.0	4.9	3.6	2.5	1.5	6.4	13.6	9.2
Annual average unemployment (%)*	1.5	6.8	9.3	11.3	10.2	9.5	9.2	8.7	7.8	7.0	6.4	5.7	5.8	5.9
Growth of employment (per cent)	-	-	-	-2.3	-2.0	-1.9	-0.8	-0.1	1.4	3.1	1.0	0.3	0.1	1.3
Growth of industrial production (%)	-	-	-9.7	4.0	9.6	4.6	3.4	11.1	12.5	10.7	18.1	4.0	2.8	6.4

* From 1992 onwards: Labour Force Survey data (ILO-criteria).
† Calculated in a new way and so not comparable. With previous years.

Source: CSO.

Figure 1
Annual real GDP growth between 1990 and 2001

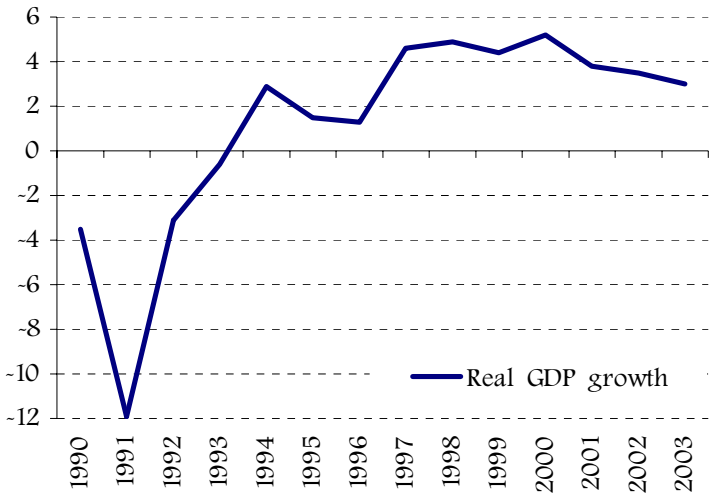

Figure 2
Employment (indices, 1989=100)
and unemployment (right-hand scale), 1990–2001

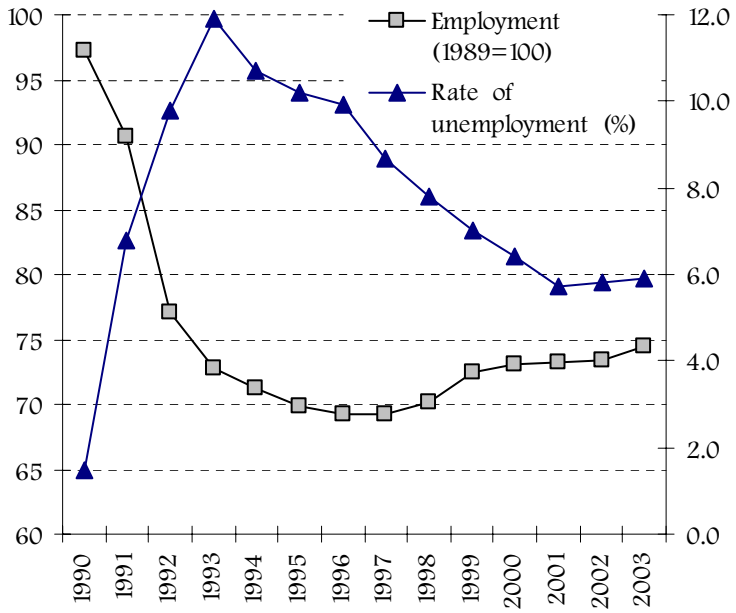

Table 2
Breakdown of total employment and foreign-company employment by branches of manufacturing (NACE-II), unit labour costs (ULC) compared to Austria in 2000, and relative productivity gains of branches, 1993–2000

Code	Branches of manufacturing (NACE-II)	Employment share		ULC (2000, PPP96 for GDP, Austria 1999 = 100)	Relative gains* in percentage points (1993–2000)
		In total (%)	Among foreign companies (%)		
D	Manufacturing	37.1	63.1	18.5	15.4†
DA	Food products, beverages, tobacco	5.7	8.7	29.0	-7.9
DB	Textiles and textile products	4.9	6.5	39.8	-7.7
DC	Leather and leather products	1.1	2.0	65.6	-8.4
DD	Wood and wood products	1.1	0.9	38.2	-6.9
DE	Pulp, paper & paper prod.; publishing & printing	1.9	1.9	25.8	-2.4
DF	Coke, petroleum products & nuclear fuel	}2.3	}6.6	77.2	-9.9
DG	Chemicals, chemical products & man-made fibres			32.6	-10.8
DH	Rubber and plastic products	1.6	2.7	20.9	-5.9
DI	Other non-metallic mineral products	1.5	2.6	26.1	-5.3
DJ	Basic metals and fabricated metal products	3.8	3.8	21.4	-2.0
DK	Machinery and equipment n.e.c.	2.9	4.7	29.7	-2.9
DL	Electrical and optical equipment	7.0	17.9	9.7	18.9
DM	Transport equipment	1.9	3.9	11.8	16.2
DN	Manufacturing n.e.c.	1.4	1.3	36.6	-6.4

* Average annual change, % of total manufacturing. † Average annual change of individual branches compared to that of total manufacturing (*e.g.* DA (93-00) - D (93-00) = relative gain DA).
Source: WIIW Industrial Database (Oblath and Richter 2002).

Table 3
The employment pattern of various occupational groups by main economic sectors
(%, 1994–1999)

Occupational groups	Agriculture		Industry		Services		Total	
	1994	1999	1994	1999	1994	1999	1994	1999
Legislators, senior officials and managers	5.6	4.6	6.3	5.9	7.7	7.3	7.0	6.6
Professionals	2.4	1.9	3.7	3.8	16.5	17.4	11.0	11.6
Technicians and associates. Professionals	3.6	2.8	7.6	8.3	16.5	18.0	12.4	13.5
Clerks	6.1	4.0	6.5	4.5	10.2	8.6	8.6	6.9
Service workers & other sales workers	2.4	1.9	2.7	2.4	22.4	25.2	14.0	15.6
Skilled agricultural and forestry workers	37.2	48.2	0.3	0.1	0.3	0.3	3.6	3.7
Craftsmen and related workers	15.3	12.1	49.7	50.4	8.8	7.5	23.1	22.7
Machine operators & assemblers	16.6	15.0	15.6	17.7	6.7	7.1	10.6	11.3
Elementary occupations (unskilled)	10.7	9.5	7.6	6.9	10.9	8.6	9.8	8.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CSO, Budapest (Labour Force Survey)

Table 4
The employment of various occupational groups by main economic sectors, for males
(1994–9)

Occupational groups	Agriculture		Industry		Services		Total	
	1994	1999	1994	1999	1994	1999	1994	1999
Legislators, senior officials & managers	6.6	5.0	7.2	7.0	10.1	9.4	8.5	7.9
Professionals	2.6	1.7	3.6	4.0	15.4	14.8	9.2	8.9
Technicians & associates, professionals	2.9	2.2	5.9	6.5	11.7	12.2	8.3	8.8
Clerks	0.4	0.3	0.9	0.4	2.1	1.5	1.4	0.9
Service workers & other sales workers	1.3	1.2	2.2	2.0	21.2	24.8	11.2	12.8
Skilled agricultural and forestry workers	35.6	46.6	0.3	0.1	0.5	0.6	4.6	5.0
Craft workers and workers	18.7	14.9	57.8	58.3	17.1	15.3	33.6	33.5
Machine operators & assemblers	21.9	19.1	15.0	15.1	14.2	15.4	15.4	15.7
Elementary occupations (unskilled workers)	10.1	9.0	7.1	6.6	7.7	6.0	7.8	6.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CSO, Budapest (Labour Force Survey)

Table 5
Female employment pattern of various occupational groups by main economic sectors
(1994–1999)

Occupational groups	Agriculture		Industry		Services		Total	
	1994	1999	1994	1999	1994	1999	1994	1999
Legislators, senior officials and managers	3.2	3.3	4.5	3.5	5.7	5.6	5.3	5.0
Professionals	2.1	2.5	4.0	3.4	17.4	19.6	13.1	14.8
Technicians & associates, professionals	5.3	4.8	10.8	12.0	20.4	22.6	17.1	19.3
Clerks	20.4	15.5	16.9	13.0	17.0	14.3	17.1	14.0
Service workers & other sales workers	5.3	3.9	3.4	3.3	23.4	25.5	17.3	19.1
Skilled agricultural and forestry workers	41.4	53.4	0.2	0.1	0.2	0.1	2.4	2.2
Craft workers and workers	6.8	3.3	34.9	34.3	2.0	1.3	10.7	9.6
Machine operators & assemblers	3.4	2.5	16.6	22.9	0.6	0.4	4.8	6.1
Elementary occupations (unskilled workers)	12.3	10.8	8.7	7.6	13.4	10.6	12.1	9.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: CSO, Budapest (Labour Force Survey).

Table 6
Employment pattern by occupational groups and NACE sections, from census data
(1990, %)

NACE sections	Occupational groups (order as in Table 5)										Total
	1	2	3	4	5	6	7	8	9	0*	
Agriculture, hunting, forestry, *etc.*	7.1	2.7	3.8	4.1	2.2	24.1	23.3	18.8	14.0	..	100.0
Mining & quarrying	6.9	3.4	6.7	4.3	1.1	0.1	55.0	13.7	8.7	..	100.0
Manufacturing	6.5	4.4	8.4	6.0	1.5	0.2	44.4	18.9	9.6	..	100.0
Electricity, gas, water supply, *etc.*	7.5	4.9	10.9	7.9	4.3	0.3	33.5	20.3	10.5	..	100.0
Construction	7.4	2.8	5.6	4.4	0.7	0.3	58.1	8.2	12.4	..	100.0
Wholesale, trade & repair	10.9	4.6	9.9	10.2	34.4	0.4	18.1	4.8	6.7	..	100.0
Hotels and restaurants	9.8	3.4	6.8	4.7	52.5	0.2	4.9	1.8	15.9	..	100.0
Transport, storage & communication	6.9	3.0	12.6	7.3	11.1	0.2	21.8	27.8	9.4	..	100.0
Financial intermediation	13.8	11.3	42.9	24.8	0.6	0.0	1.2	0.9	4.5	..	100.0
Real estate, renting & business active.	10.9	20.7	19.2	9.9	8.5	0.6	16.5	3.7	10.1	..	100.0
Public administration & defence	6.8	7.8	15.7	5.5	0.8	0.3	5.2	3.5	8.4	45.9	100.0
Education	7.2	53.1	11.1	2.8	1.9	0.2	3.0	1.0	19.7	..	100.0
Health and social work	6.2	14.5	35.3	4.7	15.4	0.4	7.1	3.6	12.8	..	100.0
Other services	8.0	15.8	11.7	5.8	11.0	1.3	12.6	6.0	21.7	..	100.0
Total	7.6	8.6	10.8	6.1	8.6	4.0	27.1	13.0	11.5	2.5	100.0

* Armed forces
Source: CSO, Budapest, Census, 6.21, pp. 79-80.

Table 7
Employment pattern based on occupational groups and NACE sections, from census data
(%)

NACE sections	Occupational groups (order as in Table 5)										Total
	1	2	3	4	5	6	7	8	9	0*	
Agriculture, hunting, forestry, *etc.*	6.6	1.9	3.3	3.8	1.8	50.2	11.4	12.5	8.6	-	100.0
Mining & quarrying	8.8	3.8	9.2	4.4	2.2	0.2	41.6	23.9	6.0	-	100.0
Manufacturing	7.3	4.3	9.9	3.4	2.4	0.5	42.6	24.1	5.5	-	100.0
Electricity, gas, water supply, *etc.*	9.1	6.0	15.7	7.9	9.0	0.2	31.1	16.9	4.0	-	100.0
Construction	10.3	3.4	5.1	3.2	1.8	0.1	61.2	6.2	8.7	-	100.0
Wholesale, trade & repair	10.6	4.7	10.3	6.9	46.4	0.3	14.3	3.8	2.7	-	100.0
Hotels and restaurants	10.5	1.5	6.0	2.1	65.1	0.3	2.5	0.9	11.2	-	100.0
Transport, storage & communication	7.5	3.9	15.2	7.3	16.5	0.1	12.4	32.8	4.4	-	100.0
Financial intermediation	13.8	15.1	52.5	14.8	1.4	0.0	0.5	0.3	1.5	-	100.0
Real estate, renting & business active.	9.5	19.7	19.2	12.0	23.0	0.5	5.6	2.7	7.7	-	100.0
Public administration & defence	7.2	11.4	24.4	8.8	7.2	0.7	4.0	2.5	8.8	24.9	100.0
Education	5.1	60.3	8.5	2.7	8.0	0.3	2.8	0.8	11.5	-	100.0
Health and social work	5.3	19.3	45.8	5.2	6.4	0.4	3.9	3.1	10.6	-	100.0
Other services	8.9	21.0	13.7	5.7	28.4	1.1	6.5	4.7	10.0	-	100.0
Total	8.1	12.3	14.7	5.7	15.8	3.1	20.2	11.3	6.9	1.9	100.0

* Armed forces Source: CSO, Budapest, Census 7 Employment, p. 36.

Table 8
Shares of those with primary, secondary and tertiary educational schooling
in the relevant sections of the population
(%)

	Shares of those with		
	primary education	secondary education	tertiary education
	attainment within the population		
	15 years and above	18 years and above	25 years and above
1990	78.1	29.2	10.1
1996	85.2	34.7	12.1
2001	88.2	38.2	12.3

Census data for 1990 and 2001, microcensus for 1996.
Sources: Életminőség és egészség (Quality of life and health). Budapest: CSO, 2002. For 2001: *Statistical yearbook of CSO*, Budapest, 2002.

Table 9
Numbers of employees by highest educational attainment
(thousands)

Period	Primary	Vocational	Gimnázium	Other secon-dary	Tertiary	Total
1994	930.5	1091.60	407.3	720.8	542.3	3692.50
1995	857.2	1094.50	407.5	704.6	559.0	3622.80
1996	814.6	1099.10	412.2	693.5	585.7	3605.10
1997	805.2	1119.60	454.3	685.7	545.5	3610.30
1998	800.5	1128.90	419.3	731.5	594.5	3674.70
1999	701.0	1211.90	308.5	943.9	626.2	3791.50
2000	665.8	1237.80	329.9	935.2	660.4	3829.10
2001	660.7	1269.60	326.3	923.1	664.8	3844.50

Source: CSO, Budapest, Labour Force Survey.

Table 10
Employed* and unemployed persons by educational attainment and by sex
(2001)

Educational attainment	Employed		Unemployed	
	No. ('000s)	Share (%)	No. ('000s)	Share %
	Male and female			
Less than 8 grades of primary	26.1	0.7	6.5	2.8
Primary	634.6	16.5	76.0	32.6
Of which: with qualification	46.5	1.2	1.9	0.8
Vocational school	1228.1	31.9	83.4	35.8
Apprentice school	41.5	1.1	3.2	1.4
Secondary school with G.C.E.	1249.4	32.5	54.2	23.3
Of which: with qualification	923.1	24.0	39.2	16.8
College	394.8	10.3	7.0	3.0
University	270.0	7.0	2.6	1.1
Total	3844.5	100.0	232.9	100.0
	Male			
Less than 8 grades of primary	16.2	0.8	4.1	2.9
Primary	316.2	14.9	48.4	33.9
Of which: with qualification	24.0	1.1	0.9	0.6
Vocational school	892.7	42.2	60.3	42.3
Apprentice school	9.9	0.5	0.9	0.6
Secondary school with G.C.E.	550.9	26.0	24.9	17.4
Of which: with qualification	446.7	21.1	20.3	14.2
College	164.5	7.8	2.6	1.8
University	165.2	7.8	1.5	1.1
Total	2115.6	100.0	142.7	100.0
	Female			
Less than 8 grades of primary	9.9	0.6	2.4	2.7
Primary	318.4	18.4	27.6	30.6
Of which: with qualification	22.5	1.3	1.0	1.1
Vocational school	335.4	19.4	23.1	25.6
Apprentice school	31.6	1.8	2.3	2.5
Secondary school with G.C.E.	698.5	40.4	29.3	32.5
Of which: with qualification	476.4	27.6	18.9	21.0
College	230.3	13.3	4.4	4.9
University	104.8	6.1	1.1	1.2
Total	1728.9	100.0	90.2	100.0

* Excluding armed forces
Source: CSO, Budapest, Labour Force Survey.

APPENDIX

Table A1
Wage and productivity indicators of Hungarian firms
by branches and ownership, 2000, HUF '000s

Branches	Gross wage/employee			Sales/employee			Value added/employee		
	Foreign firms	Domes-tic firms	F/D (%)	Foreign firms	Domes-tic firms	F/D (%)	Foreign firms	Domes-tic firms	F/D (%)
Agriculture, forestry and fishing	992	800	124	13331	6370	209	3871	1515	255
Mining and quarrying	1611	1601	101	13673	9329	147	6203	4167	149
Food production	1673	835	200	22512	10573	213	6211	1883	330
Textile industry	844	550	154	5492	2557	215	1911	1004	190
Wood production	1663	801	208	21253	8243	258	6381	21480	257
Chemical industry	2009	981	205	27339	8851	309	7494	2526	279
Machine	1364	1088	125	26804	7836	342	6014	2533	237
Other manufacturing	1139	602	189	9994	5527	181	2664	1377	193
Electricity	2025	1618	125	33328	17456	191	8480	5043	168
Construction	1104	860	128	13836	10221	135	3788	2275	166
Hotels and restaurants	1099	592	186	6428	4074	158	3798	1854	205
Commerce	1809	687	263	53522	21156	253	7630	2553	299
Transport and Communication	2740	1202	228	32449	6570	494	16043	2828	567
Real estate	2190	930	236	19489	9156	213	10147	3677	276
Education	1681	1020	165	9067	5974	152	4411	3302	134
Health services	1457	632	230	10494	3373	311	4885	2100	233
Other services	1449	848	171	18844	8105	233	11875	4763	249
Total	1647	888	185	27038	10494	258	6855	2604	263

Note: Foreign firms = competitive-sector firms with a foreign ownership stake of over 10 per cent of equity. Domestic firms = competitive-sector firms with a foreign ownership stake of less than 10 per cent of equity. Firms in financial services are excluded. Source: CSO-IE FDI Data Base. (Fazekas 2002.)

Table A2
Changes in employment and output shares,
1992–2000, % and percentage points

	Employment			Output			
	Shares		Changes in shares*	Shares at current prices		Changes in shares at current prices*	Changes in shares at 1992 prices*
	1992	2000		1992	2000		
Agriculture	11.3%	6.5%	-4.7	7.2%	4.2%	-3.0	-2.2
Industry	29.7%	26.8%	-3.0	27.3%	28.7%	1.4	8.7
Construction	5.3%	7.0%	1.6	5.9%	4.6%	-1.2	-0.5
Services	53.7%	59.7%	6.0	59.6%	62.4%	2.8	-4.4
Total	100.0%	100.0%	-	100.0%	100.0%	-	-

* Percentage points. Source: Calculations based on CSO (Oblath and Richter 2002).

Table A3
Winner and loser industries' exports to the EU 15, 1995–2000

	NACE Rev. 1	Exports, 2000, ECU mn	Average annual change, %	Competitive gain, 1995–2000, ECU mn	Market share in the EU 15, 2000, %
30 greatest winners					
Motor vehicles	341	3844.5	37.4	2607.7	11.01
Office machinery and computers	300	2313.3	88.6	2165.6	3.25
N, radio and recording apparatus	323	1850.0	45.5	1420.0	8.12
N and radio transmitters, apparatus for line telephony	322	747.5	126.0	725.3	3.04
Parts and accessories for motor vehicles	343	896.1	39.9	643.5	6.21
Electronic valves and tubes, other electronic comp.	321	398.7	57.1	331.9	0.85
Electrical equipment n. e. c.	316	706.1	23.2	307.2	5.26
Electricity distribution and control apparatus	312	465.5	30.6	283.4	5.27
Basic chemicals	241	805.5	12.3	214.1	2.34
Instruments for measuring, checking, testing, navigating	332	237.5	47.6	187.3	1.50
Electric motors, generators and transformers	311	419.2	22.3	182.5	4.38
Isolated wire and cable	313	268.5	36.5	180.6	7.12
Other general purpose machinery	292	291.1	29.6	168.9	2.02
Domestic appliances n. e. c.	297	373.4	22.0	166.4	6.96
Rubber products	251	254.5	25.4	139.1	4.02
Furniture	361	338.9	19.4	117.5	3.26
Lighting equipment and electric lamps	315	377.6	16.7	111.0	10.65
Other special purpose machinery	295	273.7	18.6	103.4	1.71
Plastic products	252	247.9	17.8	90.4	2.21
Railway locomotives and tolling stock	352	84.0	58.0	70.3	6.95
Optical instruments and photographic equipment	334	86.5	48.9	68.4	1.10
Machinery for production, use of mechanical power	291	242.3	15.1	67.3	1.35
Articles of paper and paperboard	212	92.4	37.9	65.7	4.26
Pulp, paper and paperboard	211	84.6	27.2	54.5	0.74
Other fabricated metal products	287	221.0	12.7	46.9	2.40
Basic precious and non-ferrous metals	274	484.2	7.6	44.1	1.25
Knitted and crocheted articles	177	141.1	16.7	43.2	1.93
Other textiles	175	62.7	28.2	40.0	1.68
Cutlery, tools and general hardware	286	78.1	19.2	31.7	1.30
10 greatest losers					
Publishing	221	20.0	0.6	-4.8	0.71
Coke oven products	231	9.0	-5.1	-5.3	1.10
Tanning and dressing of leather	191	21.0	-2.4	-8.0	0.81
Tubes	272	47.1	1.6	-8.5	2.57
Builders' carpentry and joinery	203	50.9	3.3	-8.5	3.21
Refined petroleum and nuclear fuel	232	271.0	8.5	-13.7	1.33
Games and toys	365	34.1	0.8	-13.8	0.46
Other food products	158	26.2	-10.6	-23.7	0.67
Made-up textile articles	174	80.1	1.8	-27.3	1.66
Other wearing apparel and accessories	182	855.0	4.9	-69.3	2.10
Basic iron and steel, ferro-alloys (ECSC)	271	265.3	0.2	-88.1	2.61
Total		20978.1	24.2	10857.6	2.63

Source: WIIW Industrial Database. (Oblath and Richter 2002).

Table A4
CEE 10 manufacturing exports to the EU 15: results of 'shift-and-share' analysis

	Exports (ECU million)					Export increase 1995-2000	Shift-and-share analysis (ECU million)			Contribution of components to the increase in exports (in per cent)*		
	1995	1996	1997	1998	2000		Component 1 (Market growth)	Component 2 (Specialization)	Component 3 (Competitiveness)	Component 1	Component 2	Component 3
Bulgaria	1678.33	1594.8	1940.2	2095.0	2910.6	1232.3	773.4	-174.4	639.5	62.8	-14.2	51,9
Czech Rep.	8318.1	9105.8	10989.1	13898.9	20575.8	12257.7	3833.2	-469.5	8894.0	31.3	-3.8	72,6
Hungary	7088.7	8215.9	11007.1	13790.6	20978.1	13889.4	3266.7	-234.9	10857.6	23.5	-1.7	78,2
Poland	10891.5	10992.4	12771.9	14763.4	21686.3	10794.8	5019.1	-634.3	6410.0	46.5	-5.9	59,4
Romania	3263.8	3488.6	4297.0	4990.7	7395.2	4131.4	1504.0	-186.9	2814.8	36.4	-4.5	68,1
Slovak Rep.	2977.9	3297.1	3845.9	5230.2	6761.5	3783.6	1372.3	-171.1	2582.5	36.3	-4.5	68,3
Slovenia	4182.8	4208.2	4596.0	5131.6	6071.8	1889.0	1927.5	-141.0	102.4	102.0	-7.5	5,4
Estonia	780.0	979.3	1337.0	1537.6	2891.9	2111.9	359.4	-49.5	1802.0	17.0	-2.3	85,3
Latvia	868.3	967.5	1106.0	1160.4	1630.5	762.2	400.1	-39.0	399.9	52.5	-5.1	52,5
Lithuania	904.4	1028.4	1238.8	1334.2	2065.9	1161.5	416.8	-73.6	818.3	35.9	-6.3	70,5
Total	40953.8	43878.0	53129.2	63932.4	92967.6	52013.8	18872.5	-2174.1	35320.9	36.3	-4.2	67,9

* The sum of the components may differ from 100 due to rounding. *Source:* Eurostat COMEXT database and WIIW calculations (Oblath and Richter 2002).

Table A5
Employees* by major occupational groups, main sectors and gender, thousands, 1994
(Labour Force Survey data)

Main occupational groups	Agriculture	Industry	Services	Total
Males				
1. Legislators, senior officials and managers	15.4	57.8	96.6	169.8
2. Professionals	6.1	28.6	148.0	182.7
3. Technicians and associate professionals	6.9	46.9	112.6	166.3
4. Clerks	1.0	7.3	19.8	28.2
5. Service workers and shop and market sales workers	2.9	17.9	203.4	224.2
6. Skilled agricultural and forestry workers	83.7	2.5	4.7	90.8
7. Craft and related workers	44.0	462.4	164.6	671.0
8. Plant and machine operators and assemblers	51.4	120.2	136.3	307.9
9. Elementary occupations	23.7	56.7	74.3	154.7
Total	*235.1*	*800.2*	*960.4*	*1995.8*
Females				
1. Legislators, senior officials and managers	2.9	19.8	66.7	89.5
2. Professionals	1.9	17.4	202.8	222.1
3. Technicians and associate professionals	4.9	46.9	238.7	290.5
4. Clerks	18.8	73.5	198.1	290.5
5. Service workers and shop and market sales workers	4.9	14.9	273.6	293.3
6. Skilled agricultural and forestry workers	38.3	1.0	2.1	41.4
7. Craft and related workers	6.3	152.3	23.2	181.8
8. Plant and machine operators and assemblers	3.1	72.2	6.6	81.9
9. Elementary occupations	11.3	37.8	156.8	206.0
Total	*92.4*	*436.0*	*1168.6*	*1697.0*
Together (both sexes)				
1. Legislators, senior officials and managers	18.4	77.6	163.3	259.3
2. Professionals	8.0	46.0	350.8	404.8
3. Technicians and associate professionals	11.7	93.8	351.3	456.8
4. Clerks	19.9	80.9	218.0	318.7
5. Service workers and shop and market sales workers	7.8	32.8	477.0	517.6
6. Skilled agricultural and forestry workers	121.9	3.5	6.8	132.3
7. Craft and related workers	50.3	614.7	187.8	852.8
8. Plant and machine operators and assemblers	54.5	192.4	142.9	389.8
9. Elementary occupations	35.1	94.6	231.1	360.7
Grand total	*327.5*	*1236.2*	*2129.0*	*3692.8*

* Excluding armed forces.

Table A6
Employees* by major occupational groups, main sectors and gender, 1999, thousands
(Labour Force Survey data)

Main occupational groups	Agriculture	Industry	Services	Total
Males				
1. Legislators, senior officials and managers	10.2	61.1	91.1	162.4
2. Professionals	3.5	34.8	143.7	182.0
3. Technicians and associate professionals	4.6	56.3	118.8	179.7
4. Clerks	0.5	3.6	14.9	19.0
5. Service workers and shop and market sales workers	2.5	17.1	241.9	261.6
6. Skilled agricultural and forestry workers	95.2	1.1	6.1	102.4
7. Craft and related workers	30.5	506.4	148.8	685.7
8. Plant and machine operators and assemblers	39.0	131.2	150.4	320.5
9. Elementary occupations	18.5	57.5	58.5	134.4
Total	*204.5*	*869.0*	*974.2*	*2047.7*
Females				
1. Legislators, senior officials and managers	2.2	15.1	67.8	85.1
2. Professionals	1.7	14.6	236.4	252.6
3. Technicians and associate professionals	3.1	51.1	273.3	327.5
4. Clerks	10.2	55.3	172.8	238.3
5. Service workers and shop and market sales workers	2.6	14.2	308.0	324.8
6. Skilled agricultural and forestry workers	35.2	0.4	1.5	37.0
7. Craft and related workers	2.2	146.2	15.4	163.7
8. Plant and machine operators and assemblers	1.6	97.6	5.2	104.4
9. Elementary occupations	7.1	32.2	128.6	167.9
Total	*65.8*	*426.6*	*1208.9*	*1701.3*
Together (both sexes)				
1. Legislators, senior officials and managers	12.3	76.2	158.9	247.5
2. Professionals	5.2	49.4	380.1	434.6
3. Technicians and associate professionals	7.7	107.4	392.1	507.2
4. Clerks	10.7	58.9	187.7	257.3
5. Service workers and shop and market sales workers	5.1	31.2	550.0	586.3
6. Skilled agricultural and forestry workers	130.4	1.5	7.6	139.4
7. Craft and related workers	32.7	652.6	164.1	849.4
8. Plant and machine operators and assemblers	40.6	228.7	155.5	424.9
9. Elementary occupations	25.6	89.7	187.0	302.3
Grand total	*270.3*	*1295.6*	*2183.1*	*3749.0*

** Excluding armed forces.*

Table A7

Employees by NACE sections and occupational groups, 1990
(census data)

	Total	Occupational groups									
		1.	2.	3.	4.	5.	6.	7.	8.	9.	0.
1. Agriculture, hunting, forestry and fishing	699258	49835	18817	26276	28324	15138	168654	162733	131533	97948	..
2. Mining and quarrying	91925	6320	3118	6120	3973	1021	128	50603	12630	8012	..
3. Manufacturing	1194168	77408	52557	100531	72213	17824	2846	530610	225610	114569	
4. Electricity, gas, steam and water supply	110932	8274	5471	12050	8747	4742	368	37176	22505	11599	..
5. Construction	315814	23485	8907	17674	14020	2311	831	183480	25863	39243	..
6. Wholesale and retail trade, repairing	465156	50771	21450	46094	47385	160212	1635	84258	22166	31185	..
7. Hotels and restaurants	107698	10506	3688	7357	5050	56531	268	5303	1906	17089	..
8. Transport, storage and communication	398343	27391	12031	50071	29009	44279	656	87015	110636	37255	
9. Financial intermediation	45524	6291	5158	19551	11284	258	7	538	389	2048	..
10. Real estate, renting and business activities	153175	16685	31702	29467	15160	12966	898	25245	5652	15400	..
11. Public administration and defence, compulsory social security	250998	17142	19554	39429	13689	1958	853	13120	8849	21154	115250
12. Education	273635	19781	145173	30308	7725	5234	583	8159	2712	53960	..
13. Health and social work	235575	14639	34114	83093	11119	36340	994	16673	8414	30189	..
14. Other services	182771	14688	28959	21431	10523	31065	2298	23119	11045	39643	..
15. Total	*4524972*	*343216*	*390699*	*489452*	*278221*	*389819*	*181019*	*1228032*	*589910*	*519294*	*115250*

1. Legislators, senior officials and managers.
2. Professionals
3. Technicians and associate professionals
4. Clerks
5. Service workers and shop and market sales workers
6. Skilled agricultural and forestry workers
7. Craft and related workers
8. Plant and machine operators and assemblers
9. Elementary occupations
0. Armed forces

Table A8
Employees by NACE sections and occupational groups, 2001
(census data)

	Total	Occupational groups									
		1.	2.	3.	4.	5.	6.	7.	8.	9.	0.
1. Agriculture, hunting, forestry and fishing	203106	13325	3874	6750	7717	3565	101936	23097	25415	17427	-
2. Mining and quarrying	7992	702	305	732	352	172	12	3321	1913	483	-
3. Manufacturing	896869	65300	38647	88713	30472	21904	4108	382159	216065	49501	-
4. Electricity, gas, steam and water supply	71374	6494	4294	11232	5672	6453	119	22194	12069	2847	-
5. Construction	236380	24235	8113	12018	7669	4240	278	144590	14561	20676	-
6. Wholesale and retail trade, repairing	520677	55425	24346	53380	35828	24180	1602	74704	19577	13975	-
7. Hotels and restaurants	133953	14068	1960	8002	2784	87151	384	3351	1184	15069	-
8. Transport, storage and communication	288938	21600	11198	43863	21108	47811	238	35696	94850	12574	-
9. Financial intermediation	69678	9639	10530	36571	10311	994	14	349	239	1031	-
10. Real estate, renting and business activities	279138	26609	55092	53596	33565	64310	1451	15519	7404	21592	-
11. Public administration and defence, compulsory social security	279789	20281	32008	68348	24657	20175	1875	11068	7060	24691	69626
12. Education	309512	15847	186599	26219	8367	24861	893	8649	2568	35509	-
13. Health and social work	241636	12816	46689	110739	12482	15473	959	9374	7552	25552	-
14. Other services	151227	13422	31782	20737	8609	42960	1650	9853	7079	15135	-
15. Total	*3690269*	*299763*	*455437*	*540900*	*209593*	*581909*	*115519*	*743924*	*417536*	*256062*	*69626*

1. Legislators, senior officials and managers
2. Professionals
3. Technicians and associate professionals
4. Clerks
5. Service workers and shop and market sales workers
6. Skilled agricultural and forestry workers
7. Craft and related workers
8. Plant and machine operators and assemblers
9. Elementary occupations
0. Armed forces

able A9
Persons employed in industry, both sexes, thousands

Pe-riod	A, B	C	D	E	F	G	H	I	J	K	L	M	N	O-Q	Total
1994	327.6	39.2	888.8	108.3	201.0	467.4	110.6	314.5	72.9	125.6	320.2	338.6	239.0	197.8	3751.5
1995	295.1	34.0	850.2	96.6	217.3	459.9	116.6	319.6	82.2	130.6	318.1	335.4	231.4	191.8	3678.8
1996	302.4	32.8	850.8	88.8	217.7	486.9	114.1	321.2	83.3	128.2	306.6	319.6	225.6	170.1	3648.1
1997	287.8	27.2	864.1	97.4	219.2	496.8	120.9	310.0	83.3	146.3	293.8	296.9	232.1	170.5	3646.3
1998	278.8	25.7	912.1	96.5	230.0	472.2	121.6	301.9	81.8	163.0	294.3	305.5	237.8	176.5	3697.7
1999	270.4	24.4	928.9	89.8	253.0	517.5	133.2	308.3	80.9	183.9	301.9	306.9	239.2	173.2	3811.5
2000	251.7	19.2	931.3	80.1	267.8	540.9	133.3	311.8	83.7	204.6	299.0	317.8	241.7	166.2	3849.1
2001	239.4	13.0	955.8	79.5	272.7	548.4	143.0	310.9	78.9	219.6	289.6	309.8	234.9	164.0	3859.5

A, B Agriculture
C Mining and quarrying
D Manufacturing
E Electricity, gas, steam
F Construction
G Trade and repairing
H Hotels and restaurants
I Transport, storage
J Financial intermediation
K Real estate, renting
L Public administration defence
M Education
N Health and social work
O-Q Other services

Table A10
Persons employed by major occupation groups (ISCO–88), both sexes, thousands

Period	1.	2.	3.	4.	5.	6.	7.	8.	9.	0.	Un-known	Total
1994	240.8	383.3	448.6	318.9	517.0	132.4	852.3	390.1	359.9	108.2	-	3751.5
1995	212.8	396.4	461.0	291.0	524.8	129.7	828.7	392.4	338.8	102.9	0.3	3678.8
1996	215.2	408.8	447.8	273.1	544.3	139.6	807.7	400.4	319.2	91.4	0.6	3648.1
1997	220.0	403.3	466.2	254.5	555.4	141.9	815.8	403.1	305.9	79.4	0.8	3646.3
1998	220.7	424.8	492.2	255.1	554.9	139.5	837.5	400.7	309.1	61.5	1.7	3697.7
1999	247.5	434.6	507.2	257.3	586.4	139.4	849.4	424.9	302.3	61.6	0.9	3811.5
2000	265.4	450.0	509.5	261.3	585.1	133.6	841.4	440.4	297.6	64.8	0.0	3849.1
2001	260.2	450.8	514.1	257.4	600.5	133.0	838.3	460.9	287.7	56.6		3859.5

1. Legislators, senior officials and managers
2. Professionals
3. Technicians and associate professionals
4. Clerks
5. Service workers and shop and market sales workers
6. Skilled agricultural and forestry workers
7. Craft and related workers
8. Plant and machine operators and assemblers
9. Elementary occupations
0. Armed forces

Table A11
Unemployment rate by educational attainment

Period	Primary (Less than 8 + Primary)	Basic vocational (Vocational + apprentice school)	Secondary general (Grammar school)	Other secondary (With qualification)	Tertiary education
1994	16.3	12.7	7.9	7.7	3.1
1995	15.9	12.3	7.4	6.8	3.0
1996	15.7	11.7	7.7	6.9	2.7
1997	15.1	10.0	6.3	5.6	1.8
1998	13.2	8.7	6.8	5.3	1.9
1999	12.5	8.1	6.3	4.8	1.4
2000	11.3	7.6	5.8	4.5	1.6
2001	11.1	6.4	4.4	4.1	1.4
2002	11.7	6.2	4.5	4.1	1.9

Table A12
Unemployment rate by NACE sections

	Agricul-ture	Mining and quar-rying	Manufac-turing	Electricity, gas, steam	Construc-tion	Trade and repairing	Hotels and res-taurants	Transport. storage	Financial interme-diation	Real es-tate, rent-ing	Public admin., defence	Education	Health and social work	Other services
1994	13.0	18.3	11.5	5.2	17.7	9.6	14.4	7.2	3.8	8.3	3.8	2.4	3.6	5.5
1995	12.2	12.8	11.2	6.8	16.6	8.9	12.0	6.6	3.5	6.3	4.9	3.2	4.1	6.6
1996	10.6	8.9	10.5	6.0	15.1	8.3	12.5	6.9	4.1	6.8	6.1	3.7	3.4	8.3
1997	8.5	12.3	9.2	5.4	12.1	6.6	10.7	5.1	3.1	4.3	6.4	3.0	3.1	8.8
1998	7.3	9.8	7.4	4.6	10.5	6.8	8.6	4.2	4.4	5.2	5.9	2.4	3.8	5.6
1999	6.3	9.6	6.9	4.7	8.5	5.6	7.5	4.3	3.9	4.7	6.0	2.6	2.8	4.6
2000	5.0	12.3	6.3	4.1	7.6	5.1	7.8	3.3	4.2	3.7	5.6	1.5	2.7	5.4
2001	5.5	11.6	5.5	3.2	6.9	4.4	7.0	3.0	3.7	3.3	5.6	1.2	2.4	5.4
2002	4.8	7.5	5.6	3.0	7.0	4.7	7.4	2.5	2.7	3.7	6.0	2.1	2.1	5.5

Table A13
Unemployment by occupational groups

	Legislators, senior officials and managers	Professionals	Technicians and associate Professionals	Clerks	Service workers and shop and market sales workers	Skilled agricultural and forestry workers	Craft and related workers	Plant and machine operators and assemblers	Elementary occupations	Armed forces	Unknown
1994	4.1	2.5	5.6	8.9	8.6	10.4	11.8	11.3	15.3	0.7	-
1995	3.6	2.2	5.3	7.6	8.6	11.0	11.6	9.9	16.0	1.1	100.0
1996	2.7	2.1	5.7	6.9	8.6	9.5	11.0	9.1	17.2	1.5	99.9
1997	2.6	1.5	3.5	6.2	7.0	9.0	9.6	8.7	15.1	1.7	99.9
1998	1.8	1.5	3.7	6.9	5.6	6.8	7.9	7.4	14.0	1.0	99.7
1999	1.6	1.5	3.2	5.6	5.6	6.5	7.2	6.6	13.0	0.8	99.8
2000	1.5	0.8	3.1	3.8	5.7	4.9	6.6	5.7	12.2	0.8	-
2001	1.8	0.9	2.4	3.1	5.0	5.7	5.8	5.3	12.1	0.4	0.0
2002	1.8	1.1	2.4	3.4	5.0	5.1	5.5	5.7	12.6	0.5	