Barnabás Ferenczi:

LABOUR MARKET DEVELOPMENTS IN HUNGARY
FROM A CENTRAL BANK PERSPECTIVE

STYLISTED FACTS

May, 1999
The purpose of publishing the Working Paper series is to stimulate comments and suggestions to the work prepared within the National Bank of Hungary. The views expressed are those of the authors and do not necessarily reflect the official view of the Bank.

National Bank of Hungary
H-1850 Budapest
Szabadság tér 8-9.
http://www.mnb.hu
Abstract

The purpose of this paper is to stimulate academic discussion on the Hungarian labour market in a policy-oriented framework by collecting some empirical stylised facts and their hypothetical explanations. These stylised facts cover both the area of labour supply and demand, including selected issues of unemployment, labour force participation, employment and wages. Stylised facts of labour supply are put in the context of micro-level conditions of economic growth and supply-side inflationary pressures. Apart from a discussion of developments in the 1990s, by using a long-term demographic projection a detailed analysis of expected labour market activity and employment tendencies is also carried out. I show that although demographic changes will increase the labour force participation rate it can only reach the European average if all demographic groups show a large increase in economic activity. I argue against counting on those out of the labour force or the discouraged workers as a potential labour reserve for future economic growth. In terms of the demand side, I show that besides a spectacular employment growth in manufacturing, public sector employment has also expanded. I also explain why it is misleading to analyse employment or wage developments in a blue-collar versus white-collar setting. As far as empirical labour market implications of the real exchange literature is concerned, I demonstrate that while wage inflation in nontradables has not been higher than that in tradables, some service sectors in the former aggregate show diverging tendencies.
CONTENTS

INTRODUCTION 6

I. Labour Supply 7
   I.1. Unemployment in Hungary 7
   I.2. Analysis of labour force participation 18

II. Labour Demand and Wages 34
   II.1. Employment developments 34
   II. 2. Issues in Wage Development 41

Conclusions for economic policy 54
Stylised facts – a summary

**FACT 1a.** The unemployment rate has been steadily declining since 1993. There is rather a drop in the *inflow* rate than a rise in the *outflow* rate behind.

**FACT 1b.** In an international context, Hungarian labour force participation and employment rates lag behind the average of developed countries by 8-10 percentage points. Beyond this, the population aged over 55 years shows the largest gap.

**Fact 2a.** It is the oldest age groups, women and those with the lowest educational attainment that typically left the labour market between 1993-98

**FACT 2b.** Demographic changes alone will increase the labour force participation *rate* in the next decade. The *size* of the labour force will, however, shrink due to the large projected decrease of population aged 15-64 years.

**FACT 3.** The expected rise in the level of employment is consistent with the projected evolution of labour force participation only for employment growth rates below an annual average of 1.5-2% (a net rise of 35-45 thousands jobs per year). The employment ratio can only reach the European averages in at least 6-8 years from now.

**FACT 4.** Regional composition changes had a negative impact on the activity rate between 1993-97 as the population of those regions that had the largest decline in labour force participation increased (relatively).

**FACT 5.** Those out of labour force or the discouraged workers are not expected to serve as a labour pool for economic growth.

**FACT 6a.** While overall employment had been shrinking until 1997, its composition has changed so that the shares of employment manufacturing and the public sector had increased while those of private services and the agriculture had declined.

**FACT 6b.** The public sector has a dominant and rising share in white-collar employment.

**FACT 7.** The share of manual workers in total employment has been rising in the private sector since 1997. Beyond this, there have been compositional changes both in the blue- and the white-collar employment observable only at the aggregate level. Among manual workers, the use of skilled labour has been increasing relative to that of the unskilled, while for white-collar employment, the share of those with higher education and / or in management positions have been rising (relative to those with secondary education in administrative positions).

**FACT 8.** Due to a changing composition, the manufacturing average wages index was *above*, while that in other sectors was *below* the wage inflation measures during 1994-97. In 1997-98 however, the rising blue-collar to total employment share resulted in *higher* wage inflation measures compared to average wage growth.

**FACT 9.** Our gross wages measure includes irregular payments besides the regular (basis or settlement) pay component. As the ratio of irregular to total payments, and the irregular payments growth rates are stable both in time and across branches, irregular payments do not seem to serve as primary means of adjustment to changing economic conditions on behalf of the firms.

**FACT 10.** Across sectors, a stronger employment growth did not induce higher wage inflation during 1994-98.

**FACT 11.** Relative wage levels in the private sector show some weak divergence. The sector with the lowest wage levels, retail and repairs had the lowest wage inflation as well; while manual wages in manufacturing, from a relatively high level, increased relatively more rapidly.
Many contemporary macroeconomics textbooks start with stylised facts that characterise the economy in question. Collecting such empirical propositions is important not only because it describes the economy in question in a very efficient way, but also because it contributes much to the development of the economics profession itself. Using stylised facts as a filter we may select from the competing theoretical models, and also compare the predictions of different schools of thought. Stylised facts might also play a role in enhancing the communication between professionals of different branches of economics as they highlight the empirical regularities seem to be agreed upon as valid and important ones at that stage of research. By collecting stylised facts characterising the Hungarian labour market in the 1990’s I would like to make a contribution to this.

Although empirical labour market research should normally based on micro-level data, analysing labour market developments in a timely fashion and for policy purposes is only possible using aggregate level data, published by the Hungarian Central Statistical Office (CSO) or similar institutions. Thus, in this paper, besides building upon findings of various Hungarian and international research projects I will only use published aggregate data to characterise the Hungarian labour market.

My paper is split into two parts, as I will discuss labour supply and demand (with wage developments) separately. In terms of labour supply, Section I. will cover it in the context of both short and long run conditions of growth on one hand, and supply side inflationary pressures on the other. From a central bank point of view an important question is whether we (will) have a sufficient labour pool for a sustainable growth, or we are to face inflationary pressures building up due to labour market bottlenecks. I will analyse this problem both in the short run with manufacturing being the dynamic force behind the GDP-growth, and in the long run when private services are expected to take over.

As far as labour demand – or, as it is measured in this paper, actual employment –, and wages are concerned, in Section II. I will try to identify the factors behind the evolution of wage levels and that of wage inflation across industries. I will show different measures of wage inflation as compared to the simple average wages index and also the role irregular wage components might play. Finally, in the context of the real exchange rate literature I will discuss the empirical implications of some propositions related to wages.

---

I am grateful for their comments on earlier versions of this paper to Gyula Nagy (BUES), János Vincze (NBH) and Zoltán Jakab (NBH) and also to participants of the seminar on the topic. I am responsible for all mistakes remained in the paper.
I. Labour Supply

The theoretical literature of labour supply focuses on the individual decision between labour market participation and non-market activities (including household work) generally referred to as leisure. So, in a theoretical sense, labour supply is derived from the demand for leisure based on the (implicit) price of leisure, the wage rate and on a budget constraint. On the extensive margin, the observable result of the participation-decision is the economically active versus inactive status of the individual. Then, for those who do enter the labour market their employed versus unemployed status is determined by the interplay of supply and demand side forces. We only observe the resulting labour market status of the individual, not the underlying mapping between wages and income to participation and hours supplied\(^2\). Moreover, using aggregate data only it is not even possible to recover the labour supply function. In this paper we define labour supply as the stock of the economically active population, and -- although they are as much a supply, as a demand side phenomena --, will discuss unemployment and employment issues in the labour supply section.

I.1. Unemployment in Hungary

International statistics define an individual economically active if he or she has entered the labour market and is employed or unemployed. Those who are said to be economically inactive has not entered or left the labour market – they do not work (in terms of paid work), but do not seek job opportunities and/or are not ready for working. The Hungarian CSO collects data for these groups using their ILO-definitions since 1992 based on the monthly household survey (Labour Force Survey, or LFS)\(^3\).

There is, however, another concept of unemployment widely used in Hungary: the one based on the number of people registered with the local unemployment offices known as the “registered unemployment”\(^4\). Although data on the registered unemployed can be very useful for research, in this paper we mainly use the LFS-data. There are important theoretical and empirical considerations behind\(^5\). At a theoretical level, it is better to use the LFS-definitions as they group people according to their actual labour market activity. In contrast, registered unemployment should be interpreted in the context of a different model: it suffers from not only the fact that the registered status can hide a wide range of actual activities (including working, out of the labour force, etc.), but also that it is significantly influenced by changes in the administrative-legal environment (concerning social transfers eligibility rules, for example). Although using micro-level data it is possible to differentiate the registered unemployed according to their actual labour market activities – or, we can

---

\(^{2}\) Simply saying, we do not observe the reservation wages.

\(^{3}\) See Appendix A. for the ILO definitions as used by the CSO.

\(^{4}\) This is not exactly the claimant count figure as not all registered unemployed apply or receive unemployment benefits. We call registered unemployed those who have been registered at the local offices as “officially” unemployed. For a comparative survey on the registered unemployment in a European context see EC (1999).

\(^{5}\) For some recent arguments see also the new regularly published Quarterly Report on Inflation of the NBH, March 1999 issue.
model their labour supply –, there is no way to do this at the aggregate level. The ILO methodology ensures that in principle all those who do paid work – even if in the illegal, “black” or “shadow” economy – are counted as employed; or all those who do not work but do not seek job opportunities either as economically inactive. So, at an empirical level the unemployment figure of the LFS seems to be a better proxy of the economically active, but not employed population. At a national level, the registered unemployment figure is generally lower than that of the LFS unemployment. This is consistent with the finding that that of those registered unemployed who were in the LFS samples only 40-50% could be on average defined as unemployed according to the ILO-criteria, while of the remaining 50-60% a third is employed, and two thirds are actually out of the labour force6.

That unemployment and labour market activity in general can be analysed in various contexts often causes confusion. In terms of unemployment, there are two ways of looking at it: while some analyse it as a business cycle indicator, for others it is a complex social problem including that of poverty, educational deficits or social cohesion. Obviously, diverging interests and motivations call for different measures of unemployment.

In the macroeconomic context of trade cycles, economic growth or inflation in general unemployment functions as an indicator of the degree of unutilised– economic resources. In this context we look at unemployment as a labour pool readily available for the firms even in the short run. So, from this point of view we are interested in developing criteria for the concept of unemployment that narrow enough to include only those who “really” constitute unused but also effective resources, i.e. (due to their educational, skill or other characteristics) a labour pool relevant and readily accessible for the mainstream technologies. Clearly, this is the typical viewpoint of a central bank if it is to analyse the sustainability of economic growth or to judge supply side inflationary pressures due to labour market bottlenecks. This is why we prefer the ILO-definitions of unemployment though considered to be very restrictive by many. Moreover, these considerations explain the use some “more effective”, i.e. more restrictive unemployment indicators at the NBH7 and also the way we look at the now popular issue of whether significant proportions of the hugely increased economically inactive population of Hungarian returning to the labour market.

There is, however, a context of unemployment different from this. Although analysing poverty or “economic disadvantage” calls for including income as a central concept, it is clear that one’s labour market situation is an important factor behind. So, when analysing unemployment many focus on groups that face more serious hardship than others do if unemployed. In this context it is widespread to distinguish unemployment by duration, age or educational level. Although this paper analyses unemployment clearly in its

---

6 This is more complex at a regional level: the “worse” situation a region is in (by its GDP, infrastructure, education, etc.) the lower its LFS figure above its registered one. While in the most developed regions like Central Hungary we have higher LFS-unemployment rate than the registered one, in the less advanced Northern or Eastern regions the registered unemployed stock is about 40% higher than the LFS one. Some factors behind that (i) in the central regions those who face unemployment are not local residents but commuters who, if become unemployed, are counted in their actual communities which may be in another region; or (ii) better supply of vacancies of the “good” regions encourages active job seeking implying that of the jobless more will be counted as unemployed as opposed to inactive.

7 See the Quarterly Report on Inflation of the NBH November 1998 issue.
In the macroeconomic context described earlier it would not be correct to impose a hierarchy on the diverging interests. So, besides the standard unemployment (and labour force) figures published by the CSO we show some alternative measures as well. The methodology behind these measures is compatible with the well-known “alternative measures of unemployment and other forms of labor resource underutilisation” developed by the US Bureau of Labor Statistics in 1994 (see Bregger-Haugen, 1995).

**Figure 1.**

**Alternative measures of unemployment**

*The numerator of the unemployment ratios is always the group shown at the curves, the denominator is the labour force defined as the sum of those employed and the group concerned*.8

Among these measures only the standard $U$ and $u4-u5$ could be regarded as proper unemployment ratios, while the others are compositional measures useful as unemployment ratios only because of their special content. Figure 1. shows that the alternative unemployment indicators move in line with the standard unemployment rate, so – in a cyclical sense – they provide no additional information. In the other context we see that unemployment rates defined as to include some groups of those out of the labour force ($u4$ and $u5$) are much higher than the standard one, which is generally true for most developed countries.9

---

8 Data series are the seasonally adjusted or, if it was necessary for smoothing, the trend-cycle series, exceptions are noted separately. Seasonal adjustment and trend-cycle estimation were made by the Seats/Tramo software developed by V. Gómez and A. Maravall and is recommended by the Eurostat. Also, when data series are broken by a vertical thin dashed line it shows that data after and before this date cannot not be directly compared.

9 That they must be higher follows from the non-negativity of the variables constituting the unemployment ratio – the issue here is how wide is the gap! These unemployment indicators were compared across developed countries by the BLS, see Sorrentino (1995).
FACT 1a. The unemployment rate has been steadily declining since 1993. There is rather a drop in the *inflow* rate than a rise in the *outflow* rate behind.

By the end of 1998 the trend unemployment rate has fallen to 7.5% from over 12% in 1993. Which is more important, since 1996 this fall has been accompanied by a rising trend in employment (both in terms of its level and its ratio to the population aged 15-74). Thus, if the fall in the number of the unemployed gets outweighed by the rise in employment – or, equivalently, those leaving unemployment go into employment rather than leave the labour force – the steady fall in the labour force participation ratio experienced since 1993 will come to an end. (Analysing unemployment, employment or labour force participation ratios has been made difficult by the 1998 change in methodology and sample of the LFS by the CSO, see *Appendix B*. for details.)

**Figure 2.**

*The number of the employed, unemployed, in and out of labour force*  

*Standard ILO methodology, all categories refer to the 15-74 years age group. This holds for Figure 3. too.*
Figures 2-3. are based on stock data, they say nothing about the flows behind. However, the stock of unemployment is determined by the interaction of inflows and outflows. The same stock level (say, an unemployment rate) may imply very different labour markets if the inflow and outflow ratios\(^\text{10}\) are different: high inflow ratios accompanied by high outflow ratios versus low inflow ratios with low outflow ratios imply diverging cyclical behaviour. The former is generally said to characterise the US labour market, while the latter the continental European one. In the latter case, a cyclical downturn that drives the inflow ratio up might lead to a permanent rise in unemployment as those who lose their job during the downturn will find it very difficult to leave unemployment even when things improve. This persistence or hysteresis mechanism is surely a factor behind the European unemployment story.

As no data on actual flows in and out of unemployment is published in the Hungarian LFS we have to rely on empirical micro-level studies and on proxies at the aggregate level. Empirical studies\(^\text{11}\) generally conclude that the observed rise in unemployment (either in the LFS or the registered figure) in the early 1990s was due to very low outflow rates rather than high inflow rates. Similarly, they show that behind the fall in unemployment since 1993 there are falling inflow ratios rather than increasing outflow ratios. At the aggregate level, we can proxy inflow into unemployment by unemployment of very short duration. So, our inflow ratio will be the number of unemployed with duration up to 30 days to that of the labour force. The outflow from unemployment is more difficult to proxy; we use the (inverted) measure of the share of long-term (over 6 or 12 months) unemployment in total unemployment. Our data reveal (see Figure 4) that the inflow rate has significantly decreased since 1993. Meanwhile, the share of long-term unemployment has been high

\(^{10}\) Inflow and outflow ratios are measured as flows relative to the labour force.

during the whole period and decreased very little since 1997 implying very low and stagnating outflow rates.

**Figure 4.**

*Inflow ratio and the share of long-term unemployment*

In all, this implies that Hungary belongs to a labour market model characterised by permanently low outflow and cyclically changing inflow rates. This is worrying since in the light of the experience of continental European countries unemployment might stuck at a high level for a long time with gradually fading substitutability between the employed and the jobless, which has bleak consequences for macroeconomic policy.

**FACT 1b. In an international context, Hungarian labour force participation and employment rates lag behind the average of developed countries by 8-10 percentage points. Beyond this, it is population aged over 55 years that shows the largest gap.**

Table 1. shows both the 1997 OECD and the Hungarian data to facilitate comparison. Looking at the whole 15-64 years age spectrum we see that male labour force participation ratio for the European OECD or EU countries were only slightly below 78%, while the corresponding female figure averaged around 55-58%. In sharp contrast, Hungarian males and females aged 15-64 years have a labour force participation ratio of 67% and 49%, respectively. In terms of the employment ratios, these is a gap of 10% between Hungarian males and the average of European males, while this gap is much narrower (3-5%) for women. Some factors explaining this female figure is the stronger "push" behind female labour market participation in this country due to the "modern" social roles established
during the previous five decades and also to the fact that most Hungarian families could not live on one salary only.

Going beyond this aggregate picture by breaking up the 15-64 age group into more age brackets we observe the following. In the middle age category (population aged 25-54 years) while Hungarian male employment and participation ratios lag much behind the European average, the employment ratio of “prime-age” Hungarian women is actually higher than the European average. The most dramatic differences for both sexes between the Hungarian and the European figures are found in the older age group: Hungarian males and females aged 55-64 years have employment ratios around a third or half of the European average! Clearly, pension schemes and eligibility rules (especially in a pay-as-you go system) shape the labour market activity of older age groups. In Hungary, to ease the labour market transformation during the first half of the 1990s it was openly supported that people over say 50 years, facing uncertainties or unemployment should rather leave the labour market by receiving some kind of a pension\textsuperscript{12}. This policy, lowering the "effective" pension eligibility ages, explains the extremely low labour market activity of the population over 50-55 years in Hungary. For women, the actual pensions eligibility age was at 55 years during most of our period so this explains the incredibly low participation rates for older women in Hungary.

### Table 1.

**Labour force participation and employment ratios compared (1997)**

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Activity ratios (%)</th>
<th>Employment ratios (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15–64</td>
<td>25–54</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>57.8</td>
<td>75.9</td>
</tr>
<tr>
<td>EU</td>
<td>67.7</td>
<td>81.1</td>
</tr>
<tr>
<td>OECD-Europe</td>
<td>66.1</td>
<td>79.2</td>
</tr>
<tr>
<td>OECD</td>
<td>69.7</td>
<td>80.2</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>66.6</td>
<td>85.0</td>
</tr>
<tr>
<td>EU</td>
<td>77.6</td>
<td>92.3</td>
</tr>
<tr>
<td>OECD-Europe</td>
<td>77.5</td>
<td>92.0</td>
</tr>
<tr>
<td>OECD</td>
<td>81.0</td>
<td>93.0</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>49.2</td>
<td>67.2</td>
</tr>
<tr>
<td>EU</td>
<td>57.7</td>
<td>69.8</td>
</tr>
<tr>
<td>OECD-Europe</td>
<td>54.7</td>
<td>66.3</td>
</tr>
<tr>
<td>OECD</td>
<td>58.5</td>
<td>67.5</td>
</tr>
</tbody>
</table>

| * Ratios: number of employed or in the labour force relative to the whole population in the relevant age group. The definitions of labour market categories are by and large similar; the Hungarian data is according to the ILO-standards. Source: OECD Employment Outlook 1998 June, Tables A-C. |

Let us now turn to two key concepts of labour market discussion: that of the wage curve and the Beveridge-curve. When analysing unemployment from a central bank perspective we focus on the issue of substitutability between those employed and those not – this determines how much any given level of unemployment exerts a downward impact on real

\textsuperscript{12} As pre-pensioners or early retirement pensioners, but disability pensions were widely used as an escape route too.
wages, or to what extent a given stock of unemployment can serve as an effective labour pool for the firms (especially in the context of an expanding economy). The former link, that of between unemployment and real wages is summarised by the wage curve, while the latter, i.e. the link between unemployment and vacancies by the Beveridge-curve.

**Figure 5.**

<table>
<thead>
<tr>
<th>Theoretical wage curve</th>
<th>Theoretical Beveridge-curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>real wages</td>
<td>vacancies</td>
</tr>
<tr>
<td>unemployment</td>
<td></td>
</tr>
</tbody>
</table>

Analysing the link between unemployment and real wages, the equilibrium and static wage curve is important since a “flattening” of the curve (i.e. shape of B instead of A on Figure 5.), when even a rising unemployment does not moderate real wages, can have long lasting consequences for macroeconomic policy. Directly, this has surely played a role in the European unemployment story. Indirectly, if nominal wage indexation is backward looking, the flatter the wage curve is the higher costs (or, higher sacrifice ratio) a disinflationary path implies in terms of GDP growth or unemployment as employees would be willing to accept a *perceived* real wage drop only facing a relatively higher rate of joblessness. Empirically, the wage curve is tested on regional micro data (as opposed to the Phillips-curve tested on aggregate data). There are such empirical investigations in Hungary available. These confirm that the higher the share of the long-term unemployment or unemployment with very low educational attainment the flatter the wage curve becomes. This enables us to extract information relevant for the wage curve even from macro-level data: a flattening of the wage curve is always linked to a rise in the weight of groups that are the *least substitutable* with respect to the employed. So, looking at the composition of total unemployment or the unemployment ratios of different groups we can get useful information on the wage curve. Our LFS data allows us to differentiate unemployment by two relevant dimensions, educational attainment and (unfortunately, independently of this) duration of unemployment. So, we consider a rise in long-term unemployment, and similarly, a rise in the share of unskilled or uneducated groups in unemployment as an indicator of a flattening of the wage curve.

The Beveridge-curve is an empirical link between joblessness and vacancies that could be rationalised as an equilibrium phenomena in the context of a *search model*. In this context the Beveridge-curve, through summarising the search intensity or search effectiveness of the unemployed, describes the same phenomena as the wage curve, namely that of the substitutability between the employed and the jobless. A rise in the number of vacancies at a given level of unemployment, i.e. an outward shift of the curve implies that there has been a flattening of the wage curve.

---

13 See Blanchflower – Oswald (1994) for a more in depth discussion of the wage curve.
14 Unfortunately, only in Hungarian.
A drop in the job search intensity of the unemployed or, equivalently, that employers regard the unemployed as potential employees to a lesser extent. Thus an outward shift in the Beveridge-curve also implies a flattening of the wage curve. Analysing the Beveridge-curve is of great importance in Hungary in the context of disinflation, the responsiveness of real wages to labour market conditions on one hand, and the availability of sufficient labour pool for a growth path on the other.

Figures 6-7. below show two Hungarian empirical Beveridge-curves. As expected, the curves are negatively sloped in the vacancies – unemployment space. Looking at Figure 6. one might conclude that there has been an improvement in the search effectiveness of the unemployed during 1994-95 as the curve has shifted in. Other information, however, does not support this claim so we explain the shift with the observed exogenous fall in the number of vacancies that time.

Figure 6.

Beveridge-curve with total unemployment*

* Total unemployment and number of vacancies divided by employment.

Alternatively, we can link vacancies to long-term unemployment (Figure 7.) which changes the picture dramatically. Instead of the simple, linear-looking relation between joblessness and vacancies we observe a backward-bending curve now. Between 1993-95 we see the curve shifting out: at a nearly constant level of vacancies long-term unemployment has risen fast, confirming that the long-term unemployed are weak (and weakening) substitutes of the employed. For the period after 1995 we observe a negatively sloped curve similar to the theoretical one.
As mentioned at the beginning of the unemployment section we can develop more "effective" or restrictive unemployment concepts than those in the LFS. In order to analyse the micro-level conditions of economic growth or supply side inflationary pressures we are aiming for developing unemployment categories that constitute effective labour reserves readily accessible for firms. As it is very plausible in principle that the more education or skills one has and the shorter time one spends unemployed the less one's human and social capital needed for successful job search erodes. So, we can distinguish unemployed groups that are more likely to form an effective labour pool than the total unemployment. Based on the aggregate LFS-data we choose those with a higher than average educational attainment and (independently) those with relatively shorter unemployment durations (not longer than, say 3, 6 or 12 months). Thus it can be an indication of labour market bottlenecks if for these groups we observe very low unemployment ratios.
Figure 8. Unemployment ratios by duration of unemployment*

* We define the unemployment ratios as the number of unemployed with the given duration divided by the sum of their number and employment. This implies that we count those with longer durations as out of labour force.

If we consider "effective" unemployment as to include those with no longer than 3 or 6 months durations then we get very low, 2-4% unemployment ratios by the end of our period. This implies that at most 2-4% of the "effectively" active population constitutes a readily accessible labour pool.

Figure 8. Unemployment ratios by educational attainment*

* We define the unemployment ratio of the given category as the number of unemployed of that schooling category divided by the sum of their number and the number of employed of that schooling category.
Looking at unemployment by schooling we observe a similar situation, though less clearly. The unemployment rate for those with at least secondary school attainment is below 6%, and for those with higher education is around 2-3%. What is surprising is that while the total unemployment rate has been steadily falling during 1993-98 the unemployment rates for these "better" schooling groups (especially for the latter one) have not really changed. On one hand this can be explained the following way. If unemployment has affected relatively more people in the lower than in the higher educational groups, then it is the higher educational groups where the unemployed are relatively less employable. So, the improving labour market conditions leave relatively more people in the higher schooling groups still unemployed. On the other hand, since the typical exit from unemployment was by leaving the labour force, which was more typical for those with lower educational attainment and for women, it follows that the stronger drop in jobless rates for the lower educational groups is simply a reflection of this. Using aggregate data there is no way to distinguish between these hypotheses, so further research is needed to clear this up.

In all, the fall in unemployment and the drop in the pace of corporate restructuring leading to large-scale job losses imply that the inflow into unemployment has been cut. However, as the short-term unemployed is the most likely to constitute an effective labour pool this drop in inflow also means a cut in the supply of this labour reserve. So, as things improve in the labour market the composition of unemployment might deteriorate – the share of long-term unemployed or less educated groups might rise, for example. If this happens these disadvantaged groups get stuck into unemployment implying a flattening of the wage curve. Thus we can not rule out labour market bottlenecks in the short run as there will be less and less short-term or educated unemployed for the firms to select from.

Unemployment is, however, only part of the supply side story. It is about those already in the labour market, that is, about decisions made on the intensive margin. In a longer time horizon we have to deal with decisions on the extensive margin as well, with the factors shaping labour force participation itself. The widely analysed aggregate activity ratio is determined jointly by the participation ratios of the age and sex groups and their weight in the total population concerned. By using a long run demographic projection of the these weights we get information on the likely long run paths of the aggregate participation ratio.

I.2. Analysis of labour force participation

In this section we first show what our LFS data reveal about the factors behind the observed evolution of labour force participation during 1993-98 in terms of demographics and education as well. Then we turn to the analysis of expected long run trends in labour force participation based on a projection of the demographic structure for the next 50 years. Instead of predicting what will happen in the future we will limit ourselves to simple consistency-checks and try to show what is unlikely to happen.
Fact 2a. It is the oldest age groups, women and those with the lowest educational attainment that typically left the labour market between 1993-98

From a central bank point of view it is important to control for the demographic compositional changes affecting the labour force participation measures. This is because the demographic structure a large population can not be influenced by government policy except for the very long run. When compositional effects move the labour market indicators policymakers might confuse them with the "true" underlying changes. The 1998 change in the LFS methodology is very damaging here, as we do not have comparable labour force participation rates by demographic groups for the period after 1997.

The evolution of the labour force participation rates for the demographic groups of the population aged 15-74 are shown below; Figure 10. shows the labour force participation ratios by age groups and Table 2. the exact relative changes in the ratios and also in the population weights for the period between 1993-97.

Figure 10.

Labour force participation rates by age groups*

* Seasonally not adjusted data.
Table 2.

The relative change in labour force participation rates and size of population by age and sex groups*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>m</td>
<td>fm</td>
<td>m</td>
<td>fm</td>
<td>m</td>
<td>fm</td>
<td>m</td>
<td>fm</td>
</tr>
<tr>
<td>activity</td>
<td>-5.7</td>
<td>-11.9</td>
<td>-0.5</td>
<td>-9.2</td>
<td>-7.8</td>
<td>-13.6</td>
<td>-0.9</td>
<td>-7.3</td>
</tr>
<tr>
<td>change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>population</td>
<td>0.0</td>
<td>1.2</td>
<td>-6.7</td>
<td>-5.6</td>
<td>16.8</td>
<td>13.8</td>
<td>12.4</td>
<td>13.4</td>
</tr>
<tr>
<td>change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Relative changes: change of the 1993.Q1 = 100% index by 1997.Q4 for each demographic group; m = male, fm = female measures.

These data reveal that the labour force participation of the oldest age groups, and, within all age groups, of women dropped the most between 1993-97. Also, we see that participation of the young has decreased somewhat as well. The large drop in participation in older groups is due to the pension programs described earlier. The decreasing labour market activity of the youngest might reflect a long run trend of the expansion of schooling – enrolment ratios into higher education has increased much since the start of 1990s in Hungary. For women, as their role in the households implies (even in post-socialist countries) that their labour force participation has a higher opportunity cost than that of men, they are more likely to quit the labour market if threatened by unemployment or difficulties with finding a job.

In all, we observe that the older cohorts and in general women have left the labour market in the greatest proportions between 1993-97. This led to a drop in the average age of economically active men and women (by 1.5 and 0.5 years, respectively) – at a time when the population averages have been rising (especially for women due to the deteriorating life expectancy figures of Hungarian men). For both male and female groups we also see a drop in the variability of ages, implying that labour market participation has become more concentrated around the middle age groups. What is more important, as Figure 11. below reveals that compositional changes have acted in the same direction as the group-level labour force participation ratios, that is, the composition-effect reinforced the fall of the aggregate labour force participation ratio. Looking back to Table 2. we see that the population in some of the groups with the largest relative drop in labour force participation ratios has increased (groups of people aged 20-24 or 40-54 years, for example), which explains this. As a result, the fictive labour force participation ratios aggregated across ages controlling for the compositional changes has decreased less than the "real" ones for both sexes until 1997. The gap (aggregated across sexes too) attributed to compositional changes was largest in 1995, nearly 0.8%. However, from around 1997 the compositional effect has changed its sign: it acts as moving upwards the aggregate labour force participation rates for both sexes (but more for men than for women), so controlling for demographic changes results in lower activity ratios since then. Although we do not have data directly comparable with those from earlier periods it is likely that a significant part of the rise in the labour force participation in 1998 was due to compositional effects alone. As we will discuss it at FACT 2b, this is just the beginning of a long run tendency: in the next decade or so, demographic changes will bias the labour force participation rate consistently.
upwards. So, in order to avoid relying on misleading figures one has to control for this in the future as well.

Figure 11.

**Labour force participation rates – original versus demographically adjusted series**

*Seasonally not adjusted data. Demographically adjusted series: group-level labour force participation rates weighted by a fix demographic structure (that of 1993:Q1).*

Finally, let us examine what our data reveal about the educational dimension of the labour supply as observed between 1993-98. We will show that female labour supply has been more responsive to adverse changes in labour market conditions: relatively less educated women have left the labour market in far greater proportions than men. We show this by comparing the changes in the composition of female labour supply to those in male supply. Then, we say that the labour supply behaviour is different between the sexes if, for any educational category, the change of its share in labour supply is different (either in its sign or magnitude). To summarise the different paths of the shares of educational categories in the male and female labour supply we developed an experimental measure shown in Figure 12. Our measure is based on the difference between the male and female proportional change of these shares, i.e. the change expressed in terms of percentage of the "level of the share" at 1993:Q1.
Figure 12.

The difference between the evolution of male and female labour supply by educational attainment*

* The graphs should be interpreted the following way. Suppose, for example, that schooling category X had a share of 20% in the female, and 30% in the male labour supply in 1993.Q1, and our graph for X gives a value of 5 at 1997.Q4. This implies that the share of category X has decreased by 5% more in the female than in the male labour supply (for example, by 1997.Q4 it was 16% and 25.5% for female and male supply, a drop by 20% and 15% resp.) So, a positive sign implies that the share of that category in female supply has fallen relative to the evolution of the corresponding share in the male supply. Seasonally not adjusted data.

Figure 12. reveals that female labour supply in the lower educational categories has dropped more than male supply. Consider those with less than finished secondary education (i.e. less then 12 years of schooling): between 1993-97, the share of this category within the male labour force has dropped by 2 percentage points, while it has dropped by 6 percentage points in the female supply. Our experimental measure, showing values around 9 for this category also indicates that the latter 6% change is even higher if compared to its starting values. For another example, look at those with highest educational attainment being finished primary school or less (at most 8 years of schooling): the share of this group in female supply has decreased by 10%, while the same figure is only 5% for men. In all, less educated women has left the labour market in greater proportions than less educated men. This implies on one hand that the educational composition of the female labour supply has actually improved since 1993. On the other hand, it follows that less educated women are heavily represented among those out of the labour force in Hungary – a key point against arguments predicting that a large number of the economically inactive will make a successful return to the labour market as things improve (see more on this under FACT 5).

The reason behind the larger observed responsiveness of female labour supply is fairly straightforward: it lies in the higher opportunity cost of labour force participation for women. Even in Hungary where traditional female roles are somewhat weaker than in Europe or the US due to the legacy of the communist era, women still have more "use" at home than men, implying that their reservation wages are higher than those of men given
the same educational, skills, etc. characteristics. So, as the likelihood of loosing one's job is increases and/or the chances of a successful job search diminish women will be the first to leave the labour market. As labour market prospects has deteriorated much more for those with lower educational attainment during the transition, we observe a relatively stronger female responsiveness at the lower end of the schooling spectrum.

FACT 2b. Demographic changes alone will increase the labour force participation rate in the next decade. The size of the labour force will, however, shrink due to the large projected decrease of population aged 15-64 years.

The rising labour force participation ratio observed in 1998 after years of decline or the steady fall in unemployment might lead to the prediction that it will not only stop people leaving the labour market, but also that a further rise in the labour force participation is expected via the return of the economically inactive. Moreover, many predict that Hungary will then be characterised by participation rates similar to those in Western Europe. This is wishful thinking, as we will show. Due to compositional effects the overall activity rate will, in any case, rise in the following decade but will only climb to the European highs only if all demographic groups show a spectacular jump in labour force participation – and even in this case it would take a long time.

Our analysis on likely future activity rate scenarios is based on a 55 year long projection of the Hungarian demographic structure done at the CSO in 1995 led by Professor Hablicsek. This projection is based on the so-called biometrics method which uses hypotheses concerning the evolution of fertility, mortality and migration to calculate the number of people in each age-sex group a period further. Figures 13-14. below show the derived projection for the size of the potential labour force using different age limits and also the changing demographic structure itself.

---

15 This has originally been used at the NBH as the input data for modelling the pension reform.
This demographic projection reveals that the single most important trend for the future is the *steadily declining number of those aged 15-74 or 15-64 years*. Although rising until around 2005, the size of population aged 25-74 or 25-64 years will also shrink from the middle of the next decade. In all, these imply that in the long run we have to face a shrinking potential labour force (just as a shrinking overall population). The rise in the number of those aged 25-29 years in 1998 until the next decade is due to the peculiarity of the Hungarian demographics. There were generous child-care benefits introduced around 1973-75 just when those born around 1953-55 in peak numbers (when a total abortion prohibition introduced by the communist government came into effect) reached the most fertile age. This was a "peak on peak" situation resulting in a huge temporary increase in the number of babies in the mid-1970s (the so-called "Ratkó-grandchildren" named after Ms. Ratkó, Health Secretary 1950-53 responsible for the abortion law). This wave of those born around 1973-75 has been first a shock to the successive levels of our educational system and has now mostly entered the labour market. The resulting rise in the number of population aged 25-74 (or -64) years implies – *ceteris paribus*, taking the 1998 employment ratios as given – an annual 0,3-0,4% rise in the actual labour force or employment for the following years.

Let us now turn to the changing composition of the population as a whole (see Figure 14. below). What is the expected effect on labour supply (or, on participation rate) of the change in demographic composition? Looking at the labour force participation rates by age group we have observed that groups in the middle of the age spectrum have the highest, while those at the ends the lowest participation ratios. So, to evaluate the effect of changing demographics on labour force participation, we will focus on the changing age distribution\(^\text{16}\). As we have seen before the demographic structure of Hungary can be characterised by two peaks: the outstandingly high share of those aged 42-44 and 20-22 years in 1995 (the so-called "Ratkó-babies" and their children, respectively). In the future

\(^{16}\text{I.e. the female/male ratio is not expected to change in a systematic way.}\)
these two peaks will steadily move upward in terms of the age groups they are represented by. This move is important as different age groups have different labour force participation rates, so the two peaks will have an impact on the aggregate participation rate depending on what age brackets they are in. That those in their 20s in 1995 will become older in time will have a positive impact on the aggregate labour force participation ratio, while those aged 42-44 in 1995 will decrease it since all age groups older than 30-39 years have gradually lower participation rates.

One might ask why we are not concerned with the childbirth figures, i.e. if they will / should change in the next decades. The reason is that, given that it takes longer and longer time for the young to enter the labour market due to a general tendency of the schooling period to extend, no change in the number of babies born in the 1990s will have a significant impact on labour supply in the next decades.\footnote{Also, as the decline in the birth figures in the developed world is a very robust worldwide trend, not a Hungarian peculiarity, there is no point in arguing that any government is responsible for it or is capable of altering it.}

In all, as revealed by Figure 14., for the next 10 years we expect a decline in the share of those aged 15-24 years and a rise in the share of those aged 25-39 years. In a labour force participation context, the latter will \textit{ceteris paribus} increase the participation ratio. We will quantify the impact of changing demographic structure on labour force participation the following way. Take the projected evolution of the population shares of demographic (age and sex) groups and weight them by \textit{constant} pre-determined age group level participation rates. Thus, we obtain macro-level labour force participation paths representing the \textit{composition effect only}. A change in the group-level participation figures is represented by this method a \textit{shift} in a fixed participation rates curve. To compare different scenarios in terms of changing groupwise participation rates we use \textit{four sets of assumptions} on the
groupwise participation rates (Cases 1-4, on Figure 15. below and also Appendix C.). These four scenarios are not the predicted or the "reasonable" ones but rather benchmark cases any likely projection should be compared to. (As it happens too often in economics we do not tell you what will happen but only rule out the “very unlikely” outcomes...)

Figure 15.

Projected labour force participation rates
(population aged 15-64 years*\textsuperscript{18})

\* See Appendix C. for the sets of participation rates assumptions used to construct these cases.

The first scenario to look at is that of Case1. where the groupwise participation figures are assumed to stabilise at their 1998 levels. Then, Case3. represents the scenario when both men and women have groupwise participation rates such that (aggregated across age groups) the outcomes by sex are similar to the EU 1997 averages. Case4. is the same (i.e. as Case3.) for Hungarian males, but for women it assumes a "post-socialist scenario" when women have participation rates higher than in most of the developed Western world. Finally, Case2. is based on participation rates averaged across those of Case1. and Case3. – that is, Case2. is a scenario based on groupwise participation rates in between the Hungarian 1998 and the EU 1997 ones. All scenarios (apart from Case1. of course) take into account that ceteris paribus the gradual rise in the official retirement ages in Hungary will push up the participation figures of the oldest age cohorts in the working age population.

The first important implication of our calculations is that Hungary will have an aggregate labour force participation rate above the EU average only if the groupwise participation rates for males will jump to the European highs while the corresponding female figures do not fall from the post-socialist levels to the European ones. To reach the EU 1997 average groupwise participation rates for males should jump by 7-15 percentage points, which would be an enormous change indeed. The second implication of our analysis is that the

\textsuperscript{18} The age category 15-64 years is chosen only to facilitate comparison with the European figures. Note that its upper age limit is not the standard ILO one (74 years) used by the Hungarian LFS statistics!
aggregate labour force participation figure based on the 1998 groupwise ratios (Case1.), though is expected to increase in the next 3-5 years, will always be at least percentage points below the EU figure.

However, besides the relative measure (i.e. the labour force participation ratio) it is also important to look at the absolute on, that is, the evolution of the size of labour supply itself. Figure 16. below shows what our scenarios imply in terms of the change in the number of people in the labour market.

**Figure 16.**

*Projected annual change in labour supply (population aged 15-64 years, in thousand people)*

![Graph showing projected annual change in labour supply](image)

* Year on year change in the number of people in the labour force, according to Cases1-4.

Our data reveal that – although the aggregate labour force participation ratio might increase due to demographic factors or a change in the groupwise participation ratios – the size of the labour supply will shrink from 1998-2000 on in all cases. This robust prediction is based on the projected strong decline in the number of working age people (i.e. those aged 15-64 years). The change in groupwise participation ratios or the rise in the official retirement age implies an annual difference of ±5-10 thousand people only.

**FACT 3.** The expected rise in the level of employment is consistent with the projected evolution of labour force participation only for employment growth rates below an annual average of 1.5-2% (a net rise of 35-45 thousands jobs per year). The employment ratio can only reach the European averages in at least 6-8 years from now.

What does the demographically shaped labour force participation ratio imply in terms of employment and the employment ratio (i.e. number of employed to the working age population here taken as aged 15-64 years). Looking at the favourable employment developments in Hungary during 1997-98, many predict an annual average employment growth of 1-2-3% for the following decades. However, employment is also demographically
constrained via the employment ratio being linked to the labour force participation and the unemployment ratios\textsuperscript{19}. Given the (projected) size of the working age population the level of employment gives the employment ratio, which, with an assumption on the unemployment rate, gives the labour force participation ratio. That is, any prediction on employment growth must be in line with labour force participation projections.

Of course, this framework only gives a limit of employment growth based on very restrictive assumptions. For example, we take labour demand as given both in terms of its level and its composition. In this section we also ignore the issue of change in the structural mismatch between labour supply and demand – although it is implicitly built into our unemployment rate assumptions. In all, our analysis provides an upper limit of employment growth only – we might have an employment growth lower than that but higher ones are very unlikely given the constraints demography imposes on labour market developments.

Table 3.

<table>
<thead>
<tr>
<th>(\Delta E)</th>
<th>U</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0,5%</td>
<td>6%</td>
<td>57,3</td>
<td>57,8</td>
<td>58,2</td>
<td>58,7</td>
<td>59,1</td>
<td>59,6</td>
<td>60,0</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>57,9</td>
<td>58,4</td>
<td>58,9</td>
<td>59,3</td>
<td>59,8</td>
<td>60,2</td>
<td>60,7</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>58,5</td>
<td>59,1</td>
<td>59,5</td>
<td>60,0</td>
<td>60,4</td>
<td>60,9</td>
<td>61,3</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>59,2</td>
<td>59,7</td>
<td>60,2</td>
<td>60,6</td>
<td>61,1</td>
<td>61,5</td>
<td>62,0</td>
</tr>
<tr>
<td>+1,0%</td>
<td>6%</td>
<td>57,6</td>
<td>58,4</td>
<td>59,1</td>
<td>59,9</td>
<td>60,6</td>
<td>61,4</td>
<td>62,2</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>58,2</td>
<td>59,0</td>
<td>59,8</td>
<td>60,5</td>
<td>61,3</td>
<td>62,0</td>
<td>62,8</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>58,8</td>
<td>59,6</td>
<td>60,4</td>
<td>61,2</td>
<td>61,9</td>
<td>62,7</td>
<td>63,5</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>59,5</td>
<td>60,3</td>
<td>61,1</td>
<td>61,8</td>
<td>62,6</td>
<td>63,4</td>
<td>64,2</td>
</tr>
<tr>
<td>+1,5%</td>
<td>6%</td>
<td>57,9</td>
<td>59,0</td>
<td>60,0</td>
<td>61,1</td>
<td>62,1</td>
<td>63,2</td>
<td>64,4</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>58,5</td>
<td>59,6</td>
<td>60,7</td>
<td>61,7</td>
<td>62,8</td>
<td>63,9</td>
<td>65,0</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>59,1</td>
<td>60,2</td>
<td>61,3</td>
<td>62,4</td>
<td>63,5</td>
<td>64,6</td>
<td>65,8</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>59,8</td>
<td>60,9</td>
<td>62,0</td>
<td>63,1</td>
<td>64,2</td>
<td>65,3</td>
<td>66,5</td>
</tr>
<tr>
<td>+2,0%</td>
<td>6%</td>
<td>58,2</td>
<td>59,5</td>
<td>60,9</td>
<td>62,3</td>
<td>63,7</td>
<td>65,1</td>
<td>66,6</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>58,8</td>
<td>60,2</td>
<td>61,6</td>
<td>62,9</td>
<td>64,3</td>
<td>65,8</td>
<td>67,3</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>59,4</td>
<td>60,8</td>
<td>62,2</td>
<td>63,6</td>
<td>65,0</td>
<td>66,5</td>
<td>68,1</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>60,1</td>
<td>61,5</td>
<td>62,9</td>
<td>64,3</td>
<td>65,8</td>
<td>67,3</td>
<td>68,8</td>
</tr>
<tr>
<td>+2,5%</td>
<td>6%</td>
<td>58,4</td>
<td>60,1</td>
<td>61,8</td>
<td>63,5</td>
<td>65,2</td>
<td>67,1</td>
<td>68,9</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>59,1</td>
<td>60,8</td>
<td>62,5</td>
<td>64,2</td>
<td>65,9</td>
<td>67,8</td>
<td>69,7</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>59,7</td>
<td>61,4</td>
<td>63,1</td>
<td>64,9</td>
<td>66,7</td>
<td>68,5</td>
<td>70,4</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>60,4</td>
<td>62,1</td>
<td>63,8</td>
<td>65,6</td>
<td>67,4</td>
<td>69,3</td>
<td>71,2</td>
</tr>
</tbody>
</table>

*Life force participation rates are for those aged 15-64 years. The unemployment rates also refer to this age group. \(\Delta E\): average annual percentage increase in number of employed; \(U\): assumed unemployment rate; all for population aged 15-64 years.

Table 3. shows the labour force participation rates implied by projections on employment growth and unemployment rates. We have to compare these to the benchmark activity rates of our previous analysis, that is, to Cases1-4. As an extremely positive scenario, let us look

\textsuperscript{19} In the formula: employment ratio = (participation ratio) \times (1 – unemployment ratio). In this section we use the working age definition of 15-64 years instead of 15-74 years of the ILO and also the CSO.
at Case 4, with participation rates high but not exceeding 69% (in terms of the population aged 15-64 years). Looking at Table 3, we see that employment growth in excess of an annual average of 2% would imply too high a participation rate for the next years: assuming unemployment rates in the range of 6-8% the implied activity rates should jump to levels above the 1997 EU average – in very short period of time! So, labour market predictions for the next couple of years with employment growth rates above an annual 1.5-2% are very unlikely – even an average of 1.5% per annum implies an extra 55-65 thousands jobs per year, while the actual working age population is shrinking in size.

Summing up, although labour force participation rates will rise in the next years, we do not expect employment growth to exceed an annual average of 1.5-2% implying a net job creation of 35-45 thousands per year. This also implies that the Hungarian employment ratio for those aged 15-64 years, if it reaches the European average of around 60% at all, it would take at least 6-8 years to come.

FACT 4. Regional composition effects had a negative impact on the overall labour force participation ratio between 1993-97 as the population of regions with the largest decline in labour force participation increased relatively.

The proper way to analyse the Hungarian labour market would be doing it at a local level as aggregating fairly closed local labour markets and immobile labour force is questionable. However, we have very limited data at a regional level so we restrict ourselves to highlight some important empirical regularities at a county-level (or, at the level of the seven so-called statistical-planning regions defined by the CSO). So, we will focus on how changes in the regional composition of the population have affected our labour force participation measures20.

---

20 In this section we use the Hungarian/ILO definition of working age population, including those aged 15-74 (not -64!) years.
As far as population aged 15-74 years is concerned, the largest regions of Hungary are the Central, the Northern and the Northern Great Plain ones. In terms of population growth, our most dynamically expanding region is the Northern Great Plain, while the population shares of the Central region and of Transdanubia in general are declining. Looking at the regional participation rates we see that the Central and Transdanubian regions had participation rates above the national average while the Northern Great Plain produced rates 4-7% below the average. That is, we observe a negative composition effect behind the national participation rate: in general, regions with lower participation rates have rising population shares. Thus, there is a bias in looking at the national participation figures: while it is low on average, in the most developed regions it is much closer to the European average than one might think using the national figures. The most important implication of this is clear: as most job creation has been concentrated in these relatively more advanced central-western regions there is a regional mismatch between potential labour reserves (proxied by share of working age people out of labour force) and labour demand – unless labour mobility increases we will not have sufficient labour pool in the more advanced regions as the labour force participation is already high there.

Why do we have more dynamic population growth the less advanced a region is; or, why do we see in the less advanced regions (in proportional terms) more children? A reason for this lies in the nature of social transfer payments. Most social benefits are increasing in the

---

* The labour force participation rate refers to the population aged 15-74 years.
** For 1993-96 the CSO published regional labour market data so that those on child-care leave were counted as economically active. For the 1997 data we used one single factor for all regions to make it methodologically comparable (as the CSO, following the ILO guidelines, counts those on childcare leave as out of labour force since 1997).

---

21 The definitions of these regions: Central = Budapest + Pest county; Northern = Borsod + Nógrád + Heves counties; Northern Great Plain = Hajdú + Jász-Nagykun-Szolnok + Szabolcs counties; South Great Plain = Bács + Békés + Csongrád counties; Central Transdanubia = Fejér + Komárom + Veszprém counties; Western Transdanubia = Gyor + Vas + Zala counties; Southern Transdanubia = Baranya + Somogy + Tolna counties. See map in Appendix D!
number of children. In general, poorer and less educated families tend to invest less in their children. Thus, we have the so-called "strategic child" effect: given the bleak labour market prospects poor and uneducated people face it might be worth for them to have more children if it increases per capita income via the rising transfer payments. So, an unintended effect of our benefit system is that impoverished and uneducated families of less advanced regions, having poor chances of earning their income via paid work, have an incentive to insure their eligibility for social transfers via having (proportionally) more children. This is socially undesirable as this strategy is only rational if these children do not cost much for the family, that is, if they do not get good (and/or long enough) education. This is a way low social status regenerates itself\textsuperscript{22}.

\textbf{FACT 5. Those out of labour force or (in this group) the discouraged workers are not expected to serve as an labour pool for economic growth.}

As the labour market situation has improved and unemployment fell during the last couple of years in Hungary many turned their attention to the large group of the economically inactive. It is especially the so-called passive unemployment or, discouraged workers phenomena that attracts much attention: many predict the return of these people to the labour market as things improve, implying that a properly defined labour pool should include discouraged workers, or some economically inactive groups in general. However, most direct and indirect information we have on the economically inactive or on discouraged workers point to the opposite direction.

Our LFS data published by the CSO \textit{directly} reveals the age and sex distribution of those out of labour force only. \textit{Indirectly}, in the light of FACT2a. We know that less educated people (especially women) are over-represented among those left the labour market since 1993. In all, most of the inactive are in school or pensioners (two-thirds altogether), are women (60%) and/or less educated. On the other hand, it is puzzling that we have 250 thousands \textit{prime-age} (25-49 years old) males out of the labour force. It is difficult to explain what these people do: most of them finished their education, not on child care leave, or can not be on pension either (although many might receive disability benefits – a group exploded in size since the transition began). More research is needed to explore this.

Let us now turn to the arguments against including the “prime age” economically inactive (i.e. those who "could work" but left the labour market, not those in school or on a "normal" pension) into the labour reserves relevant for economic growth. Our first argument is a theoretical one. Those who left the labour market since the early 1990s are not a random but a so-called \textit{self-selected sample} of population. Thus, their labour market characteristics can be assumed to be worse than those in the labour force are. Moreover, in most cases their employability characteristics – human or social capital, etc. – have only deteriorated in time. In all, we have doubts whether it is reasonable to believe that those who left the labour market might later serve as an additional labour pool behind the economic growth. Let us now focus on this issue in the narrower context of \textit{discouraged workers} only.

\textsuperscript{22} Unless we introduce a steeply degressive tax system no social policy can encounter this worldwide phenomena of impoverished and less educated families having relatively more children. However, \textit{educational} policy could help: extending the official school leaving age (currently 16 years in Hungary) would increase the implicit costs of extra children.
First, a reason why economists should be, in principle, sceptical about the concept of discouraged workers being “the” group of people who – unlike other economically inactive individuals – left the labour market for economic reasons therefore are expected to return successfully when things improve. In any general model of labour market behaviour, intensity of job search – a criteria of being classified as in the labour market in the LFS – is a mapping between preferences, opportunity costs and estimated success probabilities. This is assumed to hold for all individuals – discouraged workers, however, are distinguished saying that they are the only ones who, after evaluating this complex mapping, were shied off intensive job search thus classified as inactive. By making this distinction between discouraged workers and the rest of the economically inactive (but, say, working age) population, we implicitly accept that the latter group has left the labour market for some clearly “non-economic” reasons. Economist, however, are not meant to think in terms of economic vs. non-economic reasons when thinking about labour market behaviour. As even the development of childbirth or disability benefits\(^\text{23}\) figures could successfully be explained in the context of a cost/benefit analysis, we cannot say that there is a clear distinction between economic and non-economic reasons behind leaving the labour market.

However, even in the face of these “theoretical” considerations, at a more empirical level the questions remain (1) whether it is possible to distinguish some out of labour force groups that would be the likeliest to return to the labour market when the cyclical conditions improve; and if so, (2) whether the current ILO-definition of discouraged workers can actually capture these groups. There are international studies on both issues (see OECD 1987 and 1995) providing robust answers to our questions. First, let us summarise the arguments justifying the distinction made among out of labour force groups. Sorting out the discouraged workers imply that they are in between the unemployed and the economically inactive in terms of how strongly they are linked to the labour market. Operationally, in the LFS this is measured by that discouraged would like to work, are ready to take up a job (like the unemployed) but are not looking for jobs (like the inactive) for “economic reasons”. If the distinction of discouraged workers is meaningful, it first implies, that their individual stories typically includes a lost job followed by a lengthy period of job search. Second, in cyclical recovery periods we expect discouraged workers to enter the labour market in a higher proportion and also with higher success probabilities than other out of labour force groups. Now, we can check if these empirical implications hold in the light of the two comprehensive OECD surveys.

The OECD studies conclude that they do not: although the number of discouraged workers is (weakly) pro-cyclical, it is generally not true that their relation with the labour market is stronger than that of other inactive groups. The reasons lie in the observation found in many countries that discouraged workers have very limited, if any, work experience and very short work histories (they have been out of job for many years for example). As a result, compared to the average of the economically inactive they are not more likely to enter the labour market, or, if entered, to get a job. So, international surveys cast serious doubts on the usefulness of the current concept of discouraged workers. As the Hungarian CSO does not publish data that would enable us to evaluate the labour supply behaviour of

---

\(^{23}\) While all heavy industry branches – traditionally main “producers” of disabled people – were in decline, by 1992 the number of people applying for disability benefits rose by 133% from 1985 in Hungary. As a result, 780 thousands people were on disability benefits in 1998, constituting a net rise of 44% since 1990.
the discouraged workers; we can not empirically examine if this conclusion is valid in the case of Hungary as well. Thus, accepting the OECD findings in general, we do not think that the current distinction between discouraged workers and other inactive groups is meaningful in the case of Hungary either. It, however, remains to be seen if there are some out of labour force groups whose labour supply is very responsive to business cycle conditions. In all, we see no empirical evidence behind the popular claim that discouraged workers constitute a relevant labour pool for economic growth in Hungary.
II. Labour Demand and Wages

In this paper we proxy labour demand by its realisation, that is, employment. The reason for this is that neither the LFS-based, nor the institutional survey based CSO employment and wages data permit the analysis of actual labour demand, i.e. the mapping between real wages and desired number of employees. One could argue in favour of using data on vacancies to approximate this. As the Hungarian vacancy data collected by the National Labour Centre (NLC) is based on number of vacancies officially reported by employers, it suffers from several problems making it difficult to interpret (for example, only a fraction of all vacancies is reported, and data is not updated so we do not know how long a vacancy exists). That is why we chose to use employment developments as a proxy for labour demand.

Unlike in the first part, in what follows we use the institutional survey data of the CSO both for employment and wages. The reason behind is that this is our only source of wage data as in the LFS wages are not reported at all. So, we found it convenient to use the same data-source for wages and employment in this section. The institutional labour data collection system of the CSO is based on a representative monthly survey of enterprises (with 5 or more employees in most cases) and non-profit organisations, with enterprises over 50 employees and all budgetary institutions surveyed comprehensively.

II.1. Employment developments

The development of employment is a prime candidate through which we tell both the story of the economic transition itself and its completion. Our data show that the transition period characterised by symmetric and idiosyncratic economic shocks is over; from the end of the 1990s cyclical movements and asymmetric shocks typical of “normal” economies will probably play the main role. Thus, in part II. we show stylised facts of both the transition period and the following more “normal” period of the Hungarian labour market.

FACT 6a. While overall employment had been shrinking until 1997, its composition has changed so that the shares of manufacturing and the public sector in employment had increased while those of private services and the agriculture had been declining.
Employment had been declining until 1997 in general (until 1996 in manufacturing); meanwhile its composition had changed somewhat. The share of manufacturing in employment has increased to over 28%, but the public sector (hence, the sector of all services) has also expanded. Let us now have a closer look at employment developments by its two main components, that is, blue and white-collar workforce.

* Source: CSO institutional survey.24

24 Unless noted otherwise, this holds for all data in this section.
The relative development of these two types of labour describes the full story of labour market transition. First, note that until 1996 employment had been declining in both categories and all sectors. Then take manufacturing: while its white-collar workforce has been shrinking throughout the whole period, its manual workforce has been steadily growing since 1996. This is a story of restructuring aiming to push up efficiency: while at the beginning of our period both white-collar (mainly the administrative) and blue-collar (mainly the unskilled) employment was declining, as this rapid transformation was over and the multinational companies took over, the industry started expanding implying a strong growth in skilled manual labour. This is a plausible story behind the strong manufacturing employment growth in Figures 18-19.

Employment in the sector of private services followed a different path: the decline in manual employment exceeded that of white-collar workforce. This can clearly be attributed to the technological-quality change in private services. It is also apparent that the size of both the blue- and the white-collar workforce has stabilised since 1997; and, especially at the end of our period, white-collar employment seems to be rising somewhat. However, even with this increase total employment in private services has not increased significantly. This will be of greater importance in the context of real exchange rate arguments later.

What is also interesting is that, though the level of public sector (i.e. budgetary institutions’) employment has generally been decreasing, this was concentrated in manual workforce – the decline in public sector white-collar employment was far less severe than that in other sectors of the economy. This difference was strong enough to result in a rise in the share of public sector in white-collar, hence, in total employment. We discuss this more in detail below.

**FACT 6b. The public sector has a dominant and rising share in white-collar employment.**

In the light of the asymmetric change in public sector manual versus white-collar employment it should not be surprising that, even after a decade of economic transformation and “marketisation”, most white-collar workers are employed by the state (here taken in the narrow sense: public administration, defence, social security, education, health and social work). If we include the aggregate of Other community, social and personal service activities including for example sewage and waste disposal, political and social organisations, recreational and cultural activities where a large proportion of employees are directly or indirectly publicly financed, the white-collar employment share of the public sector has increased to over 51% by 1998. We get even higher a share if we add companies in a dominant public ownership with a total of 190 thousands employees in 1998. Including all these directly or indirectly publicly controlled and financed areas; the white-collar employment share of the broadly defined public sector has risen to over 57% by 1998.

On one hand, this implies that we have to be careful when talking about independent or market-oriented social groups as 51-57% of educated people (or, white-collar employees) have weak and simulated, if at all, exposure to market forces in Hungary. On the other hand, the dominant weight of the public sector in terms of educated workforce might constitute a large potential labour pool for the private services. Although it is manufacturing that has dominated employment growth in Hungary in the recent period, we
expect private services to take over in the long run. As wage inflation in some – labour intensive – private services sectors is already very high (see more on this later), there are signs of bottlenecks emerging. So, a shrinking public sector white-collar employment would help to create a labour pool needed for private services expansion – a scenario more viable than that of based on the return of the economically inactive for example.

**FACT 7.** The share of manual workers in total employment has been rising in the private sector since 1997. Beyond this, there has been a compositional change both inside the blue- and the white-collar employment. Among manual workers, the use of skilled labour has been increasing relative to that of the unskilled; while for white-collar employment, the share of those with higher education and / or in management positions have been rising relative to those with secondary education in clerical positions.

Many analyse employment or wage developments in a blue-collar versus white-collar setting (compare wage growth in these categories, for example) using these as proxies for the underlying development in skills, for example. In what follows, we show that this distinction is in general meaningless.

**Figure 20.**

Evolution of the share of blue-collar to total employment by sectors*  
(percentage point change relative to the 1994.Q1 shares)

![Graph showing the evolution of the share of blue-collar to total employment by sectors.](image)

* In the small boxes we show the initial 1994.Q1 blue-collar to total employment shares.

Our data reveal that the share of blue-collar workers in total employment has been rising in manufacturing during the full period since 1994. As a result of this, the blue-collar share started rising in 1996 first in the private sector, then at the level of the whole economy as well. This might be puzzling for some if they assume that a natural outcome of the economic transition should be a declining, not a rising manual labour share. However, there are diverging trends within both the blue-collar and the white-collar categories explaining the evolution of the aggregate blue-collar share. These diverging trends are, for the blue-collar labour, a shift towards skilled manual labour, while for the white-collar segment, a shift towards non-administrative jobs involving higher education and management positions.
The main problem at this point is that while we get the branch-level wages data from the institutional survey of the CSO, that survey reports the overall blue-collar share only, that is, we do not know about the two diverging trends shaping it. So, we have to use LFS data going beyond the overall blue-collar/white-collar ratio to evaluate what is happening behind it. (Unfortunately, this data is available at the aggregate level only, i.e. not by branches or sectors.) Now we are going to examine the forces shaping the economy-wide blue-collar/white-collar ratio.

If one is to associate changes in the blue-collar/white-collar ratio with those in the corresponding relative wages, it must be clear what a movement in that blue-collar/white-collar ratio means in terms of the underlying skills or educational composition developments. For example, one has to be sure whether a rise in the blue-collar share implies a kind of de-skilling process (i.e. a shift toward less human capital-intensive technologies) or there is something else going on behind. What does shape this ratio? Ceteris paribus, a relative decline in the number of unskilled manual workers decreases the overall blue-collar ratio; while a relative decline in the number of clerical / secondary education white-collar workers increases it. So, when a transition process involves both, that is, when corporate restructuring implies a disproportionately large job loss for both the unskilled manual workers and the clerical white-collar workers, it becomes very difficult to interpret movements in the overall blue-collar/white-collar ratio as we do not know what lies behind. Let us now have a look at the evolution of the internal composition of both the blue- and the white-collar labour (Figure 20. below).

Figure 21.

Employment by major occupational groups* (1994.Q1 = 100%)

* Skilled manual labour consists of service, shop and sales workers; skilled agricultural and forestry workers; craft and related workers, plant and machine operators and vehicle drivers. Unskilled manual workers are those in “elementary occupations” with no skills required. White-collar labour with higher education and/or in managerial positions includes employees in jobs requiring a higher degree and all other employees in managerial, legislative and senior positions. Clerical white-collar workers are office workers and clerks in jobs requiring no higher education. Source: LFS employment data.
Our data show that employment has shifted towards skilled manual jobs (relative to unskilled manual jobs) and also towards white-collar jobs with higher education and/or management positions (relative to clerical jobs) – only the two advantaged occupational categories has suffered no net loss since 1994. The two “bad” occupational aggregates had steadily declining numbers, apart from the rise in unskilled manual jobs since mid-1997 which calls for some further research to explain (it can also be due to some data problems). In all, we have a transition process described earlier: it involves a disproportionately large job loss for the unskilled blue-collar and the clerical white-collar collar labour. Now, we will demonstrate the effects of this on the aggregate blue-collar to total employment share, that is, reveal what is going behind the observed evolution of the overall blue-collar share. We do this by producing two fictive blue-collar share data series, each assuming that job loss was even for (1) the unskilled manual, and (2) the clerical white-collar workers. That is, for these fictive curves we assume that there has been no composition change within the two broad employment categories (blue- and white-collar labour), only between them.

Figure 22.  
**The actual and the fictive blue-collar to total employment ratios***

![Graph showing actual and fictive blue-collar share data series.](image)

* Seasonally not adjusted data. *Source of original data: LFS.*

Comparing the actual to the two “fabricated” curves reveals that the uneven job loss among the clerical white-collar workers has increased the blue-collar share twice as much as the disproportionate unskilled manual job loss had decreased it since 1994. Although we do not have comparable data for 1998 there are no signs of this to be reversing or changing. Our calculations imply that any given percentage point rise in the overall blue-collar to total employment ratio is the net of one percentage point decline due to uneven job loss among the unskilled manual labour and a two percentage points rise due to uneven clerical white-collar job loss.

Although at the level of the national economy as a whole, we could assess the quantitative contribution of the diverging tendencies to the overall blue-collar/white-collar ratio it only
proved that, especially at a branch level\textsuperscript{25}, there is no clear interpretation of movements in the ratio. Thus, the usual interpretation of relative blue-collar/white-collar wage and employment developments lacks any empirical basis. The problem is that we do not know, especially at a branch level, that a change in relative blue-collar/white-collar wages has anything to do with actual pricing effects (such as a revaluation of human capital) or it is simply a result of compositional changes within the two broad employment categories. In all, the\textit{ empirical evidence is strongly against the popular interpretations of relative blue-collar versus white-collar wage or employment developments.}

Finally, let us have a look at how this story of changing occupational composition is reflected by our (LFS-) data on educational composition of employment Figure 23. below). As far as \textit{unskilled manual labour} is concerned, educational data confirms our conclusion as it shows that people with no more than finished elementary education (a maximum of 8 years in school) were the main losers on the labour market. The share of this group in total employment has declined from 28\% to just almost 21\% showing a close correlation with the curve representing unskilled manual labour above.

\textbf{Figure 23.} \\
\textbf{Educational composition of employment*} \\
\textit{(shares of educational categories in total employment)}

![Educational Composition Chart]

*Source: LFS data.

In the light of our findings on clerical white-collar employment it is a bit puzzling that those with 12-13 years of schooling (at most a secondary education) have not lost, but gained employment share since 1993. That is, developments in clerical employment can not be closely linked to developments in this educational category\textsuperscript{26}. Our data also reveal that, since 1997, the educational composition of employment has been stabilising, no major

\textsuperscript{25} Though the problem is also present at the aggregate level as our detailed occupational data comes from the LFS while the wage data from the institutional survey, and these two sources use totally different concepts on employment for example.

\textsuperscript{26} This might be a result of our definition of the “winner” white-collar group: it includes employees with a higher degree and also those in managerial / senior office positions. The latter groups includes people with secondary education as well.
changes have taken place during the last two years. This is the result of a labour market selection process: as those with the lowest (perceived) productivity within each schooling group have already dropped out of employment – and usually of the labour force too –, the incumbents now represent the highest productivity employees of these educational groups (or, those with more bargaining power). That is, our LFS-data suggest that the occupational restructuring part of the transition process is over now.

II. 2. Issues in Wage Development

The message of our discussion has so far concluded to that, using published macro-level CSO data only, there is no point setting up a fully-fledged analytical labour supply – demand model. Thus, in this section I will first focus on methodological issues. We will discuss the problem of irregular payments, of wage inflation measures, then some points of wage determination. At a branch-level, I will examine if economic branches show diverging wage level or wage inflation tendencies; if with stronger employment growth comes higher wage inflation; and finally some empirical propositions of the real exchange literature. I will mostly focus on the private sector only\(^\text{27}\) as public sector wages are, by definition, directly determined by the economic policy makers thus analysing it would require a detailed account of economic policy itself\(^\text{28}\).

I will also restrict my analysis on nominal wages, that is, I will not discuss developments in real wages or unit labour costs. This might be regarded as a serious shortcoming of a study focusing on the labour market with high and variable inflation rates and rapid productivity changes behind. However, controlling for inflation or productivity growth is still so elementary in Hungary\(^\text{29}\) that I think it is better to skip this issue – apart from a single graph below plotting real (consumption) wage developments.

\(^{27}\) Wage data is based on the institutional survey of the CSO described earlier. There is a difference in coverage by frequency: monthly private sector wage data exclude agriculture, while the quarterly data include it.

\(^{28}\) For an empirical study on public sector labour market developments see Kézdi (1998).

\(^{29}\) Although controlling for inflation is relatively easy in terms of consumption real wages based on the CPI, it is very uncertain in the context of production real wages as we have no good PPI data. Controlling for productivity would require branch-level data with at least a quarterly frequency on value added (or, GDP). However, while for manufacturing we can estimate (!) this using quarterly gross production and annual GDP data; for services we do not even have appropriate revenue data to start from.
By looking at Figure 24, we can see that the observed real wage rise in 1994 was followed by a sharp decline due to the accelerating inflation in 1995. The slow recovery since 1996 has resulted in a stable 2-3% real wage growth in the average of the private sector during 1997-98. At the end of our period we observe a stronger dynamics, but it was a period of surprise disinflation so, as most nominal contracts are fixed for shorter periods of time, this should not be interpreted as a longer run tendency towards higher real wage growth. As far as the sub-sectors of the private economy are concerned we see a consistently higher than average wage growth in the Other services and lower ones in manufacturing and retail and repairs services. A factor behind this high wage growth in the other services can be that this sector is relatively more intensive in educated white-collar labour thus faces a tighter labour market. It would be also interesting to look at the “transmission” of public sector wage developments to the private sector (and vice versa), but this is left for future research.

FACT 8. Due to a changing composition, in manufacturing average wages index was above, while in other sectors below the wage inflation measures during 1994-97. In 1997-98 however, the rising blue-collar to total employment share resulted in higher wage inflation measures compared to average wage growth.

The wage growth measure used by most analysts is based on the change in average wages. This change, however, can be a result of “real” behavioural (i.e. pricing) developments and changes in the composition of employment as well. It is clear that the latter so-called

---

30 For current developments in wages see issues of the Quarterly Report on Inflation of the NBH.
statistical composition effect should be filtered out as inflation in any kind of prices is, by definition, a change in the price level, that is, in the prices themselves, not in the “goods” behind. One obvious way to do this is by using a fixed employment composition index. Although it would totally control for the composition effect, there is a disadvantage to this method: as we go further in time, the initial employment composition becomes less relevant, that is, a fixed composition index might become “obsolete” in this sense. As a compromise, one can use a Laspeyres, Paasche or their combination, a Fisher-index, which only partially control for a changing composition but are not subject to this problem.

How do these wage inflation indices are expected to differ in practice? When between or within industry employment composition changes are such that the overall composition shifts towards groups with relatively higher wages (or higher wage growth rates) – for example, when the blue-collar/white-collar ratio is declining –, then a Laspeyres- or a combined Fisher-type wage inflation index will show lower, the Paasche-index higher earnings growth than that indicated by average wages. When the opposite occurs, for example, when there is a rise in the blue-collar/white-collar ratio, compared to the average wages index a Laspeyres- and the Fisher-indices will show a higher, the Paasche-index a lower wage inflation rate. Now, let us see how it works in Hungary.

**Figure 25.**

*Fixed composition, Laspeyres-, Paasche- and Fisher-type private sector wage inflation indices relative the average wage index*

(percentage points difference)

![Graph](image)

*The percentage points difference between the various wage inflation indices and the average wage growth index (all of the same month of previous year = 100 type). The fixed composition index is based on the 1994-98 average employment structure: we took within the industries the average blue-collar shares and, between the industries, average employment shares of each industry to total employment.

Figure 25. reveals first the extent and direction of the bias created by using the simple average wages index. As it happens, the difference between that simple index and our more

---

31 Using published CSO wage data we can only observe (thus control for) within industry changes in the blue-collar/white-collar labour ratios, and between industry changes in the employment shares of industries.

32 So, controlling for composition changes is similar in principle to controlling for quality change effects.
sophisticated wage inflation measures is probably within the sampling error band of the former. Although this implies that so far we have not committed a statistically significant mistake by using the average wages index, the whole issue remains important since unless we continue calculating the wage inflation indices we can not evaluate the distortion caused by a changing employment composition. Second, comparing our wage inflation measures reveals that the index based on a totally fixed employment composition strongly diverges from all the others in time. That is, it gets a bit obsolete, as its employment structure becomes irrelevant. Next, note that the Laspeyres-index indicates that, during 1998, we slightly underestimated earnings growth with the average wages index. This is also confirmed by the more evenly weighted Fisher-index. It seems to be that from the end of 1998 the usual average wages index will overestimate wage inflation due to the discussed rise in the employment share of blue-collar workers for example.

**FACT 9.** Our gross wages measure includes irregular payments besides the regular (basis or settlement) pay component. As the ratio of irregular to total payments, and the irregular payments growth rates are stable both in time and across branches, irregular payments do not seem to serve as primary means of adjustment to changing economic conditions on behalf of the firms.

The wages data collected by the CSO not only covers regular payments but includes irregular components (bonus, premium and supplementary payments, etc.) as well. For the sake of simplicity, let us call all these irregular payments as *bonuses*. We have branch level wages data split into regular versus bonus payments since 1995 in a quarterly frequency.

**Figure 26.**

*Contribution of bonuses to total wages by sectors*  
(bonuses as % of total payments)
Figure 27.
Seasonal pattern of bonus contributions by sectors*

* The quarterly values are averages of bonus contributions for the 1995-98 period and their estimated variances (over time).

There are two main characteristics of bonuses to note looking at Figures 26-27. First, the seasonality of bonuses in the private sector is fairly stable over time (i.e. similar in each year): the contribution of bonuses monotonically increasing from the first to the fourth quarter. The only change we observe in this respect is that the weight of the fourth quarter is decreasing over time while that of the first is rising. But this is not necessarily a behavioural change as the bonus in the fourth and next year’s first quarter might cover the same December payment sometimes administered next January. This seasonal stability is not present in the case of the public sector where the seasonal pattern of bonuses changes in a hectic fashion\(^{33}\). Second, looking at the tendency in the bonus contributions we see that it has no clear direction, i.e. the average contributions are neither increasing nor decreasing over time\(^{34}\). That is, since 1995 the significance of bonuses in total payments has not changed significantly.

However, we can re-compute wages data to control for the uneven distribution of bonuses by smoothing the bonus components by a moving average filter.

\[^{33}\text{This was of particular importance for example when the late 1998 and early 1999 public sector wage data came out, see the 1999 March Quarterly Report on Inflation of the NBH}\]

\[^{34}\text{Contrary to what was observed in the UK, see the Bank of England Inflation Report August 1998.}\]
Figure 28. shows the results of such an exercise. Our smoothed wage series still contain seasonality, but one due to more stable “natural” short cycles in economic activity. This is of greater importance when one is using simple seasonal differencing (a year on year index) to get rid of seasonality. However, as our bonus data starts in 1995 our exercise has an obvious disadvantage that the resulting data series is very short. Moreover, as we have no bonus data by occupational (i.e. blue-collar/white-collar) groups, in the smoothed series we can not really control for the composition effect. In all, examining bonus data is important for two analytical purposes. First, when there are strange developments in total average wages, we can check if they are due to the bonus component. Second, we can tackle the issue of whether firms adjust to a change in their economic environment via the bonus component of the wages they pay out. It seems to be that the answer to the latter question is a “No”, so let us discuss this issue more in detail.

The hypothesis to discuss is if bonuses have a *puffer* role in nominal adjustment. For example, in an expansionary period, firms can react to a wage push due to labour market bottlenecks by increasing wages mainly via the irregular components to avoid a longer run rise in the wage level. If so, branches with strong output or employment growth (such as machine manufacturing) should be characterised by a *rising trend* over time in the ratio of bonuses to total wages. Also, as not all branches has experienced an expansion (at the same time) during 1995-98, we should see an *increasing cross-branch variability* in this ratio. For obvious reasons we will focus on the private sector in the following.

We have already seen that there was no upward tendency in average bonus contributions during 1995-98 so let us focus on the second issue. Figure 29. below compares the three largest branches of manufacturing in terms of quarterly bonus contributions.
Figure 29.
Average quarterly bonus contributions by manufacturing branches*

* The quarterly values are *averages* of bonus contributions for the 1995-98 period and their estimated *variances* (over time).

We can see no significant difference between the expanding of machines and the other two branches with mixed or rather poor performance. So, even in the most dynamically expanding branch bonuses play a similar role to that in the others. The next graph (Figure 30.) shows that the cross-sectional (or, within-sector) variability of bonus contributions has been small and has not increased since 1995 in the main sectors of the economy.

Figure 30.
Relative variability of bonus contributions within the sectors* (% of the means)

* Variation of branch-level bonus contributions *within a sector*, % of their mean.
In all, our data does not support the hypothesis that bonus have played a *puffer* role between 1995-98. Of course, this can be due to the definition of irregular payments data: there might be irregular components playing an important role in economic adjustment but our data did not reveal it. So, further research along these lines might uncover it.

Now, let us focus on some popular hypothesis on wage developments in a cross-sectional context. We will first discuss if stronger employment growth has been accompanied by higher wage growth. Then we turn to issues arising from the real exchange rate literature.

**FACT 10. Stronger employment growth did not induce higher wage inflation during 1994-98.**

When we see that branches with a stronger employment growth can *ceteris paribus* be also characterised by higher wage inflation we suspect that labour market bottlenecks might have emerged in the sector in question. Such relative labour shortages emerge in principle when an expanding demand is constrained by inflexible labour supply, that is, when there is not a sufficient labour pool as there is not enough *readily employable* unemployed around.

Looking at Hungarian data we have seen that it is the manufacturing sector that has shown the most dynamic employment growth in the last years. Also, Figure 24. revealed that manufacturing can not be characterised be a relatively high wage inflation. However, it is better to focus on blue-collar workforce only where manufacturing employment growth has been concentrated.

**Figure 31.**

Relative wage inflation for manual workers

(% of whole economy manual workers wage inflation)

* Seasonally not adjusted data.

Our data reveal that blue-collar *manufacturing* wage dynamics has not systematically diverged from the average either, although manufacturing is the richest and most dynamically expanding sector in this occupational category. We also see that in *retail* and *repair* services, another expanding sector in manual workforce, wage dynamics has been
below the average in the last two years that might be due to the easy substitutability of manual workers there. These do not support the claim that, at the aggregate level of the published CSO data, employment growth has induced higher wage inflation during our period. It is, however, should not be concluded that this proves that there are no bottlenecks emerging in some sectors of the economy as the aggregation of data or the absence of controls for productivity differentials make our analysis very hypothetical only.

Let us finally turn to what empirical labour market propositions the real exchange rate literature in general implies. A standard way of reasoning, the one based on the so-called Harrod – Balassa – Samuelson effect goes like this: higher productivity growth in tradables (relative to nontradables) and the assumption of an integrated home labour market – resulting in equalising home wages – imply that nontradable prices inflation will be above the average, leading to a real appreciation of the currency (say on a CPI-basis). Proponents of the transition literature of this topic mention some additional factors explaining the tendency in transition economies towards real appreciation. For example, if the wage level in services (main component of the nontradable sector) was initially very low then a rapid services expansion brought about by the transition might lead to a relatively high wage inflation. Another hypothesis focuses on the difference between the wage level and productivity: if, during the transition period, market forces develop more rapidly in services than in the tradable sector then the excess of (nominally rigid) wages over productivity will first diminish in services via a higher services price inflation.

These theoretical arguments imply the following testable empirical propositions for the labour market. The standard argument is based on that (1a) nontradable and tradable wage levels tend to equalise. In addition, the transition literature states that (1b) nontradable wage inflation can be higher than the tradable because (2) services sector increases its demand for highly qualified labour and (3) services are more labour-intensive; and/or (4) before an expansion, initial wage level in services was relatively low; and/or (5) faster shrinking of product real due to faster “marketisation” in services. In what follows, we try to assess if these five main empirical proposition hold in Hungary.

---

35 In this section we are not discussing the actual real exchange rates models themselves. For a good reference on that see Obstfeld – Rogoff (1996), especially Ch.4. We will only touch on some labour market phenomena often cited in the literature in order to assess if they are valid in the case of Hungary.

36 At the practical level, we proxy the tradable sector with manufacturing and the nontradable with private sector services, although we are aware of the difficulties at this point.
FACT 11. Relative wage levels in the private sector show some weak divergence. The sector with the lowest wage levels, retail and repairs had the lowest wage inflation as well; while manual wages in manufacturing, from a relatively high level, increased relatively more rapidly.

Figure 32. shows relative wage levels by the two main occupational categories in the private sector. We chose to use the only available blue- versus white-collar distinction to control for between-sector composition differences to the extent that the published CSO data allows it. Although this is enough to avoid comparing average wages of a sector with say, an 80% manual share to another with 10%; we still have to be careful as even the same occupation group might cover employees with systematically different quality (i.e. productivity)\(^{37}\).

Our data reveal two important points. First, note how paths of the blue- and the white-collar wage levels are very similar across sectors. If manual and white-collar wages have very similar dynamics we expect that there are sector-specific factors shaping wage developments behind. This is especially valid in the case of manufacturing and the retail and repairs sectors where relative wage levels for manual and white-collar workers evolved parallel to one another. However, in the other services sector (private services excluding retail and repairs), rising relative white-collar wages were matched by a decline in the relative manual wages. This can be explained by the heterogeneity of this aggregate: it includes branches intensive in highly skilled white-collar labour (law, computer and business services) as well as branches depending on less educated manual workforce (hotels, catering, transport and storage services). So, the improving white-collar relative wage-position is due to the first group of branches, while the worsening manual position to the latter one.

\(^{37}\) Only micro-level or individual data could provide sufficient means to avoid comparing wages of people with different productivity, skills, etc. characteristics.
Second, Figure 32. also uncovers some weak divergence in the wage levels. In terms of blue-collar workers, it is manufacturing, while for white-collar workers, the other private services where wages tend to diverge from their respective private sector average. In the more recent years of our period it was the other services that showed increasingly diverging white-collar wages in particular. Hypothetically it seems to be that wages are strongly shaped by the extent of competition in any given sector. Although employment and productivity growth has been outstanding in the sector, manufacturing wage levels are diverged upwards from the private sector average by 1-2% only – due to its export market competition and strict ownership control. Also, a worsening wage position in the retail and repairs sector might be due to that it is increasingly dominated by the competing multinational chains, and also the easy substitutability of retail workers.

These tendencies in wage levels described above call for an examination of the relative wage dynamics itself. Our graphs below show relative wage inflation in the blue- and the white-collar segments.

**Figure 33.**

**Relative wage inflation for manual workers**

(% of the private sector manual average)
These figures confirm both the divergences seen in the levels before and the modest extent of it. In manufacturing, where wages were the highest, there was some divergence which, however, has stopped since 1996, especially in terms of manual wages. As far as the retail and repairs sector is concerned, although relative wage levels have been declining, wage dynamics are around the private sector average. The other services sector is, as noted several times before, an “outlier” in this respect: its already high white-collar wages showed much above the average growth. This might be, in our hypothesis, due to a weak competition in the sector and probably to some productivity developments.

In all, what can we say about those five main empirical propositions that have emerged from the real exchange literature? Proposition (1a) seem to hold, as there is no divergence in wage levels between the total of services (nontradables) and manufacturing (tradables). However, there is no convergence between them either – relative wages are fairly stable – which seem to contradict the integrated labour market assumption. More research is needed to clear this up. Note also that there is a clear divergence within the nontradable sector, between the branches of retail and repairs and all the others. Proposition (1b) seem to fail in Hungary as there is no higher wage inflation the total of the nontradable sector, although its non-retail part shows diverging dynamics. This latter observation can be well explained by proposition (2)-(3) as significant parts these services do have a technology intensive in highly skilled white-collar labour implying a tighter labour market. The actual mechanism behind these two propositions, namely that of significant labour flows into private services has not worked in Hungary as only manufacturing was expanding in our period. The initially low wage levels in proposition (4) could only be relevant for the retail and repairs sector, but even there a lower, not a higher wage dynamics was observed. Finally, proposition (5)

---

38 As for services, revenues are probably the only way to base a measure of productivity on, high profitability growth due to a weak competition is reflected in high productivity growth too.
seem to fail too, as market forces become stronger first not in services but in the manufacturing sector in Hungary.

The main conclusion is as follows: though wage growth was not higher in the nontradable than in the tradable sector, they have not equalised either; and, within the nontradable, some sectors showed strongly diverging tendencies.
Conclusions for economic policy

What policy conclusions can we draw from the stylised facts of the Hungary labour market collected in this paper? As far as unemployment is concerned, we have seen that a high and rising share of long-term unemployment and the declining substitutability between the unemployed and the employed seem to put Hungary into the continental European labour market model. So, economic policymakers should be aware of the hysteresis phenomena: any one-off shock resulting in a temporary jump in unemployment can have permanent effects leading to high unemployment for long periods of time. Unfortunately, with this kind of unemployment persistence the moderating effect of joblessness on wage claims or the labour pool role of unemployment all deteriorate in time. So, we can have the burden of joblessness without its “benign” effects directly on inflation or indirectly on economic growth.

Thus, the first lesson for monetary policy is that we have to be careful with tightening. The European unemployment story has a clear message that recessive policies, especially if too strong or last too long, might result in permanent changes in the level and characteristics of unemployment such that future output – inflation trade-offs will gradually deteriorate and become more complicated. The second lesson is that if we are already trapped by such an unemployment it can not be eliminated, or even significantly reduced by policies stimulating aggregate demand as unemployment of this kind becomes “structural”. Although in Hungary unemployment jumped to its highs in the early 1990s due to a transition shock, and has been steadily falling since then, the weight of the long-term unemployment and that of inactivity implies that these considerations are relevant for Hungary indeed.

What can economic policy do to avoid such a deterioration in the characteristics of the labour market? First, our discussion above implies that while aggregate demand policies can achieve very little, structural or supply-side polices have better odds. The final purpose of such policies would be to shape the cost/benefit relations behind individuals’ labour market decisions so that the substitutability of the unemployed and the employed does not decrease. For example, one should tackle the market failure phenomena that constitute barriers of job search or labour market participation on behalf of the jobless: informational problems, rigidities of the transport or housing markets, etc. Note that these are not typical labour market policies but indirect measures aiming to reduce costs of labour mobility taken in a broad sense.

Second, educational policy could play a crucial role by (re)defining its priorities and, if necessary, redirecting its means. A result of such a redesign could be that more emphasis be put on high quality vocational training. As economic growth and prosperity in Hungary is, at least in the short and medium run, clearly based on the performance of the manufacturing sector we need a greater pool of highly skilled blue-collar workforce to avoid labour market bottlenecks emerging. Hungary, for example, has put far greater emphasis on the public provision of higher education so far – the long debate and spectacular policy U-turns on higher education tuition fees for example have masked the fact that to get quality vocational training (especially its on-the-job component) one has to make huge individual pecuniary contributions in Hungary. That is, an implicit redistribution of resources hitting social groups more represented in vocational education than in higher education has been going on in the 1990s. This is worrisome to the extent that while there are significant white-collar
labour reserves in the public sector potentially available for a future private services expansion, we have no such a labour pool in skilled blue-collar workforce.

In all, as far as supply-side inflationary pressures are concerned, it is an insufficient pool of skilled blue-collar workers that constitutes a potential risk. Our macro-level data, however, suggest that bottlenecks in this labour market segment have not emerged so far. The outstanding wage inflation in private services excluding the retail sector and the low unemployment statistics for the educated indicate that there are bottlenecks already present for white-collar labour, which, combined with a weaker product market competition, constitute inflationary pressure. As the weight of the public sector is dominant in this segment of the labour market a shrinking public sector employment would help providing a labour pool for the expected expansion of private sector services.
References


OECD (1987), On the margin of the labour force: an analysis of discouraged workers and other non-participants, in *OECD Employment Outlook*


Appendices

Appendix A.

*Definitions of labour market categories used by the CSO – LFS*

<table>
<thead>
<tr>
<th>Economically inactive</th>
<th>Economically active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discouraged workers (passive unemployment)</td>
<td>Employed</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
</tr>
</tbody>
</table>

- Economically inactive = not active
- Discouraged workers (passive unemployment) = inactive, but would like to work and would be able to go to work within 2 weeks, but has not actively looked for work due to labour market reasons **
- Economically active = employed or unemployed
- Employed = worked min. 1 hr for income, or was only temporarily away from regular work
- Unemployed = not employed, but has actively looked for work during last 4 weeks, and would be able to go to work within 2 weeks

* all definitions refer to population aged 15-74 years.

** labour market reasons in the LFS are any of the following answers in the questionnaire: “the respondent has not looked for work actively because s/he says
- there are no suitable jobs around, or
- there are too many unemployed, or
- s/he lacks the relevant skills or education, or
- s/he is too young / old.”

Appendix B.

*Computing methodologically consistent LFS data series for 1993-1996*

The CSO changed both the sample and the methodology behind its LFS in January 1998: it calculates the unemployment, employment and inactivity numbers using an increased sample and the method of demographic projections. As the CSO revised the 1997 data only to make it consistent with the 1998 methodology, the earlier 1993-96 data were not comparable with the new ones. So, to avoid a structural break in these – in any case very short – data series we chose to correct the 1993-96 data to make it comparable with the new ones. The correction of the 1993-96 was based on the CSO-revision of the 1997 data: using the dynamics of the original 1993-1997 data and the revised 1997 estimates for all three labour market groups we projected back the original dynamics on the revised 1997 numbers to obtain the revised 1993-96 numbers. To be precise, for each of the employment, unemployment and inactivity series we followed the procedure below:

(1.) Take the published 1998.Q1-Q4. LFS data, and the yearly (same quarter in 1997) index indicating a change with a consistent methodology; 
(2.) calculate the 1997.Q1-Q4. revised numbers using this index. 
(3.) Take the original 1993-96 data and, for each quarter, calculate the factors that compare them with the relevant original quarterly number in 1997. That is, we get a fixed (1997) basis index of the dynamics of the original 1993-97 data series. 
(4.) Now, take the revised 1997 data and this index for the dynamics, and the revised 1997 quarterly numbers by this index for each quarter in 1996-93; 
(5.) and obtain the estimates in each quarter of 1993-96.

The graph below shows the result of this exercise for the unemployment series. Besides the published CSO and the above computed series we also include the result of the simplest correction solution, when we simply used the averages of the original and the CSO-revised 1997 numbers to get revisions for 1993-996.

**Originally published and corrected unemployment series**

(Thousands people)

* Source: LFS unemployment data and own calculation.
### Appendix C.

**Activity rates used in scenarios 1-4. for the activity rate projections**

#### Activity rates by age and sex groups (%)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CASE1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>16.3</td>
<td>70.1</td>
<td>87.6</td>
<td>87.9</td>
<td>87.2</td>
<td>83.5</td>
<td>79.8</td>
<td>69.4</td>
<td>40.9</td>
<td>11.0</td>
</tr>
<tr>
<td>female</td>
<td>13.6</td>
<td>50.7</td>
<td>56.6</td>
<td>67.2</td>
<td>73.6</td>
<td>78.9</td>
<td>73.2</td>
<td>53.0</td>
<td>14.0</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>CASE2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>16.0</td>
<td>80.0</td>
<td>89.0</td>
<td>91.0</td>
<td>91.0</td>
<td>89.0</td>
<td>87.0</td>
<td>75.0</td>
<td>58.0</td>
<td>18.0</td>
</tr>
<tr>
<td>female</td>
<td>14.0</td>
<td>55.0</td>
<td>58.0</td>
<td>66.0</td>
<td>69.0</td>
<td>77.0</td>
<td>74.0</td>
<td>64.0</td>
<td>30.0</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>CASE3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>15.0</td>
<td>90.0</td>
<td>90.0</td>
<td>95.0</td>
<td>95.0</td>
<td>95.0</td>
<td>95.0</td>
<td>80.0</td>
<td>75.0</td>
<td>25.0</td>
</tr>
<tr>
<td>female</td>
<td>15.0</td>
<td>60.0</td>
<td>60.0</td>
<td>65.0</td>
<td>65.0</td>
<td>75.0</td>
<td>75.0</td>
<td>75.0</td>
<td>45.0</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>CASE4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>15.0</td>
<td>90.0</td>
<td>90.0</td>
<td>95.0</td>
<td>95.0</td>
<td>95.0</td>
<td>95.0</td>
<td>95.0</td>
<td>80.0</td>
<td>75.0</td>
</tr>
<tr>
<td>female</td>
<td>15.0</td>
<td>60.0</td>
<td>65.0</td>
<td>75.0</td>
<td>80.0</td>
<td>80.0</td>
<td>80.0</td>
<td>75.0</td>
<td>60.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

---

### Appendix D.

**Planning-statistical regions of Hungary**

- Central Transdanubia
- Western Transdanubia
- Central Hungary
- Northern Hungary
- Southern Transdanubia
- Southern Great Plain
- Northern Great Plain

![Map of Hungary with statistical regions](image-url)
MNB Füzetek / NBH Working Papers:

1995/1 (november)
Simon András: Aggregált kereslet és kínálat, termelés és külkereskedelem a magyar gazdaságban 1990-1994

1995/2 (november)
Neményi Judit: A Magyar Nemzeti Bank devizaadósságán felhalmozódó árfolyamveszteség kérdései

1995/3 (február)
Dr. Kun János: Seignorage és az államadóság terhei

1996/1 (március)
Simon András: Az infláció tényleg 1990-1995-ben

1996/2 (június)
Neményi Judit: A tőkebeáramlás, a makrogazdasági egyensúly és az eladósodási folyamat összefüggései a Magyar Nemzeti Bank eredményének alakulásával.

1996/3 (június)
Simon András: Sterilizáció, kamatpolitika az államháztartás és a fizetési mérleg

1996/4 (július)
Darvas Zsolt: Kamatkülönbség és árfolyam-váralkoszások

1996/5 (augusztus)
Ökonometriai vizsgálat a részletes fogyasztói árindex alapján

1996/6 (augusztus)

1996/7 (szeptember)
Dr. Balassa Ákos: A vállalkozói szektor hosszú távú finanszírozásának helyzete és fejlődési irányai

1997/1 (január)
Csermely Ágnes: Az inflációs célkitűzés rendszere

1997/2 (március)
Vincze János: A stabilizáció hatása az árakra, és az árak és a termelés (értékesítés) közötti összefüggésekre

1997/3 (április)
Barabás Gyula - Hamecz István: Tőkebeáramlás, sterilizáció és pénzmennyiség

1997/4 (május)
1997/5 (június)  
Árvai Zsófia: A sterilizáció és tőkebeáramlás ökonometriaiai elemzése

1997/6 (augusztus)  
Zsoldos István: A lakosság Divisia-pénz tartási viselkedése Magyarországon

1998/1 (január)  
Árvai Zsófia - Vincze János: Valuták sebezhetősége: Pénzügyi válságok a ’90-es években

1998/2 (március)  
Csajbók Attila: Zéro-kupon hozamgörbe becslés jegybanki szemszögéből  
ZERO-COUPON YIELD CURVE ESTIMATION FROM A CENTRAL BANK PERSPECTIVE

1998/3 (március)  
Kovács Mihály András - Simon András: A reálárfolyam összetevői  
THE COMPONENTS OF THE REAL EXCHANGE RATE IN HUNGARY

1998/4 (március)  
P.Kiss Gábor: Az államháztartás szerepe Magyarországon  
THE ROLE OF GENERAL GOVERNMENT IN HUNGARY

1998/5 (április)  
Barabás Gyula - Hamecz István - Neményi Judit: A költségvetés finanszírozási rendszerének átalakítása és az eladósodás megfékezése  
Magyarország tapasztalatai a piacgazdaság átmeneti időszakában  
FISCAL CONSOLIDATION, PUBLIC DEBT CONTAINMENT AND DISINFLATION HUNGARY’S EXPERIENCE IN TRANSITION

1998/6 (augusztus)  
Jakab M. Zoltán-Szapáry György: A csúszó leértékelés tapasztalatai Magyarországon

1998/7 (október)  
Tóth István János - Vincze János: Magyar vállalatok árképzési gyakorlata

1998/8 (október)  
Kovács Mihály András: Mit mutatnak?  
Különféle reálárfolyam-mutatók áttekintése és a magyar gazdaság ár- és költség-versenyképességének értékelése

1998/9 (október)  
Darvas Zsolt: Moderált inflációk csökkentése  
Összehasonlító vizsgálat a nyolcvanas-kilencvenes évek dezinflációit kísérő folyamatokról

1998/10 (november)  

1998/11 (november)  
P. Kiss Gábor: A költségvetés tervezése és a fiskális átláthatóság aktuális problémái
1998/12 (november)
Jakab M. Zoltán: A valutakosár megválasztásának szempontjai Magyarországon

1999/1 (January)
ÁGNES CSERMELY-JÁNOS VINCZE: LEVERAGE AND FOREIGN OWNERSHIP IN HUNGARY

1999/2 (március)
Tóth Áron: Kísérlet a hatékonyság empírikus elemzésére a magyar bankrendszerben

1999/3 (március)
Darvas Zsolt-Simon András: A növekedés makrogazdasági feltételei
Gazdaságpolitikai alternatívák

1999/4 (április)
Lieli Róbert: Idősormodelleken alapuló inflációs előrejelzések
Egyváltozós módszerek

1999/5 (április)
Ferenczi Barnabás: A hazai munkaerőpiaci folyamatok Jegybanki szemszögéből
Stilizált tények