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Unemployment Insurance and Incentives in Hungary

JOHN MICKLEWRIGHT
and
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European University Institute, Florence

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ECONOMICS DEPARTMENT

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UNEMPLOYMENT INSURANCE AND INCENTIVES IN HUNGARY

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January 1995

Abstract

We investigate the effect of changes in unemployment insurance (UI) rules in Hungary on the outflow rate from the UI register. Existing claims to UI are "grandfathered" in Hungary when UI rules change - new rules are applied only to new claims and existing claims continue to be administered under the old rules. Entitlement periods to UI were cut substantially at the start of 1993 and using non-parametric methods we compare the outflow rate from claims beginning in January 1993 with those beginning in December 1992 - a total sample size of 80,000 claims. Differences in job exit hazards between the December and January samples are found for some work history groups but there are no sharp rises in the hazards before expiry of UI entitlement. Hazards of exits to labour market programmes do rise just before UI expiry. The results suggest the unemployed in Hungary to be fairly inelastic to changes in UI benefits.

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1. INTRODUCTION

A notable feature of the labour market in Hungary is the low outflow rate from unemployment, a characteristic in common with labour markets in several other Eastern European countries. The rise in registered unemployment to about 14 percent of the labour force in early 1993 resulted more from a very low outflow rate than from a high inflow rate. Inflows each month in 1992 were about 1.0 percent of the labour force - a level similar to that in several Western European countries (Boeri, 1994) - whereas only 5 percent of the unemployed stock left the register each month, a very low figure by Western European standards.

This situation poses two problems for those concerned with design of income support for the unemployed. On the one hand, the low outflow rate implies that a person's need for income support will on average last a long time, and well beyond the sort of period usually covered by unemployment insurance (UI) benefit. The data we use in this paper show that exhaustion of entitlement to benefit is the single most likely way for a spell of UI in Hungary to finish. Data from the labour force survey show that people unemployed over a year made up more than 40 percent of the unemployed stock by the Spring of 1994, up from little more than 10 percent at the start of 1992. Large numbers of unemployed then lack income support from the state altogether or they must rely on support from a social assistance scheme which until recently had received little attention from the Hungarian government (and which is much less generous than UI). By June 1994 the numbers of registered unemployed receiving social assistance equalled the number receiving UI, who made up little more than a third of the unemployed stock.

On the other hand the question arises of whether the low outflow rate is in part caused by disincentives present in the unemployment benefit system. The principal cause of unemployment in Hungary to date has surely been a sharp fall in output caused by demand and supply side shocks, with GDP falling by over 20 percent during 1990-93. However, a number of commentators have argued that the UI system in Hungary is generous both in absolute terms and relative to systems in other countries inside and outside Eastern Europe, with the implication that this

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has been a contributory factor to the emergence and the continuation of high levels of unemployment. The existence of a large informal economy in pre-reform Hungary - which has undoubtedly continued - fuels fears that the benefit system provides a substantial subsidy to this form of activity.

We have argued elsewhere that the Hungarian benefit system is more complicated than is often appreciated, making difficult both assessment of its generosity and comparison with other countries (Micklewright and Nagy, 1994). And allegations of large disincentives ignore the point that unemployment benefit in Eastern Europe was introduced *in order to permit* unemployment to emerge in economies where it had not previously occurred in open form. Nevertheless, the question remains of whether at the margin the benefit system in Hungary induces a low level of search behaviour. Data from the Labour Force Survey are suggestive - a third of unemployment benefit recipients interviewed in the third quarter of 1993 were not classified as unemployed in the ILO/OECD sense of both searching and available for work, although many of these were classified as discouraged workers.

Our aim in this paper is to try and produce more concrete evidence than has hitherto been available on disincentives within the Hungarian unemployment benefit system. In particular, we look at the extent to which differences in the speed at which people leave registered unemployment in Hungary are caused by differences in their UI benefit entitlements. Preoccupation with incentives might seem an issue of second order magnitude in the face of sharp drops in output during transition and the restructuring of the economic system. But at the very least the issue is worthy of attention so as to allow the income support role of the benefit system to be discussed more dispassionately. Moreover, there has been a steady fall in unemployment since its peak in the first quarter of 1993 (something true of both registered unemployment and unemployment defined on ILO/OECD criteria of search and availability - see Figure 1) and the weak recovery in 1994 may imply that attention to the supply side of the labour market should take on more relevance.

If the benefit system in Hungary has had a significant impact on behaviour, then we can expect policy changes in the last few years to have had a substantial

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effect. There have been repeated changes to the system since unemployment benefit was first introduced in 1989. The last major reform occurred in January 1993 when entitlement periods to unemployment insurance (UI) were cut by a third (the maximum falling from 18 to 12 months) and benefit amounts were also changed (in general reduced). It is on the effect of this change in UI rules that our analysis in this paper is focused.[1] The analysis is a simple one and exploits the fact that existing claims to UI in Hungary are "grandfathered" when the rules governing UI receipt are changed - the new rules are applied only to new claims and existing claims continue to be administered under the old rules. We compare exit rates from the UI register for claims starting in the month before and the month after the change in rules, this comparison providing a "quasi-experiment" (Meyer, 1988) of the effects of the UI changes.

Section 2 describes the features of the Hungarian UI system that are central to our analysis, including the key issue of the differences in the pre- and post-January 1993 rules. It also describes the data we analyse, which provide information on some 80,000 claims to UI. This large sample size offers the hope of pinning down any effects of the changes in benefit rules with some precision. In Section 3 we use non-parametric techniques to look at how the probability of leaving the register changes over a spell of UI, comparing claimants receiving under the pre- and post-January 1993 rules. The data allow us to distinguish exits to employment from exit to range of other states, including labour market programmes and this turns out to be an important distinction when considering UI effects. Section 4 concludes.

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1. In one sense the impact of the reduction of entitlement periods on the level of registered unemployment is obvious. It appears that less than half of those who exhaust UI qualify for means-tested social benefit and there is little incentive for the others to remain registered. So one would expect a reduction in entitlement periods to reduce the registered unemployed stock (albeit with a lag since changes affect only new claims) even if there were no change in behaviour. What we are concerned with shedding light on in this paper however are the behavioural changes that may result from cuts in the generosity of benefit.

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2. THE HUNGARIAN UI SYSTEM AND THE DATA FROM ITS REGISTERS

This section has two purposes. First, we need to provide the reader with sufficient information about the Hungarian UI system to understand the analysis of its effects that follows. Second, we have to explain the microdata from the administrative registers of the UI system that we use, and in doing so we focus on whether inflow samples drawn from immediately before and after the new rules were introduced on the 1st of January 1993 can be reasonably viewed as providing a "controlled experiment" of the effects of UI change. We refer to the rules applying before and after that date as the "92 scheme" and the "93 scheme".

Unemployment Insurance in Hungary

The Hungarian UI system is quite complex with substantial variation in entitlement periods and benefit formula (Micklewright and Nagy, 1994). Eligibility depends in the first instance on employment history in the four years prior to a claim. At least 12 months of work is required in this period in order to qualify for any benefit. The period of entitlement then depends on the length of the work record; 12 months work results in the minimum period and 4 years of work brings the maximum. Length of entitlement is a step function of the work record and there are 10 different entitlement periods in all (including the maximum and minimum). The January 1993 changes cut all 10 entitlement periods by one third. The minimum fell from 4½ months to 3 months and the maximum from 18 months to 12 months. Long entitlement periods are common in practice. In the sample we analyse, nearly two-thirds of claimants have entitlement periods at or near the maximum.

The level of benefit is a function of (unindexed) gross earnings in the four complete calendar quarters prior to the claim. The formula that is applied depends on the duration of unemployment. There is a more generous formula early in the spell - "period 1" - than in the latter part - "period 2". Period 1 lasted for the first

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two-thirds of the total entitlement period in the 92 scheme but since 1st January 1993 it lasts only for the first quarter.

The schedules relating benefit to earnings have the piece-wise linear formulae shown in Figure 2. Benefit in period 1 in the 1992 scheme was set at 70 percent of past earnings, shown by the thick solid line in the figure. If the application of this formula produced a monthly benefit figure less than the current minimum wage then benefit was set equal to the latter. But if the past earnings fall below the current minimum wage then benefit was set equal to past earnings. Maximum benefit was twice the minimum wage. The thick dashed line shows how the schedule was modified in period 2 when the formal benefit-earnings ratio was 50 percent. The January 1993 changes actually increased the formal benefit-earnings ratios in both period 1 and period 2 to 75 percent and 60 percent respectively but the maximum benefit in period 2 was reduced to about 1.7 times the minimum wage and a figure about 5 percent lower than the minimum wage was taken as the criterion for modifying the formula at the lower end of the distribution.

The higher incidence of unemployment among the lower paid and the lack of any indexing provisions for past earnings result in the bottom two pieces of the formula in each period determining the benefit of the majority of claimants. This may be seen from the arrows pointing to the horizontal axis in Figure 2. Using the data on the December 1992 and January 1993 inflow to the UI registers described below we calculated for each individual the ratio of his or her (unindexed) past earnings to the February 1993 minimum wage. The arrows show the bottom decile, lower quartile, median, upper quartile and top decile of this distribution. Nearly a half of the sample have earnings that would be sufficiently low for the provisions relating to the minimum wage in the 92 scheme to bind. About 1 in 5 have earnings that are less than the minimum wage. There are substantial differences in the position for men and women since the latter are on average lower paid and the domination of the low earnings provisions in their case is really striking (Micklewright and Nagy, 1994).

It can be seen from the above that the changes introduced in January 1993 were substantial ones and in general reduced the generosity of the UI system. The

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cut in the period of total entitlement by one third is the most obvious feature. If the actual spell of unemployment is short then the total benefit received in the spell can be higher in the 93 scheme on account of the increase in the formal benefit-earnings ratios in both periods. This would be true if someone with maximum entitlement period were to have a spell shorter than about 20 weeks. But beyond this point the increase in importance of period 2 in the 93 scheme would result in total benefit falling and the low outflow rate from the register means that the great majority of claimants have lower total benefit over a spell under the 1993 rules. A person exhausting UI under the 93 scheme after a maximum entitlement period of 12 months would have received total benefit by this time of about 10 percent less than under the 92 scheme rules under which of course there would also be a further 6 months of entitlement to run. Moreover, these calculations presume that the formal benefit-earnings ratios apply throughout. Figure 2 shows that those affected by the maximum benefit rule and by the formulae applying to low earnings would be unlikely to ever receive higher benefit under the 93 scheme.

What happens after UI exhaustion? This question is clearly critical to an analysis of the impact of changes in rules relating to the duration of UI entitlement. On exhausting UI an individual may apply for Social Benefit, eligibility for which depends on household income. The scheme is administered and paid for by local governments although recipients are obliged to remain registered as unemployed with the local employment office. Per capita household income must not exceed 80 percent of the minimum pension, a level equal to about two-thirds of the minimum wage. However, the amount of Social Benefit paid is not means-tested and is paid at a flat-rate equal to the value of this cut-off line (although local governments can pay more at their discretion.) The simple per capita adjustment used in calculating eligibility would appear to favour families with children although it should be noted that family allowance (which is generous in Hungary) is taken into account in the calculation. A married claimant with a spouse earning two-thirds of the average wage and with two dependent children would not qualify for Social Benefit and receipt seems likely to be restricted to those with large families where no other household member works. Given the large numbers of unemployed now receiving

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Social Benefit (which may also be claimed by those entering unemployment who have exhausted their UI entitlement in earlier spells) surprisingly little is known about its receipt. Less than 50 percent of UI exhausters are thought to qualify and we show below that termination of UI will typically lead to a big drop in benefit income for those that do manage to qualify, which is not surprising given the level of Social Benefit in relation to the minimum wage.

Data from the UI Registers

To enable us to focus on the effects of the introduction of the 93 scheme we use data relating to persons with new spells of benefit recorded in the UI registers as starting in December 1992 and January 1993. We start with the complete inflow in those months, which is 100,392 individuals - about 2¼ percent of the economically active population aged 20-59. From this sample (we use the word for convenience although we have the inflow population in the months concerned) we discard two types of persons. The first are those who quit their last job voluntarily. Quitting led to a 3 month delay in UI receipt under the 92 scheme and 6 months under the 93 scheme. Our January sample should therefore contain no spell of benefit starting under the 93 scheme as the result of a quit. The data for both December and January contain UI spells administered under the 92 scheme relating to claims for benefit made in the Autumn of 1992 but we discard these so as to achieve a sample for December 1992 which matches that for January 1993 as closely as possible. For the same reason we discard those receiving statutory severance pay prior to UI. This also delays the start of UI payments (from 1 to 6 months depending on the work record) and again means that no spell of UI following a period of severance pay and administered under the 1993 rules should be found in our January data. As a result of these two decisions we discard more than 25 percent of spells administered under the 1992 rules (in about three-fifths of cases due to severance pay).[2] We are left with a sample of 80,711 spells, all relating

2. For reasons that are not clear here are in fact a few spells under the 93 scheme of benefit following severance pay or a voluntary quit. We discard these spells as well.

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to people who lost their job and who did not receive statutory severance pay. Of these 50,441 are administered under the 92 scheme and 30,270 are administered under the new rules operating from 1st January 1993.

The 92 scheme sample is the substantially larger one. Is it possible that people who would otherwise have entered the register in January 1993 made their claim to UI in December 1992 in order to benefit from the more generous set of rules in operation at that time? If so *and* if the people concerned had a lower desire to leave the register then we would be unable to tell whether differences in the speed of return to work between 92 and 93 scheme people were due to the lower taste for work of the former (or, of course, some other unobserved difference between the two groups) or the reduced benefit entitlement of the latter.

In considering this issue we need to remember that the individuals under investigation are all officially job losers rather than quitters, although of course some may have volunteered for redundancy. This must limit the extent to which they can control their date of registering a claim to benefit. In the first instance this obviously depends on the date of job loss which may be entirely out of their control. Following job loss the date of claim to UI is however an individual decision and the 92 scheme people are in fact somewhat quicker at registering their claims - see columns 1 and 2 of Table 1. The median lag from the date of job loss is only 2 days for them and the upper quartile 9 days, compared to 7 and 33 days for the 93 scheme claimants.[3]

Awareness of the introduction of the change in the rules of the UI system at the end of 1992 is difficult to judge. The amendment to the relevant employment law was made as late as December 23rd but the main measures, including the changes in entitlement periods, had been discussed within the Ministry of Labour since at least September (although there had been substantial uncertainty

3. If a shorter lag signifies a greater willingness to live on benefit then these differences would still be a concern even if there had been complete ignorance of the imminent change in the benefit rules among those becoming unemployed in December 1992. Those with less desire to live on benefit would have got caught by the change in the rules and the December and January inflows would still differ in their mix of people with higher and lower propensities to remain on benefit.

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surrounding the date the new measures would be introduced). At least one mass circulation daily newspaper announced the substance of the forthcoming changes (but not of course the date they would be effective) in October. It is possible that some enterprises shedding staff in December may have warned their employees of imminent changes and advised them to claim quickly.[4]

As far as the size of the two inflows are concerned, it is - surprisingly - impossible to establish from published figures whether or not the December 1992 inflow was abnormally large. Monthly inflow figures published by the National Labour Centre are from the 20th of one month to the 19th of the following month and they do not record entrants reported late by local employment offices, which appears to result in a substantial under-estimate of the inflow (Micklewright and Nagy, 1994a). Enterprises may only make large layoffs with prior notification to the Ministry of Labour of one or three months (depending on the numbers of involved). Given the uncertainty surrounding the date of introduction of the new benefit rules it seems unlikely that layoffs in December 1992 were substantially affected by the introduction of the new scheme. The tax year coincides with the calendar year in Hungary and this may be one reason for enterprises shedding more staff in December than in January.[5] It should be noted that the majority of those on the 93 scheme actually lost their jobs in December, rather than January - 61 percent have a last date of employment in December and among these nearly half lost their jobs on the last day of the year.

Table 1 compares a number of observed personal characteristics of the 92 scheme and 93 scheme samples, a comparison that is in any case important when interpreting any non-parametric analysis of the spell data that does not control for observables. Columns 1 and 2 relate to the full sample (obtained after the selection rules given above). The gender composition is virtually identical, men making up

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4. Large enterprises do appear to keep abreast of changing legislation affecting unemployment benefit. A local employment office manager told us in October 1994 that he had heard of new draft changes to the unemployment benefit system from an employer and not from head office!

5. Checking a sample of the stock of UI recipients in March 1992 we find that entry in December 1991 was substantially more common than in January 1992.

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over two-thirds of the inflow, and there are only slight differences in educational level, manual/non-manual status, average age, and average base period earnings. There are rather larger differences in the geographical breakdown of the two groups. The biggest differences are for the two areas with the lowest and highest unemployment rates, the capital Budapest city and the county of Szabolcs in the north-east of the country. The former is much more strongly represented in the 93 scheme sample and the latter in the 92 sample. Looking at several other months of inflow data it seems that the representation of these two counties in the 93 scheme inflow is the more typical. However, when we divide the 20 Hungarian counties into two groups on the basis of the outflow rate from the register in the summer of 1992, the composition of the 92 and 93 scheme samples in terms of high and low outflow counties is very similar. The incidence of an earlier spell of UI in the register records (this can be at any time since 1989) is somewhat higher in the 92 scheme sample. (The quite high incidence in both samples - around 30 percent - is of some interest and shows that as in Western labour markets there is a significant degree of recurrent unemployment in Hungary.)

The last characteristic considered in Table 1 is employment history, where we have grouped the first 8 of the 10 periods into two (12-27 months and 28-44 months). Those with a history of continuous work in the four years prior to claiming benefit obtain the maximum entitlement, and this is easily the modal period for claimants under both schemes. But the maximum is notably more common among 92 scheme claimants, applying to 43 percent of men and 52 percent of women compared to 36 percent and 40 percent respectively under the 93 scheme. (The contrast between the schemes is rather less marked if we also include the group with the next best work history.) It is difficult to know how to interpret these differences. It might be argued that those with the best work history had the biggest incentive to register a claim under the 92 scheme and what we are seeing in Table 1 is consistent with income-maximising claim behaviour. On the other hand, all entitlement periods were longer by the same proportion under the 92 scheme. Columns 3 and 4 in Table 1 compare the characteristics of claimants in this modal work history group.

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Differences in the speed of claim are somewhat smaller than in the full sample, while differences in occupation, education and county are slightly bigger.

Are these differences in characteristics of 92 and 93 scheme claimants greater than those we would expect from looking at the inflow in a pair of consecutive months when there was no change in the UI rules? We also have data from the inflow in April and May 1994 (from which we again exclude those with severance pay and voluntary quitters).[6] The differences between the characteristics of claimants in these two months are small. Notably, differences are also small between geographical distribution and work histories in the April-May 1994 samples in contrast to the December 1992 and January 1993 samples. For example, the proportions with a maximum entitlement period differ by only 2 percent points compared to 9 points with the earlier pair of months. Of course, the comparisons may be affected by the seasonal difference. A better comparison would be between December 1991 and January 1992, which would also have the advantage of spanning a change in tax year.

It is clear that the December 1992 and January 1993 inflow samples differ in several respects, although are very similar in others. On balance we think it unlikely that the former contains a disproportionate number of persons with a high propensity to stay on benefit, who made sure that they claimed under the more generous 92 scheme.

To complete our description of the data, Table 2 provides some information on the levels of UI benefit in payment. The first part of the table shows benefit in period 1 and period 2 as a percentage of previous earnings, where the latter are the earnings during the relevant base period used to calculate benefit but indexed to January 1993. Period 1 lasts for the first two-thirds of the benefit period in the 92 scheme but only the first quarter in the 93 scheme. Both benefit and earnings are gross. (The effect of personal income taxation on the comparison is not obvious and is discussed in Micklewright and Nagy, 1994.) The adjustment of the basic benefit-earnings formula for low and high earnings together with wage inflation during the

6. The April data record spells of benefit starting only after the 9th of the month.

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base period (and in any lag before entry to unemployment) means that the "standard" period 1 rates of 70 percent in the 92 scheme and 75 percent in the 93 scheme are a poor guide to replacement rates faced in practice. Median period 1 replacement rates on the 92 scheme are 59 percent for men and 68 percent for women - more women being affected by the rules governing low earnings. The median is notably higher for men on the 93 scheme but not for women.

Viewed relative to previous earnings, UI benefit may appear quite generous for the majority of claimants. In absolute terms the benefits are much less generous. The minimum wage, which played a big part in the determination of benefit for many unemployed people in the 92 scheme, was about equal in December 1992 to the per capita minimum subsistence income level calculated by the Hungarian Central Statistical Office for a 2-adult/2-child household. Of course, this also illustrates the low living standards provided by jobs at the bottom of the earnings distribution.

The bottom part of Table 2 gives information on the ratio of UI benefit in period 2 (net of the 6 percent social insurance contribution levied on the unemployed) to the level of Social Benefit paid in January 1994 (the time when the modal work history group on the 93 scheme would exhaust UI). The calculation is made for all claimants in the sample and not just those who actually exhaust UI entitlement. The table shows the distribution of the drop in benefit income that would be experienced were all the sample to qualify for Social Benefit. In reality less than a half of those who do exhaust UI would probably get this form of benefit. UI in period 2 exceeds the Social Benefit level by over 40 percent for more than 90 percent of the sample and by over 50 percent for more than half. Broadly speaking, we can say that about half of people exhausting UI will not qualify for Social Benefit and among those that do about half will lose at least a third of their benefit income. The exhaustion of UI therefore has considerable consequences for benefit income in the majority of cases.

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3. SPELL DURATIONS AND EXIT RATES - NON-PARAMETRIC ANALYSIS

If the 92 and 93 scheme samples are sufficiently similar in observable and unobservable characteristics then differences in spell durations between claimants on the two schemes should be the result of different entitlements to benefit. The shorter entitlement periods of the 93 scheme should exert a downward pressure on reservation wages and in addition have a positive effect on search intensity. It is worth noting that the individual is fully informed of his or her benefit entitlement after a claim had been decided upon by the local employment office; national guidelines require local offices to inform the claimant in writing of the level of benefit in both period 1 and period 2 and of the day that entitlement will expire.

Each spell in the data is traced through the administrative registers of the UI system until it finishes through an exit to a job, a government labour market programme, exhaustion of entitlement to UI, or some other reason. Investigation of local office practices indicates that the exit state coded on each spell is very reliable and in only a few cases is the state unknown (those labeled as censored in Table 3). The distribution of exit states is shown in Table 3. Exit to a job is the most common outcome overall but there is a big difference in its importance for men and women - nearly a half of men on both the 92 and 93 schemes leave to a job but only one third of women, for whom exhaustion of UI entitlement is the single most common way of leaving the register. (Taking 93 scheme claimants of both sexes together, exhaustion is the most common form of exit overall and this is the basis for our comment on the frequency of exhaustion in the Introduction.) Some form of labour market program (including early retirement) accounts for nearly 1 in 10 exits. The fact that the job exits are almost as common for 93 scheme claimants as for 92 scheme claimants, despite their shorter entitlement periods, is of some note although exhaustion is certainly more common on the 93 scheme.

In comparing the speed of exit of claimants in the two schemes we divide the sample into the four groups of work history identified in Table 1.

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Continuous employment history

We start with the modal group of continuous employment in the last four years, which brings a maximum entitlement period to benefit. Everyone in this sub-sample had continuous employment in the 4 years prior to the claim. Survivor functions are shown in Figure 3. The functions finish at the end of the entitlement periods to benefit, 360 days for the 93 scheme and 540 days for the 92 scheme.[7]

We see immediately that the survivor functions for both men and women on the 93 scheme lie well below those for 92 scheme claimants - people receiving under the 1993 rules move off the register more quickly than those receiving under the 1992 rules. At the one year point, when entitlement ceases under the 1993 rules, only 32 percent of men in the 93 scheme were still receiving UI while 47 percent of their counterparts under the 92 scheme were still in the register - nearly half as many again. Among women, 45 percent of 93 scheme claimants survive to one year whereas 57 percent of those on the 92 scheme are still receiving UI at this point. The comparison of the survivor functions for men and women reflects what we saw in Table 3 - women leave the register more slowly and are much more likely to exhaust UI.

At first sight the sharply contrasting rates of survival in the register for 92 and 93 scheme claimants seems strong evidence in support of the hypothesis that the shorter benefit period (and somewhat lower benefit level) faced by the latter increased their intensity of search and/or reduced their reservation wages. However, closer inspection of the survival functions casts some doubt on such a simple explanation for the observed differences. In particular, the male survivor functions diverge sharply at an early point - at around 70-90 days - and thereafter run roughly parallel to each other. It is difficult to think of why benefit-induced differences in behaviour of claimants on the two schemes should be concentrated so

7. The survivor functions are estimated with the usual Kaplan-Meier method, which ensures that the small amount of spell censoring in the data does not affect the estimates.

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early in the spell when even under the 93 scheme there was still some 9 months of benefit entitlement to run.

Figures 4a-4d shed more light on the issue by looking at the empirical hazards. These diagrams give the probability of leaving the register to go to a job (Figures 4a and 4b) and any other register exit (Figures 4c and 4d) in a given interval of time conditional on surviving all risks of exit up until the start of the interval. The intervals are defined as two weeks long. Figure 4a shows an enormous surge in the job hazard for men on the 93 scheme just before the three month point, the hazard increasing some four or five-fold from its average level in the first few weeks (or that around the six month point). (This increase is highly significant, the 95 percent confidence interval around the peak of 0.0086 is from 0.008 to 0.0093.) There is also a rise for men on the 92 scheme at the same point in calendar time (on average the 92 scheme men entered the register about 30 days earlier) although it is notably lower - about half that of the 93 scheme hazard. From this point onwards the hazards are very similar, although the 93 scheme hazard remains a little higher.

The second point to note from Figure 4a is that there is little apparent rise in the 93 scheme hazard as the point of exhaustion of entitlement at one year draws near. This is true both in relation to the hazard for claimants under the 93 rules in earlier periods (which could be explained by seasonal factors in late 1993) but also in relation to the hazard for 92 scheme claimants over the same period. In the final two week period there is a slight upturn in the 93 scheme hazard that we do not see for the 92 scheme. The difference is significant but it is very small. Similarly, there is no surge in the hazard for 92 scheme claimants just before their entitlement expires 6 months later at the 18 month point. We cannot tell whether the steady gradual rise in the hazard during the first half of 1994 for these claimants is benefit-induced due to the approaching end of entitlement or whether it is due to an upturn in the labour market.

It seems likely that seasonal factors combined with an exceptional increase in hiring by employers is the principal cause of the surge in the male job hazard at around the 90 day mark. (The rise seems exceptional since there is no similar sized

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increase a year later for the 92 scheme claimants who are still on the register, although this may represent a sorting affect.) The stock of registered vacancies hit a three-year high in Spring 1993 and reached the highest level yet recorded in the 1990s, before falling back substantially in the rest of the year. (The change, as opposed to the level, does seem seasonal however; vacancies rose 50 percent between January and May 1993 and 125 percent and 25 percent between the same two months in 1991 and 1993 respectively.) Figure 5 shows the outflow rate to jobs from the *stock* of UI recipients during March 1992-December 1993. The outflow rate increased almost three-fold between December 1992 and April 1993, the latter date seeing the highest monthly outflow rate during the 19 months in the diagram. In other words, the outflow rose sharply for *all* UI recipients at this time and not just for the December and January inflow cohorts that we investigate in this paper. Looking back at Figure 1 we see that this is the period when unemployment began to fall in Hungary.

There remains the issue of why the 93 scheme hazard increases more sharply in Spring 1993 than that for 92 scheme claimants and it seems unlikely that it is associated with their shorter period of entitlement to benefit.[8] The three month point is the time at which the more generous period 1 finishes for those with maximum entitlement but it is difficult to think of an argument explaining what we see that involves this. The formal benefit-earnings ratio at this time is higher on the 93 scheme than on the 92 scheme and it falls at the three month point rather less than that at the (later) switch from period 1 to period 2 under the 92 scheme. This leaves the possibility that the 93 scheme claimants have characteristics that on average allowed them to benefit more from the upsurge in demand at this time, although we have seen in Table 1 that in terms of observable characteristics the two groups are quite similar. One characteristic we cannot control for is being on temporary layoff. It is possible that a greater proportion of men with a continuous

8. It might be argued that the 1993 scheme claimants perceive the Spring of that year as being their only chance of benefiting from a favourable seasonal upswing in demand while those on the 92 scheme perceive that they have a further chance the following year before their benefit expires, but this seems very far-fetched.

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employment history who enter the registers in January were on temporary layoff than those entering the register in December and that the upswing in the labour market in Spring 1993 led to higher numbers of 93 scheme claimants being recalled.

Figure 4b shows the job hazards for women and we draw attention to the difference in vertical scale from Figure 4a. The hazard for 93 scheme women lies everywhere above that for the 92 scheme, in general being between 10 and 50 percents higher. Note that there is a much smaller rise around the 3 month point, of about 50 percent for the 93 scheme claimants compared to other periods. Whatever happened in the Hungarian labour market in Spring 1993 seems to have favoured the job prospects of unemployed men with good work histories much more than unemployed women.

Figures 4c and 4d show the hazards of exit to the other labour market states described in Table 3 for men and women respectively (in this case the graphs have the same scale). These include various active labour market programs of subsidised work and training together with normal and early retirement. For both men and women the other exits hazard jumps at 180 days since it is at this point that eligibility for various labour market programmes begins and those within 3 years of normal retirement age become eligible for early retirement (the decision to allow early retirement is at the discretion of the local employment office). The 93 scheme hazards are in general somewhat above those for the 92 scheme. Hazards for both schemes and both sexes rise sharply and significantly just before the exhaustion point (less so for women on the 93 scheme). This suggests that both claimants and/or local employment offices look harder for available labour market programs when benefit entitlement is close to expiry, although it should be noted that the rises in the hazards at this point are not enormous and the great majority of those leaving the register at some time to go to labour market programmes are not leaving just before UI exhaustion.

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Employment history of 44-47 months

Figure 6 and Figures 7a-7d give survivor and hazard functions for claimants with 44-47 months work in the previous 4 years - a group that make up a fifth of the sample (the most numerous group after those with a continuous employment history). There are some marked differences from the graphs for the continuous employment history group. Looking first at the survivor functions, which in this case end at the slightly shorter entitlement periods of 330 days and 495 days, we again see a big difference between men and women that emerges early on. This is of course what we saw in Figure 3 but in Figure 6 the values of the survivor functions for both sexes at the point when benefit expires in the 93 scheme are almost identical for 92 and 93 scheme claimants. Comparison with Figure 3 shows that it is the survivor functions *of the 92 scheme claimants* that are different in this case. Whereas 93 scheme claimants in the two work history groups - 48 months and 44-47 months employment - leave the register at more or less the same speed as each other (something true of both sexes) the 92 scheme claimants with continuous work history leave the register much more slowly than those with a small interruption in their work record (or those too young to have worked 4 complete years).

The hazards in Figures 7a-7d again shed more light. The job exit hazards for men (Figure 7a) on the two schemes are virtually identical when one bears in mind that the 92 scheme men enter the register a month earlier (so they are "hit" by the Spring surge in outflows a month later). And they are also very similar to that for 93 scheme claimants with continuous work history shown earlier in Figure 4a, underlining the fact that it is hazard of the 92 scheme continuous work history group that is exceptional. The peak of the job exit hazard for women is higher on the 92 scheme than on the 93 scheme. And, as for the continuous employment history group, for neither sex is there a jump in the job exit hazard shortly before expiry of UI entitlement, although we again see increases in the other exits hazard on both schemes at this point. The conclusion for this employment history group seems to be that the introduction of the 93 scheme had no effect at all on the job exit hazards but in somewhat hastened the other exits.

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Employment history of up to 43 months

Figures 8 and 9 show the survivor functions for the remainder of the sample who all have shorter employment histories.[9] We have grouped the eight work history periods concerned into two, 28-43 months and 12-27 months. In both cases the survivor functions for the 93 scheme lie somewhat below those of the 92 scheme and in the case of the 28-43 months group we again see evidence that the upturn in the labour market in Spring 1993 benefited men more than women. The job exit hazards are shown in Figures 10a-10d. Figure 10a shows quite clearly that once we have taken into account the one month earlier entry of those receiving under the 1992 rules, the job exit hazards of 92 and 93 scheme claimants with 28-43 months employment are very similar - the 92 scheme group being affected by the "Spring surge" one month later, this accounting for the relative positions of the survivor functions in Figure 8. The same appears to apply (although with somewhat less clarity) for women in Figure 10b and for men with 12-27 months employment history in Figure 10c.[10] Again, the conclusion for these employment history groups appears to be that the introduction of the 93 scheme had little effect on job exit hazards.

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9. The survivor functions in both Figures 8 and 9 (and the hazards in Figure 10) are estimated using groups with various entitlement periods and we treat UI exhaustion as censoring when obtaining the estimates.

10. It should be noted that standard errors of the estimated hazards are quite large in some instances in Figures 10a-10d. For example, the hazard of 0.0039 in the last fortnight of entitlement for men with 12-27 months employment on the 93 scheme has a 95 percent confidence interval of 0.0026-0.0053 and that for women of 0.0037 has an interval of 0.0019-0.0055.

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Summary

The following points seems clear from the non-parametric analysis of the data.

- For most employment history groups we have found little or no evidence that the introduction of the 93 scheme raised the job exit hazard when we take into account the slightly later point at which 92 scheme claimants encountered the increase in labour demand in the Spring of 1993.
- The speed of return to work is only markedly higher on the 93 scheme claimants compared to 92 scheme claimants for individuals with continuous employment histories, but For men, the hazards diverge sharply only early on in the entitlement period, which is not easily explained by an incentives story. One possible explanation that may contribute to this pattern is that the 93 scheme claimants had a higher recall probability to the previous job, but at present this must remain speculation.
- There appears to be very little rise in the job exit hazard near the time when benefit expires. In short, there is no evidence that large numbers of claimants are putting off taking a job until just before their UI entitlement runs out. Of course, it is an open question as to what happens after UI expiry. The possibility of Social Benefit following exhaustion of UI entitlement, albeit paid at a substantially lower rate than UI, may be one reason for the lack of any sharp rise in the hazard as UI expiry draws near. It may also help explain the apparent lack of much impact on job exits from the introduction of the 93 scheme. It should however be born in mind that Social Benefit is probably received by only about half of UI exhausters.
- The exit rate to other labour market states (including subsidised employment) is typically a little higher for 93 scheme claimants and does rise just before the exhaustion point for claimants on both schemes. This suggests that the introduction of a shorter UI entitlement period in 1993 did bring forward the point at which some claimants apply for participation in labour market

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programmes or local employment offices offer such programmes to claimants, although the numbers involved are small.

Our analysis has been predicated on the assumption that comparison of 92 and 93 scheme samples drawn from around the time of changes in the UI rules provides a "natural experiment" of the effects of the changes. We showed in Section 2 that the observed characteristics of the two samples were reasonably similar and we argued that it was unlikely that a disproportionately large number those with a higher propensity to stay on benefit managed to claim under the more generous 1992 rules. If we are wrong then we should see higher hazards for the 93 scheme claimants. The fact that we do not in general find large differences between the hazards of claimants on the two schemes is therefore some evidence against the hypothesis that there was widespread income-maximising claim behaviour at the time of the changes in UI rules.

4. CONCLUSIONS

In this paper we have looked at whether differences in the speed at which people leave registered unemployment in Hungary are caused by differences in their UI benefit entitlements, focusing on the effect of major changes in the UI system in January 1993 which substantially reduced entitlements. Broadly speaking, we find that the introduction of the new rules was not associated with large increases in exit rates from the UI register that are easily explained by a story of increased incentives to find work or to move off the register to other destinations. So the conclusion would appear to be that the unemployed in Hungary are rather inelastic to changes in UI benefit system parameters.

The work we have presented has been simple non-parametric analysis of administrative data from UI registers. These data have their advantages (large sample sizes and precise measurement of benefit entitlements) but any more definite conclusions about unemployment benefits and incentives to work in Hungary must await further analysis of alternative data sources. We need to

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observe claimants after the point of UI expiry when we know whether they have qualified or not for Social Benefit, a form of income support for the unemployed in Hungary about which far too little is currently known. We need data that provide information on the household characteristics of claimants and on other sources of income. One aspect of this - which will be very difficult to obtain information on - is the involvement of the unemployed in the informal economy. Anecdotal evidence suggests this is quite common and the existence of significant income from this source may be one reason for changes in UI rules to have little effect. This said, the main finding of this paper may be thought rather unsurprising given the broad economic picture so far in Hungary during transition and the principal reason for the emergence of large-scale unemployment.

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FIGURES AND TABLES

Figure 1: Numbers of Unemployed in Hungary and Numbers receiving Unemployment Insurance (UI), 1991-94

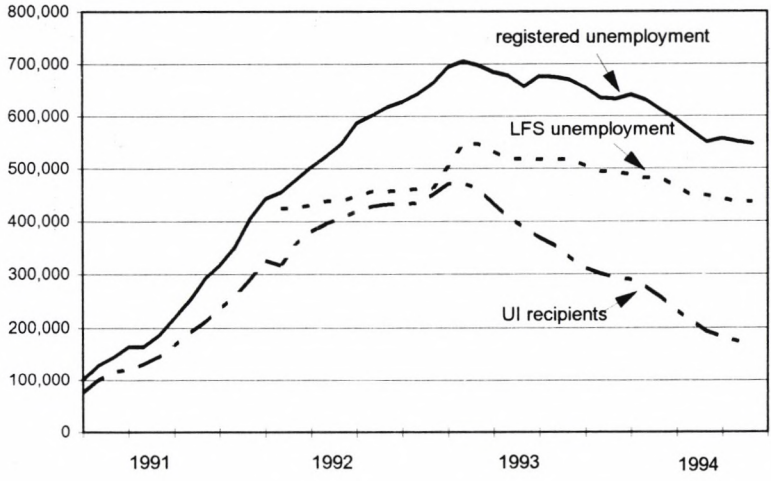

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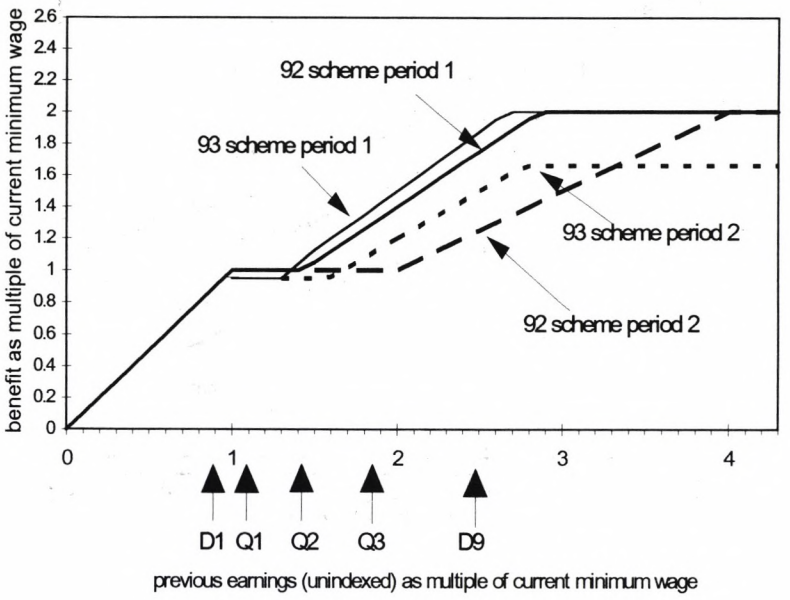
Figure 2: Benefit-Earnings Formulae in the 1992 and 1993 Hungarian UI schemes



Note:

The arrows below the horizontal axis refer to quantiles of the ratio of unindexed previous earnings to the February 1993 minimum wage, calculated using the December 1992 and January 1993 inflow samples. D1 is the bottom decile, Q1 the lower quartile, Q2 the median, Q3 the upper quartile and D9 he upper decile.

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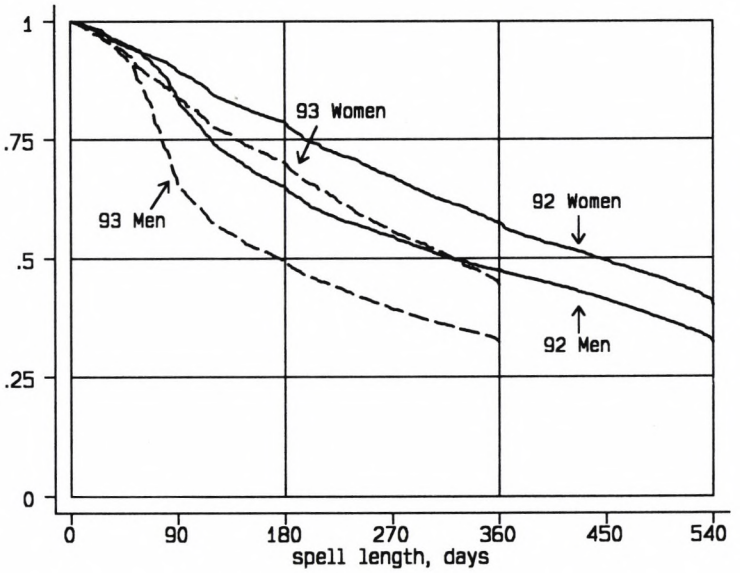
Figure 3: Survivor Functions for Claimants with Continuous Employment in Last 4 Years



Note: sample sizes are

14,908 men on 92 scheme
7,334 men on 93 scheme
8,071 women on 92 scheme
3,845 women on 93 scheme

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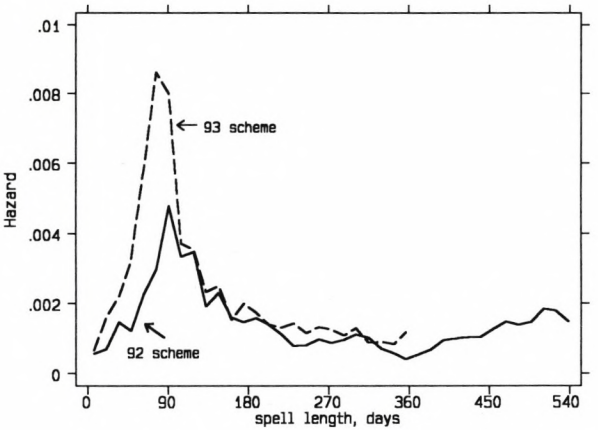
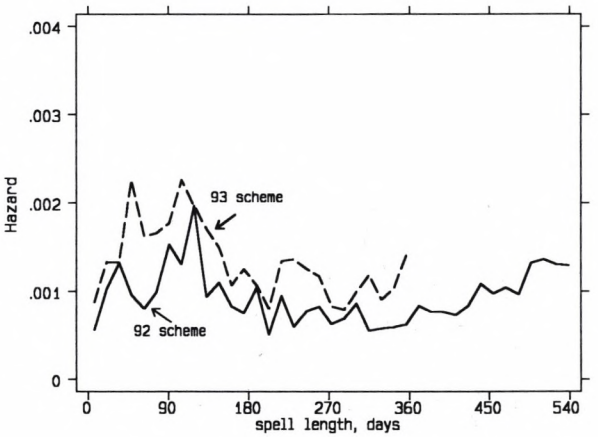
Figure 4a: Hazard Functions for Male Claimants with Continuous Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 14,908 (92 scheme) and 7,334 (93 scheme)

Figure 4b: Hazard Functions for Female Claimants with Continuous Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 8,071 (92 scheme) and 3,045 (93 scheme)

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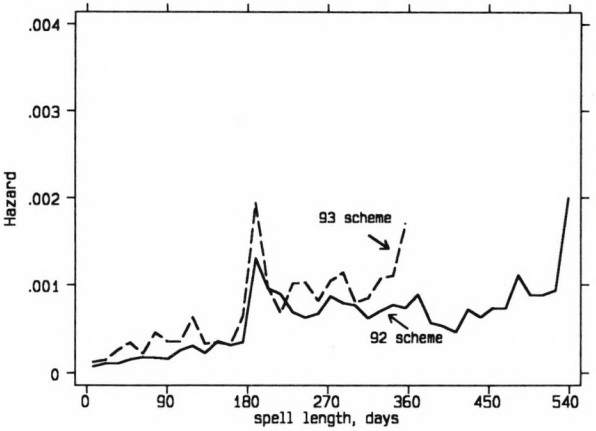
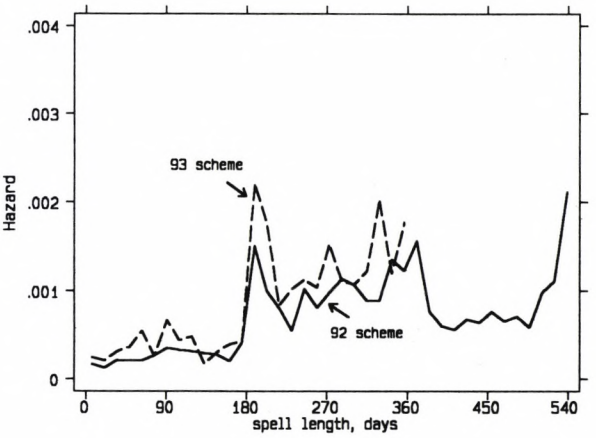
Figure 4c: Hazard Functions for Male Claimants with Continuous Employment in Last 4 Years: Non-job Exits



Note: sample sizes are 14,908 (92 scheme) and 7,334 (93 scheme)

Figure 4d: Hazard Functions for Female Claimants with Continuous Employment in Last 4 Years: Non-job Exits



Note: sample sizes are 8,071 (92 scheme) and 3,045 (93 scheme)

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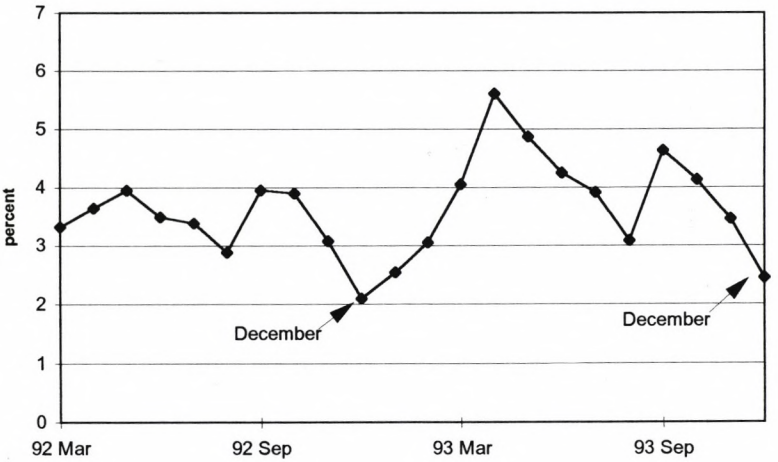
Figure 5: Proportion of the Stock of UI Recipients Leaving the Register to a Job, March 1992 - December 1993



Source: National Labour Centre
Note: Figures include Career Beginner's Benefit Recipients

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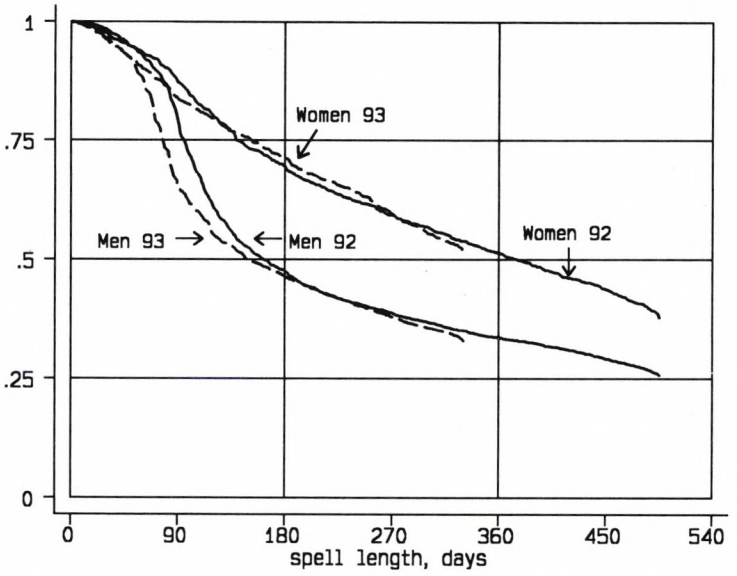
Figure 6: Survivor Functions for Claimants with 44-47 months Employment in Last 4 years



Note: sample sizes are

7,612 men on 92 scheme
4,694 men on 93 scheme
2,170 women on 92 scheme
1,662 women on 93 scheme

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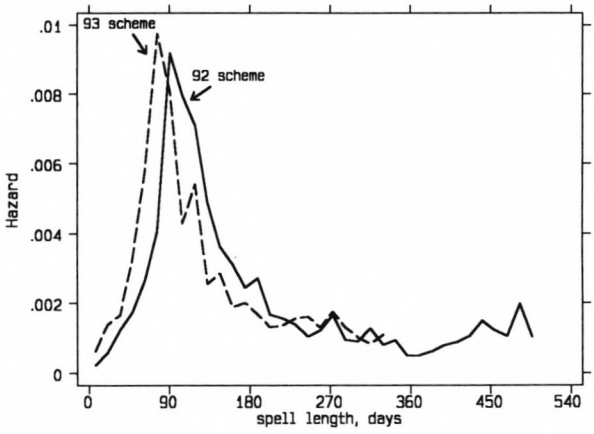
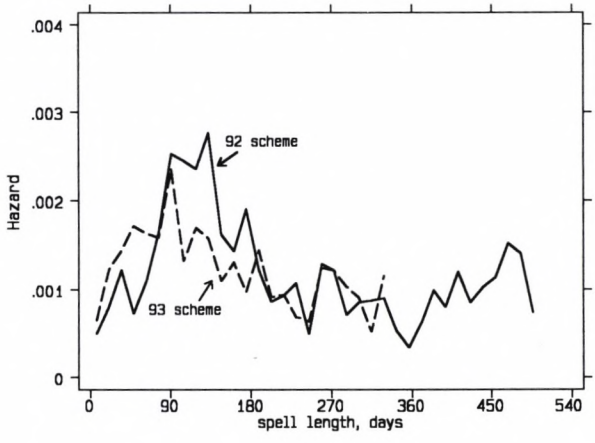
Figure 7a: Hazard Functions for Male Claimants with 44-47 months Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 7,612 (92 scheme) and 4,694 (93 scheme)

Figure 7b: Hazard Functions for Female Claimants with 44-47 months Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 2,170 (92 scheme) and 1,662 (93 scheme)

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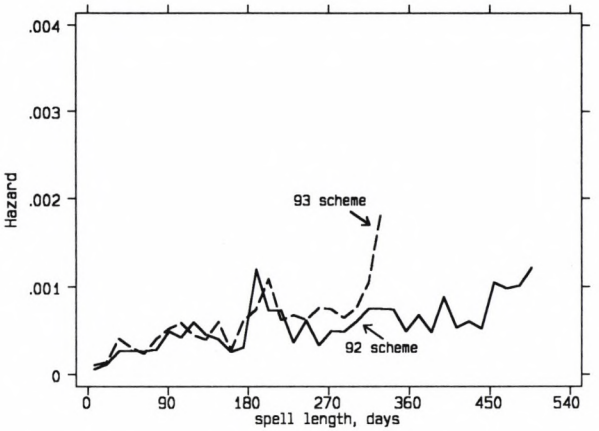
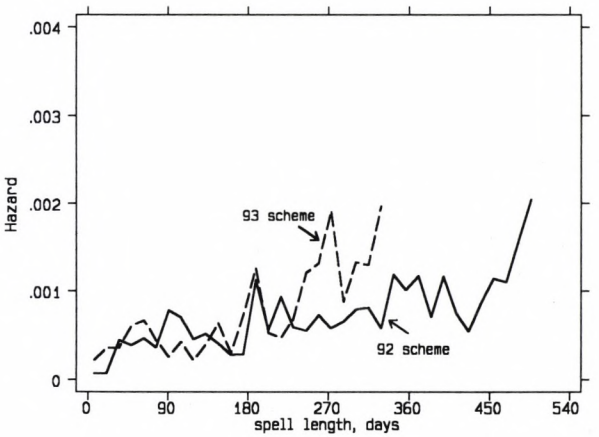
Figure 7c: Hazard Functions for Male Claimants with 44-47 months Employment in Last 4 Years: Non-job Exits



Note: sample sizes are 7,612 (92 scheme) and 4,694 (93 scheme)

Figure 7d: Hazard Functions for Female Claimants with 44-47 months Employment in Last 4 Years: Non-job Exits



Note: sample sizes are 2,170 (92 scheme) and 1,662 (93 scheme)

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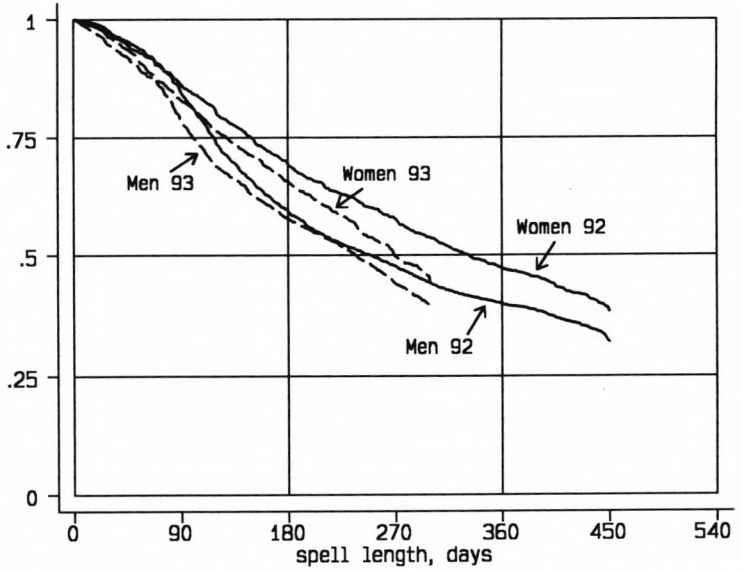
Figure 8: Survivor Functions for Claimants with 28-43 months Employment in Last 4 Years



Note: sample sizes are

7,275 men on 92 scheme
5,412 men on 93 scheme
3,005 women on 92 scheme
2,442 women on 93 scheme

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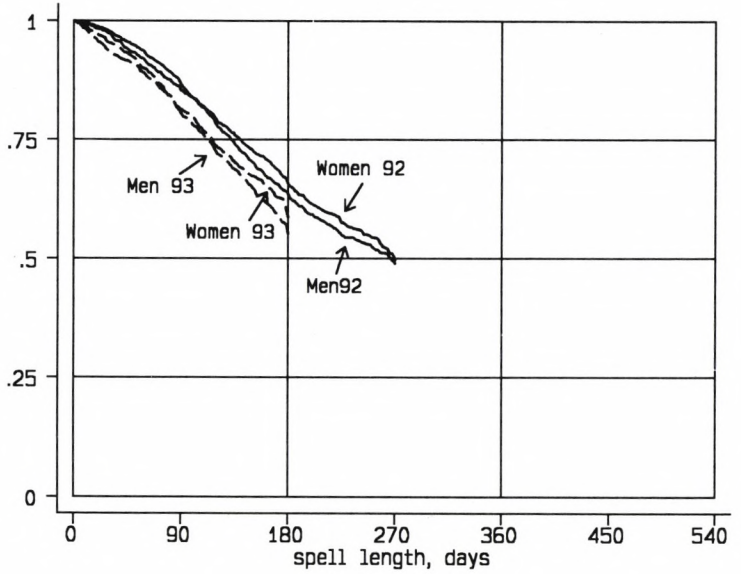
Figure 9: Survivor Functions for Claimants with 12-27 months Employment in Last 4 Years



Note: sample sizes are

4,598 men on 92 scheme
3,089 men on 93 scheme
2,363 women on 92 scheme
1,642 women on 93 scheme

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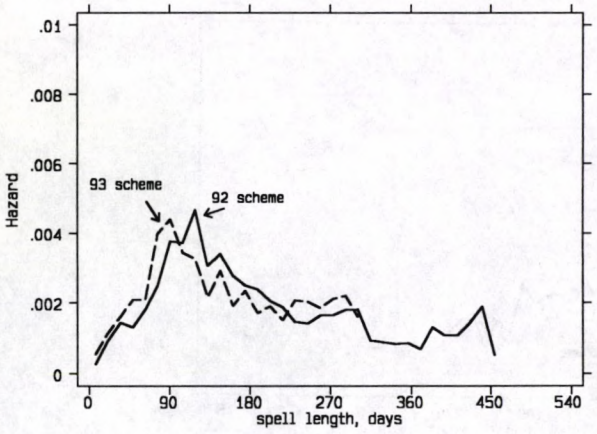
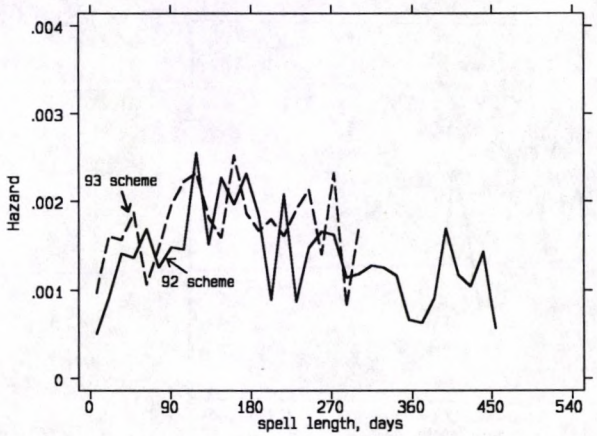
Figure 10a: Hazard Functions for Male Claimants with 28-43 months Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 7,275 (92 scheme) and 5,392 (93 scheme)

Figure 10b: Hazard Functions for Female Claimants with 28-43 months Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 3,005 (92 scheme) and 2,442 (93 scheme)

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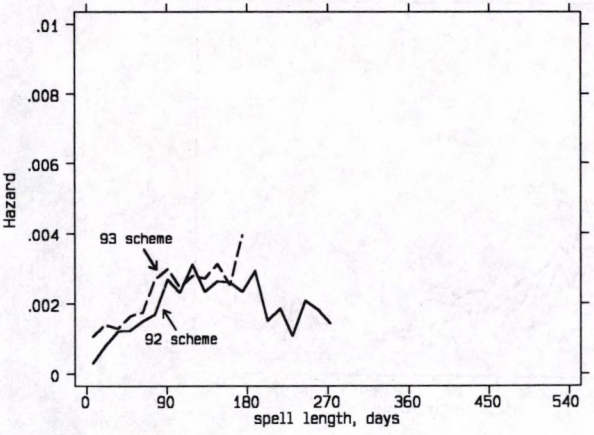
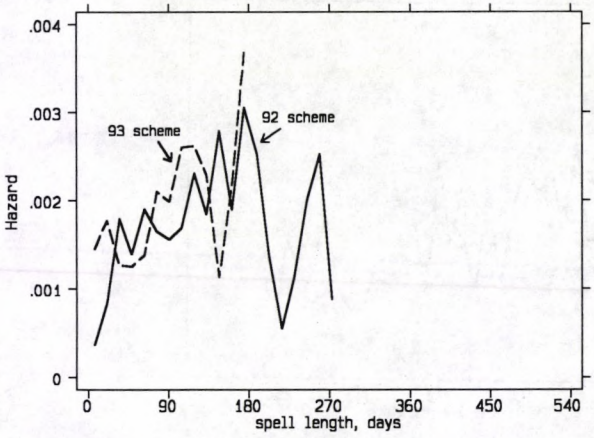
Figure 10c: Hazard Functions for Male Claimants with 12-27 months Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 4,598 (92 scheme) and 3,099 (93 scheme)

Figure 10d: Hazard Functions for Female Claimants with 12-27 months Employment in Last 4 Years: Exit to a Job



Note: sample sizes are 2,363 (92 scheme) and 1,642 (93 scheme)

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Table 1: Characteristics of 92 Scheme and 93 Scheme Claimants among New Spells of UI Starting in December 1992 and January 1993

	1.	2.	3.	4.
	All work history groups		Continuous empl. group	
	1992 scheme	1993 scheme	1992 scheme	1993 scheme
Days between date of last employment and start of UI payment				
median	2	9	2	5
upper quartile	9	33	4	7
top decile	94	212	8	15
proportion:				
male	0.686	0.680	0.649	0.656
age (average years)	36.5	35.2	39.0	37.8
education				
primary and below	0.428	0.426	0.424	0.441
vocational	0.491	0.491	0.482	0.472
general secondary and above	0.081	0.083	0.094	0.087
manual	0.854	0.873	0.806	0.846
area				
Budapest city	0.063	0.112	0.043	0.075
Szabolcs	0.114	0.069	0.103	0.066
high outflow county	0.382	0.391	0.372	0.406
previous spell of UI	0.300	0.270	0.013	0.012
entry to UI from employment	0.936	0.896	0.994	0.990
base period earnings indexed January 1993 (gross Forints per months)	17222	16980	17621	17510
work history in previous 4 years				
12-27 months	0.139	0.158		
28-43 months	0.206	0.260		
44-47 months	0.195	0.211		
continuous employment	0.460	0.371	1.000	1.000

Notes:

1) Figures based on 50,002 individuals receiving benefits under the 1992 scheme and 30,110 receiving under the 1993 scheme.
2) Vocational schooling includes vocational secondary schooling.
3) High outflow counties are Békés, Fejér, Győr, Hajdu, Somogy, Tolna, Vas, Veszprém and Zala. They are the counties with the highest three-month outflow rates for spells of UI starting during the period 20 March 1992-19 April 1992 (see Micklewright and Nagy, 1994a).

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Table 2: Benefit Levels on the two Schemes

i) ratio of gross UI benefit to indexed base period gross earnings (%)

	92 scheme period 1		93 scheme period 1	
	men	women	men	women
bottom decile	56.1	57.9	54.3	56.3
median	59.3	68.4	67.2	67.2
top decile	84.7	84.7	84.7	87.8
	92 scheme period 2		93 scheme period 2	
	men	women	men	women
bottom decile	42.4	42.4	46.4	48.3
median	54.1	68.4	53.7	66.1
top decile	84.7	84.7	84.7	87.8

ii) ratio of period 2 net UI benefit to Social Benefit in January 1994

	92 scheme		93 scheme	
	men	women	men	women
bottom decile	1.46	1.20	1.42	1.21
median	1.56	1.56	1.49	1.49
top decile	2.01	1.58	2.47	1.89

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Table 3: Exit States from the UI Register

Exit state	92 scheme		93 scheme		All
	Men %	Women %	Men %	Women %	%
employment	49.0	34.4	47.0	31.6	43.5
subsidised empl.	1.3	1.1	0.6	0.5	1.0
subsidised self-empl.	1.9	1.2	1.5	0.8	1.5
public works	1.7	0.8	1.4	0.8	1.3
training scheme	1.2	2.7	1.4	3.5	1.8
early retirement	3.5	6.8	1.8	4.5	3.8
normal retirement	1.5	2.4	0.4	1.7	1.5
disqualified	2.0	2.6	2.6	2.6	2.3
other	0.1	2.8	1.5	1.7	1.9
UI exhausted	32.8	40.3	38.5	47.8	37.5
spell censored	3.7	4.9	3.3	4.5	3.9
total	100.0	100.0	100.0	100.0	100.0

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