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The relations between the Norwegian Labour and Welfare Organisation's and Statistics Norway's figures of unemployment

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Chapter 1. Introduction

The unemployment in Norway is measured in two ways and with two different data sources. Statistics Norway's unemployment figures from Labour Force Survey shows higher level and in short periods also a different trend than figures of registered unemployed at the employment office.

Statistics Norway's (SN) presents unemployment figures from Labour Force Survey (LFS), while The Norwegian Labour and Welfare Organisation (LWO) (earlier The Directorate of Labour) presents figures based on registrations in their register of job seekers. Normally, LFS shows a higher level of unemployment than LWO figures of registered unemployed. Mainly the trend in the two time series will show the same pattern, but in shorter time spans differences have occurred. In the first half of 2005 the deviations in the figures of change was relatively large. Not least due its occurrence prior to the parliament election, it created a lot of attentions. The administration and the opposition used different unemployment time series, and mass media asked if Statistics Norway and The former Directorate of Labour agreed on which way the

Unemployment went.

According to the figure 1, the two time series of unemployment, seasonally adjusted, roughly follow each other through the business cycles, but the LFS figures have a higher level then the registered unemployment at the employment office. Further, the sample uncertainty of the LFS figures gives some short-term fluctuations around a trend. Through the first half of 2005 the deviations between the unemployment series becomes larger. The figures of registered unemployed at the employment office fell some in 2004 and this accelerated through 2005. In the LFS a significant fall in the unemployment didn't start until the second half of 2005.

In this article we will cast light on the causes why the two sources of data shows unequal level of unemployment and in shorter period's different trend. Partly, the presentation is based on results from a merges of the two sources of data at individual level. These merges are described in details in a own paragraph / textbox.

It is not surprising that the sources of data show different figures of the unemployment. Even though both figures aim at measuring the unemployment, the definitions and methods of measurement are very different. How big the differences actually are, to some extent are veiled by differences that levels out when we are looking at the unemployment totals.

The differences in the measures of unemployment are partly caused by differences in the definitions and methods of measurement, but can also be caused by measurement errors. When it comes to definitions, the LFS strictly are in accordance with recommendations given by the International Labour Organization (not employed, had been seeking work during the preceding four weeks, available for work within the next two weeks). The register of job seekers differs from these recommendations by having some additional restrictions. We will illustrate the difference in the two sources of data with figures from the merge of the data for the period 2004-2006.



FIGURE 1. Unemployed persons aged 16-74 years (LFS) and registered unemployed at the employment office, seasonally adjusted, three-months moving average. 1989-2006. 1000

Chapter 2. Merging between LFS and register of job seekers

The persons in the two data sources are merged month by month. Since unemployment is a status that some persons only stay in for a short period of time, it is a important point that the reference periods in the two data sources ought to be as similar as possible. On the other hand, the LFS is a sample survey, and to take into consideration the goal of getting smallest possible random fluctuations, the largest possible part of the sample ought to micro merged. The LFS cowers all the weeks in every month, while and register of job seekers gives a status at the end of each months. Experiences have showed that in the balancing between small sample uncertainty and good overlap in reference periods, it is suitable to utilise the samples from the last two weeks each months in the LFS. The numbers of unemployed (and other groups in register of job seekers) are relatively low compared to the sample size in the LFS. For that reason we need to make use of data for many months in order to get significant results. This analysis is based on figures for 6 and 12 months, in other words half year averages and annual averages.

A merge or link up between the two data sources enable us to identify individuals that are in both data sources. We can then check how one and the same person have been classified in each of the two data sources. Differences can not be caused by sample uncertainty, but can be explained by different definitions, measurement errors in one or both of the data sources or differences in reference period.

Use of the inflation factors in the LFS, is a continuance of this analysis, in order to estimate the magnitude of the classification differences between the two data sources for the total population aged 16–74. Sample uncertainties are attached to these population estimates. In principle the LFS is approximately a random sample of the total population aged 16–74 years. Then it also should be approximately a random sample of the persons in the register of job seekers. Basically the expected values of LFS-estimates shouldn't be much biased. This means that the LFS ought to give about the same estimated figures for variables linked up from the register of job seekers as the register of job seekers itself. For example the expected values for registered unemployed and for work-disabled from the linked LFS data should give about the same as the (true) official figure for registered unemployed and for work-disabled from Labour and Welfare Organisation. Nonresponse in the LFS might cause a little interference. The non-response may be biased along some variables in the register of job seekers. The deviations we observe between the figures from the register of job seekers and the corresponding population estimates from the linked LFS data are either causes by sample uncertainty or bias in the net sample. If there are bias in the non-response this may lead to repeated over (under) estimation of the true values from the register of job seekers. To some extent our estimation procedure with post-stratification reduces the effect of non-response¹. Even without non-response, the sample uncertainty will make the population estimates fluctuate around the true values from the register of job seekers.

For estimated population values of combinations of statuses from the two data sources an additional effect come into account. We will illustrate this by an example of the combination of unemployed in the LFS and work-disabled in the register of job seekers. The sample uncertainty in the LFS will not only have contributed to that the estimated figure of work-disabled in the LFS might be to high or low, but also the work-disabled in the linked up LFS by chance are more or less unemployed according to the LFS than the true value for all the work-disabled. On the other hand, the estimated proportion of the work-disabled that is unemployed according to the LFS might be right, even though the estimated number of work-disabled according to the LFS accidentally is higher or lower than the true value in the register of job seekers. The true values of the population total for combinations of statuses from the two data sources are unknown, as opposed to pure population total for a statuses in the register of job seekers. We can only give an estimate about the sample uncertainty for population estimates of combinations of statuses from the two data sources.

¹ Our inflation factors are calculated by post stratification on age, sex, register employment status and industry.

Chapter 3. Difference in figures of level

On average 87 000 persons are registered unemployed in the 1st half 2005 according to the register of job seekers, while 113 000 persons are unemployed according to the LFS. When we merge the two data sources we find that:

- 47 000 persons are unemployed according to both statistics
- **50 000 persons are unemployed according to the LFS but not in the register of job seekers** This means that they neither were registered as unemployed, on labour market measures nor workdisabled. Typically this will be youth searching for work besides school or in holydays.
- 17 000 are unemployed according to the LFS and in the register of job seekers, but are classified as something else
 - 6000 or 9 per cent of the LFS-unemployed were according to the register of job seekers on a labour market measure. By definition they are excluded from the number of registered unemployed (Instead they are published as a separate time series). In the LFS they are classified as unemployed if the meet the requirements about not being employed, has been seeking work and are available.
 - 11 000 or 17 per cent of the LFS-unemployed were work-disabled according to the register of job seekers. Also the work-disabled are published in a separate time series, and not included in the number of registered unemployed. In register of job seekers it is the caseworker at the Labour and Welfare Organisation that consider if a person is available for a labour market, while in the LFS it is the individual that consider this.

• 39 000 are registered unemployed, but classified as something else in the LFS

- 17 000 or 20 per cent of the registered unemployed are defined as employed according to the LFS. Typically this would be individuals with a small occasional job that they don't report to the Labour and Welfare Organisation. Also, minor differences in reference periods will contribute here. E.g. a individual that in the last week of the month was unemployed for 3 days and then got a job, would in the LFS be defined as employed. In the report system of the Labour and Welfare Organisation this will be intercepted in the register of job seekers a month later.
- 11 000 or 12 per cent of the registered unemployed answered in the LFS that they were not available for work or haven't been seeking work. Typically this would be persons close to pension age that look at unemployment benefit as early retirement pension.
- 11 000 or 12 per cent of the registered unemployed answered in the LFS that they were not available for work within the next two weeks, and thereby falls out of the definition of unemployment used in the LFS.

Even though the differences at a individual level are big, the differences pulls in different directions, so that the total figures are not that different. Meanwhile if we look at age divided figures, clearly differences appear.

Speculations have been made about bias in the LFS samples being the cause of the differences in the two unemployment series. In an analysis published by SN (Nina Hagesæther og Li-Chun Zhang, 2006), the conclusion is that the net sample is a somewhat biased, but that this is fixed by the method of estimation. Nevertheless for subgroups of the unemployed this still may give some bias. Analysis based on the micro merging of the two data sources discussed in the previous paragraph, confirm the same. When we micro merge the registered unemployed in the register of job seekers with the interviewees in the LFS samples, we use the inflation factors from the LFS to make population estimates. Our population estimates of registered unemployed fluctuates some around the true numbers of registered unemployed in the register of job seekers.

		Registered
Age	LFS-unemployed	unemployed
Total	100	100
16-24 years	33	17
25-55 years	61	71
56-74 years	6	12

TABLE 1. LFS-unemployed and registered unemployed at the employment office by age.Annual average 2005. Per cent.

Chapter 4. Differences in trends

From the first half of 2004 to the first half of 2005 the two data sources showed a different trend. The number of registered unemployed persons at the employment office decreased by 6 000, while the unemployment increased by 4 000 according to the LFS. When we break down the change in the unemployment like above, we find that the decrease in the registered unemployment partly stems from registered unemployed that are employed persons according to the LFS. Such a decrease in registered unemployment will not decrease the LFS-unemployment, since they in the LFS haven't been defined as unemployed in the first place. Also, we find that the sample uncertainty contributed to that the linked LFS got a too little drop in the estimated number of registered unemployed. Finally, the unemployment rose according to the LFS among work-disabled, a group that is not defined as registered unemployed. Accordingly, different factors that pulled in the same direction and contributed to that the LFS and Norwegian Labour and Welfare Organisation's figures of registered unemployment showed a different trend.

When we are looking at the changes from the first half of 2005 to the first half of 2006, the two data sources shows equal a trend pattern. The number of registered unemployed decreased by 19 000, while the unemployment decreased by 21 000 according to the LFS. Behind this similar trend pattern in the total figures, nevertheless there are some variations for subgroups. Among other factors, it seems to have been some growths among unemployed in the LFS that were not in the register of job seekers.

On the other hand, there were big deviations in the seasonally adjusted unemployment figures of change from the 3-months period February-April to May-July 2006 published august 25th 2006. The unemployment dropped by 18 000 persons according to the LFS, while the registered unemployed at the employment office declined by 5 000. Analysis based on micro merging of the two data sources needs somewhat longer period of observation in order to make relatively trustworthy conclusions. Underlying LFS data shows that it especially is for the months June and July that the unemployment drops in the LFS and that particularly for persons under 25 years of age. Most likely this has been caused by more people getting a job and/or they got their job faster than the year before. Shorter duration of unemployment spells gives a lower level when the unemployment are measured at a certain point of time. Based on earlier analysis of gross differences, and as mentioned above, we can make relatively trustworthy conclusions. The unemployment drop according to the LFS specially comes among persons that don't register in the register of job seekers. Typically for these months there are school youths that are applying for holiday jobs. Besides differences in unemployment definitions, in addition sample uncertainty seems to have pulled in the same direction.

Chapter 5. Useful tool for presentation of unemployment figures

The system for micro merging of the two data sources are a useful tool for understanding the differences of the two types of unemployment figures. For publishing of unemployment figures by the months, this tool can not be utilized to generate new empirical information. We need somewhat longer period than between two following quarters to generate trustworthy results. In periods with less changes in the unemployment, than we have seen the last year, a dominating factor behind a figures of change could be the sample uncertainty

(S.E. \pm 5 000). Later, when we get more observations and the changes have accumulated, we can micro merge the data sources and conclude more trustworthy about the causes.

The system for micro merging of the two data sources also can be useful to detect potential structural changes in the way the LFS and register of job seekers intercepts peoples seeking for work. Structural changes could either be because people change behaviour or due to changes in the way the LFS or the register of job seekers measure job seekers.

Chapter 6. Why two different measures of unemployment?

Due to differences in the measuring of the unemployment in the register of job seekers and in the LFS, from time to time confusion is created among some users. One can ask why we don't use only one of the data sources. The short answer is that the two unemployment measures supplement each other.

The LFS measure the total unemployment best, in the way international organisations recommend that this shall be done. Due to that LFS is the best measure for comparison of unemployment between countries. Further, the LFS also survey person's attachment to the labour market in a broader sense than only giving a figure of the unemployment. The LFS also gives figures for different groups that satisfy some but not all of the requirements in the definition of unemployment. In addition the LFS measure employment, so we get a consistent picture of the trends in employment and unemployment.

As opposed to the LFS, the figures of registered unemployed in the register of job seekers don't have any sample uncertainty attached to it. This means that this measure can give figures of unemployment at the level of municipality and other detailed subgroups. Figures of registered unemployed at the employment office have shorter time of production, and more precisely measure changes from month to month. Moreover, the LFS have a biased net sample for immigrants, so that figures of unemployment for this group are best measured by the figures of registered unemployed. Also, the figures from the register of job seekers produce precisely which groups the Labour and Welfare Organisation deals with, for example like recipients of unemployment benefits.

References:

Nina Hagesæther og Li-Chun Zhang (2006): Om arbeidsledighet i AKU og Arena. Statistisk sentralbyrå. Notater 2006/34.