



## Background document

### Revision of the monthly harmonised unemployment figures for Germany

#### Introduction

With the release of 31 October 2007 Eurostat replaces the previous, temporary method of calculating harmonised monthly unemployment for Germany by a new method. This new method bases the unemployment estimates on the continuous German Labour Force Survey. Thereby it is brought in line with the methods used for the other Member States of the European Union. This harmonisation results in a significant upward revision in unemployment rates for Germany. The general downward trend since 2005, however, remains unchanged. This paper describes the revision and underlying causes in detail, and provides methodological information on the new method used.

The changeover to the new method is done in full agreement with Destatis, the German Statistical Office. The figures published by Destatis are identical to those released by Eurostat.

After this introduction, the document is divided into five main sections. The first section describes the European approach to calculate internationally comparable unemployment figures. The second section provides background information on the calculation of harmonised monthly unemployment figures for Germany during the transitional period from 2005 up to the changeover. The third section examines the revision resulting from the changeover to the LFS for calculating German unemployment figures. The fourth section describes methodological aspects of the new calculation method. Finally, the last section gives a short overview of remaining work.

#### 1. Eurostat's harmonised unemployment rates

Eurostat produces harmonised monthly unemployment rates for the EU, the euro area and Member States with some time-series dating back to 1983. The backbone of the calculations is formed by the European Union Labour Force Survey (LFS), measuring among other things the labour status according to recommendations of the International Labour Office – ILO. The LFS is regulated in Europe with Council Regulation (EC) No 577/98 of 9 March 1998<sup>1</sup>, setting the common framework for a continuous survey in the Community providing quarterly results. Regulation (EC) No 1991/2002 of the European Parliament and of the Council of 8 October 2002<sup>2</sup> made the continuous, quarterly LFS mandatory for all Member States from 2003, providing, amongst other, a transitional period for Germany until 2005.

---

<sup>1</sup> OJ L 77, p. 3, 14.3.1998.

<sup>2</sup> OJ L 308, p. 1, 9.11.2002.

A further step towards improved comparability of the LFS and, hence, the estimates of unemployment across Europe, was taken with the implementation of Commission Regulation (EC) No 1897/2000 of 7 September 2000<sup>3</sup> which created a legal basis for a common definition of unemployment and of a common approach to the formulation of the questions on the labour status.

The current estimates of monthly unemployment are always made using the harmonised definitions of the LFS. As with all long-running surveys, the methodologies and definitions of the LFS evolve over time, new classifications are adopted, new questions are introduced, a national questionnaire is brought in line with international standards and new weighting schemes are adopted, to mention a few. Such events inevitably cause breaks in the time-series which Eurostat corrects for by revising the back-series.

In all countries of the European Union, the LFS is producing *quarterly* results. In order to provide unemployment rates at a *monthly* frequency, short-term trends from unemployment registers are used assuming similar short-term developments with the unemployment based on ILO definitions. In some countries, the monthly trends can be observed directly using the LFS.

## **2. The transition in Germany from an annual LFS to a continuous LFS**

Before 2005, the Labour Force Survey was conducted on an annual basis in Germany. During one week in spring, information concerning the labour status was provided by the respondents. Eurostat used these annual results, in combination with monthly information on registered unemployment, to calculate monthly harmonised unemployment rates for Germany.

In line with Regulation (EC) No 1991/2002 of the European Parliament and of the Council, the German Federal Statistical Office (Destatis) switched from the annual survey at the beginning of 2005 to a continuous LFS providing quarterly and annual results. Destatis expected that, due to the sample size, the survey might eventually also produce reliable monthly results. This was, however, not planned to be the case from the outset; a number of methodological issues still had to be addressed.

Further changes were made to the survey compared to previous years, most notably in the sequence and wording of questions relating to employment in the reference week. The changes also included the introduction of a sliding reference week (depending on the interview week), introduction of standardised computer aided interviewing and refinement of the weighting scheme. All of these changes caused a break with the past series.

### *Hartz IV*

In January 2005, at the same time as the continuous LFS commenced in Germany, the German Federal Government introduced an extensive reform of the social security system, which included the bringing together of unemployment and social welfare benefits. These measures are usually referred to as Hartz IV. It was anticipated already in 2004 that there would be significant effects on the registered unemployment. Therefore, the assumption of a

---

<sup>3</sup> OJ L 228, p. 18, 8.9.2000.

sufficiently stable relationship between the registers and the unemployment as measured in the annual LFS (assumption underlying the approach used to calculate Eurostat's rates at the time) would not be true over an unspecified period from 2005. The Federal Labour Agency<sup>4</sup> in Nuremberg was not able to maintain a separate series, using the old definitions for registered unemployment.

#### *The Monthly Telephone Survey: a temporary solution*

Under those circumstances it proved impossible to produce reliable harmonised monthly unemployment rates for Germany in the same way as before. While work was ongoing to make the continuous LFS suitable for the production of monthly unemployment figures, Eurostat and Destatis looked for a temporary alternative.

For this purpose Destatis expanded the ILO Monthly Telephone Survey (MTS) that had been running from April 2003 as a pilot survey to 30 000 interviews per month. The MTS would run until April 2007.

The survey was organised as a computer aided telephone survey, with random digit dialling, sub-selection and direct interview of one adult household member and with high overlap from month to month. The questionnaire was designed to conform to Commission Regulation (EC) No 1897/2000 and was comparable to the LFS questionnaire.

Eurostat agreed to use, for a limited time, the results from the Monthly Telephone Survey for estimating the harmonised unemployment rate for Germany. When the temporary measure of basing the unemployment estimation on the Monthly Telephone Survey was introduced the effect was a downward shift in the time series for the total unemployment rate for Germany<sup>5</sup>.

#### *Action plans to improve the LFS*

The use of the Telephone Survey for the production of monthly unemployment figures enabled Destatis to further improve the LFS by means of intensive action plans. These action plans aimed at improving the monthly employment status estimates in the Labour Force Survey. After the successful implementation in 2005, 2006 and early 2007, Eurostat and Destatis agreed that the Labour Force Survey was ready to be used for the production of the harmonised monthly unemployment rates.

The new, revised series would first be published at the end of October and refer to the situation in September 2007.

---

<sup>4</sup> Bundesagentur für Arbeit.

<sup>5</sup> Rengers, Martina (2005) "[Die monatliche Erwerbslosenzeitreihe der ILO-Arbeitsmarktstatistik](#)" in *Wirtschaft und Statistik* 10/2005, pp. 1049-1070. Statistisches Bundesamt, Wiesbaden.

**3. The revised unemployment estimates**

With the use of the German LFS, a big step forward is taken in the harmonisation of the measurement of unemployment in Europe. The unemployment estimates in all Member States are now based on the continuous Labour Force Survey.

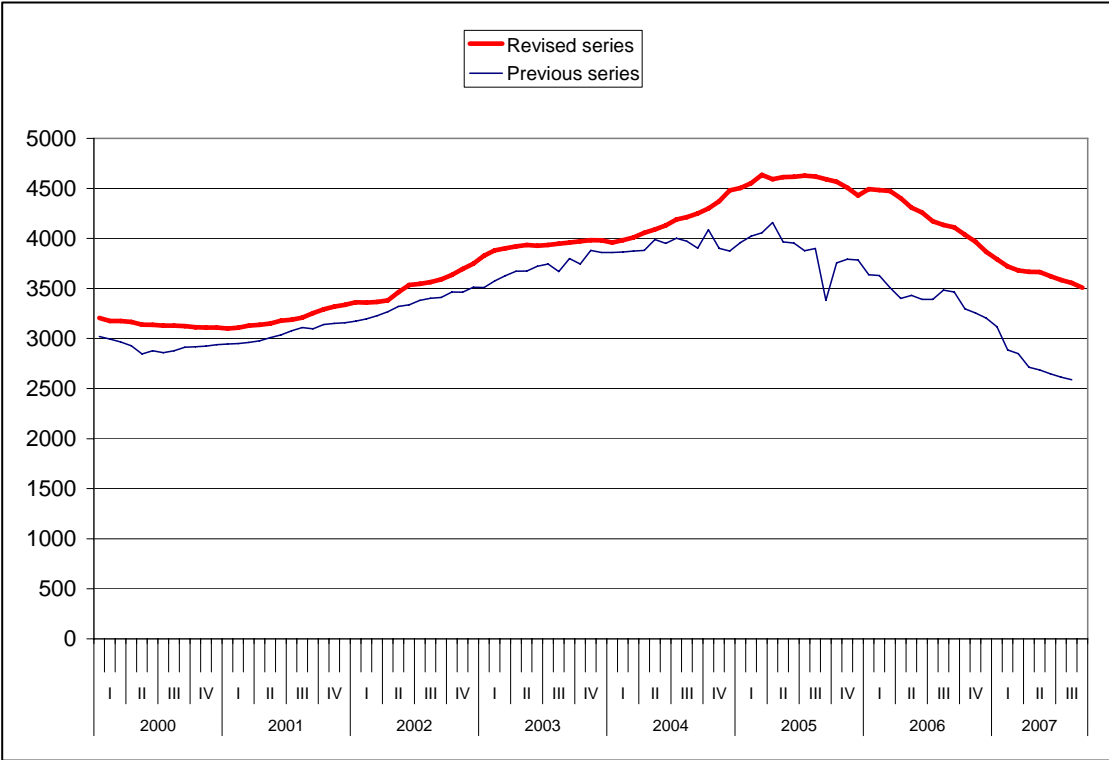
Within Europe, the German Labour Force Survey is the largest household survey of its kind. The average sample size per month is around 30 000 dwellings, with completed interviews of persons of working age approximately 35 000 on average each month. The survey is part of the German Micro-Census and has a very high response rate (approx. 95% annually) compared to other Member States and a relatively low rate of proxy<sup>6</sup> answers (approx. 27%). All households are visited and interviewed by specially trained interviewers using portable computers, but those respondents who so wish can complete the questionnaire on their own on paper.

*A major revision*

The replacement of the provisional unemployment figures based on the Monthly Telephone Survey by the estimates from the LFS results in a major upward revision. The LFS measures a significantly higher level of unemployment in Germany than the MTS.

Chart 1 gives the level of unemployment in Germany from 2000 to September 2007, showing the previous Eurostat estimates based on the Monthly Telephone Survey as well as the revised estimates based on the Labour Force Survey.

*Chart 1. Seasonally adjusted unemployment (x1 000 persons) in Germany, January 2000–September 2007.*

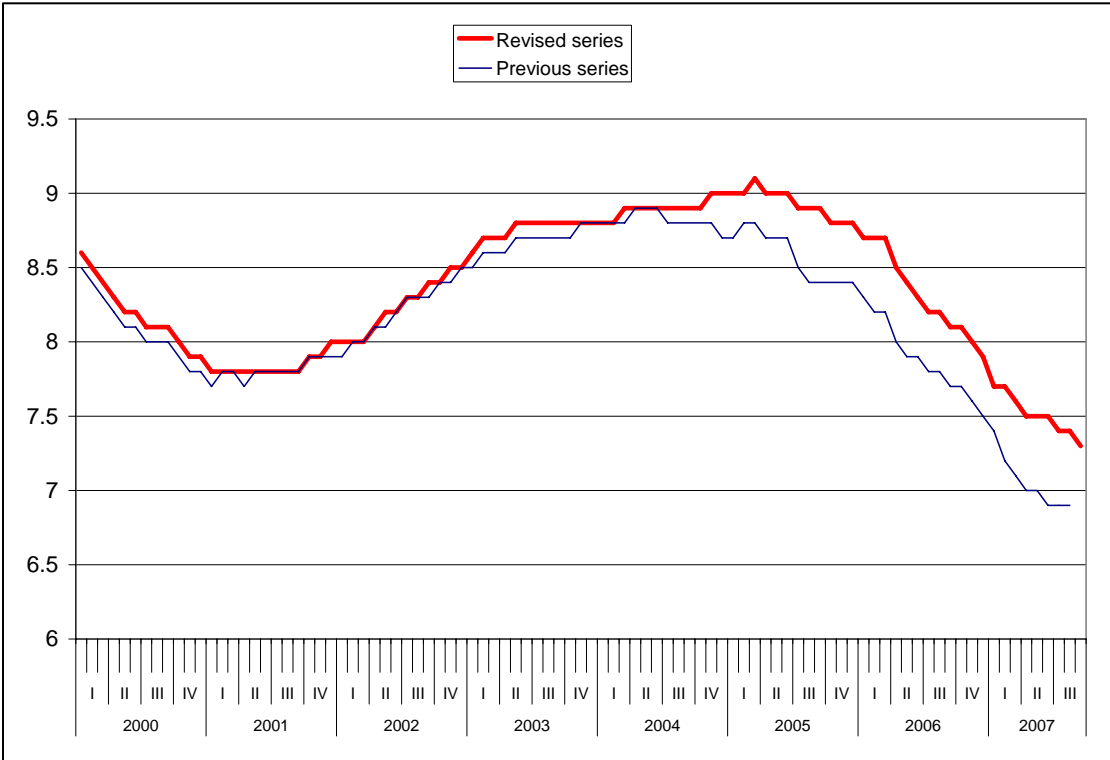


<sup>6</sup> I.e., when a household member gives answer for an absent member of the household.

The difference between the previous and the revised series ranges between half and almost one million persons unemployed since 2005. However, the general downward trend in unemployment since early 2005 is not affected.

In chart 2, the effect of the German revision on the euro area estimates is given. With German unemployment accounting for about 30% of the euro area unemployment, the latter is clearly affected by the revision as well.

**Chart 2. Seasonally adjusted unemployment (%) in the euro area, January 2000–September 2007, before and after revision of the German data.**



The euro area unemployment rate is revised upwards by between 0.3 and 0.5 percentage points since 2005. As for the German unemployment, the general direction of the trend is not affected.

*Underlying causes for the revision*

In comparing the LFS and the MTS it is important to note that, although the two surveys have largely similar questionnaires, there are big differences in the methodology and field work, which may lead to disparate results.

It is difficult, if not impossible, to pinpoint one or some particular causes for the different results between the two sources. Mostly this is because it was not possible to combine the two surveys and so compare the different methods directly. In the following some of the differences are highlighted. The points below should, however, not be viewed as a final evaluation of the two sources.

- The LFS is part of the German Micro Census and thus responding to the survey is compulsory. The non-response in the LFS is approximately 5%, compared to more than 50% initial non-response and a further 10% non-response each time persons are re-interviewed in the MTS.
- The information in the MTS is solely collected by supervised telephone interviewing from a telephone centre, while interviews in the LFS are mostly collected by direct visits and personal face-to-face interviews. Approximately 20% of the questionnaires are completed by the respondents themselves in the LFS. Both surveys use computer aided interviewing techniques. Differences in the mode of interviewing can cause differences in results.
- Although the questionnaires of the LFS and MTS are similar regarding the employment status, there are differences with regard to the questions on job search to be answered by the non-employed, both in sequence and wording. In the MTS, the questions on job search were more restrictive as compared to the LFS, resulting in a lower estimate of unemployment in the MTS.

#### *LFS based unemployment estimates for Germany*

Eurostat is satisfied that the continuous German Labour Force Survey provides reliable and internationally comparable results on unemployment in Germany. With the transition to the LFS-based statistics for Germany, a European wide exercise to base the unemployment figures on the continuous LFS has been achieved. This common approach provides a solid base for good quality and international comparability.

## **4. Methodological aspects of the new method**

### **4.1 Construction of the time series**

#### *Monthly LFS from 2005 onwards*

Monthly values are available from the continuous LFS from early 2005 onwards. However, as a result of phasing-in problems, the monthly fluctuations of the raw data are not considered reliable enough before 2007 to allow for the publication of this data. Therefore, raw data from the continuous LFS is published from reporting month January 2007 onwards.

#### *Back calculation for 1992-2004*

Before 2005, the LFS was only conducted on an annual basis during one week in spring. Therefore, no intra-annual information before 2005 is available from the LFS. To be able to produce long monthly time series on German unemployment, the annual LFS results before 2005 and the monthly LFS results from 2005 onwards are combined. The monthly values derived from this model are used as intermediary figures in order to derive a seasonally adjusted time series as described below. Only the seasonally adjusted estimates can, however, be published, and not the intermediary data.

The seasonally adjusted figures are published from January 1992 onwards, but the estimates for the period 1992 to 2006 should be treated with caution.

## 4.2 Adjusting for seasonal variations

In order to gain a clearer picture of the general trend in unemployment required for short-term analysis, regular variation within a year, such as students entering the labour market in the summer, must be removed from the series. This process of seasonal adjustment is only possible after having gained sufficient knowledge from the data on the intra-annual variations.

Monthly data for Germany from the LFS is only available since early 2005, which is not sufficiently long a time series to enable reliable seasonal adjustment using standard techniques. Eurostat considers the minimum length of a series for testing the extraction of the seasonal pattern to be four years for the monthly unemployment data. It is thus unlikely that seasonal patterns in the unemployment directly measured by the LFS are sufficiently known until early 2011. Until then an alternative method, such as using information from auxiliary sources, needs to be applied.

Information from an auxiliary source on registered unemployed is available in seasonally adjusted form in Germany. It needs to be said that the data on registered unemployment is not in accordance with definitions recommended by the ILO. Registered unemployment data are national administrative data compiled on a purely national basis and for national purposes. Furthermore, as a result of different legislation and definitions the data is also not comparable between countries. Therefore, the number of registered unemployed cannot be put directly in the calculation of the ILO unemployment rate. However, there is a large overlap between registered unemployment and unemployment as measured with the LFS, and the trends are similar. Furthermore, the break in the series on registered unemployed resulting from the Hartz IV reforms can now be corrected for. All this makes the seasonally adjusted statistics on registered unemployed suitable to be used in the process of deriving estimated seasonally adjusted monthly unemployment figures for Germany.

### *Benchmarking*

The seasonally adjusted registered unemployment data first needs to be brought to a level that allows international comparability, i.e. in accordance with definitions recommended by the ILO. The data from the LFS can be used for this purpose. For each month ( $t$ ), a so-called benchmark factor is calculated. This factor is equal to the ratio of the moving 12 month averages of the monthly LFS unemployment figures and the registered unemployment.

The benchmark factors as described above are updated each month with the arrival of a new monthly figure from the LFS, while for the most recent 6 months, the factor is provisionally kept constant. This means that the seasonally adjusted monthly figures are provisional for 6 months. When short-term developments in the registered unemployment diverge from the developments of unemployment as measured with the LFS, this will lead to revisions.

The benchmark factor for a given month  $t$ ,  $B(t)$  is calculated using the following formula:

$$B(t) = \frac{LFS_{raw\ data} [1/2(t-6) + (t-5) + \dots + (t) + \dots + (t+5) + 1/2(t+6)]}{Registers_{raw\ data} [1/2(t-6) + (t-5) + \dots + (t) + \dots + (t+5) + 1/2(t+6)]}$$

The unemployment figures are calculated as follows:

$$Unemployment_{raw\ data}(t) = LFS_{raw\ data}(t)$$

$$Unemployment_{seasonally\ adjusted}(t) = B(t) * Registers_{seasonally\ adjusted}(t)$$

This benchmarking method is used for men and women by two age groups (15-24, 25-74).

### 4.3 Source for employment figures in the denominator of the unemployment rate

In Germany, the Labour Force Survey is the only source from now on measuring *unemployed* persons according to definitions recommended by the International Labour Organisation (ILO). For *employed* persons, an alternative figure is available from the system of Employment Accounts. The Employment Accounts are based on the integration of numerous statistical sources. Furthermore, the Employment Accounts are anchored in the system of National Accounts, ensuring consistency with other variables such as compensation of employees and value added. In the past it has been shown that the Employment Accounts provide a highly reliable and stable series of employment results on a monthly basis.

The employment figures from the LFS and from the Employment Accounts have differed considerably over the years. In particular, the LFS has had difficulties in picking up minor jobs or marginal employment. Although improved, this continued with the new survey in 2005, and led to series of action plans, aiming at improving the measurement of small or minor jobs. Mostly, these have resulted in decreasing the difference in employment between the LFS and Employment Accounts, without visibly affecting the measurement of *unemployment*. Nevertheless, the Employment Accounts continue to provide higher levels of employment. The exact causes of this remaining incoherence are being studied further.

Usually, Eurostat uses both unemployed as well as employed as measured with the LFS by default in the calculation of the unemployment rate. For Germany, the estimate of the unemployed is taken as measured with the LFS, but for the time being the employment<sup>7</sup> is taken from the Employment Accounts. Presently, the Employment Accounts figures are judged to provide a more exhaustive estimate of German employment. In addition, there is the advantage that the employment figures from the Employment Accounts are fully comparable over time, with a long time series available.

$$Unemployment\ rate = 100 * \frac{Unemployed_{LFS}}{Employed_{Employment\ Accounts} + Unemployed_{LFS}}$$

The rates are calculated for men and women by two age groups (15-24, 25-74).

---

<sup>7</sup> National concept, i.e. persons who are resident in Germany. Furthermore the data are adjusted to conform to the definitions used in the LFS, referring to the non-institutional population aged 15 and older. Conscripts and civilian servicemen are not included in the employment.



Work is in progress to further enhance the coherence of the employment statistics between the LFS and the Employment Accounts. Eurostat and Destatis share the longer-term aim to base the monthly unemployment rate solely on the LFS.

## **5. Future prospects**

Basing the unemployment estimates on the LFS brings the estimation of monthly unemployment in Germany in line with the methods that are used for the other Member States. However, ongoing work could lead to changes that further improve the quality of the German LFS:

- The exact mechanisms governing the interview process will be studied by means of a follow-up survey.
- It will be examined how the LFS can be further optimized for the measurement of monthly information in Germany.
- Destatis continues to work on achieving acceptable levels of coherence of employment statistics from the LFS and from the Employment Accounts. When this is achieved, the monthly statistics will be based solely on the LFS.
- In 2011 the seasonal patterns from the LFS is expected to be sufficiently clear for enabling direct seasonal adjustment based only on the monthly LFS.

31 October 2007