Labour market flow statistics in the EU

Statistics Explained

Data extracted in October 2021.
Planned article update: 13 January 2022

This article gives an overview of developments in Labour Market Flow statistics in the European Union (EU) Member States. Labour market flows show the movements of individuals between employment , unemployment and economic inactivity . They help to understand and interpret changes in the levels of labour market indicators based on the EU Labour Force Survey (LFS) . Eurostat publishes quarter-on-quarter flows and year-on-year flows for all Member States. Quarterly data is available starting with the transition between the first and the second quarter of 2010 (for all Member States from 2021 onwards), and annual data is available starting with the transition between 2010 and 2011.

Quarterly changes

Out of all those persons in the European Union (EU) who were unemployed in the first quarter of 2021, 54.6 % (8.8 million persons) remained unemployed in the second quarter of 2021, while 24.2 % (3.9 million) moved into employment and 21.2 % (3.4 million) towards economic inactivity. Of all those initially in employment, 96.0 % (187.3 million persons) remained in employment, while 1.2 % (2.4 million) of those employed in the first quarter of 2021 were recorded as unemployed in the second quarter 2021, and 2.8 % (5.5 million) transitioned into economic inactivity. Out of all those persons who were economically inactive in the first quarter of 2021, 91.3 % (110.9 million persons) remained economically inactive in the second quarter of 2021, while 4.9 % (6.0 million) moved into employment and 3.8 % (4.6 million) towards unemployment. These figures cover the whole EU for the first time and are hence not directly comparable with data up to 2020. Figure 1 gives an overview of all possible transitions and shows the aggregate transitions between the first quarter and the second quarter of 2021 between the different labour market statuses. Data is shown in absolute numbers to allow a comparison of the actual size of the different flows. The levels indicated for employment, unemployment and inactivity refer to those remaining in each status between the two quarters. The grey arrows indicate the net direction of flows between two statuses. The matrix in Table 1 shows the same flows in % of the initial status, to give an impression of the share of individuals leaving each labour market status. All data shown is seasonally adjusted.

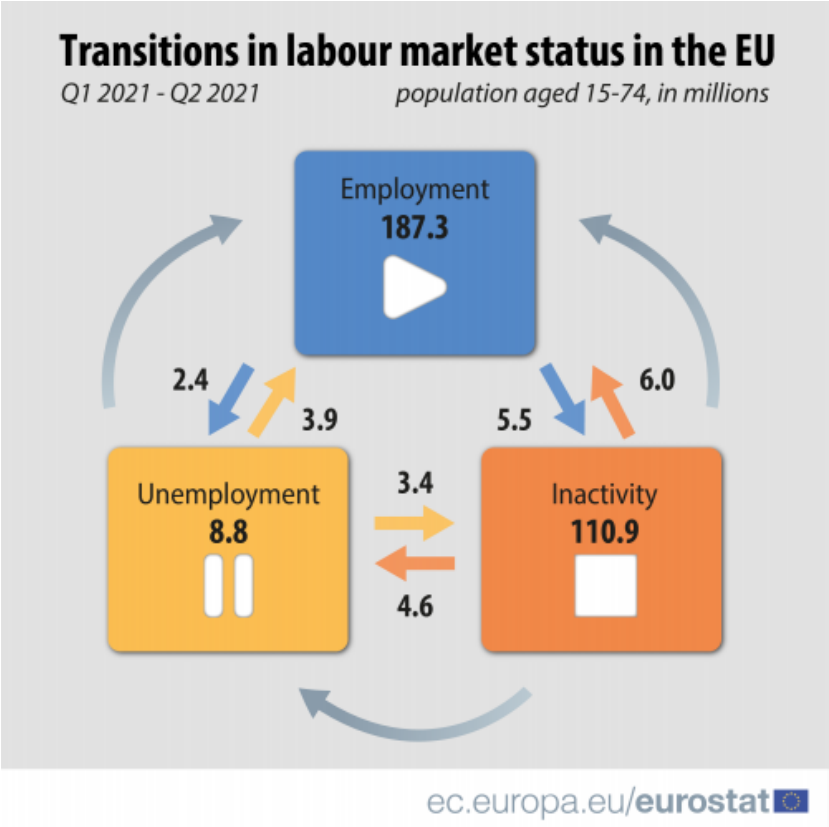

Figure 1: Schematic overview of labour market flows 2021Q1-2021Q2 (millions of persons) Source: Eurostat (lfsi_long_q)

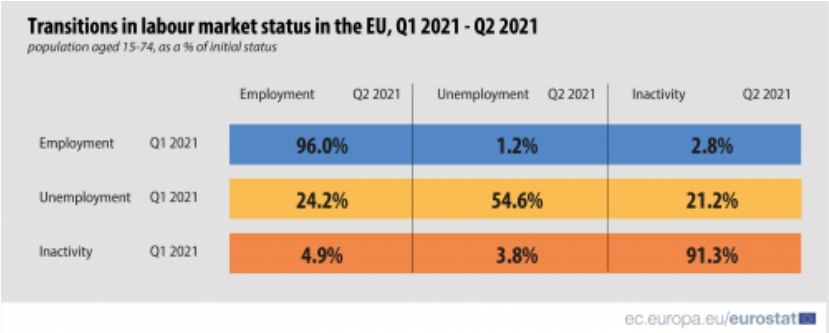

Table 1: Transitions in labour market status in the EU, 2021Q1-2021Q2 (in % of initial status-population aged 15-74) Source: Eurostat (lfsi_long_q)

Three quarterly transitions (unemployment to employment, unemployment to inactivity, and employment to inactivity) are included in the European Statistical Recovery Dashboard, see here .

Annual changes

Out of all those persons in the European Union (EU) who were unemployed in 2019, 39.8 % remained unemployed in 2020, a rate down in comparison with the transitions of the previous year, when 41.4 % had remained unemployed. 30.0 % moved into employment and 30.1 % left the labour force. The year before, 25.5 % of previously unemployed had left the labour force. These developments show the strong influence of COVID-19 measures on job search behaviour as well as availability for work, the two key conditions differentiating those out of the labour force from unemployed. Of all those initially in employment, 92.3 % remained in employment, while 2.5 % of those employed in 2019 were recorded as unemployed in 2020, and 5.2 % transitioned out of the

labour force. The matrix in Table 2 shows all transitions in % of the initial status. In contrast to quarterly labour market flows until 2020, annual figures do include data for Germany, with the exception of the transitions from 2019 to 2020, when estimates based on available data have been made to allow the derivation of EU aggregates.

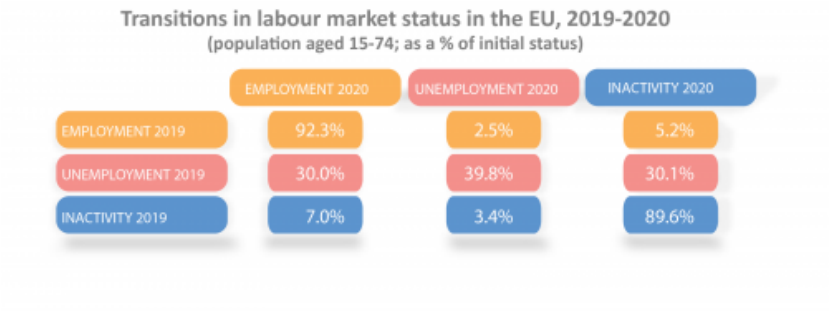

Table 2: Transitions in labour market status in the EU, 2019-2020 (in % of initial status-population aged 15-74) Source: Eurostat (lfsi_long_a), data extracted in April 2021

Data on country level is shown in Figure 2. To allow comparison, the focus is on outflows of unemployment from 2019 to 2020. Only in Denmark, outflows from unemployment into employment exceeded 50 %. In Bulgaria, Romania and Greece, less than 15 % of those who were unemployed in 2019 found a job in 2020. Transitions from unemployment out of the labour force were particularly high in Italy (44 %), and exceeded 30 % also in Belgium, the Netherlands, Poland, Ireland and Finland.

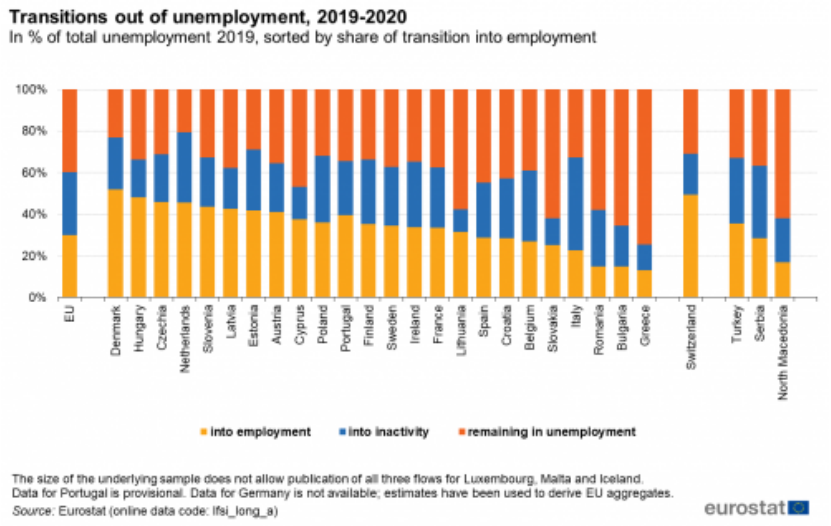

Figure 2: Transitions in labour market status in the EU, 2019-2020 (in % of initial status-population aged 15-74) Source: Eurostat (lfsi_long_a), data extracted in April 2021

Labour market flows: transition probabilities

Labour market flows in %: understanding transition probabilities

Flows can be expressed in levels, as a % of the initial status, or as % of the final status. In this article and in the flows database, Eurostat expresses flows in levels and as a % of initial status. This means that flows in % refer always to **outflows** from the initial status towards the final status. Mathematically speaking, each flow is calculated as the relevant outflow divided by the sum of all outflows from the same status. These figures can also be referred to as transition probabilities: given that an individual is in a certain labour market status in the initial period, the outflows expressed in % refer to the probability, all else equal, that the individual will

be in a certain labour market status in the final period.

Flow statistics augment the analysis of the net changes in stocks of unemployment, employment and inactivity. To illustrate this point, Figure 3 shows the evolution of net changes in unemployment each quarter since the second quarter of 2010 and how this change is composed. The yellow bars illustrate the net flow between employment and unemployment, while the blue bars illustrate the net flows between inactivity and unemployment. Negative values indicate net flows out of unemployment, which means unemployment decreases. On the other hand, positive values show net flows into unemployment, corresponding to increasing unemployment. Consequently, a yellow bar with a negative value indicates a net flow from unemployment into employment while a positive value indicates a net flow from employment into unemployment. The same holds for the interpretation of the flow from inactivity indicated by the blue bars. The red line traces the net change in unemployment levels resulting from the combined net flows. For net flows between two quarters, if the blue and yellow bars are both positive or both negative, then the corresponding red dot represents the sum of both bars. If one bar is positive (inflow into unemployment) and the other is negative (outflow from unemployment), then the red dot indicates the net effect of these two flows.

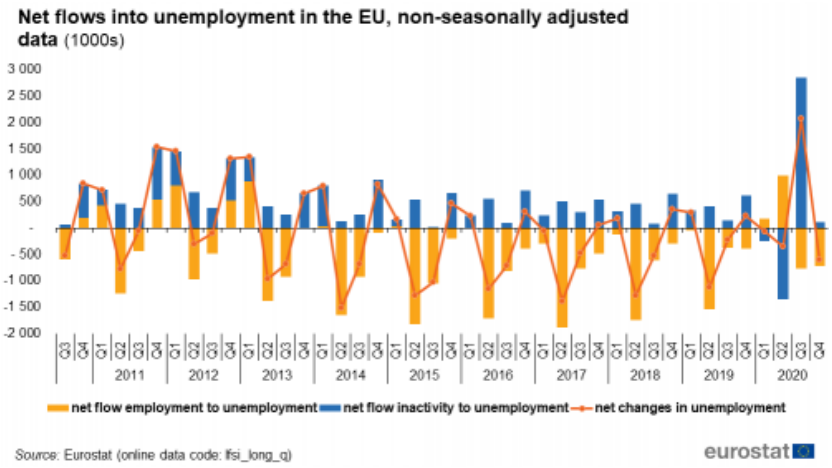

Figure 3: Net changes in unemployment, EU excluding Germany, non-seasonally adjusted data (thousand persons) Source: Eurostat (lfsi_long_q), data extracted in April 2021

Figure 4 shows the same information using seasonally adjusted data. From Figure 3 we know that the flows are highly seasonal, which means that the size and direction of a flow in and out of unemployment depends not only on general economic conditions, but also on seasonal factors that are repeated in a similar fashion each year. These seasonal factors are removed from the data ("seasonally adjusted data") in Figure 4, and it becomes visible that the red line peaks at the end of 2011, which means that inflows into unemployment were largest (or outflows from unemployment were smallest) during that period. From 2012 on, the red line significantly decreases, indicating a decreasing inflow into unemployment or an increasing outflow from unemployment. From 2014 on, net outflows of unemployment have exceeded inflows in basically all quarters until 2020. Starting with the second quarter of 2020, the impact of the COVID-19 crisis becomes clearly visible.

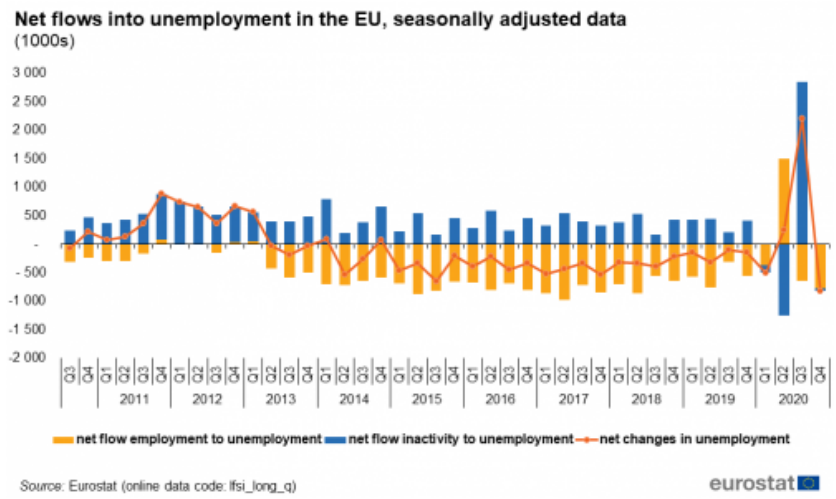

Figure 4: Net changes in unemployment, EU excluding Germany, seasonally adjusted data (thousand persons) Source: Eurostat (lfsi_long_q), data extracted in April 2021

Data sources

Methodology The data in this article can be subject to revisions due to improvements in the methods used to derive flow estimates. However, the statistics are judged reliable for policy analysis and other purposes. The methodology applied aims at producing comparable figures across countries and may differ from national approaches. For an up to date list of countries who send their national estimates to Eurostat for publication, please see the metadata file directly attached to the data table. Estimates are derived from the EU-LFS by exploiting the quarterly and annual overlap of a share of the sample; this overlapping data is weighted to be compatible with stock data derived from the EU-LFS for the initial period as well as the target period, with the exception of inactivity in the initial period. Since the EU-LFS is not designed as a panel survey, attrition between periods, particularly for year-on-year flows, is relatively high. Persons who move nationally, internationally, cannot be contacted, refuse to answer or die are missing from the pseudo-longitudinal sample. For the production of flow estimates, the relatively strong assumption has to be made that those who drop out are similar in their labour market transition behaviour to those who stay in the sample.

Eurostat calculates initial flow estimates as 3x3 ILO labour status transition matrices, for the age group 15-74, by sex and for individual countries.

The following general criteria are applied for quarter-on-quarter as well as year-on-year flow calculations:

- For all quarters from the second quarter of 2010 onwards, the quarterly longitudinal flow samples are defined as the overlap of their sample with the sample of the previous quarter for the age group 15-74. For all years from 2011 on, the annual longitudinal flow samples are defined as the overlap of all four quarters of one year with the same quarters of the previous year for the age group 15-74.

- All computations are restricted to persons aged 15-74 during the target period; this implies that in the initial period, persons aged 14 are included in the sample as well.

Labour status transitions - computational details

The current calculation of ILO labour status transitions already anticipates possible future consistency requirements for flow statistics. For each transition, i.e. from an initial period to the target period, it hence starts with separate calculations by sex and age group, using 10-year age groups 15-24, 25-34. . . 65-74. For each of these subgroups, the International Labour organisation (ILO) labour status distribution in the longitudinal flow sample is calculated, using target period weights. As those figures are based on a subset of the target sample only, the resulting grossed-up weights obviously do not provide correct estimates for the underlying population subgroups. They have hence to be calibrated further to known marginal totals for the subgroups in question. In order to do this, the target period distribution of the 3 labour statuses in the respective subgroups is taken, and correction factors calculated.

The flow sample weights are then adapted to match the distribution in the target period, namely for each

age group x sex x labour status. The steps described in the following could be applied to each individual matrix produced that way. However, in order to avoid empty or poorly populated cells as far as possible and to get more robust results, calculation of the headline indicators for the age group 15-74 starts with a further aggregation of the previous results over age, i.e. all intermediate transition matrix results calculated so far for an individual country are combined into one single matrix, by sex. As they are just added up, also these combined matrices match the relevant ILO labour status distribution in the target period, by sex.

As for the target period, marginal ILO labour status distributions for the initial period are available as well. The next step tries to achieve consistency of the transition matrix with both marginal distributions. The procedure applied requires a common population 15-74 in both periods – for that, the probably least critical value (inactive population initial period) is corrected in a way that the total population in both periods matches that of the final period. While in the majority of countries, the total population changes indeed very little between years for the time period for which data is produced, there are some countries with larger population changes; for these countries, flow estimates might be affected by this methodological choice. Afterwards an iterative raking procedure is applied. It starts with the matrix consistent with the final period distribution and tries to find matrix values which are as close as possible to the start matrix while ensuring also consistency to the (partly corrected) initial period distribution. The procedure implies an alternating adjustment of the matrix rows and columns. The iterative raking stops once the deviation of the row and column sums from the marginal distributions is less than a pre-specified threshold. The results of the iterative raking are the flow estimates to be used for publication by Eurostat. They are published separately for males and females.

Breakdowns of labour market flow statistics

While transitions between the ILO labour statuses are interesting and important indicators in their own right, there is nevertheless demand from policy makers, researchers and other stakeholders for breakdowns of these flows. Clearly, it is not only important to know how many unemployed persons manage to find a job and move towards employment, but also *which* of the unemployed manage this transition. A large number of other breakdowns for the transition between unemployment and employment are of interest, and the same holds for other transitions, such as transitions between inactivity and employment, and transitions between contracts for those who are employed and stay employed.

The production of these statistics is, however, not straightforward, as the matched sample is relatively small for most countries; for quarterly transitions, quarterly data is pooled and annual averages are used. As this still does not result in a sufficiently large sample in many cases, a simple regression based method to estimate transition probabilities is applied to the flow of interest, e.g. unemployment to employment. The set of explanatory variables is chosen not depending on an underlying economic model, but instead is driven by the demand for specific breakdowns mentioned above, as well as the availability of data in the LFS, i.e. there is no use made of external sources. The relevant advantage of the regression approach is that it allows us to include a function of age into the regression, exploiting the fact that we have a continuous variable at our disposal. This makes it possible to "borrow strength" from the distribution of age over the dependent variable. From the estimated coefficients of the regression, predicted probabilities are derived. Currently, nine tables of breakdowns based on this methodology are published under Eurostat's "experimental statistics" label. Figure 5 shows an example of the breakdown by age group for job-to-job transitions, one often requested flow based indicator. The figure shows the probability of an individual employed in both the initial and the target quarter, having changed jobs in between (defined as starting a new work contract between the two interviews). The figure gives a good impression of the differences between countries with regard to the total predicted probability. The probability of an employed individual changing jobs between two quarters in 2020 ranged from 6% in Sweden to just 1% in Greece, Romania and Slovakia. However, in all countries the transition probability for employed individuals aged 15-24 was much higher than that of older workers, with the lowest rate found for those aged 55-74. This confirmation of a specific pattern for a breakdown for all countries, while overall transition probabilities are so different, shows the need for these as well as further breakdowns.

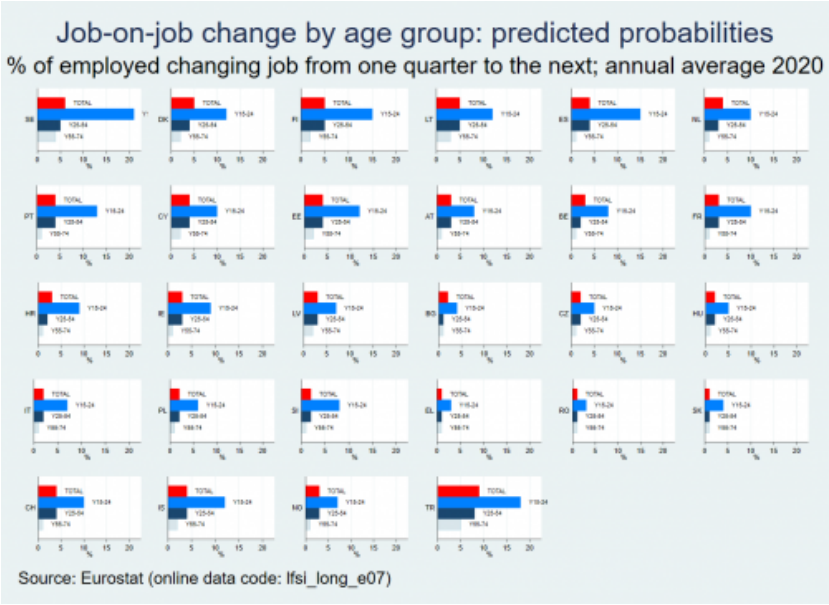

Figure 5: Predicted probabilities of quarterly job-to-job change by age group, annual averages 2020 (in % of initially employed in the relevant age group) Source: Eurostat (lfsi_long_e07)

Context

Employment and unemployment statistics can be used for a number of different analyses, including macroeconomic (looking at labour as a production factor), productivity or competitiveness studies. They can also be used to study a range of social and behavioural aspects related to an individual's labour market situation, such as the social integration of minorities, employment as a source of household income and unemployment as a risk for poverty or social exclusion.

Employment and unemployment are both structural as well as short-term indicators. As structural indicators, they may shed light on the structure of labour markets and economic systems, as measured through the balance of labour supply and demand. As short-term indicators, they follow the business cycle ; however, it has limits in this respect, as employment and unemployment are often referred to as a lagging indicator .

Flow statistics, as presented in this article, aim to bridge the gap in understanding the dynamics between these two important indicators. They are valuable in qualifying changes in unemployment and employment, and help to make informed policy decisions. Understanding for example why the level of unemployed does not drop after an economic recovery will be easier when considering the in-and outflows in and out of unemployment. In a case where unemployment stagnates because the substantial outflows from unemployment to employment are counterbalanced by inflows from inactivity to unemployment, the development can be judged as a recovery on the labour market despite the stagnating unemployment levels: we can see that large numbers of inactive individuals have decided to take up the search for employment, thus being counted as unemployed. The decision to search for work might indicate that these individuals earlier regarded their chances on the labour market as so low, that they did not even search for work (discouraged workers). The large outflows from unemployment to employment indicate that the demand for labour has indeed increased.

The situation is different if unemployment is stagnating because there are only minimal outflows of unemployment. In that case, flow statistics indicate that the economic recovery has not (yet) reached the labour market.

Other articles

- Employment - annual statistics

- Statistics on employment characteristics of households
- Unemployment statistics

Main tables

- Employment and unemployment (LFS)

Database

- Employment and unemployment (LFS)

Dedicated section

- Experimental statistics
- Labour market including Labour force Survey (LFS)

Methodology

- Flow statistics (ESMS metadata file — lfsi_long__esms)