

Additional File 5 to *Labor market regulation and the cyclicalcy of involuntary part-time work*

Data Description

In this subsection, we describe our different data sources. We primarily use yearly micro data from the European Labour Force Survey (LFS). However, additional data sources are needed for information on GDP growth and particular employment forms as well as for the calculation of transition probabilities. Table 1 provides an overview of our data sources.

For Germany, the European Labour Force Survey (LFS) provides cross-sectional information on about 830,000 respondents per year. Our main analysis covers the time period 2002 through 2017, as information on federal states (“Bundesländer”) is crucial for our analysis and only available as of 2002 (variable *region*).

The LFS provides information on respondents’ employment status. We use the variable *ilostat* which is based on the respective ILO definition¹ to determine whether respondents are employed or unemployed. We exclude all self-employed from our sample, using the variable *stapro*. Most importantly, the LFS allows for the identification of part-time workers (variable *ftpt*). This part-time measure is based on self-assessment. We further restrict our definition of part-time work to those who usually do not work more than 35 hours in total using the variable *hwusual*. The variable *ftptreas* determines whether we consider employees as involuntary part-time workers. Part-time employees are only considered as IPT if *Could not find a full-time job* applies. If instead respondents state to work part-time for one of the following reasons, they are assumed to work part-time voluntarily: *Person is undergoing school education or training, Of own illness or disability, Looking after children or incapacitated adults, Other family or personal reasons* (from 2006) or *Other reasons*.

The LFS furthermore allows the assignment of employees to occupations and industries. For industries, we primarily use the variable *na111d*, which is based on the

¹“Persons in unemployment or Unemployed population are defined as all those of working age who were not in employment, carried out activities to seek employment in a recent period (comprising the previous 4 weeks or month) and were currently available to take up employment (in the reference period or within a short subsequent period not exceeding two weeks in total).” https://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470306/lang--en/index.htm, accessed October 11th 2019.

NACE Rev 1.1 classification. As of 2009, the LFS provides information on respondents' industry only based on the ~~more recent~~^{newer} NACE Rev. 2 classification. We use guidelines by the European Communities (2008, chapter 5) to translate this information into NACE Rev. 1.1 (on the one-digit level). We exclude respondents from our data set who are assigned to *Agriculture, hunting and forestry*, *Activities of households* or *Extra-territorial organizations and bodies*. We use ~~the~~ variables *is883d* (2002-2010) and *isco3d* (2011-2017) to identify occupations. Again, our analysis is based on the one-digit level. In line with the restriction relating to industries, we exclude respondents who are *Skilled agricultural, forestry and fishery workers*. The LFS also provides information on relevant socio-demographic characteristics. We use ~~the~~ variables *age* and *sex* to define demographic groups.

For information on GDP, we use additional Eurostat data. We calculate regional GDP growth based on yearly GDP in Euros ~~at~~^{on} German federal state level.

For the calculation of transition probabilities in Section 4.2 of our paper, we use Mikrozensus data covering the time period 2012-2015. In general, this data comprises the same information as the LFS, because the German LFS data is collected from the Mikrozensus. However, unlike the LFS data, the original Mikrozensus data can be linked to a panel. This ~~is possible~~^{possibility exists} for the years 2001-2004 and 2012-2015, but not for a longer time period.² overlap with the time period of our main analysis. We follow instructions by Herter-Eschweiler and Schimpl-Neimanns (2018) to ~~longitudinally~~ combine survey years ~~longitudinally~~. We use the same definitions for the different employment states as in the main analysis.

Additional information is required to assess the incidence of particular employment forms in Section 5 of our paper. The Federal Employment Agency provides ~~quarterly~~ time series ~~quarterly~~ data on employees' characteristics by federal states ("Beschäftigte nach ausgewählten Merkmalen"), including information on the number of marginally employed. This data source allows to distinguish between those who have a minijob in addition to a regular job and those who are exclusively marginally employed. It only provides information on the incidence of marginal employment as of 2003. For 2002, we use data that is ~~separately~~ available ~~separately~~ from the Federal Employment Agency. Since marginal employment has only been allowed alongside another job since the Hartz reforms in 2003, this additional source only covers individuals who are exclusively marginally employed.

For information on short-time work, we also use data from the Federal Employment

²Mikrozensus panel data is furthermore available for the time period from 1996 to 1999 which does not

Agency (“Angezeigte und realisierte Kurzarbeit”). We use the annual time series data on the actual number of short-time workers by federal states (as opposed to the often reported planned numbers ~~which are often reported~~). This data covers all legal bases for claiming short-time work subsidies.

For the measurement of the incidence of working -time accounts and the calculation of moving shares conditional to job changes in additional file 6, we rely on data from the Socio-economic panel (SOEP). This data set is based on an annual representative survey of about 30,000 individuals in about 14,000 private households in Germany. Respondents who work overtime are asked whether their additional working time can be recorded in a working time account. For a discussion of data sources ~~covering in which~~ working time in Germany ~~is covered~~ see Zapf (2012).

References

- European Communities (2008). “NACE Rev. 2 – Statistische Systematik der Wirtschaftszweige in der Europäischen Gemeinschaft”. In: *eurostat – Methodologies and Working Papers*.
- Eurostat (2019). *EU Labour Force Survey Database User Guide*. Tech. rep. European Commission, Eurostat. Directorate F: Social statistics, Unit F-3: Labour market and lifelong learning.
- Herter-Eschweiler, Robert and Bernhard Schimpl-Neimanns (2018). *Möglichkeiten der Verknüpfung von Mikrozensus-Querschnitterhebungen ab 2012 zu Panels*. Statistisches Bundesamt and GESIS – Leibniz-Institut für Sozialwissenschaften.
- Zapf, Ines (2012). “Flexibilität am Arbeitsmarkt durch Überstunden und Arbeitszeitkonten – Messkonzepte, Datenquellen und Ergebnisse im Kontext der IAB-Arbeitszeitrechnung”. In: *IAB-Forschungsbericht* 3/2012.

Table 1: Data sources

Source	Information	Period
European Labour Force Survey	Main data source, incl. information on employment states	1997-2017
https://ec.europa.eu/eurostat/web/lfs/overview Release 2018, extracted October 2018, no DOI available		
Eurostat	GDP at current market prices by NUTS 2 regions	1997-2017
http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10r_2gdp		
Mikrozensus	Panel data on employment states	2001-2004 and 2012-2015
http://www.forschungsdatenzentrum.de/de/haushalte/mikrozensus (RDC of the Federal Statistical Office and Statistical Offices of the Länder Mikrozensus) 2012 DOI: 10.21242/12211.2012.00.00.3.1.0, 2013 DOI: 10.21242/12211.2013.00.00.3.1.0 2014 DOI: 10.21242/12211.2014.00.00.3.1.0, 2015 DOI: 10.21242/12211.2015.00.00.3.1.0		
Socio-Economic Panel	Incidence of working time accounts	2002-2017
https://www.diw.de/de/diw_01.c.576627.de/soep.v33.1.htm DOI: 10.5684/soep.v34		
Federal Employment Agency	Incidence of marginal employment and of short-time work	2002-2017
https://statistik.arbeitsagentur.de/DE/Navigation/Statistiken		
Federal Statistical Office	Inter-state commuting and moving behavior	2013
urlhttps://www.pendleratlas.de https://www.statistikportal.de/de/bevoelkerung/raeumliche-bevoelkerungsbewegung/wanderungen-ueber-die-grenzen-der-bundeslaender		

Note: The results and conclusions are ours and not those of Eurostat, the European Commission or any of the national statistical authorities whose data have been used.