

## **Readme for *Is Automation Labor-Displacing? Productivity Growth, Employment, and the Labor Share***

This document details the data and programs used for creating tables and figures in this paper. We first outline the data processing and where to access the raw datasets; and then describe the various datasets and programs we made available to replicate our results.

### **Raw data access and processing**

This paper uses publicly available EUKLEMS data, which can be downloaded from [www.euklems.net](http://www.euklems.net). Our main data source is the 2008 database release, which we combine with the 2007 and 2009 releases to maximize data coverage. We use the highest possible level of industry disaggregation (classified by ISIC revision 3) where TFP growth data are available: our paper appendix lists these industries. Furthermore, we remove a number of country-years where the change in the laborshare is exactly zero for all industries, as we suspect this to be the result of some imputation procedure: this concerns Ireland prior to 1988, Luxembourg prior to 1986, and Sweden prior to 1981. We also remove Greece for a lack of TFP data; as well as Eastern European countries, Cyprus, and Malta. As described in the paper, we exclude several industries: agriculture (code AtB), public administration (code L), private households (code P), and extra-territorial organizations (code Q). Lastly, as also outlined in the paper, we create a sectorgroup variable which classifies the remaining industries into five broad groups: manufacturing, utilities & construction, education & health, low-tech services, and high-tech services.

We further analyze the EUKLEMS 2017 database release separately since it uses a different industry classification, ISIC revision 4. We again drop agriculture (code A), public administration (code O), private households (code T), and extra-territorial organizations (code U). We analyze years 2000-2015 for Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden, the UK, and the US—Greece, Ireland, Luxembourg, and Portugal are excluded for a lack of consistent TFP data coverage.

We merge country-specific business cycle indicators from the OECD into the EUKLEMS data. These business cycle data are available from <http://www.oecd.org/sdd/leading-indicators/oecdcompositeleadingindicatorsreferenceturningpointsandcomponentseries.htm> or <http://www.oecd.org/sdd/leading-indicators/CLI-components-and-turning-points.csv> for a direct download in CSV format.

We construct real wages (for use in Table 3) by deflating nominal wages by the Consumer Price Index, obtained from the OECD – these data are available from [https://stats.oecd.org/Index.aspx?DatasetCode=mei\\_prices](https://stats.oecd.org/Index.aspx?DatasetCode=mei_prices) with an OECD iLibrary subscription.

Further, we use patent data from the USPTO – downloadable here <https://github.com/funginstitute/downloads>. These data are processed and matched to Compustat firms and their industry classification as described in Autor et al (2017):

<https://economics.mit.edu/files/11709>. We crosswalk these data to the EUKLEMS industry level and will assist any authors with Compustat data access in performing our crosswalk.

Lastly, we use the 2013 release of the World Input-Output Database (WIOD) which is available for download here: <http://www.wiod.org/release13>. To match the industries we analyze in EUKLEMS, we exclude WIOD industries AtB, L, and P (note that industry Q is not observed in WIOD in the first place); and merge industry codes 17t18 and 19; and codes 60 through 63. We calculate up- and downstream weights for each year from 1995 to 2007 separately, and then take the unweighted average across years by country-industry.

### **Processed data and code**

Here is an overview of the processed datasets we provide, and their purpose in producing the tables and figures in our paper:

<i>File</i>	<i>Description</i>	<i>Purpose</i>
KLEMS_b2008_clean.dta	Processed EUKLEMS-2008 database (supplemented with information from 2007 and 2009 releases), including OECD business cycle indicators	Input file for most tables and figures
KLEMS_2017_clean.dta	Processed EUKLEMS-2017 database, including OECD business cycle indicators	Input file for Table 6, panel F
IO_weights.dta	Input-output weights by country-industry from WIOD	Input file for Table 9
country_weights.dta	Country-size weights in terms of employment, hours, and value added	Used in several programs to weight results by country size
country_weights_bydecade.dta	Decade-varying country-size weights in terms of employment, hours, and value added	Used in several programs to weight decadal results by country size
industry_weights.dta	Industry-size weights in terms of value added, averaged across countries and years	Reported in Table 2

This is the code for producing each of our tables and figures – in all programs, input and output paths should be set at the top before running.

<i>File</i>	<i>Description</i>	<i>Notes</i>
Table 1.do	Makes Table 1	
Table 2.do	Makes Table 2	
Table 3.do	Makes Table 3	
Table 4.do	Makes Table 4	
Table 5.do	Makes Table 5	
Table 6 – panel A.do	Makes Table 6, panel A	
Table 6 – panel B.do	Makes Table 6, panel B	
Table 6 – panel C.do	Makes Table 6, panel C	

Table 6 – panel D.do	Makes Table 6, panel D	
Table 6 – panel E.do	Makes Table 6, panel E	
Table 6 – panel F.do	Makes Table 6, panel F	
Table 7.do	Makes Table 7	These three programs (for producing Tables 7 & 8) use input file KLEMS_b2008_pat_clean, which contains confidential patent data (cf. <a href="https://economics.mit.edu/files/11709">https://economics.mit.edu/files/11709</a> ) and is therefore not released.
Table 8 – panel A.do	Makes Table 8, estimates with patent counts	
Table 8 – panel B.do	Makes Table 8, estimates with patent citations	
Table 9.do	Makes Table 9	
Table 9 – Store within prediction.do	Stores predicted within-industry changes in employment, hours worked, and labor-share from Table 9	
Table 9 – Store between prediction.do	Stores predicted between-industry changes in labor-share from Table 9	Requires first running “Table 9 - Store within prediction.do”
Table 10.do	Makes Table 10	Requires first running “Table 9 - Store within prediction.do” & “Table 9 - Store between prediction.do”
Table 11.do	Makes Table 11	Requires first running “Table 9 - Store within prediction.do”
Table 12.do	Makes Table 12	
Table 12 – Store within prediction.do	Stores predicted within-industry changes in labor-share from Table 12	
Table 13.do	Makes Table 13	Requires first running “Table 12 – Store within prediction.do”
Figure 1.do	Makes Figure 1	Top and bottom panel are stored as separate figures (1A and 1B)
Figure 2.do	Makes Figure 2	
Figure 3.do	Makes Figure 3	
Figure 4.do	Makes Figure 4	
Figure 5, 7.do	Makes Figures 5 and 7	Requires first running “Table 9 - Store within prediction.do” & “Table 9 - Store between prediction.do”; Top and bottom panels of Figure 5 are stored as separate figures (5A and 5B).
Figure 6.do	Makes Figure 6	Requires first running “Table 9 - Store within prediction.do”; Top and bottom panels are stored as separate figures (6A and 6B).
Figure 8.do	Makes Figure 8	Top and bottom panels are stored as separate figures (8A and 8B).