Quick-start Guide – model set-up

## System requirements

LINDA is designed to operate on desktop workstations and the *Microsoft Windows* operating system. We recommend minimum system specifications of a 64-bit operating system, computing processor(s) with at least 6 physical cores, 32GB of RAM, and 1TB of hard disk space.[[1]](#footnote-1) *Microsoft Excel* is required to generate parameter alternatives and analyse summary statistics reported by the model. A computer screen not less than 17” in diagonal dimension is also required.

## Loading the model onto a new computer

The model is generally delivered as a single \*.msi file. This file extracts the files required to run the model, along with the associated directory structure. Double click on the \*.msi file, and work through a standard set of install options. Note that you may receive a security warning that the file is from an “unknown publisher” – this is because we have not obtained a (costly) software publisher’s certificate. Minor issues to note include:

* The model can be installed into any directory of your choosing, outside of the folders that are protected by the operating system (like the “Program Files” folder). As you will need to obtain ready access to the model folder, we suggest you save it in a directory that you access frequently. Also, the directory name should not include the character “.”
	+ The remaining discussion denotes this directory as “LINDA\”
* Model updates are delivered in the same fashion as the full model install. If an update is installed in the same directory as the original model, then it will over-write all pre-existing model files except those that have been generated by the user. This means that all of the simulations that you have generated via a previous version of the model will not be deleted when you up-date the model.

The installer creates three subdirectories: CODE, DOCUMENTATION, and MODEL.

* The CODE subdirectory includes a Visual Studio project for adding tax and/or benefit schemes programmatically (LINDA\CODE\Taxes, see Section 4), and for writing your own post-simulation analysis routines (LINDA\CODE\UserAnalysis, see Section 3.3).
* The DOCUMENTATION subdirectory includes the model’s user manuals.
* The MODEL subdirectory includes files that are required to run the model.

The MODEL subdirectory contains four subdirectories in addition to a set of model files.  The subdirectory ANALYSIS\_FILES contains a set of Excel files that are used by the model’s in-built analysis routines, and an additional subdirectory that stores some related statistics. The subdirectory BASE\_FILES contains a separate subdirectory for each "base" specification that you create with the model, in which files that are required for the respective base specification are stored.   The subdirectory SIMULATIONS will contain a separate subdirectory for each simulation that you run, in which are stored the panel data generated by the model, model parameters, and excel simulation output.   The TAX\_DATABASE directory will contain files describing the tax databases used by the model to project taxes and benefits.

## Extracting base data from the Wealth and Assets Survey

The model starts with data reported by the Wealth and Assets Survey (WAS) for a population cross-section of reference adults. A Stata program (e.g. “derive WAS 2017.do”) is provided in the model subdirectory “LINDA\MODEL\BASE\_FILES\”, which can be used to extract and format the WAS data ready for importing into the model. Unless otherwise stated, the model has been specified to use the standard End User License version of the WAS available through the UK Data Archive. Please open the file “derive WAS 2017.do”, edit the directory locations as indicated by comments at the top of the file, and run it to generate the base dataset.

## Using UKMOD to create a database for imputing tax and benefit payments

LINDA is designed to use two complementary methods for imputing taxes and benefits. The public download version of the model is set-up to impute taxes and benefits from a reference database generated by UKMOD. Here, we focus exclusively on the steps involved to obtain the reference database using UKMOD.

1. Request access to UKMOD via the following link: <https://www.microsimulation.ac.uk/ukmod/access/>
	1. You should follow the directions to request access to UKMOD and the Family Resources Survey data for 2017
2. Download the EUROMOD installer file from the following link: <https://www.microsimulation.ac.uk/euromod/access/>
3. Run the EUROMOD installer file, and accept all default settings
	1. Do not launch the program immediately.
4. When you are granted access to the UKMOD, you should receive credentials for accessing an online file repository, called Redmine.
5. Access Redmine, and use the site navigation (accessible from the top right drop-down box) to Download the UKMOD installation files and the FRS data files.
	1. Your access email should provide a link to the UKMOD installer files
	2. The FRS data are located under UKMOD > Data > Single wave UKMOD input data > UK\_2017\_latest\_release
6. Extract the UKMOD files
	1. UKMOD is an add-on to EUROMOD, delivered as a set of zip folders
	2. Extract the installer files to a folder of your choosing, which we denote by UKMOD\
	3. Extract the FRS data files to UKMOD\UKMOD\_PUBLIC\_AX.XX+\Input (where X.XX relates to the version of UKMOD used)
7. Open EUROMOD
8. Set the EUROMOD “Project Folder” to UKMOD\UKMOD\_PUBLIC\_AX.XX+
9. Select “UK” under “Countries”
10. Run UKMOD
11. Select country: UK; system: UK\_2017; dataset: UK\_2017\_a4
12. Run, and allow EUROMOD to finish
13. In Excel, open UKMOD\UKMOD\_PUBLIC\_AX.XX+\Output\uk\_2017\_std.txt
	1. In the import wizard use “Tab” delimiters
14. Save as LINDA\MODEL\TAX\_DATABASE\UKMOD\base2017.csv
	1. CSV (Comma delimited) (\*.csv) – note, **not UTF8 format**
	2. When prompted, “do you want to keep using that format?”, select “yes” and close Excel

## Creating a simulation base

As noted in the introduction, the model starts with data reported by the Wealth and Assets Survey for a population cross-section of reference adults. The model parameters have been calibrated to match the model to a wide range of summary statistics calculated from survey data sources, with the calibration structured around the year in which the reference population was observed (see the technical documentation supplied with the model for details). The model comes packaged, ready to project the circumstances of the population cross-section forward and backward through time, to build up a complete life history for each reference individual. It is recommended that this be done, and that the associated data should be defined as the “base” for subsequent simulations. This can be done by “double-clicking” the file “LINDA\MODEL\SIDD.exe”.

A window showing the model execution should open, and provide information to let you know what the model is doing. When the model simulation is complete, a total time for execution should be reported, and you should see a cursor indicating that the window is ready for a new command.

1. Close the execution window
2. Open the MODEL subdirectory, and then open “Job File.xls”
	1. note that a “Security Warning” may appear in Excel if macros have been disabled
3. Ensure that you allow macros to work in Excel
	1. please ask your system administrator if you require assistance with this
4. Press ALT+F8
5. Select “SIDD”, and press the “Run” button
6. Enter “base2017” into the text-box with the title “name of run to adopt as new base”
7. Enter “base2017” into the text-box with the title “directory name for new base”
8. Press the “CONVERT RUN TO NEW BASE” button

Excel will then work away for a short while, after which you should receive a message confirming that the new base has been created. Please note that the macro may look as though it has frozen at this stage – please give it some time to complete.  If you look in the BASE\_FILES subdirectory, you should now see a new subdirectory with the name “base2017”, which includes all of the files defining the base simulation specification.

1. The model is delivered on the assumption that you have a 64-bit operating system. Please contact the NIESR if you require files to run on a 32-bit system. Note also that these minimum system requirements are for the base model specification, and are not sufficient for every feasible model specification. Please contact NIESR for further assistance. [↑](#footnote-ref-1)