SPECIALISTS IN EMPIRICAL ECONOMIC RESEARCH

PORTABLE DYME

A Simplified Software Package for Model Building

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PART I: PortableDyme – An Overview

PortableDyme Model Building Framework

► What is PortableDyme?

⇨ Complete model building framework (software and basic model)

⇨ „Portable" means „runs on any Windows computer without installation"

⇨ „Dyme" comes from the econometric programming library „Interdyme" published by INFORUM, USA

► What's in there?

⇨ Project management and editing tool

⇨ Database maintenance tools

⇨ C++ compiler (needed to write and execute the statements which form the model)

⇨ G7 regression software

⇨ Interdyme econometric programming library

⇨ Basic macroeconometric Input-Output model template

⇨ Evaluation tools based on Microsoft Excel

PortableDyme Model Building Framework

▶ The four major steps of model building:

1. Building the historical database
2. Performing regressions
3. Writing model code
4. Performing impact analysis and evaluating

▶ PortableDyme reflects these steps both on disk and in the project editor

▶ Each step contains preconfigured scripts and instructions

▶ Model building is an iterative process!
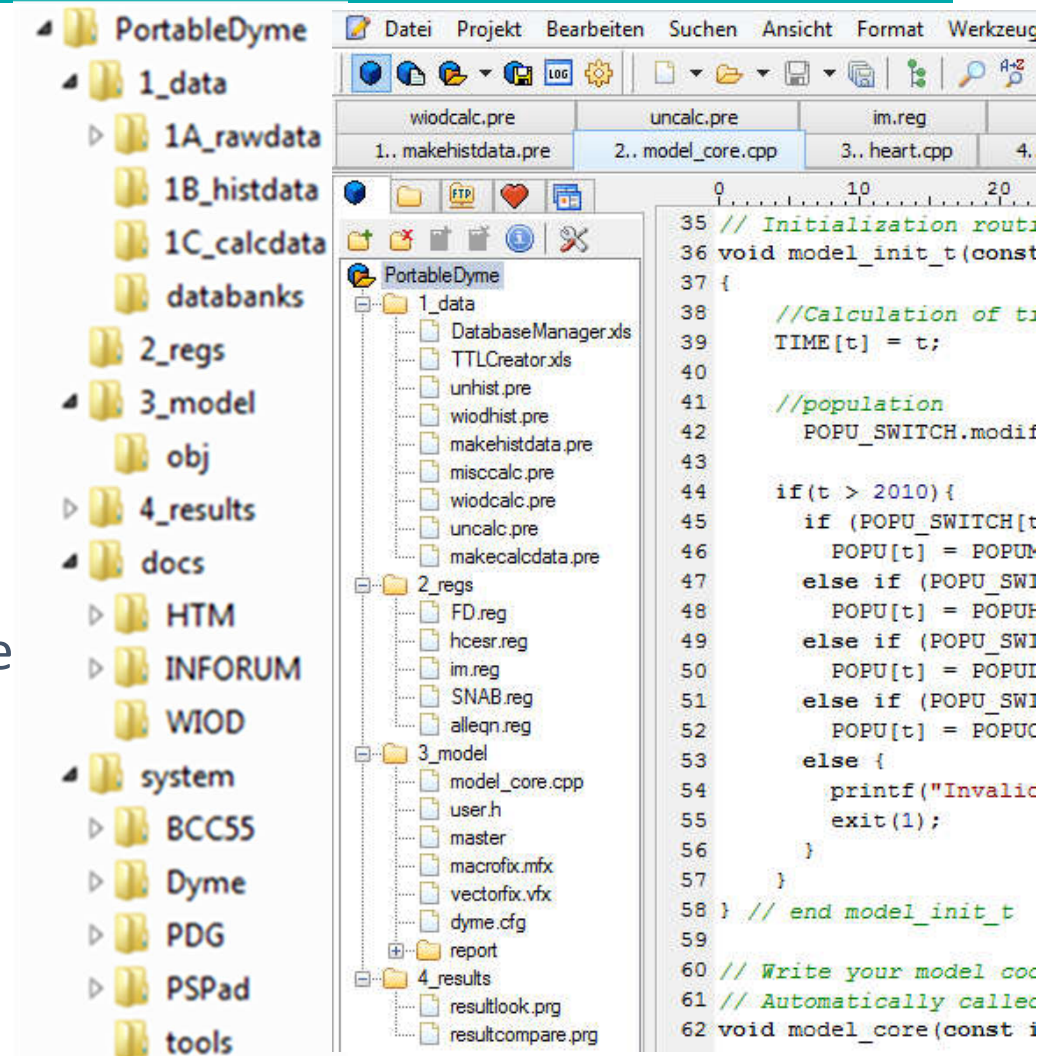
PortableDyme Model Characteristics

► Model characteristics (depending on data,…)

⇨ **Macro models**
  - Consider GDP and its components, employment and prices
  - Include national accounts
  - Depict economic circuit (production, income, consumption etc.)

⇨ **Input-Output models**
  - Show industry detail in production, employment,…
  - Depict direct, indirect (and induced) effects

⇨ **Econometric models**
  - Have an empirical foundation
  - Based on past observations (historical data)
  - Assume that past behaviour is valid in the future

⇨ **Combinations possible!**

PortableDyme Model Characteristics

⇨ Only a few exogenous variables, all others are endogenously calculated

⇨ Combines econometric-statisticial analysis with IO analysis

⇨ Dynamic models (year by year solution)

⇨ Non-linear model due to many feedback effects

- Requires iterative solution algorithm (≠ explicit solution)

► What can such a model be used for?

⇨ Evaluation of historical developments due to rich database (ex post analysis, monitoring)

⇨ Forecasting (ex ante analysis)

⇨ Impact analysis (answering ‚what if' - questions)

⇨ Developments over time or comparison of different situations at a particular time
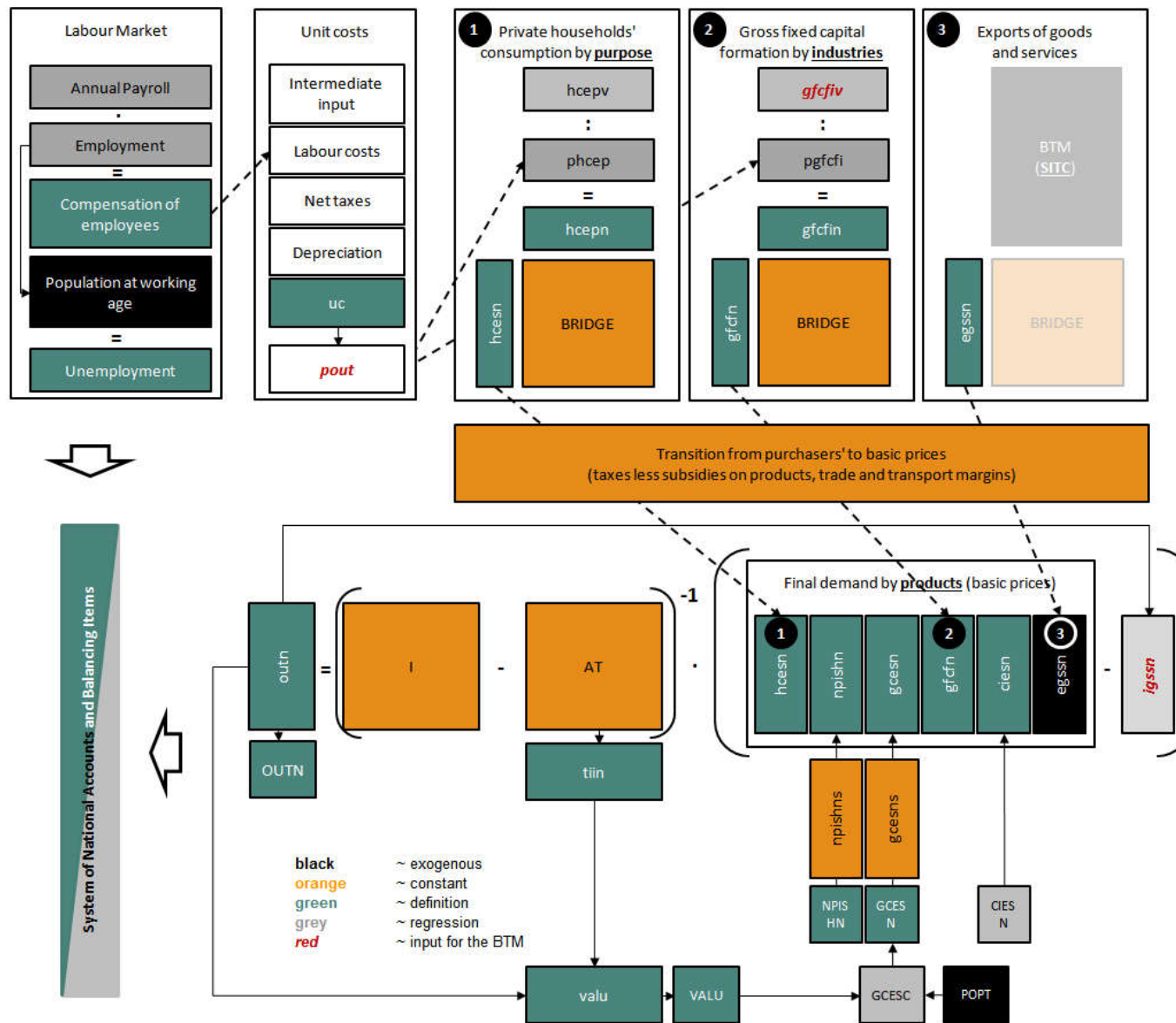
Scenario analysis
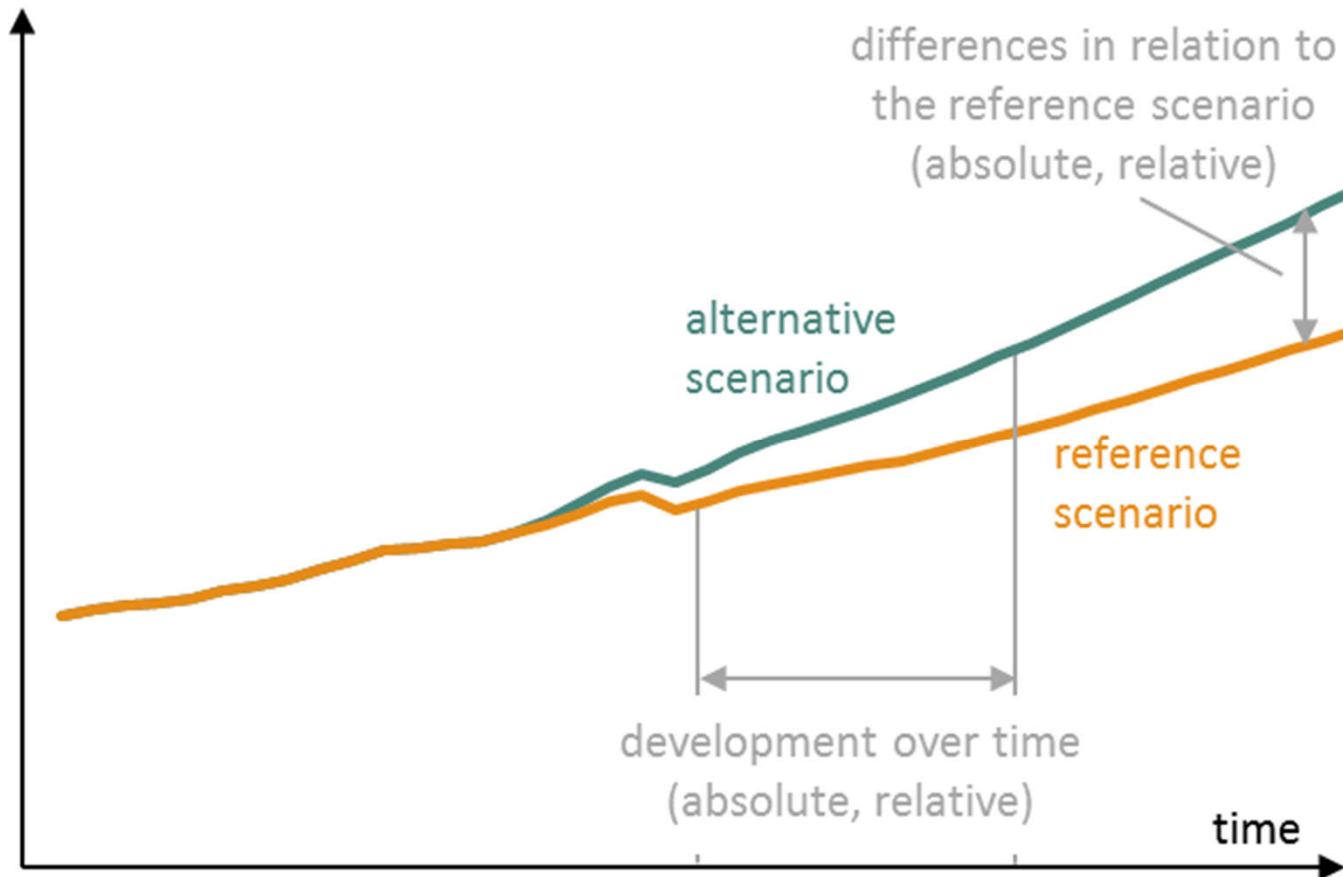
PortableDyme Model Template

► Basic macro-econometric input-output model (excl. prices)
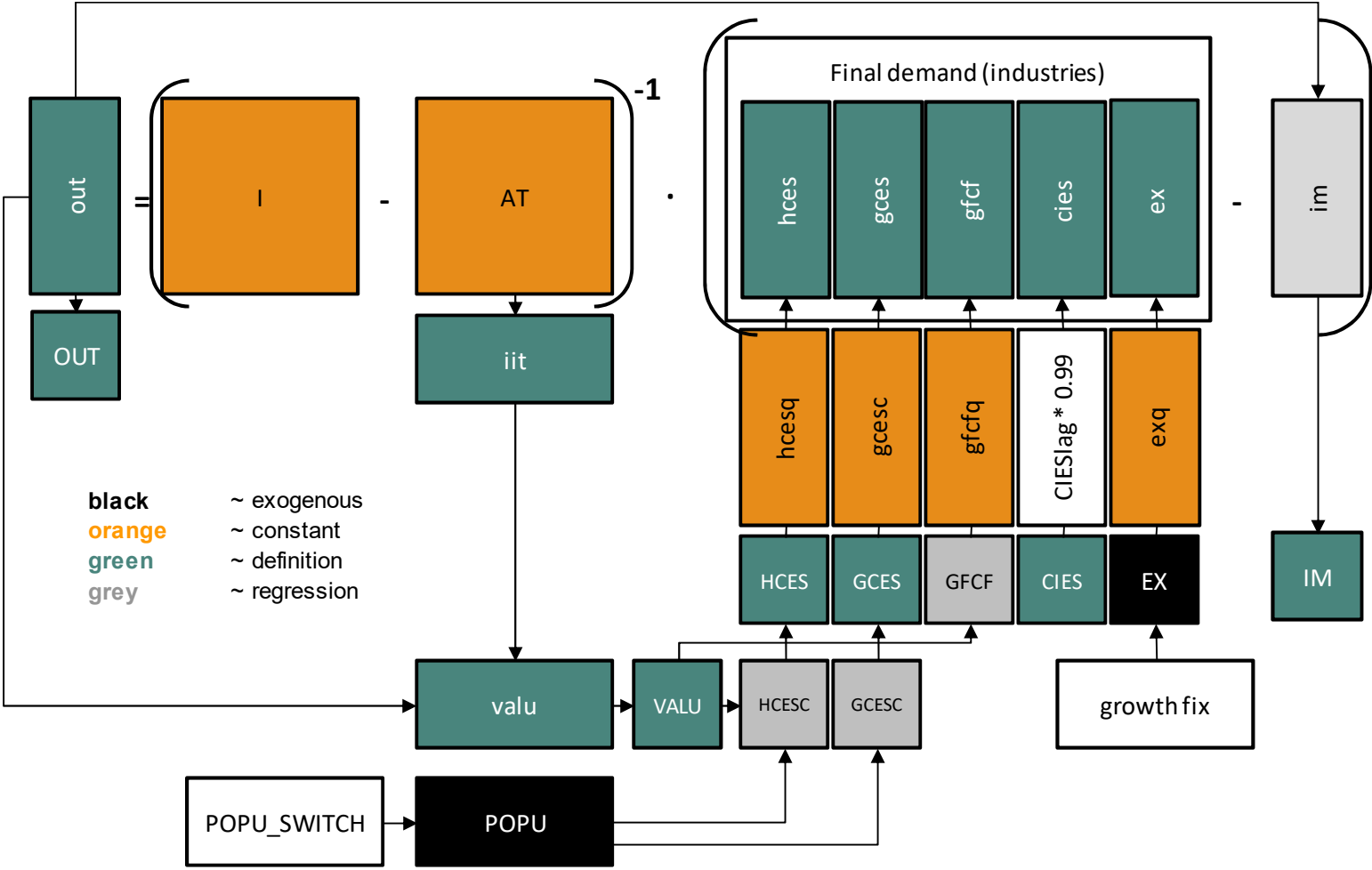
Example for comprehensive economic model

E3 model structure

► E3 model: Covers the interactions between the economy, energy system and environment

⇨ Comprehensive modeling of the economy incl. inter-industry linkages (IO approach)

⇨ Integration of energy balances into the modeling system

⇨ Modeling of the inter-relations between economic growth by industries and energy consumption

⇨ Energy prices influences production and consumer prices
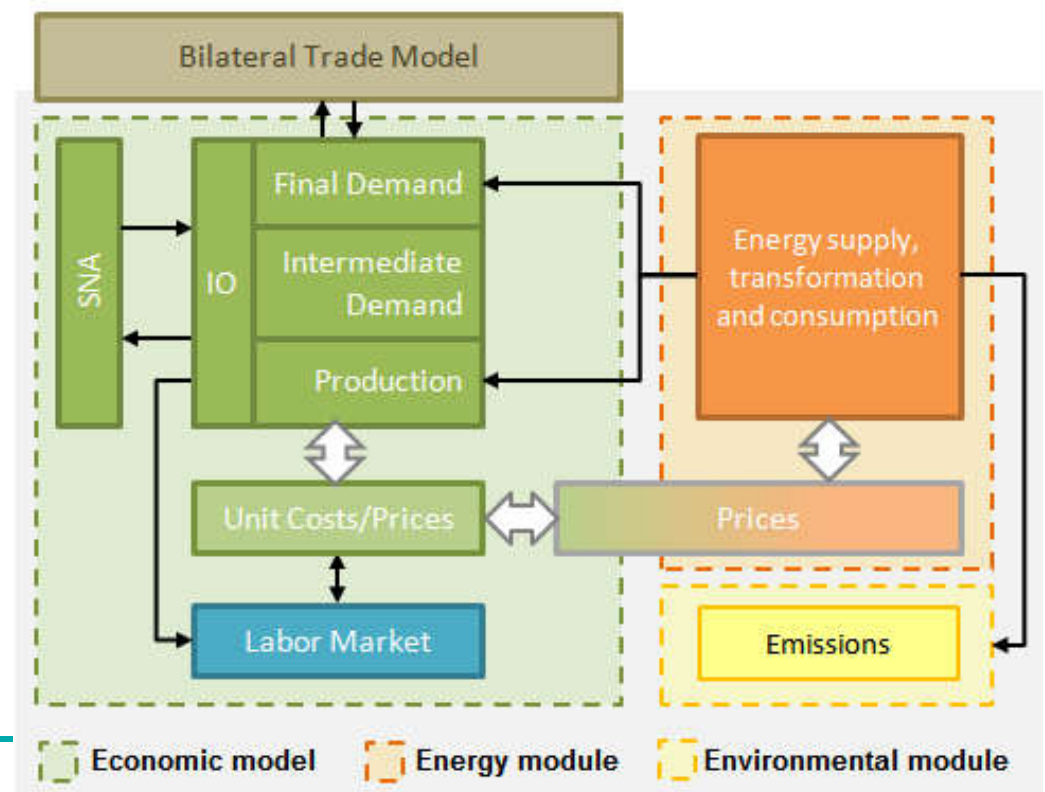
Setting up PortableDyme

► Drag and Drop the PortableDymeVanilla directory from the USB drive to your computer's **C:** drive

Basic PortableDyme Commands

► To launch the PortableDyme environment, double-click the rocket (launch.exe)

► Commands will have to be typed in the command box; pressing ENTER executes them

► The most important PortableDyme commands are:

⇨ edit   Opens the project editor tool

⇨ help   Opens the documentation

⇨ 1 to 4   Switch between model building steps

⇨ g7   Start G7 program
               used in step 1 for database creation and
               used in step 2 for performing regressions

⇨ idmodel compiles model from human-readable into machine-readable form (step3)

⇨ run   Run the model (step 3)

1_Data collection and preparation with G7

► Original data files („raw data") will have to be placed in appropriate folder

► Raw data will be put into corresponding database files
  ⇨ .BNK   Time series (macro) database
  ⇨ .VAM   Vector and matrix database

► Each variable needs to be described in DatabaseManager.xls → Name, type, description, etc.

► Vector and matrix variables need to have row & column titles described in TTLManager.xls

1_Data collection and preparation with G7

► G7 provides the „xl" command for reading Excel files into databases, e.g.

xl open   Opens a workbook

xl vecread   Reads data from a sheet into a vector

⇨ See chapter 2.3.11 in „INFORUM Help"

→ execute help command from the prompt to find it

► For every data provider, a .pre ("preparation") file containing "xl"-commands needs to be created

► Other essential G7 commands, e.g. looking at a variable, graphs, etc.:

⇨ See chapter 2.1.7 in „INFORUM Help"

Hands-on Training: Data Input

► Goal: get the data into the model

► Data sources:

⇨ OCED http://stats.oecd.org

⇨ UN https://esa.un.org/unpd/wpp/

⇨ Eurostat http://ec.europa.eu/eurostat/data/database

► Data are organized differently, structure is not harmonized

⇨ Data for different years can be stored in rows, columns, worksheets or workbooks

► Next: Examples for processing data with G7

Hands-on Training: Data Input

► 1. Example: **time series data** (e.g. population)

   ⇨ Download data from https://esa.un.org/unpd/wpp/

   ⇨ Store the Excel-files in 1_data\1A_rawdata\UN

   ⇨ Each variable needs to be described in DatabaseManager.xls
      → Name, type, description, etc.

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Hands-on Training: Data Input

⇨ Create a pre-file and save as unhist.pre in the folder
1_data\1B_histdata

⇨ Open Excel workbook with original data   *xl open*

(check the directory!)

⇨ Select the worksheet where the data is in   *xl open ws*

⇨ Read the data into the databank   *xl read*

⇨ Close Excel workbook   *xl close*

► Open G7 and type add makehistdata.pre in the command line

► Check your results!

► To be continued…

Thank you for your attention.

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