

# CompNet

The Competitiveness Research Network

The 6<sup>th</sup> CompNet  
Vintage: What did  
we learn?

Experiences from 6<sup>th</sup> CompNet vintage  
(feedback from data providers, cross-country comparability report, own experiences) ⇒

- Changes in data preparation package
- Changes in the code
- Changes in the data collection process

# Data preparation package

# More detailed description of raw variables

- General problem 6<sup>th</sup> vintage: often vague raw variable definitions → questions from data providers, comparability problems, delays in data processing
- 7<sup>th</sup> vintage:
  - More exhaustive and precise definitions, often according to International Financial Reporting Standards (IFRS) and International Accounting Standards (IAS);
  - Three input variable groups: financial, trade, other

# More detailed description of raw variables

Old:

A	B
1	Raw variables definition
2	
3	<b>Variable</b> <b>Definition</b>
4	Adjusted export      Total exports by the firm, adjusted for reporting threshold
5	Capital      Tangible fixed assets
6	Cash and cash equivalents      Cash and balances at banks
7	Cash flow (from profit/loss statement)      EBT + depreciation + extraordinary income
8	Current assets      Cash and other assets expected to turn in cash within a year
9	Current liabilities      Short term debt + Trade credit + Other current liabilities
0	Depreciation      Depreciation on intangible and tangible assets
1	Dividends      Dividends
2	Firm's birth year      Year of establishment of the firm (limited availability)
3	Fixed assets      Tangible, intangible and other fixed assets
4	Four-digit sector      4-digit Nace Code rev. 2
5	Imports      Total imports by the firm
6	Intangible fixed assets      Total intangible fixed assets
7	Interest paid and financial charges      Interest on financial debts + other financial expenses
8	Labor      Yearly average number of employees, calculated in full-time equivalent
9	Labor cost      Gross employee compensation (wages + employers' contributions to social security)
0	Long term debt      Loans due in more than 1 year
1	Non-current liabilities      Long term debt + Other non current liabilities
2	Other current assets      Current assets - Trade debtors - Total inventories
3	Other current liabilities      Other current liabilities
4	Other fixed assets      Fixed assets - tangible fixed assets - intangible fixed assets
5	Other non-current liabilities      Provisions
6	Profit/loss      EBIT (operating profits)
7	Profits and losses before taxes      EBT (EBIT + financial revenues)
8	Raw materials (intermediate inputs)      Consumption of raw materials + energy + external services
9	Sector      2-digit Nace Code rev. 2
0	Shareholder funds (equity)      Equity
1	Short-term debt      Loans due within 1 year
2	Total assets      Total assets
3	Total inventories      Inventories and consumable biological assets
4	Trade credit (accounts payable)      Trade credit or Accounts payable (Liabilities related to purchased goods)
5	Trade debt (accounts receivable)      Trade debt or Accounts receivable
6	Turnover      Total sales net of VAT
7	Unadjusted export      Total exports by the firm, not adjusted for reporting threshold
8	Value added      Turnover - raw material
9	

New:

A	B	C	D	E	F
Variable	<b>Definition - First best</b> Note: For stock variables like assets or liabilities we would prefer the yearly average (e.g. fixed assets at the beginning of the calendar year + fixed assets at the end of the calendar year)/2). Stock variables at a particular point in time (e.g., beginning or end of the accounting period) are only second best.	<b>Definition - Second best</b>	<b>Definition - Third best</b>	<b>Information to document the data:</b> What definition have you used? Please specify which of the proposed definitions you have used. If you have used a different definition.	<b>Module</b>
1	Fixed assets	Sub item of non-current assets (yearly average) consisting of capital (tangible fixed assets) + intangible fixed assets + other fixed assets (mainly financial long-term assets)	Fixed assets at a particular point in time		Financial
2	Capital	Balance sheet item tangible fixed assets (yearly average), sub-item of fixed assets and non-current assets: only land, machinery, equipment, buildings and other durables; does not include long-term financial assets and intangible assets (patents, goodwill etc.)	Tangible fixed assets at a particular point in time		Financial
3	Intangible fixed assets (New in CompiNet)	Related balance sheet item intangible fixed assets (yearly average): acquired - not developed in-house - intellectual property (patents, licences, copyrights, trademarks) and goodwill	Intangible fixed assets at a particular point in time		Financial
4	Other fixed assets	Basically all fixed assets (yearly average), that could not be subsumed under tangible fixed assets or intangible fixed assets: contains mainly long-term financial assets such as shares in affiliated enterprises, loans to affiliated enterprises, stocks, securities or bonds held not for immediate sale	Other fixed assets at a particular point in time		Financial
5	Current assets	Current assets (yearly average) are assets according to IAS 1.66, expected to be realised in the entity's normal operating cycle, held primarily for the purpose of trading. Sub-items are: accounts receivable, total inventories and other current assets (including cash and cash equivalents)	Current assets at a particular point in time	cash and cash equivalents + accounts receivable + inventories	Financial
6	Cash and cash equivalents	Balance sheet item cash and cash equivalent (yearly average). It is a sub-item of other current assets: value of a company's assets that are cash or can be converted into cash immediately. These include cash means, bank accounts, marketable securities, commercial paper, treasury bills and short-term government bonds with a maturity date	Cash and cash equivalents at a particular point in time		Financial
7	Total inventories	Inventories (yearly average) according to IAS 2.6: include assets held for sale in the ordinary course of business (finished goods), assets in the production process for sale in the ordinary course of business (work in process), and materials and supplies that are consumed in production (raw materials)	Total inventories at a particular point in time		Financial
8	Accounts receivable	Related balance sheet item: accounts receivable (yearly average), sub-item of current assets	Accounts receivable at a particular point in time		Financial
9	Other current assets	Basically all current assets (yearly average) that could not be subsumed under accounts receivables and inventories; contains for example cash and cash equivalents (see definition above), prepaid expenses and accrued income	Other current assets at a particular point in time		Financial
10					

- Complete revision of the questionnaire: Excel-file instead of text file
- Raw variable preferred definition now also included in questionnaire

# Revised questionnaire

Old:

New:

Questionnaire - Notepad  
File Edit Format View Help  
\*\*\*\*\*Questionnaire\*\*\*\*\*

- 1) which is your country?  
PORTUGAL
- 2) which is the path of your database?  
e:\DATEN\PROJEKTE\Compnet\Do Files\Preparation\Test\_File\_Portugal\
- 3) How is your database called?  
PTadj\_augmented 40e.dta
- 4) How is your additional dataset file (sent by CompNet) named?  
Country\_Portugal.dta
- 5) How do you call your capital variable?  
TANGIBLE\_FIXED\_ASSETS
- 6) How do you call your raw material variable?  
m
- 7) How do you call your labor cost variable?  
lc
- 8) How do you call your value added variable?  
ADDED\_VALUE
- 9) How do you call your labor variable?  
NUMBER\_OF\_EMPLOYEES
- 10) How do you call your sector variable?  
NACE\_CODE\_V2
- 11) How do you call your turnover variable?  
OPERATING\_REVENUE
- 12) How do you call your mark/id variable?  
BVD\_ID
- 13) How do you call your year variable?

	A	B	C	D	E
1	This Questionnaire is filled with example variables from our data set. Please substitute the answers with you own information or delete and lea				
2	ID	question_txt	required_format <i>Note: This question refers only to the format of the required raw variables, either "string", or "float" with "," as the 1000</i>	question_answer	definition_information
3					
4	1	Which is your country?		Portugal	
5	2	Which is the path of your database?		e:\DATEN\PROJEKTE\Compnet\Do Files\Preparation\Test_File_Portugal\	
6	3	How is your database called?		PTadj_augmented 40e.dta	
7	4	How is your additional dataset file (sent by CompNet) named?		Country_Portugal.dta	
8	5	How do you call your capital variable?	float	TANGIBLE_FIXED_ASSI	Balance sheet item tangible fixed assets (yearly average), sub-item of fixed assets and non-current assets: only land, machinery, equipment, buildings and other durables; does not include long-term financial assets and intangible assets (patents, goodwill etc.)
9	6	How do you call your intermediate input variable?	float	m	All expenses of the firm for products and services acquired valued at basic prices, i.e. excluding Non-VAT taxes on products but including subsidies on products. Definition includes all expenses for raw materials and consumables, expenses for components, expenses for goods intended for resale and expenses for hired services. (If items from income statement are used: expenses for purchased materials and hired services only according to the classification of expenses by nature method.)
10	7	How do you call your labor cost variable?	float	lc	Gross wages and salaries paid to employees, other monetary or non-monetary expenses for employee

- 6<sup>th</sup> vintage: only unadjusted export raw data
- 7<sup>th</sup> vintage:
  - Additional trade information in trade questionnaire
  - Threshold adjustment procedure
  - Import- and export data at intra- and extra EU – level available (at least for some countries)

# Code changes

- 6<sup>th</sup> Vintage: read in from text-file, line numbers as reference  $\Rightarrow$  difficult to check even for programmers, sensitive to errors (e.g. accidentally deleted lines)
- 7<sup>th</sup> Vintage: read in from Excel files

- 6<sup>th</sup> Vintage: only selected log files produced (e.g. Data\_Preparation.smcl) ⇒ difficulties with error diagnosis for CompNet secretariat
- 7<sup>th</sup> Vintage: each code module produces a separate log file to make error checking easier

- 6<sup>th</sup> Vintage: not advisable to interrupt and restart code  $\Rightarrow$  global macros lost, indicators not calculated, program crash
- 7<sup>th</sup> Vintage: each module reloads global macros and data  $\Rightarrow$  modules have still to be run sequentially but code can be paused and rerun after a module has finished.

# Outlier detection and treatment

- 6<sup>th</sup> Vintage:
  - Outlier routine dropped individual value
  - Level compared to sector
  - Growth
- 7<sup>th</sup> Vintage:
  - Drop observation
  - when the ratios between VA,LC,K,L,M are several iqrs away from median
  - Growth rates of L above hardcoded thresholds
- Reason:
  - Is robust to being run as secondary outlier routine
  - Drops significantly more firms

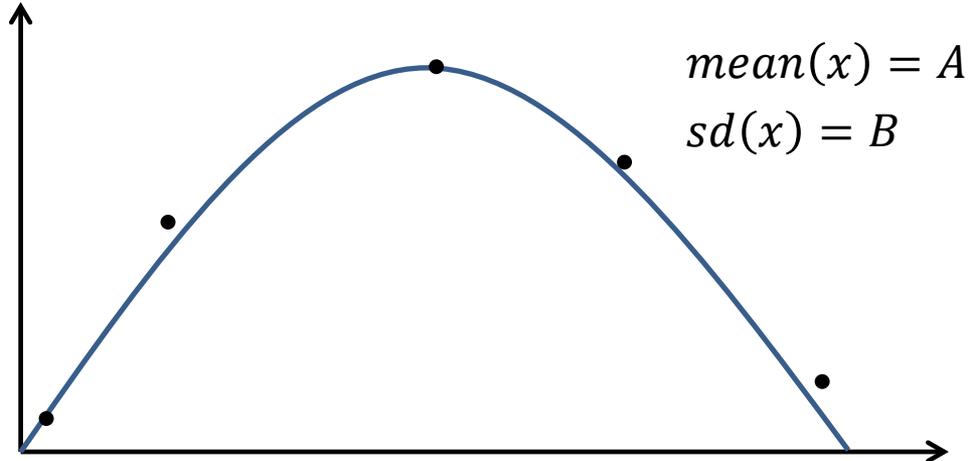
- 6<sup>th</sup> vintage: except for some exceptions based on firm numbers published by Eurostat, weighting based on macro sector and size class (1-digit)
- 7<sup>th</sup> vintage: calculation of sector (2-digit) and size class weights based on national business registers

# Weighting procedure

Firm id	L	Size Class	Firms in Population	VA
1	100	2	10	200K
2	10000	5	1	200M

- 3 Different relevant means of  $\frac{VA}{L}$ :
  - Sample mean: 11.1K
  - Firm population mean: 3.6K
  - Aggregate  $\frac{VA}{L}$  (mean per worker): 18K

- This vintage, we aggregate data
  - quality check
  - Create “EU” country
- Methodology:



- 6<sup>th</sup> vintage: General problem of unsatisfactory production function estimations (especially translog results); reasons: one-shot results, measurement problems (e.g. measurement of capital stock), underlying assumptions of estimation method
- 7<sup>th</sup> vintage: OLS-estimations as baseline
- (General problem of cross-country comparability of regression-based productivity measures)

# Changes data collection process

- 6<sup>th</sup> Vintage: successive collection of results for the full and the 20E sample  $\Rightarrow$  shorter calculation time per sample but unnecessary delays and additional data collection cost
- 7<sup>th</sup> Vintage: code produces output simultaneously for full and 20E sample

- For this vintage, we will add several layers to the quality checks, which now consists of:
  - Accounting identities
  - Impossible values
  - Values against whitelist
  - Time trends
  - Dispersion & Skewness
  - Aggregation