

Statistical Business Register Implementation of ISIC Revision 4

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Outline

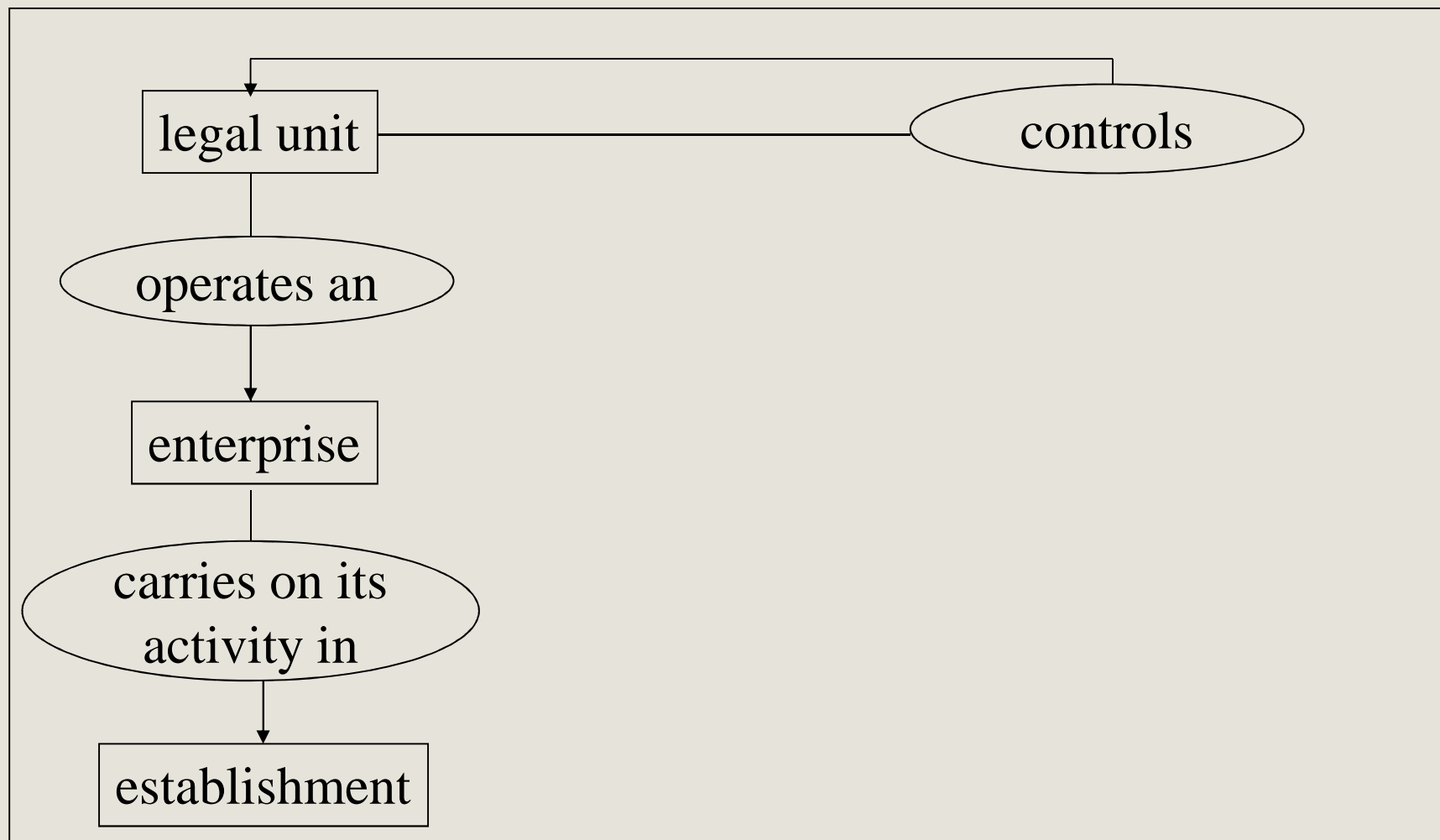
- Introduction: definitions
- Statistical Business Register
- Benefits and issues of using administrative data

- Issues of the transition to a new classification
- Recoding of a Business Register
- Information sources
- Quality assurance
- Summary and conclusions

Statistical Business Register (BR)

- Statistical Business Register is a list (computer file, database) of the enterprises and/or establishments in a country, with an identification number for each unit
- Statistical Business Register is an essential tool for industrial statistics:
 - Serves as a statistical frame for industrial surveys
 - Serves as a basis for grossing-up results from sample surveys to produce business population estimates
 - Serves as an important tool for managing an industrial census
 - A system for updating the BR is essential for the preparation of reliable time series for employment, value added and business demography in the industrial sector

Conceptual model of SBR



Functions of SBR: (i) Traditional

- **Frame for industrial surveys:** provide appropriate ID and address data. The results of the survey are important input for updating the register. The register is used as a basis for grossing-up results from sample surveys to produce business population estimates
- **Survey support:** SBR stores important contact data to facilitate the filling in of the questionnaires; Can document the workflow of the conduction of the survey
- **Comprehensive survey documentation:** which units where selected for which surveys; basis for response burden calculations, can be enlarged with information related to response burden

Functions of SBR: (ii) Emerging

- Documentation of classification codes: needs empirical and up-to-date information on the production structure of the enterprise; indication of the relative importance of the activities
- Cooperation with other statistical institution (e.g. the National Bank)
- Unique statistical database
- Other statistical uses: e.g. business demography statistics
- Link to administrative data: For example updating turnover data from tax register; the link to the social security database for updating the number of employees, etc.
- Other non-statistical uses: depends on the legal basis

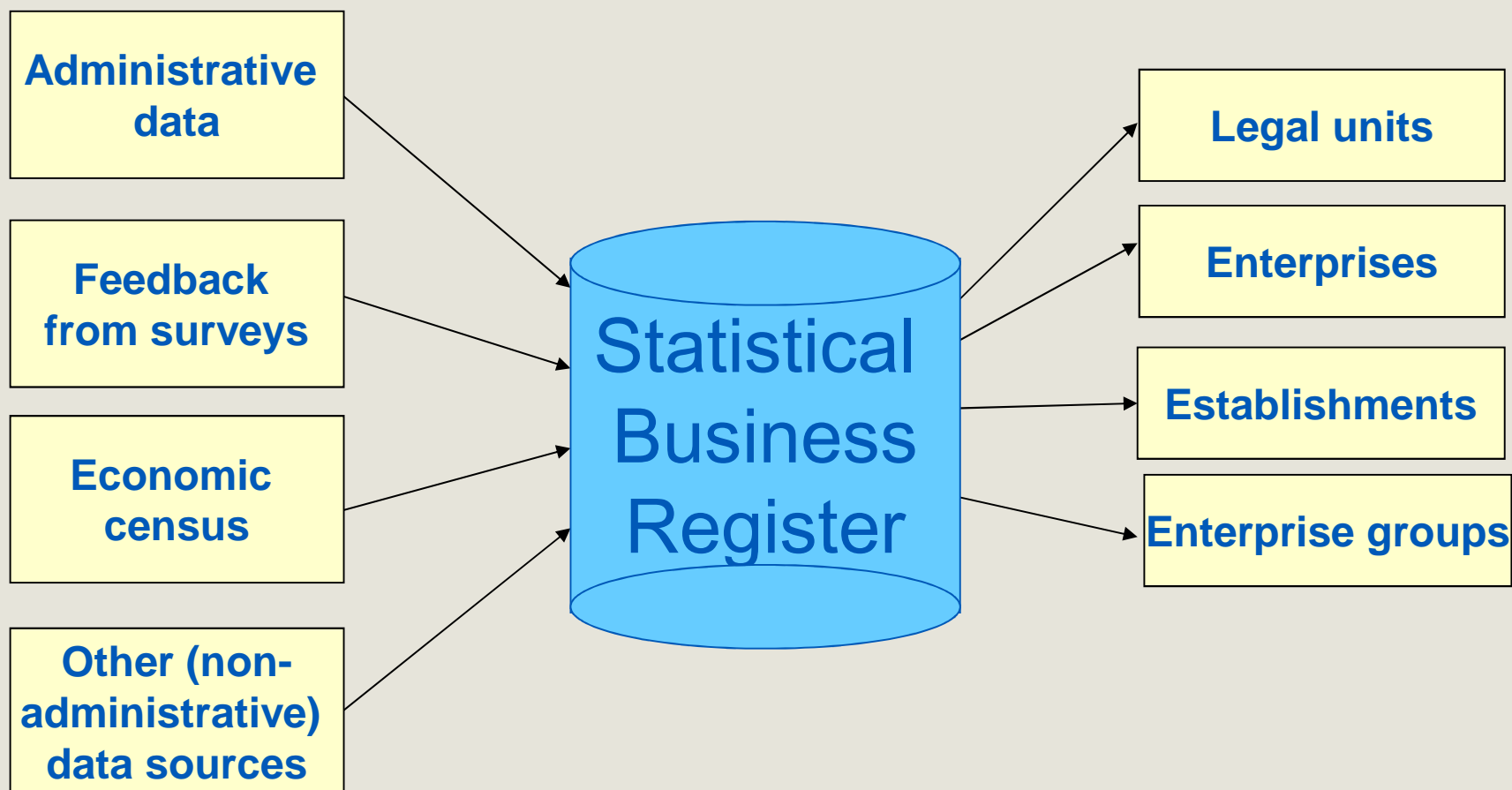
Functions of SBR: Business demography

- A well-ordered SBR can serve as the basis for reliable periodic statistics on business demography
 - entries and exits – in terms of number of units and their employment levels, as well as for employment size distributions by activity and district.
 - Statistics for business demography provide useful indicators of business conditions by activity and district.
 - Conversely, however, irregularities in time series for such tabulations can provide a useful indicator of flaws in the updating process.
- The Statistics Office must take care to respect policies that will enhance the accuracy of statistics for business demography

Functions of SBR: Business demography (2)

- When closures occur, the date of closure should be entered into SBR → the closure is ascribed to the actual time of closure, not to the time that closure was reported.
- Care must be taken in deciding how to assign identification numbers to units, bearing in mind that any change in an ID number involves an implicit exit and entry.
- A clear Statistical Business Register policy is needed when a business physically relocates: same district? moves over short and long distances
- Changes in ownership: does the main product (activity) remains the same?

Data Sources of SBR



Data Sources of SBR

- Tax Registers: can serve for both entries and exits
- Single administrative source
- Multiple administrative sources
 - Lack a common identifier (matching necessary)
 - Duplicate entries (due to matching errors)
 - Complete coverage cannot be expected
 - No source may be available to document closures (if tax register is absent)
 - Costly field checks needed
- Economic Census
- Feedback from industrial surveys (very effective for exits)

Data Structure of SBR

1. Unified ID (common reference number for business)
2. Name and physical location;
3. Mailing address;
4. Name and address of the headquarter
5. Kind of economic activity, description or code;
6. Legal organization - incorporated or unincorporated;
7. Type of ownership: public (by central, state and local governments); national, private and foreign controlled;
8. Number of persons employed;
9. Volume of sales or value of output;
10. Source and date of information

Data Structure of SBR

Entities = Statistical units:

- both establishments and enterprises
- with links to each other

- Establishment
 - Data collection for production and employment

- Enterprise
 - Data collection for cost and receipts related to non-industrial services
 - Final data collection and reporting at enterprise level

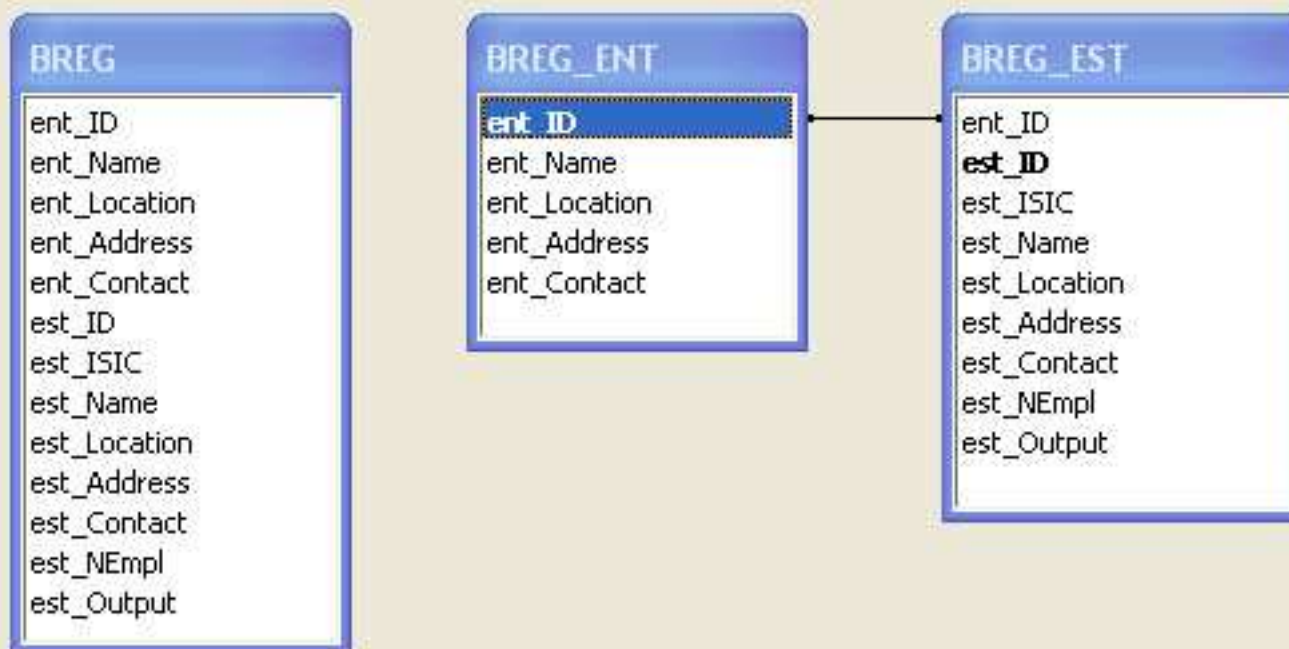
Data Structure of SBR

BREG : Table													
	ent_ID	ent_Name	ent_Location	ent_Address	ent_Contact	est_ID	est_ISIC	est_Name	est_Location	est_Address	est_Contact	est_NEmpl	est_Output
	0001	AAA				00011	1511	AAA-1				0	0
	0001	AAA				00012	1511	AAA-2				0	0
	0001	AAA				00013	1511	AAA-3				0	0
	0002	BBB				00021	1600	BBB-0				0	0
	0003	CCC				00031	2301	CCC-1				0	0
*												0	0

BREG_ENT : Table						
		ent_ID	ent_Name	ent_Location	ent_Address	ent_Contact
	▶	+ 0001	AAA			
		+ 0002	BBB			
		+ 0003	CCC			
	*					

BREG_EST : Table									
	ent_ID	est_ID	est_ISIC	est_Name	est_Location	est_Address	est_Contact	est_NEmpl	est_Output
	▶	0001	00011	1511	AAA-1			0	0
		0001	00012	1511	AAA-2			0	0
		0001	00014	1600	AAA-3			0	0
		0002	00021	2301	BBB-1			0	0
		0003	00031	2301	CCC-1			0	0
	*							0	0

Data Structure of SBR



Record linkage and matching

- When multiple data sources are used the system will require extensive linkage and matching
- Two kinds of duplication:
 - Records which are already in the register
 - Introduction of duplicates into the register
- Easy if there is a common reference number for businesses (*Exact Matching*)
- Otherwise apply *Probabilistic Matching* - determining the probability that records from different sources should match, using a combination of variables
- Perform quality checks
- Appropriate use of existing software should be made

Updating system

- It is preferable to utilize an integrated register application with the following basic modules:
 - Importing of external sources
 - Parsing and editing data from external sources
 - Matching (sources against each other and against register)
 - Entering of field data, validation and storage
 - Managing the register (edit, ad hoc edition, etc.)
 - Querying and reporting
 - Managing of the annual industrial survey and other surveys

Recommendations (IRIS 2008)

- Reliance on a comprehensive SBR is recommended (previously a separate industrial directory was recommended)
- Statistical units: both establishments and enterprises with links to each other
- Strategy for data collection: the importance of using administrative data is stressed
- Practical need for a cut-off: coverage of units of more than a certain size (usually employment size)

What are *Administrative Data*

Definition 1: Data available in records of government bodies administering various governmental programmes, mainly collected for the purpose of carrying out various non-statistical programs

Definition 2: A wider definition would include also organizations operating in private sector

Examples: tax register, social security database, register of companies (industrial register), register of Economic Chamber

Benefits of *Administrative Data*

Cost: Surveys and censuses are expensive while administrative data can be cheap, often “free”

Response Burden: Reduced burden on data suppliers; Statistics can be compiled more frequently with no extra burden

Coverage:

- Full coverage of target population
- No survey errors and lower non-response
- Better small-area data

Timeliness: can be improved for some types of data but not for all

Issues and limitations of *Administrative Data*

- Administrative units do not always coincide with statistical units:
 - legal entities or some breakdown of these entities suitable for administrative purposes vs. statistical units (enterprises and establishments)
 - **profiling**: the process of converting from administrative units to statistical units – typically is a function of the statistical business register (see EUROSTAT: *Business Register Recommendation Manual*, chapter 19)
- Are known to contain inactive units
- Administrative and statistical priorities are often different

Issues and limitations of *Administrative Data* (2)

- Different definitions of variables:
 - for example *turnover* for VAT purposes may not include turnover related to the sales of VAT exempt goods and services, whereas the statistical system is likely to require the total turnover
- Different classifications: conversion tables needed for different classifications:
 - are not classified by economic activity
- Necessary to perform data parsing and conversion
- Enterprises are not broken down into establishments (as recommended in IRIS 2008)

Issues and limitations of *Administrative Data* (3)

- Timeliness
 - Data may arrive too late
 - Data may relate to a different reference period: e.g. tax year may not coincide with calendar year, necessary for industrial statistics
- Public sources of administrative information are generally set up for the purpose of tax collection and monitoring government policies → they are susceptible to political changes
- Data from multiple sources: matching/linking issues, data conflicts. It is necessary to establish priority rules.

Transition to a new classification

- The transition to a new classification - a very complex process: involves virtually all aspects of the compilation and presentation of the relevant statistics;
- Even more valid for the transition to a new classification of economic activities - used in a myriad of statistics; a high level of coordination is therefore required;

Transition to a new classification

- **Advantages:** data are available according to an up-to-date classification with an improved depiction of current economic structures
- **Disadvantages:** (from the perspective of many data users) –
 - Breaks in the time series.
 - Back-casting is necessary in order to minimise these problems.
 - Not all statistics can be transferred to the new classification at the same time (different statistics are published in different classifications)
 - Certain statistics will need to be compiled according to both the old and the new classifications in parallel

Transition to a new classification

- An important basic prerequisite: recoding of **all statistical units in the business register** to comply with the new classification;
- The units have to be coded according to both the old and new classifications in parallel for a certain period of time;
- Involve all institutions that list the units in their registers according to the ISIC (or the corresponding national) classification (tax administration, social insurance registers, etc.)

Analysis of the correspondence ISIC R3 → ISIC R4

- Recoding of every statistical unit - a time and money consuming task
- Start with an estimation of the expected workload.
- How many enterprises/establishments can be recoded automatically?
- For how many enterprises/establishments some kind of investigation work is needed?
- → Use the correspondence table between the old and the new classification.

Recoding types

- In principle, the relationship between elements in R3 and R4 may be one of the following four types:
 - **1:1 cases:** One element in the old classification can be found in the new classification in the same way.
 - **1:n cases:** One element in the old classification has been subdivided into two or more elements in the new classification.
 - **n:1 cases:** Several elements in the old classification have been aggregated to form one element in the new classification.
 - **m:n cases:** Parts of different elements of the old classification have been reassembled so that the new elements are not simply aggregates of old elements or disaggregates of one old element. These are typical configurations in classification revisions.
- It is clear that only 1:1 and n:1 cases can be recoded automatically.

National classifications

- An NSO can use either directly ISIC classification or a national one
- In a national classification it is possible to have subclasses, created to represent the national economics conditions.
- Example:
 - **ISIC Revision 4**
 - **NACE 2.0** (in EU member countries, almost 1:1 to ISIC) Mapped to national classifications, e.g.
 - **ÖNACE 2008** in Austria with a 6-digit sub-class level, which is a breakdown of the 4-digit class level - 380.000 enterprises;
 - **TOL 2008** in Finland, 500000 enterprises;
 - etc.

National classifications

The integrated system of International Economics classifications



Source: Statistics Austria

Number of elements in ISIC Rev 3, NACE Rev. 1.1 and ÖNACE 2003

Hierarchical levels		ISIC Rev. 3.1	NACE 1.1	ÖNACE 2003
Sections	A, B, C, D, E, ...Q	17(3)	17	17
Divisions	01,...10,..., 15, ..., 37, 40, 41... 99	62(23)	62	62
Groups	011, ...111, 112, ...151, ..., 371, 372, 410, ...410, ..., 990	159	224	224
Classes	0111, ...1010, ..., 1511, ..., 3720, ..., 4100, ..., 9900	292	514	514
Sub-classes	-	-	-	722

1. Automatic recoding

Example: ÖNACE 2003 -- ÖNACE 2008 for the Austrian BR

Basis	Number of sub-classes	Percentage of subclasses	Number of enterprises	Percentage of enterprises
4-digit level	359	50%	190.000	50%
6-digit level	105	15%	64.600	17%
additional 1:1 classes	78	11%	15.200	4%
Other surveys (PRODCOM)			7.600	2%
TOTAL	542	76%	277.400	73%

2. Gathering of information

- With regard to the main activity of the enterprise
- In the previous example – for about one quarter of the enterprises is necessary to gather information
- Information sources:
 - Internal sources
 - External sources
 - Surveys
 - Profiling
 - Probabilistic methods

2. Gathering of information

- Main premises:
 - **Response burden:** in order to avoid an additional burden for the enterprises by further statistical surveys, all other kinds of information sources – to a reasonable extent – should be exploited before making direct contact with the enterprises.
 - **Probabilistic recoding:** Since a probabilistic recoding always uses the classification which is most probable, without considering any information on the particular enterprise itself, this kind of recoding should only be used in individual cases and only if indeed no information whatsoever could be obtained on the enterprise

Strategy based on the number of enterprises

1. For sub-classes that contain only few enterprises (say less than 200), information on the activity shall be obtained as far as possible by internal investigation (internet, administrative data, etc.).
2. For sub-classes that contain many enterprises (say more than 200), tailor-made questionnaires are to be developed – unless special sources of information were available – that shall retrieve exactly the activities relevant for the sub-class.

a) Information search by internal investigation

1. **Utilization of existing data bases:** (e.g. available on the internet: Economic Chamber, Associations, etc.).
2. **Google search:** (e.g. the homepage of the enterprise or other information - trader lists, industry data bases, etc.)
3. **Telephone contact:** (only possible if a telephone number is available)
4. **Recoding without information:** only used in exceptional cases. If for example 80% of the activities of a present sub-class go into the new sub-class A and 20% to the new sub-class B, the enterprise in question will be classified under A.

b) Information search by using special sources of information

- In a few classes it is apparent that although they contain many enterprises (which would have been an indicator for the development of a questionnaire version), special information sources are available which enable a recoding. I do not know how far this applies to manufacturing

c) External sources

- Administrative sources
 - Tax authorities (wages, VAT, etc.)
 - Social security (activity and existence)
- Commercial sources
 - Trade associations
 - Chambers of commerce
- Others
 - Telephone directories, 'Yellow Pages'
- Early inclusion of external sources in the revision process improves usefulness of information

d) Profiling

- Profiling is used for large and complex enterprises
 - Too important to rely on estimates or possibly incorrect information
 - Complex structure needs to be explored to correctly assign statistical units
- Can be done by personal visit, telephone etc.
 - Existing administrative sources might work for simple structures
- Example: In Canada for manufacturing less than 500 units are profiled, accounting for over 80 per cent of value added.

e) Developing tailor-made questionnaires

- For the remaining classes tailor-made questionnaires can be developed;
- Options:
 - Special surveys just to determine the new code
 - Register surveys (regular or special)
 - Product surveys
 - Add-ons to existing surveys to allow a decision on the new classification code
- **Example:** In Austria these amount to about 42,000 enterprises; in total 12 questionnaires; none of them pertain to manufacturing.

f) Probabilistic methods

- Useful only if a large number of not statistically insignificant units has to be recoded
- Methods will assign a code on a probability basis
 - Individual units may be coded incorrectly
 - Aggregated information is correct
 - In later regular surveys, coding of these small units will be corrected

f) Probabilistic methods (cont.)

- General approach:
 - A sample of the population to be recoded is surveyed to establish the new classifications code
 - A conversion matrix is developed based on the result, showing probabilities of the units in old code A to be coded to new codes B1, B2 etc.
 - Invalid links are removed (e.g. due to change in activity)
 - Verification of matrix is necessary
 - The matrix is applied to the full population

- Example: Germany (Classifications Newsletter 23)

Priority rules

- If information is available from different sources for a given unit, priority rules should be established to deal with potential discrepancies

Recoding process

- Setting timetables
- Keeping supporting information in the register
- Use of indexes
- Use of computer-aided coding systems
- Treatment of corrections

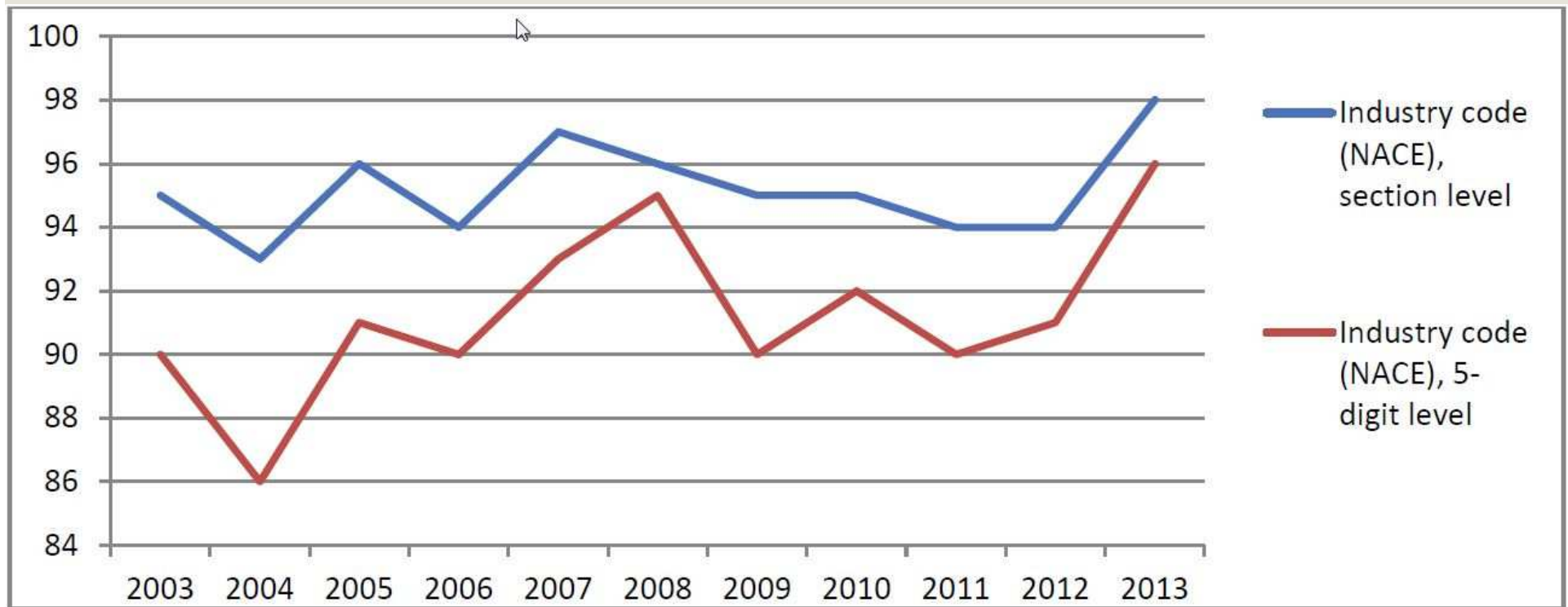
Quality assessments

- Quality assessments and plausibility checks: after completion of the recoding operations (ISIC R3 and ISIC R4 codes have been assigned for each record in the register (enterprise or establishment).
- It is impossible to look at each individual enterprise → the checks have to be prepared and developed at the preliminary stages of the project.

Quality assessments

- Compare the number of units classified in ISIC R3 and ISIC R4: according to old and new ISIC at all classification levels;
- Check for empty sub-classes: Are there classes without any records allocated (in some cases this may be correct);
- Check specific classes with few enterprises: (e.g. mineral oil processing in Austria) - each accounts for a high proportion of the whole class;
- Check recoding relations: (although the recoding process should guarantee that no recoding takes place outside the correspondence);
- Check size ratios in 1:1 recoding;
- Check classes that can be recoded automatically.

Example: Statistics Finland, Industry code (NACE) correctness (%) among small enterprises



Source: Statistics Finland (Wiesbaden Group meeting, September 2014)

UNIDO Experience

- **INDSTAT 2:** In 2008 UNIDO converted the complete database of Industrial Statistics in ISIC Revision 2 (3-digits) into a database in ISIC Revision 3 (2-digits) and joined it with the existing database in ISIC Revision 3 2-digits: combines historical time series data from 1963 to 2010 for 166 countries.
- UNIDO Publications by ISIC classification
 - **Yearbook 2011:** 8 country tables in ISIC Revision 4
 - **Yearbook 2013:** 45 country tables in ISIC Revision 4 (22 of them are OECD)
 - **Databases 2013:** INDSTAT 2, INDSTAT 4 and IDSB: still in ISIC Revision 3 (backwards conversion to Rev.3)

UNIDO Experience: Examples

- **Yearbook 2013:**

- 45 country tables in ISIC Revision 4 (22 of them are OECD)
- Convert data from Rev.4 to Rev.3 to be published in particular tables showing for individual countries and areas basic indicators that are characteristic of the manufacturing branches (61 branches reported in accordance with a three-digit code):
 - Costs of input materials and utilities, Costs of labour, Operating surplus
- Handling of Index of Industrial Production (IIP) series (23 divisions reported in accordance with a two-digit code)

Table 1.11

SELECTED CHARACTERISTICS OF BRANCHES, SELECTED YEARS AND COUNTRIES

Processed meat, fish, fruit, vegetables, fats (ISIC 161)														
Country or area	Latest year (LY)	Value added per employee (current 1000 dollars)		Wages and salaries per employee (current 1000 dollars)		Percentage in output ^{a/}								
						Costs of input materials and utilities			Costs of labour			Operating surplus		
		2000	LY	2000	LY	2000	2005	LY	2000	2005	LY	2000	2005	LY
Industrialized Countries														
CIS														
Azerbaijan	2009	—	61.5	0.2	2.6	—	82.1	69.3	3.2	0.8	1.3	—	17.1	29.4
Georgia	2009	3.4	6.5	0.2	2.4	71.0	88.5	81.7	1.7	3.7	6.7	27.3	7.9	11.5
Kyrgyzstan	2009	—	15.2	0.2	1.1	—	78.6	29.2	3.1	6.6	5.0	—	14.8	65.8
Russian Federation	2009	—	25.1	0.8	5.7	—	69.8	71.9	8.4	5.5	6.4	—	24.7	21.7
Ukraine	2009	—	—	0.4	2.4	—	—	—	4.9	3.9	3.5	—	—	—
EU-15														
Austria	2008	44.0	79.4	20.9	39.0	72.9	74.1	77.5	12.9	12.4	11.0	14.2	13.5	11.5
Belgium	2008	49.7	96.4	22.5	43.5	83.1	83.4	86.0	7.7	7.4	6.3	9.3	9.3	7.7
Denmark	2008	44.5	89.5	29.8	62.6	76.3	77.7	79.6	15.9	14.8	12.8	7.8	7.5	7.5
Finland	2008	39.3	77.4	22.6	40.9	75.0	74.9	79.5	14.3	14.7	10.8	10.6	10.4	9.7
France	2007	30.5	55.5	17.2	31.5	81.7	81.0	81.8	10.3	10.7	10.5	8.0	8.3	7.9
Germany	2008	27.6	57.4	16.3	31.1	79.1	81.0	84.0	12.3	10.6	8.7	8.6	8.4	7.3
Greece	2007	—	58.8	—	25.3	—	71.8	72.7	—	12.1	11.8	—	16.3	15.5
Ireland	2008	35.0	72.8	17.7	43.3	82.4	79.7	83.2	8.9	10.9	10.0	8.7	9.4	6.8
Italy	2008	42.3	74.4	17.1	33.9	84.5	84.3	86.4	6.3	6.1	8.2	9.2	9.6	7.4
Luxembourg	2007	28.3	56.7	22.6	36.4	71.3	84.2	63.8	23.0	31.6	23.3	5.7	4.2	12.9
Netherlands	2006	48.8	81.7	24.5	39.0	84.0	—	84.9	7.8	—	7.2	8.1	—	7.9
Portugal	2008	14.8	33.9	7.8	16.1	85.2	82.1	83.9	7.8	8.5	7.6	7.0	9.5	8.5
Spain	2008	28.7	68.8	13.7	30.0	82.5	81.7	81.9	8.3	7.8	7.9	9.1	10.5	10.2
Sweden	2008	48.4	77.6	24.4	42.6	75.6	79.2	81.1	12.8	11.4	10.4	11.6	9.3	8.5
United Kingdom	2008	38.0	66.4	21.2	36.0	71.1	72.2	76.1	16.1	14.5	12.9	12.8	13.2	10.9
EU-12														
Bulgaria	2009	1.9	8.9	0.9	3.7	87.8	88.5	86.1	5.8	4.1	5.8	6.4	9.3	8.1
Cyprus	2009	24.5	50.0	12.0	25.4	81.8	82.2	80.9	9.0	9.0	9.7	9.3	8.8	8.4
Czech Republic	2007	6.8	21.0	3.3	9.4	85.8	84.2	83.5	8.9	7.4	7.4	7.5	8.4	9.2
Estonia	2009	5.6	20.5	2.8	10.5	76.5	79.9	77.9	11.7	9.8	11.4	11.8	10.4	10.7
Hungary	2008	8.9	23.0	3.6	11.3	81.2	81.7	82.9	7.6	8.8	8.3	11.1	9.5	8.7
Latvia	2009	5.5	11.7	2.2	6.7	70.5	78.1	81.1	11.8	8.9	10.7	17.8	13.0	8.1
Lithuania	2009	3.4	13.5	1.8	6.3	83.7	84.7	82.7	8.5	7.2	8.1	7.8	8.1	9.3
Poland	2008	6.2	22.9	—	11.5	85.2	84.2	83.5	—	7.2	8.2	—	8.7	8.2
Romania	2009	—	14.8	—	5.5	64.2	86.9	82.8	—	5.9	6.4	—	7.2	10.7
Slovenia	2009	15.5	32.0	11.5	21.2	80.0	80.0	79.4	14.9	15.4	13.7	5.1	4.6	6.9
Other Europe														
Norway	2008	46.8	75.6	26.2	52.9	79.3	82.4	83.1	12.5	10.7	11.8	8.3	6.9	5.1

a/ At current prices.

Table 1.5 DISTRIBUTION OF WORLD VALUE ADDED, SELECTED DIVISIONS AND YEARS ^{a/}
(Percentage)

ISIC Division	Year	Industrialized countries								Developing countries			World
		All countries	CIS	Europe			East Asia	North America	Others	All countries	NICs	Others ^{b/}	
				EU-16	EU-12	Other							
15 Food and beverages	2000	70.8	1.7	25.4	2.1	0.7	20.5	17.5	2.9	29.2	16.9	12.3	100.0
	2005	64.1	2.2	23.3	2.1	0.5	17.2	16.1	2.7	35.9	16.8	19.1	100.0
	2009	56.7	2.2	20.5	2.2	0.5	14.5	14.5	2.3	43.3	16.8	26.5	100.0
16 Tobacco products	2000	41.1	1.0	11.7	1.3	2.4	11.9	11.2	1.6	58.9	20.0	38.9	100.0
	2005	30.3	1.0	7.4	0.8	2.3	9.7	7.6	1.4	69.7	15.7	54.0	100.0
	2009	22.7	0.8	5.1	0.6	2.5	8.3	4.3	1.1	77.3	13.6	63.7	100.0
17 Textiles	2000	54.4	0.9	24.7	1.7	0.4	11.5	13.7	1.5	45.6	22.3	23.3	100.0
	2005	39.7	1.0	18.0	1.6	0.3	7.0	10.6	1.2	60.3	19.0	41.3	100.0
	2009	27.3	0.8	13.2	1.3	0.3	5.1	5.8	0.8	72.7	16.8	55.9	100.0
18 Wearing apparel, fur	2000	64.1	1.0	20.9	3.3	0.5	19.5	17.4	1.5	35.9	18.0	17.9	100.0
	2005	43.4	1.1	15.2	3.0	0.6	12.1	9.9	1.5	56.6	19.2	37.4	100.0
	2009	31.4	0.8	12.5	2.2	0.5	7.7	6.5	1.2	68.6	15.9	52.7	100.0
19 Leather, leather products and footwear	2000	56.2	0.8	31.3	2.8	0.3	9.8	9.9	1.3	43.8	22.4	21.4	100.0
	2005	37.0	1.1	20.1	2.3	0.2	6.4	5.8	1.1	63.0	21.0	42.0	100.0
	2009	25.7	1.1	13.7	2.2	0.1	4.1	3.7	0.8	74.3	17.4	56.9	100.0
20 Wood products (excl. furniture)	2000	84.6	0.8	25.9	2.8	3.2	10.3	39.0	2.6	15.4	10.6	4.8	100.0
	2005	80.6	1.2	24.2	3.3	3.0	7.5	38.7	2.7	19.4	10.7	8.7	100.0
	2009	71.6	1.2	26.3	4.5	3.4	6.9	26.9	2.6	28.2	8.7	18.5	100.0
21 Paper and paper products	2000	83.4	1.2	25.5	1.1	1.0	20.0	30.4	4.2	16.6	10.1	6.5	100.0
	2005	77.2	1.5	24.6	1.3	0.8	18.6	26.3	4.1	22.8	10.4	12.4	100.0
	2009	69.2	1.6	24.1	1.5	0.6	17.7	20.3	3.4	30.8	10.2	20.6	100.0
22 Printing and publishing	2000	91.2	0.3	33.3	1.4	1.8	23.2	29.9	1.3	8.8	5.7	3.1	100.0
	2005	87.8	0.5	33.5	1.8	1.6	22.2	26.8	1.4	12.2	6.6	5.6	100.0
	2009	84.9	0.5	33.4	2.0	1.6	24.3	21.8	1.3	15.1	6.9	8.2	100.0
23 Coke, refined petroleum products/nuclear fuel	2000	59.2	1.4	10.7	1.4	1.0	32.6	11.2	0.9	40.8	23.2	17.8	100.0
	2005	52.0	1.5	9.0	1.3	0.9	27.7	10.9	0.7	48.0	24.2	23.8	100.0
	2009	46.1	1.6	8.5	1.3	0.8	24.8	8.5	0.6	53.9	23.3	30.6	100.0
24 Chemicals and chemical products	2000	75.8	1.0	27.9	1.0	1.9	17.8	24.7	1.5	24.2	13.3	10.9	100.0
	2005	68.6	1.0	25.6	1.0	2.0	15.1	22.6	1.3	31.4	12.8	18.6	100.0
	2009	59.6	0.9	23.2	1.1	2.2	12.8	18.2	1.2	40.4	13.5	26.9	100.0

a/ At constant 2000 prices.
b/ Including China.

Summary and conclusions

- Overview of an implementation process and methods used
- Examples are based on the implementation in Statistics Austria:
http://www.statistik.at/web_en/classifications/implementation_of_the_onace2008/index.html
 - Nearby 73% of the enterprises could be recoded automatically, for the rest additional surveys or investigations were necessary
- Double coding of the statistical units in BR according to ISIC Rev. 3 and Rev. 4 has to continue for some time
- Plausibility and quality checks
- Examples of UNIDO handling of time series in deferent revisions