

QUALITY CONTROL IN A MULTIPLE-SOURCE MIXED MODE STATISTICS

– using the example of German turnover indicators in the service sector

Dr. Jutta Oertel – Federal Statistical Office of Germany

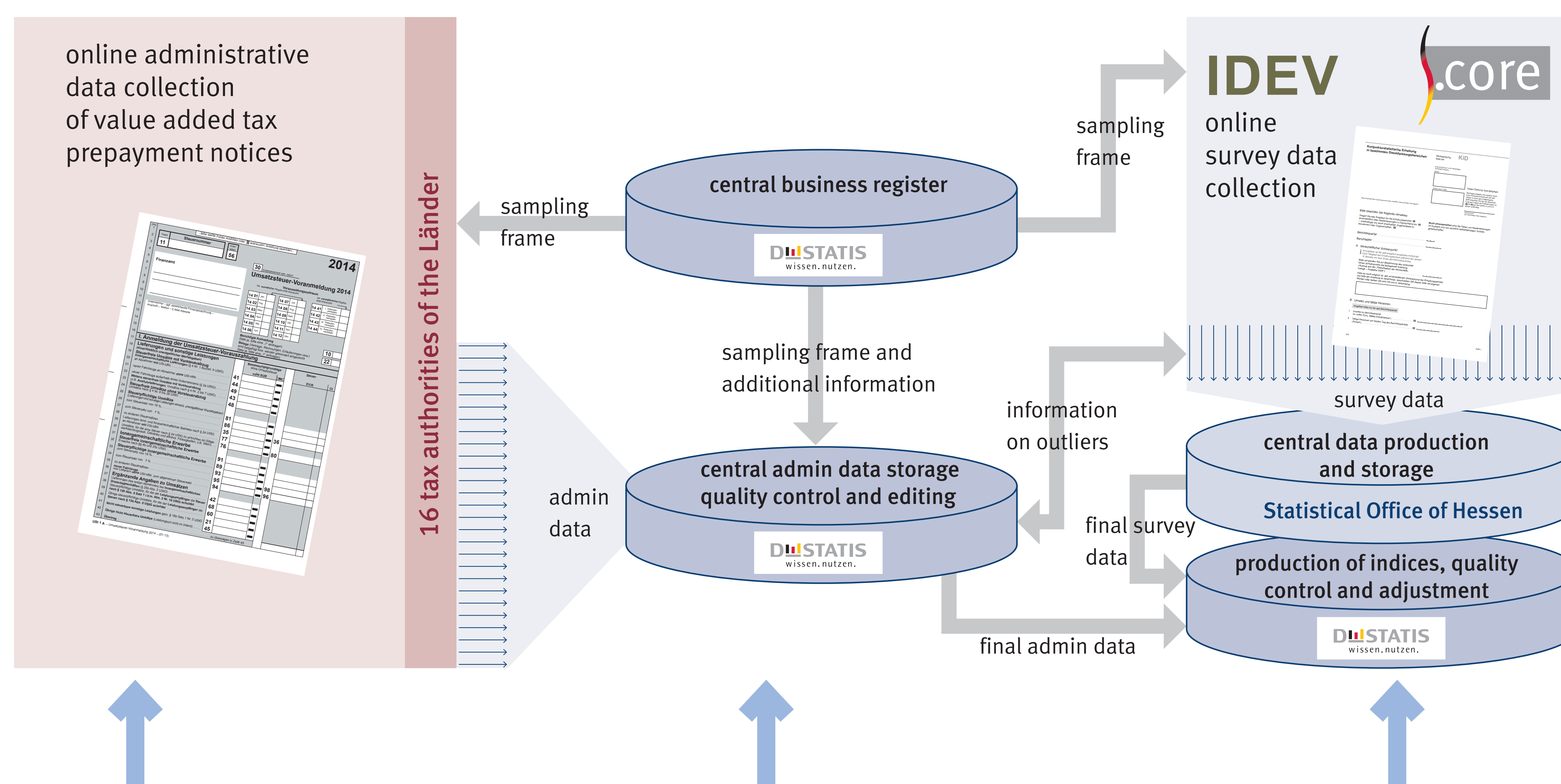
In 2007 Germany switched from a traditional survey to a multiple-source mixed mode system (“Mixmodell”) in producing quarterly turnover indices in the service sector. This method is output-oriented. It successfully combines survey data for large enterprises with administrative value added tax data – relieving small and medium-sized enterprises of some of the bureaucratic burden and saving costs for the statistical offices.

Now that methodological, organizational and processing problems have been mastered, the focus lies on the challenge of controlling the quality in the “Mixmodell”. This poster illustrates the experience gained in Germany with multiple-source mixed mode quality control.

Method of the “Mixmodell”

- ▶ production of quarterly services turnover indices in accordance with European regulation
- ▶ sample frame: German business register
- ▶ sources: survey of largest enterprises, data from value added tax prepayment notices for small and medium-sized units
- ▶ pairing principle
- ▶ data combination at variable level (not unit-level)
- ▶ decentralised data collection but central pooling
- ▶ central data combination, production of indices, final quality checking, adjustment processes and data delivery to Eurostat (Destatis)

Data production process according to the “Mixmodell”



Quality control of administrative data

Problems: Control of administrative input data is hardly possible!
General problems are incompleteness, errors in the data, misclassification, estimation character of tax data and differences in definition
=> **Focus on technical control, automatic plausibility checks and estimation as well as output control**

This data needs to be timely, paired with previous period, matched to business register data and free of significant outliers!

That means:

- ▶ automatic control for technical correctness and plausibility
- ▶ automatic estimation of missing data
- ▶ automatic matching, recoding of economic activity and distribution of tax-group turnover etc. by means of the business register
- ▶ macro-plausibility checks of results and manual treatment of significant outliers

Process control and quality control of final results

Method compensates for quality deficits of administrative data.

=> **Focus on process monitoring and output control**

This data needs to be complete, plausible, timely, coherent/comparable and accessible!

That means:

- ▶ monitoring of matching procedures (elimination of duplicates)
- ▶ monitoring of the rate of non-matched units
- ▶ monitoring of the share of turnover covered by survey data
- ▶ process control for timeliness
- ▶ two regular revisions per quarter
- ▶ checking of the plausibility of final indices/change rates
- ▶ evaluation by comparison with other time series, e. g. economic climate index

Quality control of primary data

Primary data collection provides 40%-60% of turnover data and serves as a safeguard for the “Mixmodell”

=> **Focus on thorough traditional quality control of the input for the largest enterprises**

This data needs to be complete, accurate and timely!

That means:

- ▶ manual plausibility checks for each unit
- ▶ contacting the reporting unit if necessary
- ▶ providing estimates for missing data
- ▶ macro-plausibility checks of results

Conclusions

Quality control in the “Mixmodell” is focused on

- ▶ increasing input and output quality (primary survey)
- ▶ monitoring input, automatic improvement and controlling output (administrative data)
- ▶ ensuring process control, completeness and timely delivery
- ▶ controlling (and evaluating) mixed output

=> **Good quality control as regards primary data and processes**

=> **Lack of input control of administrative data is a permanent challenge**

Outlook

- ▶ provide for statistical requirements in administrative source
- ▶ continually improve method and process
- ▶ further develop and standardise quality indicators for administrative data and especially for mixed data
- ▶ enable users to assess the quality of the “Mixmodell”

Further information

▶ General information: <https://www.destatis.de/EN/Homepage.html>

▶ Data: <https://www-genesis.destatis.de/genesis/online>

▶ Methodological descriptions:

- Fischer, Hanna/Oertel, Jutta (2009): Konjunkturindikatoren im Dienstleistungsbereich: Das Mixmodell in der Praxis, in Wirtschaft und Statistik, Wiesbaden, WiSta 03/2009, S. 232 ff.
- Lorenz, Robin (2010): The integrated system of editing administrative data for STS in Germany, ESSnet Administrative data - Seminar in Rome
- ESSNET - Use of administrative data and accounts data in business statistics (2012): WP6 Quality indicators when using administrative data in statistical outputs – list of quality indicators
- Oertel, Jutta: Turnover and output measurement for “organisation of conventions and trade shows” in Germany; 30th Meeting of the Voorburg Group on Service Statistics (UN City Group) 2015, Sydney
- Oertel, Jutta: Using alternative data for German turnover indicators in the service sector; 31st Meeting of the Voorburg Group on Service Statistics (UN City Group) 2016, Zagreb