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Session 3: Using the SBR to produce business statistics

Challenges in the production of Business Demography statistics in the indication of the EBS regulation

1 Introduction

The purpose of this document is to present a completely revised production process of business demography (BD) in Austria. Statistics Austria (STAT) publishes BD beginning with the reporting year 2007. Until the reference year 2012, business demography statistics were based on secondary data by using a mainly model-based approach. The first major methodological revision took place in 2015. The most important change was the inclusion of small and very small enterprises with an annual turnover below 10,000 Euro. (Statistics Austria, 2017). Since the statistical Business Register (SBR) still used the 10,000 Euro threshold as activity criterion, the business register for administrative purposes (ABR) was needed as additional data basis. Moreover, supplementary administrative data such as tax and employment information as well as legal information from the Austrian Economic Chambers and the Austrian Commercial register were used in the production process. The new approach resulted in a register-based business demography statistics with less model-based estimates on a more extensive data basis. Therefore, a comparison of micro-data between business demography and other business statistics, e.g. with structural business statistics (SBS), short-term business statistics (STS) and the census of local units of employment was enabled. There was one obvious drawback: Since both SBS and SBR still used the threshold, BD was not coherent to both of them and BD published more active enterprises than SBS. Another shortcoming was the lack of characteristic information on enterprises not in the SBR. Hence, the production process was time consuming and, due to the limited resources, relied mostly on automated plausibility checks. A description of the status quo is given in section 2.

In order to cope with the new European regulation for business statistics (EBS), STAT pursued the following main goals:

- Small and micro enterprises should be included in SBR.
- Both SBS and BD should use a common data frame exclusively based on SBR.
- Both SBS and BD should use the statistical enterprises implemented in SBR.

STAT is currently revising the data bases and methodology of most business statistical products. Beginning with the reporting year 2021, SBS and BD will both base on the same data frame, publishing the same number of active enterprises (European Commission, 2020). Since the population of active enterprises in the reporting year is now defined in SBR, the BD production process is focusing even more on longitudinal relations between SBR-enterprises to attain an image of the demographic events that is as complete as possible. The new methodology is discussed in section 3.3.

Since the main publication of the BD reporting year 2021 is in June 2023, the presented results in this document have preliminary character. Due to the time lag in the availability of tax information, the results

all refer to the reporting year 2020. They contain a comparison between the old and the new production approach.

Results and possible improvements are discussed in the concluding section 4.

2 Status Quo in Business Demography methodology

2.1 Coverage, consistency and coherence of BD, SBR and SBS

Until the reporting year 2020, the ABR and SBR form the central data basis for the business demography statistics (Statistics Austria, 2022). Additionally, the following administrative data sources are used:

- Tax data (VAT, income tax and supplements, corporate tax and supplements)
- Employers and employee's data from the Federation of Social Insurances.
- Austrian Economic Chambers (Austrian Economic Chambers, 2022) memberships and activity data
- Austrian Commercial register (registered legal units, information on legal events concerning the unit)

The main purposes for the use of sources additional to SBR include:

- To complete the coverage of the SBR especially concerning small business owners and enterprises in the NACE-sections P-R
- To complement missing characteristics
- To determine more exact demarcations of demographic events, e.g. for identification of mergers or takeovers

2.1.1 Comparison of BD, SBR and SBS

Table 1 below compares the published active enterprises of SBS and BD, as well as the active market producers in the SBR final frame, all of reporting year 2020. The main causes of the deviations are the used thresholds (10,000 Euro annual turnover) in SBS and SBR, whereas BD sets no threshold. The rest attributes to additional activity criteria in BD: enterprises registered in the chamber of commerce that have been assigned an active self-employed person by the Federation of Social Insurances count as active enterprises. (Statistics Austria, 2022).

Differences between SBS, BD and SBR, reporting year 2020, by economic activity (NACE sections)				
NACE SECTION		SBS	BD	SBR (market oriented)
B	Mining and Quarrying	307	363	299
C	Manufacturing	25,727	29,661	25,591
D	Electricity, Gas, Steam and Air Conditioning Supply	2,429	3,769	2,529
E	Water Supply; Sewerage, Waste Management and Remediation Activities	2,126	2,902	2,778
F	Construction	37,261	40,946	37,007
G	Wholesale and Retail Trade	76,938	93,757	76,878
H	Transportation and Storage	13,799	16,532	13,694

I	Accommodation and Food Service Activities	44,291	50,669	43,244
J	Information and Communication	21,760	28,500	22,240
K ₁	Financial and Insurance Activities	6,582	10,440	8,480
L	Real Estate Activities	18,083	20,474	19,812
M	Professional, Scientific and Technical Activities	68,516	95,253	70,562
N	Administrative and Support Service Activities	17,911	25,024	18,776
TOTAL		335,730	418,290	341,890

Table 1: Comparison of active enterprises in SBS, BD and SBR for reference period 2020. ¹NACE sections K64.2 and K64.3 excluded.

3 Business demography, reporting year 2021

3.1 Main goals in rise of the EBS regulation

Starting with reporting year 2021, Austria will produce BD in line with the EBS regulation, which requires some essential changes:

- 1.) Harmonization with the SBS statistics – BD now uses the same data basis with the same number of active enterprises and the same characteristics as SBS, all based on the SBR.
- 2.) The statistical unit is „enterprise“, profiled and maintained within the SBR.
- 3.) To deal with the incompleteness of the SBR in the past, in a transition phase of five years, the former BD data are still going to be used for a correct determination of enterprises demographic events that relate to years before 2021.

3.2 Strengthening the backbone – SBR adaptations

In order to provide a solid basis for coherent business statistics, a lot of effort went into overcoming the before mentioned issues in the SBR, especially in rise of the EBS regulations:

- Statistical units - inclusion of enterprise groups and statistical enterprises as new entities in the SBR
- Coverage - lower turnover thresholds for active enterprises in SBR to (almost) zero
- New data sources - including new data sources such as supplement data on turnover from income- and corporate tax returns
- Implementing a new concept of estimating the end of economic activity

Throughout this process, about 120,000 new enterprises were included in the SBR. Moreover, a stricter end-of-activity estimation is now widely in line with the SBS requirements for active enterprises.

Additionally registered enterprises in February 2021 above and below 10,000 Euro turnover by economic activity (NACE sections)

NACE SECTION		At least EUR 10,000 T/O	Below EUR 10,000 T/O
B	Mining and Quarrying	5	5
C	Manufacturing	901	2,302
D	Electricity, Gas, Steam and Air Conditioning Supply	29	157

E	Water Supply; Sewerage, Waste Management and Remediation Activities	9	12
F	Construction	684	655
G	Wholesale and Retail Trade	2,672	5,309
H	Transportation and Storage	287	481
I	Accommodation and Food Service Activities	407	353
J	Information and Communication	1,086	2,395
K	Financial and Insurance Activities	415	990
L	Real Estate Activities	95	162
M	Professional, Scientific and Technical Activities	4,347	9,451
N	Administrative and Support Service Activities	2,994	4,604
P	Education	2,864	8,931
Q	Human Health and Social Work Activities	21,090	17,101
R	Arts, Entertainment and Recreation	3,873	8,080
S	Other Service Activities	6,502	10,477
TOTAL		48,260	71,465

Table 2: Additionally registered enterprises in February 2021 due to new data sources and the removal of the 10,000 Euro annual turnover threshold

3.3 The new Business Demography methodology

3.3.1 From SBR commencement and cessation to BD enterprise birth and death

The purpose of commencement- and cessation dates in the SBR deviates in some ways from the needs in BD. They are defined as the begin and end of activity of a present enterprise. However, the longitudinal continuity follows the leading legal unit in terms of employment and turnover. Restructuring in groups and enterprises often lead to “new” enterprises in the SBR. Challenges include:

- Volatile longitudinal enterprise development – e.g., within an enterprise group, change of activity of a single legal unit has impact on at least 2 enterprises in the group
- Groups are frequently restructured based on information from commercial register and the European group register (EGR.)
- SBR enterprise profiling has a strong focus on giving a correct transverse image of the present reporting year, whereas BD is interested in a preferably complete biography (temporal start- and endpoint) of the underlying production factors (“birth from scratch”), regardless of possible legal restructurings such as mergers, takeovers and break-ups (see section 3.3.2).

The continuity of enterprises in the BD-sense goes beyond the enterprise definition in the SBR and we regard the dates of commencement and cessation from SBR only as the starting point in determining enterprise demographic events. Hence, we need to establish longitudinal year-to-year relations between SBR-enterprises.

3.3.2 Identifying relations between enterprises

A birth amounts to the creation of a combination of production factors with the restriction that no other enterprises are involved in the event (European Commission, 2020). Enterprise survival should be seen as the continuity of production factors (UNECE, 2018). Therefore, it is crucial to display relations between enterprises that might share production factors. Moreover, The following common relations (the type of relations in parenthesis) between enterprises and their legal units have to be identified within the production process. The relations are typically established on legal-unit-level:

1. Predecessor-Successor (usually 1:1)
2. Enterprise and group restructurings (m:n)
3. Mergers, Takeovers... (1:1)

Predecessor-successor relations and restructurings are maintained (semi-)automatically within the SBR. Additional information on mergers, takeovers, break-ups etc. comes directly from the commercial register.

3.3.3 Estimating activity in the years after the reporting year

Enterprise activity is typically measured the parameters turnover and employment (Eurostat-OECD, 2007). While data on employment and advanced turnover tax returns are timely available, this is not the case for other turnover data sources. At the time of publication (t+18 months after the reporting year), there are no turnover data available apart from the advanced turnover tax returns. These are mandatory only for enterprises that exceed a taxable annual turnover of 30,000 Euro. In the BD 2020, more than 30% of active enterprises neither paid advanced VAT nor had they employees.

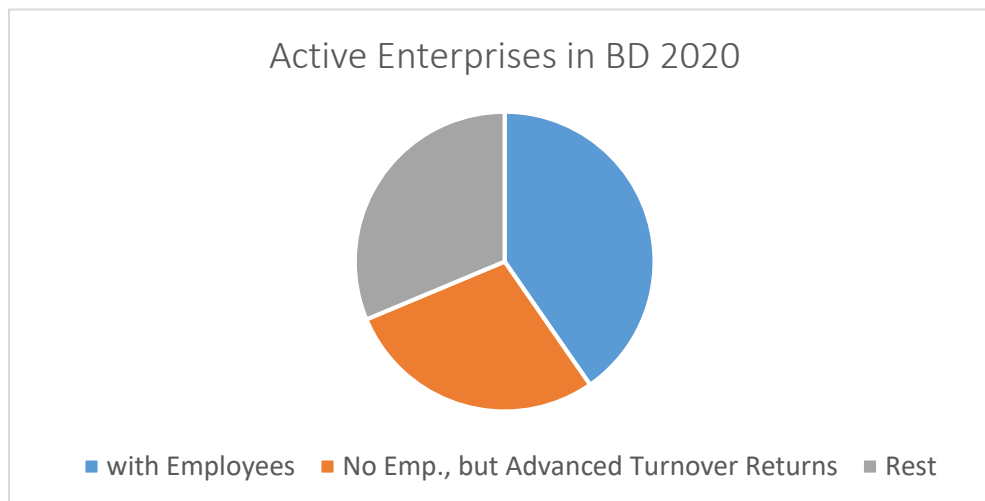


Figure 1

Consequently, additional activity markers are necessary to determine if an enterprise has ended its activity in the reporting year: An active enterprise in the reporting year that has no positive turnover or employee values in the subsequent years counts as enterprise death candidate if one of the following conditions is true:

- There is a zero or negative value reported in one of the turnover variables for the subsequent years
- For sole proprietors: End of self-employed social insurance
- End of membership at chamber of commerce
- End of entry in commercial register

- Advance turnover tax returns or positive number of employees in reporting year (but not in the subsequent years)

The last condition of course considers that employee- and advance turnover tax return data are timely available. A sudden end of values in these variables strongly indicates the end of activity of the enterprise.

Still, the number of enterprise deaths is marked as preliminary and is therefore routinely revised in the subsequent year.

3.3.4 Establishing enterprise birth, death and survival

Incorporating the above issues, we formulate the main production process and distinguish initial production from the computations in subsequent reporting years.

First year:

1. Take active enterprises from SBR as data basis – identical to SBS enterprises
2. Take date of enterprise commencement and cessation from SBR
3. Establish relations to units of old BD for all active enterprises
4. Compute potential birth- and death year for all active enterprises
5. Identify mergers, takeovers, break-ups and restructurings for all active enterprises
6. Reconsider birth and death year analogous to step 4

Future reporting years:

1. Take active enterprises from SBR as data basis – identical to SBS enterprises
2. Join information of the preceding two years
 - a. Adopt existing birth years
 - b. Mark enterprise deaths from preceding years as reactivations
 - c. Mark enterprises not occurring in preceding years as potential enterprise births
3. Identify mergers, takeovers, etc.
4. Reconsider birth and death year analogous to step 2

4 Results

4.1 Enterprise entry in SBR and birth in BD

As described in section 3.3.1, an SBR final frame entry could have several reasons apart from an enterprise birth (European Commission, 2020). The table below shows the enterprises that have entered the SBR final frame in 2020. More than half of these entries have had turnover or employees before 2020 or include a legal unit that is regarded as active in the old BD. About 200 entries are part of a merger or in an identified predecessor-successor relation. In fact, less than half of the 2020 entries is an enterprise birth.

The majority of these non-birth entries had values of turnover or employees before 2020, based on the enterprise structure (corresponding legal units) in 2020. The main reasons for such entries are restructurings of enterprises/groups and units that entered after the final frame of 2019 has been fixed. Further analysis is needed to quantify these effects in detail.

Enterprise entries, SBR final frame 2020

Demographic event	Active enterprises
Turnover/Employees before 2020	20,213
Merger, takeover, etc. registered in commercial register	88
Active in old BD	4,908
Predecessor-successor relation	120
BD enterprise births	19,321
Total	44,650

Table 3: Main reasons to rule out potential enterprise births

4.2 Unpublished results for the reporting year 2020 and comparison to status quo BD.

The results of the new production process are unpublished, preliminary and for analytic purposes only. The comparison in table 4 includes NACE-sections B-N for reasons of data availability. The differences occur due to different rules for activity as described in sections 2.1, resp. 3.3, as well as enhanced maintenance of small and micro enterprises since their inclusion into the SBR.

Differences between new (preliminary data) and old (published) BD, reporting year 2020, by economic activity (NACE sections)

NACE SECTION		BD new			BD old		
		Active Enterprises	Births	Deaths	Active Enterprises	Births	Deaths
B	Mining and Quarrying	313	2	10	363	8	9
C	Manufacturing	29,500	1,265	1,195	29,661	1,268	923
D	Electricity, Gas, Steam and Air Conditioning Supply	3,548	106	146	3,769	145	87
E	Water Supply; Sewerage, Waste Management and Remediation Activities	2,835	46	100	2,902	66	54
F	Construction	38,136	1,658	1,917	40,946	2,337	1,417
G	Wholesale and Retail Trade	88,615	4,772	5,050	93,757	5,809	4,178
H	Transportation and Storage	15,244	865	1,150	16,532	1,180	1,050
I	Accommodation and Food Service Activities	46,572	1,967	3,621	50,669	2,655	2,548
J	Information and Communication	26,651	1,576	1,626	28,500	1,855	1,040
K	Financial and Insurance Activities	10,426	390	507	10,440	485	532
L	Real Estate Activities	19,656	801	899	20,474	510	501

M	Professional, Scientific and Technical Activities	83,710	4,071	4,482		95,253	4,295	3,471
N	Administrative and Support Service Activities	24,738	1,805	1,372		25,024	2,021	1,458
TOTAL		389,944	19,324	22,075		418,290	22,634	17,268

Table 4: Preliminary comparison of the former and the new BD

5 References

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