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Article

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Data Observer

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Combined Business Tax Statistics 2016 of the Federal Statistical Office of Germany – A Micro Data Set for Scientific Use

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Abstract: This article aims to give background information of the combined business tax statistics 2016 of the Federal Statistical Office of Germany. The micro data set includes the different German business tax statistics, which are linked together (i.e. trade tax statistics, corporate income tax statistics, turnover tax statistics, statistics on business partnerships and associations as well as additional information of the statistical business register). With more than three million businesses the micro data set provides linked information on the German business structure and is available in anonymised form for scientific use at the Research Data Centre of the Federal Statistical Office.

Keywords: business tax, turnover tax, corporate tax, trade tax, business register

JEL Classification: H25

1 Introduction

Business taxes account for roughly 40 percent of overall tax revenue in Germany.¹ With more than 30 percent, turnover tax alone (including import turnover tax) is

1 Data on the tax revenue for the period 1999 to 2020 are available in the Online-Database of the Federal Statistical Office of Germany, Code 71211, <https://www-genesis.destatis.de/genesis/online>.

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the second most important source of revenue after wage tax. Another 10 percent of overall tax revenue is contributed by corporate income tax and trade tax. The latter is particularly important for German municipalities since its revenue directly accrues to the communal budget. According to the German law on tax statistics (*Steuerstatistikgesetz*), detailed numbers are gathered annually on each of these business taxes. These statistics thus provide a rich amount of data on the business structure of the German economy which has been used extensively by researchers since it was established. On the one hand, trade tax statistics and corporate income tax statistics allow for analysing profits and losses of enterprises in every detail that is subject to taxation. On the other hand, turnover tax statistics trace economic activities of a broad range of more than 6.6 million businesses, reaching from large-scale multicorporate enterprises to small-scale business owners. Obviously, merging these different forms of business tax statistics into a single data set allows for treating more advanced research questions.

According to the German law on tax statistics, micro data of the different business taxes can be linked to each other, as long as they refer to non-natural persons, i.e. enterprises in sole proprietorship, associations, business partnerships and corporate bodies. The data have been linked by the Federal Statistical Office of Germany to create the GKUPV data set. The letters in the abbreviation stand for the German names of five different sets of statistics: trade tax statistics (*Gewerbesteuerstatistik*), corporate income tax statistics (*Körperschaftsteuerstatistik*), advance return turnover tax statistics (*Umsatzsteuerstatistik – Voranmeldungen*), statistics on business partnerships and associations (*Statistik über die Personengesellschaften und Gemeinschaften*) and assessed turnover tax statistics (*Umsatzsteuerstatistik – Veranlagungen*). The main purpose of this process of record linkage is to provide data for simulation models: The GKUPV data set constitutes the basis for a simulation model on business taxes calculated by the Fraunhofer Institute of Applied Information Technology (FIT) on behalf of the Federal Ministry of Finance. At the same time, this data set is provided to a broader research community via the Research Data Centre of the Federal Statistical Office. Until recently, the GKUPV data set was only available for the years 2007 and 2010, the first two reporting years for which the data linkage was undertaken across all business tax statistics. This data offer has now been augmented by the data from the year 2016, the most recent reporting year for which all the business tax statistics included are available. We take this update as an occasion to present this rich and powerful data set to the research community and give some background information. The following chapters present each set of business tax statistics in more detail and give an overview of the variables included in the data set. Next, chapter 3 describes the process of record linkage used to create the GKUPV data set. Finally, the last section treats some technical aspects concerning access to the data and gives a short outlook on further extensions of the data set.

2 Description of the Business Tax Statistics

2.1 Regional Trade Tax Statistics (*Gewerbesteuerstatistik*) 2016 (G)

The regional trade tax statistics are federal statistics that have been gathered every three years starting in 1995 and annually from 2010 onwards. Trade tax is paid by businesses on their revenue to the municipality, council or other local authority where their premises are situated. There are three kinds of trade: businesses with a fixed location (*stehende Gewerbebetriebe*), travelling businesses (*Reisegewerbe*), e.g. travelling sales people, and market trade (*Marktgewerbe*), e.g. at farmers' markets, provided that these are operated inside Germany. Since 2010, the trade tax statistics also contain the subsidiary companies' (*Organgesellschaften*) declarations if provided. Parent companies (*Organträger*) and integrated subsidiary companies (*eingegliederte Organgesellschaften*) form a tax group (*Organschaft*) analogous to the regulation in the Corporate Income Tax Act (§2 GewStG) and are assessed together as one taxpayer. However, the affiliated companies also submit their own declarations. The trade income of each subsidiary is determined separately and allocated to the parent company to calculate the tentative tax based on the trade income. The declaration is due in the middle of the year following the tax year. Exceptions can be permitted. Within a period of four years following the year in which the annual declaration was delivered, the tax authorities can make changes to the final tax assessment. Therefore, the data is made available to the public with a minimum time lag of four years after the tax year.

The regional trade statistics show businesses' gains and losses as well as business profits (*Gewerbeertrag*). Furthermore, the statistics describe additions, reductions, allowable deductions and determined base amount of tax (*festgesetzter Steuermessbetrag*). It consists of data collected for tax purposes. It is then passed on by the tax authorities (*Finanzverwaltungen*) via state data centres to the respective statistical offices of Germany's 16 federal states. After examination of the data, it is exchanged via automated systems with authorities in other areas where the business in question has had taxable trade for example through a branch. Thus, the data provides not only the location of a business' headquarters but also the sites of its other premises. In German tax law, businesses with premises in different municipalities have their amount of trade tax divided into amounts paid to different municipalities. Since the combined business tax statistics (GKUPV) only represent business enterprises (*gewerbliche Unternehmen*), all those variables that describe the division of trade tax (*Zerlegung*) are not integrated in the GKUPV data set.

In 2016, there were 3.9 million businesses liable to pay trade tax. In total, the tax assessed amounted to € 12.2 billion. Depending on the legal form (*Rechtsform*), different allowable deductions (*Freibeträge*) can be claimed. After certain reductions and deductions, the resulting reduced revenue (*gekürzter Gewerbeertrag*) is multiplied by 3.5% to establish the base amount of trade tax (*Steermessbetrag*). To receive the payable amount, this is then multiplied by the assessment rate (*Hebesatz*). The latter is fixed separately every year by every municipality and can therefore differ from municipality to municipality and from year to year. To prevent the formation of tax havens, the lowest assessment rate is fixed at 200% which leads to a minimum tax rate of 7%. The highest assessment rate in 2016 was 900%. Generally speaking, large cities tend to demand higher rates than municipalities located in more rural and remote areas.

2.2 Corporate Income Tax Statistics (*Körperschaftsteuerstatistik*) 2016 (K)

The corporate income tax statistics are federal statistics that have been gathered every three years starting in 1992 and annually from 2013 onwards. Corporate income tax is paid by corporations on their income. Since it is a combined federal and state tax (*Gemeinschaftssteuer*) the Federal Republic of Germany and its federal states share the revenue generated by corporate income tax. The statistics describe all declared assessments of corporate income tax and therefore corporate bodies (*Körperschaften*), associations (*Personenvereinigungen*) and total assets (*Vermögensmassen*) – both tax-exempt or liable to limited or unlimited corporate income tax in a given year. Furthermore, the statistics include parent companies (*Organträger*) and integrated subsidiary companies (*eingegliederte Organgesellschaften*) that form a corporate tax group (*körperschaftsteuerliche Organschaft*) and are taxed together as one taxpayer. Even though all subsidiary companies hand in their own tax declaration, tax is paid only by the parent company (exceptions described in §16 KStG). The declaration is due in the middle of the year following the tax year. Exceptions can be permitted. Within a period of four years following the year in which the annual declaration was delivered, the tax authorities can make changes to the final tax assessment. Therefore, the data is made available to the public with a minimum time lag of four years after the tax year.

The corporate income tax statistics show a corporation's earnings and income, possible special concessions, the amount of assessed corporate income tax, the corporation's legal form, its economic sector, its type of tax liability (*Art der Steuerpflicht*) and its type of tax assessment (*Veranlagungsart*). The corporate income tax statistics consist of data collected for tax purposes. It is then passed on by

the tax authorities via state data centres to the respective statistical offices of Germany's 16 federal states.

In 2016, there were 1.3 million corporations liable to pay corporate income tax. In total, the tax assessed amounted to € 35.4 billion. The tax rate is 15%.

2.3 Turnover Tax Statistics (Advance Returns and Assessments) (*Umsatzsteuerstatistik – Voranmeldungen und Veranlagungen*) 2016 (U/V)

Both sets of turnover tax statistics are federal statistics that have been gathered annually since 1996 (advance returns turnover tax statistics) and 2006 (assessed turnover tax statistics) respectively. Turnover tax is generally imposed on all deliveries and other performances made by an independent business owner as part of his enterprise in return for payment and within the German territory (§1 UStG). According to this definition, it does not matter for turnover taxation whether these activities have been carried out with the intent to realize a profit or not. An independent business owner can be a natural or a legal person as well as an association carrying out commercial or professional activities on their own account (§2 UStG). For a better understanding of the turnover tax statistics, it is important to note that one observation in the data set comprises all deliveries and other performances of a single business owner, regardless of whether these activities belong together from an economic perspective. In particular, an entrepreneur running several different businesses shows up only once in the turnover tax statistics. Since it is a combined federal, state, and local tax (*Gemeinschaftssteuer*) the Federal Republic of Germany, its federal states and municipalities share the revenue generated by turnover tax. The turnover tax statistics consist of data collected for tax purposes. It is then passed on by the tax authorities via state data centres to the respective statistical offices of Germany's 16 federal states.

Official turnover tax statistics in Germany include two sets of statistics, which are gathered from different stages of taxation; one in advance and one after the tax is assessed. Entrepreneurs doing business in Germany have to self-declare advance returns (*Voranmeldungen*) each month or quarter of the year depending on the total amount of their turnover. This means that the business owner is obliged to calculate the amount of taxable turnover and, consequently, the total of their payments in advance. Annual data based on advance returns constitute the basis of the first set of turnover tax statistics which is usually published by the statistical offices in the year following the year under review. The advance returns turnover tax statistics are used to process the data of the other business tax

statistics, e.g. to harmonize the classification of economic activities, because they provide the most recent business tax data included in the GKUPV data set.

The second set of turnover tax statistics is gathered from the annual tax declaration made by the business owner. In this declaration the business owner can offset their actual tax obligations with their payments made in advance. Similar to other (business) taxes, this declaration is due in the middle of the year following the tax year. Moreover, within a period of four years following the year in which the annual declaration was delivered, the tax authorities can make changes to the final tax assessment. Nonetheless, the annual declaration concerning turnover tax is also solely based on the calculations of the taxpayer. Hence, the taxpayer usually does not receive a tax bill. The period of four years, during which final assessments can be made, is the reason why the second turnover tax statistics, based on tax assessments (*Veranlagungen*), is published with a minimum time lag of four years after the year under consideration.

While the advance returns turnover tax statistics are published considerably earlier, they only comprise business owners with a total amount of turnover exceeding a threshold of € 17,500 (since 2020: € 22,000). Only these larger entrepreneurs are legally obliged to hand in advance returns. In contrast, so-called small business owners (*Kleinunternehmer*) only have to deliver annual declarations, which is the reason why they are only included in the assessed turnover tax statistics. For the assessment period of 2016, only 3.27 million taxpayers were covered by the statistics on advance returns, whereas the statistics on assessments for the same year included 6.55 million taxpayers. However, the total amounts of turnover reported in both statistics differ by far less, with € 6.09 trillion according to the advance return turnover statistics and € 6.31 trillion according to the assessed turnover tax statistics.

Compared to advance return turnover tax statistics, assessed turnover tax statistics provide more detailed information with regard to different categories of turnover. Import turnover tax containing deliveries and other performances is not part of either of the turnover tax statistics since it is levied by the customs administration. Note, however, that the GKUPV data set only contains a selection of variables available in both turnover tax statistics in order to keep the whole data set manageable. This selection includes the sum of total turnover, containing taxable as well as tax-free deliveries and other performances. Taxable turnover is further distinguished according to the tax rates (regular, reduced, or other) that apply to different forms of economic activities. The variables included in the GKUPV data set also comprise the deductible amounts of input taxes as well as intra-community acquisitions. Additional information on turnover tax can be taken from the statistics on advance returns which are also available at the Research Data Centre both as single cross sections and as a separate panel data file.

2.4 Statistics on Business Partnerships and Associations (*Statistik über die Personengesellschaften und Gemeinschaften*) 2016 (P)

The statistics on business partnerships and associations are federal statistics that have been gathered every three years starting in 1992 and annually from 2008 onwards. They describe all separately and standardly ascertained income generated by partnerships and associations. Furthermore, they describe the amount of different types of income, the number and type of interested parties, and their involvement.

The statistics show all joint groups of legal and/or natural persons, i.e. associations, which can include joint heirships or a group of persons that jointly own property, and business partnerships like civil-law associations (*Gesellschaften bürgerlichen Rechts*), general commercial partnerships (*Offene Handelsgesellschaften*), or limited partnerships (*Kommanditgesellschaften*). Neither business partnerships nor associations are liable to pay tax on their income though depending on the partnership or association, they might pay turnover tax or trade tax. To establish earnings and losses, the financial authorities sum up all earnings as declared in the declarations of separate and standard ascertainment of income and then split that sum according to the interested party's share. Depending on the type of interested party (natural person or corporation) they will then be subject to either income tax or corporate income tax. The tax declaration is due in the middle of the year following the tax year. Exceptions can be permitted. Within a period of four years following the year in which the annual declaration was delivered, the tax authorities can make changes to the final tax assessment. Therefore, the data is made available to the public with a minimum time lag of four years after the tax year.

The statistics on business partnerships and associations consist of data collected from tax notices of assessments (*Feststellungsbescheide*). They are then passed on by the tax authorities via state data centres to the respective statistical offices of Germany's 16 federal states. The statistics on business partnerships and associations include data about the respective partners of a partnership; however, those data are not included in the GKUPV data set. In 2016, there were 1.2 million business partnerships and associations of which 78% declared a positive income. In total, they generated an income of € 177.4 billion. Of all business partnerships and associations, 66% comprised two partners or associates.

2.5 Statistical Business Register (*Statistisches Unternehmensregister*)

The statistical business register is a register maintained and updated on a regular basis by the respective statistical offices of Germany's federal states. It is a database containing data about economically active and inactive businesses and companies with taxable turnover generated by goods and services and/or employees subject to social insurance. The main sources are data collected by civil service agencies like the federal employment agency and tax authorities as well as data that is part of statistics on economic sectors, e.g. statistics on manufacturing, commerce, or services.

The only variables from the statistical business register used in the GKUPV data set are the number of marginally employed and the number of employees that are subject to social insurance. The latter are counted within businesses, i.e. one legal unit, which might be a parent company.

2.6 Tax Groups (*Organschaften*)

In German tax law, two different forms of tax groups have to be distinguished carefully. On the one hand, there are integrated groups of companies (*ertragsteuerliche Organschaft*) concerning taxes on profits. This means that several enterprises are treated as a single taxable entity with respect to trade tax and corporate income tax. On the other hand, there is the so-called VAT (value added tax) group (*umsatzsteuerliche Organschaft*) in which different enterprises are also considered as a single taxpayer with regard to turnover tax. However, both tax entities do not necessarily overlap completely (see Table 1). Above all, it is the different process of formation which constitutes the most important difference between the two forms of tax groups. Whereas enterprises have to sign an explicit profit transfer agreement in order to be acknowledged as an integrated group of companies in trade and corporate income tax, VAT groups can also be formed unintentionally. According to German turnover tax law, a VAT group automatically emerges if one company is integrated financially, economically, and organisationally into the enterprise of a parent company (§2 Abs. 2 Nr. 2 UStG). Therefore, it is only the actual business relationship which is of relevance. A formal agreement is not a necessary precondition for forming a VAT group. It is also possible for financial authorities to declare a VAT group against the will of the participating companies.

When companies are integrated into a VAT group, only turnover between the group and external business partners is recorded in the tax statistics. Internal turnover is not included in the data. In addition, since only the parent company is subject to turnover tax – in fact, the original idea of the VAT group is to simplify the procedure of taxation – all the integrated companies are not included in the turnover tax statistics. In trade and corporate income tax statistics, however, there is information both on the parent and on its integrated companies. For the GKUPV data set, this difference in the data means that we cannot fully compare both tax groups as it is only possible to link the VAT group as such with a member of a tax group concerning taxes on profits, be it the parent company or an integrated company. In particular, it is not possible to verify whether and to what extent the members of both tax groups overlap.

Table 1: Number of tax groups.

	Cases	Mean Gross Income (in €)	Mean Turnover (in €)
Total	8,010,582	100,700	1,059,013
Single companies	7,925,832	72,302	621,685
Integrated groups concerning taxes on profits	40,358	1,630,237	63,667,222
VAT groups	39,430	394,852	14,965,076
Integrated groups concerning both taxes on profits and on value added	4,962	8,127,635	290,854,556

Gross income is derived from corporate income tax statistics (variable st2_K65823). Where this variable is missing, profits from trade statistics (variable st1_K2110) are taken as a proxy. Data on turnover are either taken from the statistics of assessments (variable st5_u_ef144) or from the statistics of advance returns (variable st3_z_ef7) depending on availability.

2.7 Variables

In general, all business tax statistics have a similar structure (see Table 2). Thus, each of the statistics provides a limited number of categorical variables which serve for classifying the taxpayer. This core of variables, which is populated for every enterprise, is followed by a broad range of variables, mostly numerical in nature, stemming from the process of taxation. Broadly speaking, every aspect that is relevant for taxation is stored in a separate variable. However, not all of these features are of equal relevance for every entity included in the data.

Each of the five business tax statistics included in the GKUPV data set contain some seemingly identical variables referring to basic characteristics of the taxed enterprise. The most important among these characteristics is the legal form of an enterprise, its location according to the official municipality code (*Amtlicher Gemeindeschlüssel*) as well as the business sector (*Wirtschaftszweig*) the enterprise is mainly engaged in. The latter is derived from the German Classification of Economic Activities, 2008 edition (WZ 2008). Even though the variables are the same across the different statistics the attributes may differ within a single case according to different original statistics. It is extremely rare but not necessarily implausible or faulty. For example, the same business might belong to one business sector in trade tax statistics and another in turnover tax statistics. When processing specific business tax statistics, the data collected from the advance returns on turnover, published much earlier, are usually taken as a benchmark. However, in some individual cases diverging specifications can be justified. Therefore, the decision was reached to keep seemingly identical variables in the data set. Information about the origin of a variable is kept anyway.

Moreover, there are some particular cases that are purposefully not harmonised. This is mainly the case with regard to the aforementioned tax groups. To give just one example: There are 19,875 cases, included in both the trade tax statistics and the advance returns turnover tax statistics, that have different business sector classifications in each set of statistics. This is less than one percent of the total number of cases which are contained in both statistics. In turn, 12,964 of these cases refer to tax groups, either VAT groups or integrated groups of companies concerning taxes on profits or both. Since tax groups constitute the largest cases included in the GKUPV data set with regard to profits or turnover (see Table 1), harmonization of variables like the business sector classification or other in the GKUPV data set would create a large bias in comparison to the single data sets. Therefore, the categories as included in the single business tax statistics were maintained and it is up to the researcher to select the appropriate category variables according to their research interests.

3 Method and Quality of the Combined Business Tax Statistics

For merging the five statistics, the trade tax statistics are used as the basis. All other statistics are subsequently linked to it by record linkage using both the taxpayer identification number and the old taxpayer identification number as identifiers. First, the data from the corporate income tax statistics are added to the trade tax

Table 2: Main types of variables included in the GKUPV data set.

Source	Variables	
	Categorical	Numerical
Trade tax	Municipality code, business sector, Legal form, Companies forming an integrated tax group	Business profit/loss, Numerous additions (e.g. interests and rents) and deductions (e.g. losses, shares in the profits of a partnership, etc.), Tax-free allowances, Base tax amount, Municipal assessment rate
Corporate income tax	Municipality code, business sector, Legal form, Companies forming an integrated tax group, Type of tax liability/tax assessment	Total income, Adjusted gross income, Taxable income, Corporation tax assessed, Losses carried forward, Income of integrated companies attributed to parent company, Numerous additions (e.g. hidden distribution of profits) and deductions (e.g. capital ex- penditures, foreign taxes, etc.), Acquisitions and participations in other cor- porations, Non-deductible expenditures
Business partnerships and associations	Municipality code, business sector, Legal form, Type of partnership/ community (limited or unlimited liability), Type of partner/community (e.g. natural persons or corporations)	Receipts by income type (agriculture and forestry, trade or business, independent per- sonal services, investment of capital, rentals and royalties, other income), Number of partners
Advance returns turnover tax/Business register	Municipality code, business sector, Legal form, VAT group (yes/no)	Total/taxable/tax-free deliveries and other performances, Taxable deliveries and other performances at different tax rates (regular, reduced, other), Deductible input taxes, Intra-community acquisitions, Number of employees
Assessed turnover tax	Municipality code, business sector, Legal form, VAT group (yes/no)	Total/taxable/tax-free deliveries and other performances, Taxable deliveries and other performances at different tax rates (regular, reduced, other), Deductible input taxes, Intra-community acquisitions

Table 3: Results of record linkage.

Statistics	Cases ^a	Merged with Trade Tax	Rate in %
Trade tax	3,887,556	–	–
Corporate income tax	1,226,047	1,204,482	98.2
Advance returns turnover tax	3,266,429	2,119,368	54.5
Business partnerships and associations	439,860	421,523	95.8
Assessed turnover tax	6,550,943	3,119,669	80.2

^aWith regard to corporate income tax and business partnerships and associations the number of assessments of trade statistics was restricted to those with legal forms included in the respective statistics (i.e. excluding individual business people (*Einzelgewerbetreibende*)). In turnover tax statistics, like in trade tax statistics, all legal forms are included and therefore the figures refer to the total number of cases.

statistics. The resulting data set is then enlarged by adding first an excerpt of the advance returns turnover tax statistics, then the statistics on business partnerships and associations and last an excerpt of the assessed turnover tax statistics. Two variables are added from the statistical business register: the number of marginally employed and the number of employees that are subject to social insurance. These are taken over from the turnover tax panel data set, together with the data on the advance returns turnover tax statistics.

If the subjects to taxation are similar (e.g. subjects in trade tax and corporate income tax) the resulting linkage rate is very high. For less similar subjects, however, for example those in trade tax and turnover tax, the linkage rate is lower (see Table 3). There are several reasons for these differences:

- The data might be transferred to the statistical offices at different points in time.
- The tax group might not overlap fully.
- The population might not be the same, for example smaller enterprises (with turnover less than or equal to € 17,500) are not included in the advance returns turnover tax statistics.
- Certain legal forms and business sectors are impacted differently by the taxation of profits and of turnover, respectively.

Differences in tax law are the most important reason why data on taxes on profits, i.e. trade tax and corporate income tax, cannot fully be linked to data on turnover tax and vice versa. For instance, whereas trade tax and corporate income tax refer to the enterprise as the subject to taxation, turnover tax targets the business owner. In a similar vein, the reasons for tax exemption often differ among tax laws.

4 Data Access, Possibilities for Scientific Use and Outlook

The combined business tax statistics data set GKUPV is available in anonymised form for scientific use at the Research Data Centre of the Federal Statistical Office. It can only be accessed on-site, either at a workplace for guest researchers or via controlled remote data processing. As with all data offered by the Research Data Centre, researchers interested in using the GKUPV data set have to formally apply and sign a contractual agreement. In particular, this binds researchers to secrecy and data protection rules, which mean that output is generated in close cooperation with the Research Data Centre before being published. Finally, access to the data is subject to a fee proportional to the extent of the use.²

Since the reporting year 2013, all business tax statistics presented in this article are compiled and published annually. Therefore, the Federal Statistical Office is currently developing a concept to provide the GKUPV data as a panel data set starting from the year 2013. For obvious reasons, adding a time dimension will very much broaden the scope of research questions that can be addressed as well as the methods which can be applied to the GKUPV data set. However, for reasons of practicability such a panel data set will probably contain fewer variables than included in the GKUPV cross sections or in the single tax statistics.

Reference

The quality reports on each set of business tax statistics included in the GKUPV data set provide further information concerning the overall methodology of processing the data. They can be accessed on the web page of the Federal Statistical Office:
https://www.destatis.de/EN/Methods/Quality/QualityReports/_node.html.

² For further information on how to access the data set see: <https://www.forschungsdatenzentrum.de/de/steuern/gkuvp>