Analysing Gender Equality at the Firm Level

Abstract

The role of gender in the labour force and potential inequalities between men and women have been widely discussed. Despite efforts to align gender roles in recent decades, high levels of inequality are not an exception but rather the standard. These inequalities can lead to the respective minorities' general dissatisfaction, which affects the working atmosphere and ultimately a firm's economic success (Hoogendoorn et al., 2013).

Recent quantitative studies confirm this dissatisfaction exists. However, analyses only take place at a country or regional level. Therefore, conclusions can be drawn on an aggregated level, whereas underlying structural differences between individual firms remain undetected. Alternative ways to measure inequalities include qualitative studies for individual companies. However, no generalized inference can be made.

Our proposed framework, the Gender Equality Firm Index (GEFI), allows for quantitative gender equality analysis at the company level. GEFI aims to explore the latent and the concrete implementation of gender equality in firms. Specifically, we derive firm-level measurements from large-scale data extraction of firm websites and combine them with official data. We consequently derive a gender equality score for each company, making it possible to draw conclusions at any given level of granularity. We demonstrate the applicability of our framework in a case study including nearly 1 million firms throughout Germany. Thereby, we find that mainly urban and western German firms in sectors such as health and social services comparably enforce gender equality the most, which is in line with the existing literature.

Keywords: Gender Equality Index; Firm level studies; Web Minig; Germany; Gender

1 Introduction

Gender inequality plays an important role in many areas of society, such as working life. Equally qualified individuals may be offered different career opportunities and remuneration, depending on sociodemographic characteristics such as gender. According to official statistics, differences in income of an average of 20% for the same work still existed between men and women in Germany in 2019 (Destatis, 2020a). The distribution of the genders is also still strongly asymmetrical with regard to career opportunities, which is expressed, for example, by the lack of women on supervisory boards, leading to an executive glass ceiling for women (Kerevel, 2019; Brader and Lewerenz, 2006).

In addition to these scientifically quantified imbalances, differences also exist at latent dimensions: Lacking efforts and measures to ensure equality among employees might lead to the (unintentional) discrimination of certain sociodemographic groups, such as women, irrespective of the qualification.
This not only affects the respective individuals, but can also lead to economic consequences for a company. Various theoretical and empirical studies confirm a negative relationship between gender inequality and economic growth (Klasen and Lamanna, 2009).

The problems discussed above arise, take place, and, all things being equal, can be resolved at the firm level through concrete policies and measures. However, targeted policies to lower inequality are hard to implement

without knowing the current state of the ecosystem. Typically, data about inequalities suffer from one of two problems: Quantitative data (e.g., official statistics) is not available at the necessary levels of granularity, while qualitative data (e.g., interview or questionnaire responses) cannot be conducted at large scale. While it is possible to carry out qualitative studies at the company level, quantitative analyses have so far been conducted at more aggregated levels. As the former covers only a small fraction of businesses or institutes, drawing conclusions for a society as a whole and identifying general structural patterns is not possible. In addition, qualitative data tools, such as surveys, often face the problem of being too dependent on the researcher's objective and are therefore not generalizable. They are also expensive and time-consuming (i.e., results can be obsolete before they are published).

We address these issues by proposing a composite index to quantify the degree of gender inequality at the firm level. The Gender Equality Firm Index (GEFI) fully measures equality automatically, objectively, at a large scale, and with high granularity and frequency using the information on company websites in combination with data provided by the companies. The GEFI framework makes it possible to gain a deeper insight into the structures of a labour market and thus identify certain dimensions (e.g., sector, firm size, or region) that may exhibit a higher degree of gender inequalities.

We combine company data and the website data to calculate a value for each company for our composite indicator. This value quantifies and measures gender inequality and is additionally evaluated with regard to the various dimensions.

To demonstrate the applicability of the GEFI framework, we conduct a case study for Germany. Our data set comprises all firms that are located and registered in Germany and have a web presence. We also retrieved supplementary firm meta-data from the Mannheimer Unternehmenspanel (MUP) database. Our findings confirm that firms located in urban and west German areas have the highest degree of equality on average. In addition, an increase in firm size accompanies higher gender equality. Furthermore, we identify strong differences between certain industries and sectors: The highest values are found in the health sector, whereas construction is far below the average. This is consistent with the results of previous studies that indicate women with STEM degrees are more likely to switch to other sectors, such as healthcare (Beede et al., 2011).

An advantage of the GEFI framework is its applicability to other countries and languages: The company data we use in our analysis contain standardized information and are also available for other studies.

The remainder of this paper is structured as follows: In Section 2, we review previous literature on gender indices. In Section 3, we detail the components and technical steps to construct the GEFI. In Section 4, we provide a case study for Germany, starting with the description of the data sources, which is followed by the distinction of the different dimensions (e.g., sectors and regions) used in the analysis. The results are presented in Section 5. In Section 6, we validate the GEFI results with external data sources, before concluding in Section 7.

2 Literature Overview

2.1 Gender Inequality at the Firm Level

Both quantitative indices and qualitative survey analyses aim to identify structural inequalities that can be seen as an outcome of the unequal treatment of one gender by the other. To complete the picture, discussing the consequences for the corresponding minorities is necessary.

One can safely assume that women may not be accepted and promoted in the same way as men in certain professions: In addition to the negatively disproportionate number of women in science, technology, innovation, and entrepreneurship, a disproportionately high number of women work in low-level positions, inter alia due to overcrediting men for traditional female roles but not vice versa (Etzkowitz and Ragna, 2010). A car Volvo developed in 2004 serves as an example: The company made headlines for a car that was to have been solely developed by women. However, it never went into production and turned out to be a PR campaign (Temm, 2008). Volvo appears to have used equality as a pretext and a cost-effective marketing tool, which can be seen as disrespectful to this demographic minority, whose efforts seem to have been exploited for this purpose and not taken seriously.

In a similar context, Brader and Lewerenz (2006) investigate 16,000 mainly small- and medium-sized German firms. Their study was conducted at different management levels to ensure a representative and differentiated result. A decreasing proportion of women in the top management levels could be observed, while the overall proportion of women in lower management positions in the company mostly remained constant across firms. For example, at the top management level, only one in four managers was a woman. The authors show that small- to

medium-sized companies are more likely to be run by women, whereas a shortage of female managers still exists in large companies. In companies with more than 500 employees, only 4% of women work in the upper management level. When looking at the range of tasks at different management levels, significant differences can be identified: The tasks in middle management or at the second management level have significantly lower responsibility. Regardless of professional qualifications, women are not reasonably trusted (Brader and Lewerenz, 2006).

Other studies argue similarly and mention that females are disadvantaged in male-dominated industries and excluded from certain technical tasks. Men are still considered the main players in STEM fields and are more likely to be called upon for technological and industrial developments in particular. Employers assume that women do not possess an equivalent level of technical understanding, which implies that outdated gender roles remain preserved and are still part of the work structure (Berglund and Thorslund, 2012).

These circumstances arise from discursively created social stereotypes that lead to underrepresentation of females at the top management level (Carli and Eagly, 2007). Psychologically, this is due to subconscious constructions and beliefs that are socially and politically determined, as well as role-specific characteristics of men and women. Men are usually associated with characteristics such as leadership and power, whereas women tend to be associated with weak and adaptive characteristics. Therefore, they are perceived as unsuitable for senior management positions because female stereotypes are usually not consistent with the qualities and skills of a successful manager (Glick and Rudman, 2012)

Galvez et al. (2020) investigate data from PhD recipients in the United States and find that equally impactful contributions to research from gender and racial minorities do not guarantee the same successful careers that members of the majority group may receive. The disregard for relevant research results and innovations serves as a possible explanation of the underrepresentation of minorities in certain academic fields. The authors find that the greater the likelihood of belonging to a minority, the greater the likelihood of novel conceptual links. However, these contributions are less influential than for the group of white males (Galvez et al., 2020).

Women often choose paths that lead away from their academic majors and toward other professional groups, despite having the appropriate qualifications. Bede et al. (2011) point out that female STEM majors are twice as likely to switch their academic or business specialization to education or healthcare, thus supplying labour below their qualification. Besides the low enrolment rate of 29% of women in STEM majors in Germany, approximately 20% of women with a STEM degree work in healthcare and approximately 14% work in education, compared to 10% and 6% of men, respectively (Bede et al., 2011; Bundesagentur für Arbeit, 2019). Heterogeneous groups of workers may cause positive externalities such as increased productivity and quality: Campell et al. (2013) find that heterogeneously gendered groups of scientific authors receive up to 34% more citations in their publications than gender uniform teams. They conclude that diversity not only promotes fairness, but can also lead to a higher quality of scientific work (Campell et al., 2013). The above-mentioned literature gives sufficient evidence that a need for alignment exists in some areas of the labour force.

2.2 Gender Indices

A variety of studies identifies gender inequality in the labour force on different levels of aggregation and the resulting personal and economic downsides. Typically, different countries are compared by constructing an index with a score for each observation.

Bericat (2012) gives an overview of the existing literature and works out differences in concepts and data sources[1]. First, a popular conceptualization is the Gender Equality Index (Straus and Sugarman, 1988), which integrates indicators of equality in economic, political, and legal dimensions for every U.S. state. Second, the Social Institutions and Gender Index (SIGI; Branisa et al., 2009) mainly focuses on indicators of social institutions for 101 non-OECD countries, such as family code or son preference. However, when comparing SIGI to other equality indices, the correlation is below 50% in most cases. This indicates an inconsistency in the validity and reliability between the concepts. Third, the Global Gender Gap Index (GGGI; Bekhouche et al., 2012) aims to detect countrywide gender gaps for 144 countries based on macroeconomic indicators like health or education. Fourth, scores of the European Gender Equality Index (EGEI; Bericat, 2012) are available for 27 European countries,

[1] See, for example, the original concept of measuring gender inequality with the Status of Women Index (Yllö, 1984)

including indicators capturing gender equality pertaining to education, work, and power. Fifth, the Women's Economic Opportunities Index (WEOI; Economic Intelligence Unit 2010) includes nearly 30 indicators for 184 countries to quantify women's opportunities in the workforce in terms of laws or other basic conditions.

All these indices face the problem of data inconsistency: While the WEOI is available for 184 countries, the SIGI only contains data of 101 countries, which makes a comparison cumbersome. When comparing the above-listed indices, van Staveren (2013) finds average correlations of 50-80%. According to the author, this is partly satisfactory, but there is also room for improvement. These discrepancies are justified by stating that the indices examine gender inequalities at different input levels, such as with resources or outcome variables. He therefore recommends a categorization depending on the corresponding dimension.

However, these indices only measure the target variable at the country level. Making cross-country comparisons is possible, but heterogeneities between industries or regions remain unidentified. The Gender-Equality Index (Bloomberg, 2019) represents the first specifically company-based quantitative measurement concept, designed through survey data from 325 selected international companies at regular intervals. However, one disadvantage concerns the sample: It only contains large international corporations, which might not be representative of society. Small- and medium-sized enterprises employ approximately 95% of the German labour force. In addition, due to the nature of a questionnaire, the data are neither freely accessible nor completely objective. With the GEFI, we address these issues by involving all German firms active in the labour market, without relying on survey data.

In addition to the well-established indices listed above, there have recently been attempts to reduce the aggregation level. Di Bella et al. (2020) address this problem with the Regional Gender Equality Index (R-GEI) based on the 20 NUTS-2 regions in Italy. They stress that nationally summarized indices cannot adequately reflect heterogeneities within the country. Italy exhibits strong regional heterogeneities between the south and the north and requires a differentiated view (Di Bella et al., 2020).

The labour market in Germany shows strong heterogeneities with regard to various regions as well. Although the East–West reunification happened multiple decades ago, structural differences are still present. In addition, a high degree of sectoral diversity can be observed. Germany has 21 official sectors, and one would expect to observe imbalances between men and women. We will analyse this in more detail in the case study starting from Section 4.

3 Gender Equality Firm Index

We propose a highly granular quantitative gender equality index at the firm level that can be collected with high frequency and at a low cost through large-scale data extraction of firms' websites. Kinne and Lenz (2019) demonstrate the emergence of useful firm information from websites using deep-learning methods. The possibility of collecting independent text data through data extraction is advantageous and enriching. In particular, due to the continuous improvement in technical feasibility, transferring large amounts of unstructured text and documents into a form that can be used for economic analyses is possible (Lüdering and Winker, 2016; Kinne and Lenz, 2019; Lenz and Winker, 2020).

Thus, to capture latent company characteristics, including web data in the analysis is necessary. Focusing only on the data provided by the companies at this level of aggregation could provide an incomplete concept. A web presence is among the most important B2C channels, and the way a firm represents itself online could tell a lot about the underlying firm policy. We enable and simplify the quantification of these structures with the advancing digitalization of the collection of online mass data. Using this data (e.g., as we do with GEFI) is important. We are aware that we may only be able to measure marketing capabilities, because companies are aware of these characteristics when positioning themselves. We try to correct this with an extra indicator, as explained below.

Furthermore, we use the MUP panel database because it contains information of the total population of firms in Germany. In addition, we do not assume ex ante that there is an imbalance to the advantage of men, since it can also be the other way around. While the majority of empirical studies and official data point to a preference for men to the detriment of women, we want to remain as objective as possible. We do not equate gender imbalances to the disadvantage of women but aim to detect structural imbalances in the labour market in general.

The GEFI is a composite index, strongly oriented towards the SIGI, with one final score for each company. The GEFI consists of five components:

- Publicly announced pro-diversity programs (*pro-diversity-programs*)

- Degree of gender diversity in leading positions (*Blau-executive*)
- Discrepancy between representation and implementation (*purple-washer*)
- Gender distribution on the website (*Blau-website*)
- Number of children (*number-child*)

That is, we assume that all sub-indicators should be weighted equally. The GEFI is built as an unweighted average, thus it has a logarithmic and exponential function. In addition, the GEFI does not have a hierarchical component because each indicator enters the index directly. The individual indicators are between zero and one and incorporated using the following formula, following the SIGI:

$$GEFI_i = \frac{1}{5} \ln(e^{pro-div_i} + e^{Blau-exec_i} - e^{purple_i} + e^{Blau-website_i} + e^{child_i})$$

This functional form allows for a higher degree of variability in the substitution rate between lower and higher levels of discrimination (OECD, 2019). We detail each of these components in the following subsections.

3.1 Publicly announced pro-diversity programs (*pro-diversity-programs*)

The degree to which companies disclose information regarding their ethics or at a non-economic, non-business- or non-product-related level is captured with this component. It specifically accounts for concrete measures of achieving gender equality. The company is not only theoretically striving for equality, but also has policies to achieve this goal. Fehre et al. (2015) mention home office and flexible working hours as an important measure, especially for women. This also includes offers such as part-time jobs or job sharing. This is particularly suitable for parents who can or want to work only part time. The more that pleasant circumstances are offered, the greater the chance that qualified and motivated employees will be hired or remain loyal to the company (Fehre et al., 2015).

This indicator is constructed using a keyword search on each firm website. We included terms such as *childcare*, *maternity leave* or *antidiscrimination law* and identified 15 exhaustive measures, which are listed in Appendix A. In a second step, we determine all relevant variants of the manually selected terms using word embeddings.[2] The variants can be used to find semantically similar words, such as *forecast* and *prediction*. Employing this technique, we identify the 10 most similar words to the original words and include these in the keyword search. These words are listed in Appendix A as well. It is also possible that companies use different spellings or synonyms, which is taken into account that way.

For each company, the measures are counted and summarized. Words expressing the same measure (e.g., *parental leave* or *maternity leave*) are not counted twice because they denote the same measure. Multiple mentions of a term does not guarantee added value, and in the worst case, distorts the results. Our main goal is to identify as many different measures as possible.

Because the share of the measures mentioned is marginal relative to the total number of words, we use a robust min-max normalization (i.e., we remove the median and scale the data according to a quantile range between the first and the third quartile). If, for example, a company mentions an equal opportunity representative on its website, then it can be assumed that this company promotes and implements equality between women and men and performs internal tasks in this respect, which ultimately leads to an increase in performance.

We normalize the sum by dividing it by the total number of words on the website. The normalization compensates for the firm-size effect because of the positive correlation between company size and Internet adoption (Pian and Teo, 2004). A DAX-30 company is initially more likely to be able to offer in-house childcare than a small, family business with few employees and furthermore to mention this on its website. Additionally, Pfeffer (1977) argues that larger firms have more HR-related capital available to implement measures that address challenges associated with diversity (Pfeffer, 1977).

[2] This are a novel paradigm from computer science to represent words and phrases, as well as their compositionality (Mikolov, 2013a; Mikolov, 2013b; Le and Mikolov, 2014).

3.2 Degree of gender diversity in leading positions (*Blau-executive*)

In this step, we aim to measure gender diversity at the management level. The use of a gender quota can be seen as a classic tool for measuring equality. Since information about the firm hierarchy is generally not available on the website, company executive data of the MUP is used here. This indicator is constructed using the gender of all executives as a basis. The degree of equality is measured for each firm, where the maximum value indicates a great orientation towards gender equality and a perfectly balanced composition of women and men, while values below the maximum show discrepancies. This information reveals whether a company actively implements gender mainstreaming at the executive level. A homogeneous composition denotes a bias towards the respective direction. It may happen that the same person has different top-level management positions within one company, thus each person is only counted once. For this purpose, the Blau Index (Blau, 1977) is used as a basis. The score for each firm is calculated using the following formula:

$$Blau_i = 1 - \sum_{i=1}^{n} p_i^2 \ ,$$

where *n* is the number of groups (i.e., male or female) and p_i is the proportion of members, respectively. Yet, using this formula would yield only values from zero (minimum) to 0.5 (maximum). The score is rescaled when calculating the index to reach a maximum value of one. We deliberately do not use a women's quota, as this represents the proportion of women in all relevant persons. The maximum value would only be reached if all persons were female, which, however, does not represent gender diversity but rather perfect gender homogeneity.

3.3 Discrepancy between representation and implementation (*purple-washer*)

To achieve a better image among the public, companies have an incentive to highlight their efforts towards gender equality. However, these mainly latent measures cannot be clearly traced or quantified, resulting in a risk of non-objective things being mentioned. This is also known as *purple washing*, a term primarily influenced by so-called *green washing*, which has not yet been applied in the academic literature. The focus here is on marketing methods that aim to present a company to the public as equitable without the necessary conditions being met.

Generally, in Germany, although gender diversity on executive and management boards is increasing, this growth is very sluggish. In 2018, the women's quota in Germany was just 26.1% for firms with up to 10 employees. For bigger firms, the quota has been even smaller (e.g., 17.1% for firms with 11 to 50 employees), resulting in an overall German average of 22.6%.

This indicator is constructed using the information collected in *pro-diversity-programs* and *Blau-executive*: Companies identified as diversity-oriented at first (and ceteris paribus having a non-zero amount of pro-diversity measures) should employ both men and women in higher positions.[3] However, if the executive level only hosts members of a single gender, then the firm might only attempt to achieve equality, but not actually implement it. Therefore, we calculate the discrepancy between *Blau-executive* and a theoretically expected reference value. The latter is computed as the average of the expected score of the Blau Index with regard to size, sector, and region for each firm using data from the Federal Statistical Office (Destatis, 2020b; 2020c; 2020d). Subsequently, we subtract this from the actual indicator score. If the result is negative (i.e., the actual equality is lower than theoretically expected), then it can be assumed that the firm is purple washing. It only pretends to be gender friendly, but the level of equality does not correspond to what one would expect, given measurements for similar companies. Formally, this can be presented as:

$$purple - washer_i = \begin{cases} Blau_{official,i} - Blau_{expected,i} & pro - diversity - measures > 0 \\ 0 & pro - diversity - measures = 0 \end{cases} .$$

For example, assume firm *i* reaches a Blau score of 0.15. We subtract this from its expected value (e.g., 0.22[4]), which would yield a value of 0.07. However, unlike other indicators, *purple-washer* enters the index negatively, as a discrepancy between the representation and implementation that negatively effects gender equality.

[3] The value of *purple-washer* in the companies with no hits in *pro-diversity-programs* is zero, as there is no statement about equality.

[4] This serves as a synthetic example. Theoretical Blau scores are calculated for all companies of a certain size class, region, and sector. If an average score of 0.20 is calculated across all companies in a sector (for all sizes and regions), then another score of 0.28 is calculated for all companies in a size class (across all sectors and regions), and a third score of 0.18 is calculated across all companies in a region (for all companies in a size class and sector), then 0.22 would be obtained on average.

3.4 Gender distribution on the website (*Blau-website*)

While the focus was formerly on the executive level, the following indicator concentrates on all persons in a firm. *Blau-website* measures the proportion of women and men mentioned on a firm's website. That is, an overall diversification quota based on website content is determined. Even without concrete firm enquiries, the gender distribution within the firm structure is approximated.

The implementation is done by matching first names; that is, filtering and counting female and male first names on the website. Specifically, a list of all male and female first names is taken and, in case of a match with a word on the website, the last names are checked.[5] Since there is no official list of last names, only words that begin with an uppercase letter followed by only lowercase letters are used as last names. A word recognized as a first name is followed by either a last name, a verb, or a punctuation mark. We calculate a Blau score based on the filtered website names. Equivalent to *Blau-executive*, each person in a company is considered only once. A ratio between zero and 0.5 is subsequently rescaled to achieve a maximum value of one. In addition to the quota of official firm MUP data, this measure reveals additional information on the latent underlying company structure. If a company pursues a consistent gender equality policy, then both scores from *Blau-executive* and *Blau-website* should be relatively similar. However, as already highlighted, the proportion of women in top management is lower than in lower positions. Therefore, *Blau-executive* and *Blau-website* will likely differ.

3.5 Number of children (*number-children*)

For this indicator, we analyse the amount of children of executive level employees. To avoid withdrawing completely from working while parenting their children, employees often choose part-time employment. In 2018, almost 30% (11 million people) of the working population in Germany worked part-time.

Measures such as corporate childcare or maternity leave represent a major factor influencing people's decisions about whether to work for a company. If these benefits are offered, then the company can be seen as gender or family friendly, which is reflected in a larger number of children. However, it should be noted that this factor only plays a role for an individual at the stage of life when their children are not yet adults. For this reason, only people who have not yet passed the age of 60 are considered.

We take the mean of the number of children per person at the executive level over each company from the MUP and normalize by the maximum value of the mean values over all firms to obtain a value between zero and one.

4 A Case Study for Germany

We demonstrate the applicability of the GEFI in a case study for Germany. We detail the data and the dimensions of the analysis in the following two sections.

4.1 Data

A company's public appearance, approximated through its website and enriched with firm data from the MUP, serves as a basis for the GEFI computation. MUP is updated semi-annually, and it maintains data for all companies based in Germany. It represents the most comprehensive panel company database outside official statistics. We checked whether the companies listed in the MUP have an Internet presence and, if they did, whether the texts and information contained there could be extracted. Of the original 1.3 million companies in Germany listed in the MUP, about 993,000 were used after filtering. This reduction is because companies either have no web address or do not provide sufficient information in the MUP.

To obtain the final data set, we use two pre-processing steps on the raw website data: We transform each word into its stem to filter out noise due to different word endings.[6] Further, to obtain comparable and consistent results, we deleted all non-German texts.

4.2 Company characteristics

We calculate the GEFI for all firms in the dataset described in the previous section. Given that firm-specific characteristics might exert influence on the degree of equality, clustering firms based on certain criteria is

[5] We used a list hosting 40,000 first names in Germany. In split cases, we used the German connotation (e.g., Andrea is a female name in Germany, but male in Italy; https://pypi.org/project/gender-guesser/). Only names to which a gender could be clearly assigned are considered.

[6] Stemming is conducted following *pro-diversity-programs* because this step changes the words so that they would no longer be recognized as names.

appropriate.

We first aggregate our results according to the official sector classification of the German Federal Statistical Office, which includes 21 branches (e.g., construction, healthcare, and social services). The list of all sectors is in Appendix B. We aggregate GEFI scores for every sector and consequently identify those with need for improvement.

Second, we define two regional classifications: Initially, the analysis is performed on the federal state level. We examine the differences in gender equality between the 16 federal states. Clear signs of economic imbalances exist between states. For example, the difference in GDP per capita between the strongest federal state (Hamburg) and the weakest (Saxony-Anhalt) is more than 130% (Destatis, 2020e). Subsequently, an overarching, expanded, analysis of western and eastern Germany is conducted. Great efforts have been made to align Germany after the reunification. However, structural differences still exist (e.g., in average wages or productivity). Although there has been convergence in GDP growth between the regions since 1991 (1991: 10% in the east and 1.2% in the west vs. 2018: 1% in the east and 1.4% in the west; Bundestag, 2019), differences become obvious when looking at the locations of the DAX companies. Not even one of the 30 companies comes from the former East German region, whereas more than half are located in Bavaria (27%) and North Rhine-Westphalia (30%) alone (Destatis, 2020e). Lastly, we aggregate with respect to firm size because we expect a positive relationship with gender equality. Segarra and Teruel (2017) argue that larger companies have to be more complex, offer more products, and solve tasks that are more specialized. A gender-friendly environment helps to cope with these tasks (Segarra and Teruel, 2017). In line with this, other studies find that diversity has a positive influence on performance in large groups (Kanfer et al., 2008). Here, too, we follow the official size classifications when grouping (1-5, 6-25, 26-250, >250 employees).

5 Main findings

In this section, we present the findings of our case study, which include selected results of the individual indicators obtained for each firm. Additionally, we discuss the GEFI scores of the sub-dimensions.

A need to improve gender-related working conditions becomes clear when looking at the results from *pro-diversity-programs.* We identify topics and expressions that have been used the most among the firms in our sample: Only 7.6% mention alternative, family-friendly working time models with benefits such as “home office,” “working time model,” or “work life balance.”

Legal regulations against gender discrimination, such as “prohibition of discrimination” and “anti-discrimination law” or “anti-discrimination policy,” are found for 6.5% of firms. Words such as “maternity leave” were use by 3.4% of companies that mentioned measures to support the period before and after childbirth. The possibility of supervising children after school within the company is mentioned by only 2.6% of the firms in the sample, using buzzwords such as “child care.” As stated above, this factor is extremely relevant for many families. This result highlights the alarmingly low attention paid to these measures.

Of additional noteworthiness is the discrepancy between *Blau-website* and *Blau-executive* over all companies: the average value of the former is 40% higher compared to the latter. That the gender distribution across management and employees is still asymmetrical becomes obviously clear.

5.1 Regions

Within the following, we conduct a regional analysis of the GEFI scores. Figure 1 maps the overall results for all firms in Germany at the county level. Lighter areas imply greater equality and darker areas lower equality. The red lines detail the borders of the individual federal states.

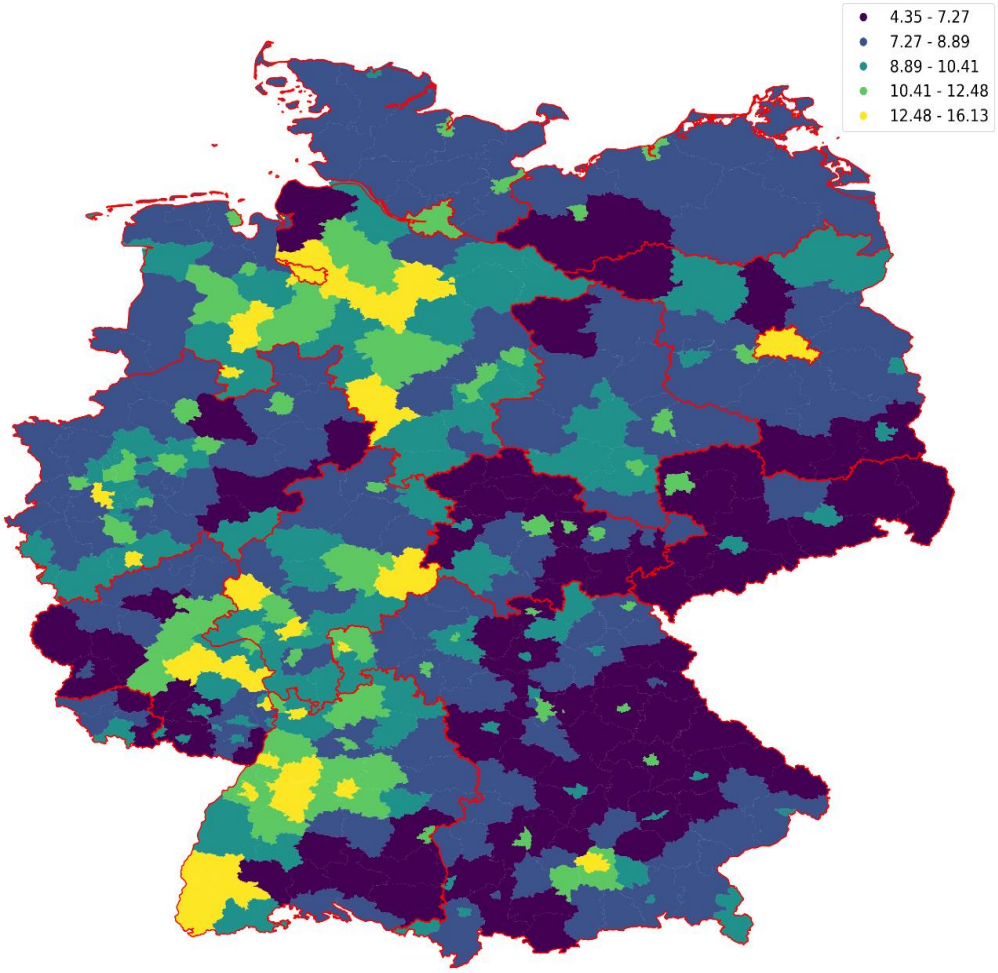

Figure 1: GEFI scores for Germany

What is immediately striking are the differences between the west and east. In the east (including Bavaria), most territories display a rather dark coloration, implying lower average GEFI values. The western states show an average score of 9.62, while the eastern states were slightly lower, averaging 9.09.[7] The lowest overall scores were found in Saxony, Thuringia, and Brandenburg. This is consistent with regard to other economic indicators: The east still lags far behind western Germany in terms of economic performance, productivity, innovative capacity and unemployment (Borger and Müller, 2014).

What also stands out is that the city states (Bremen, Hamburg, and Berlin) report the highest average GEFI scores. Their average value (12.2) is more than 30% higher than the average value of the other federal states (9.3). Straus and Sugarman (1988) uncover and confirm a significant positive correlation between urbanization and gender equality. As the name suggests, the city states encompass only the territory of a city and its immediate surroundings. The population density here is noticeably higher than the national German average (233 people per km^2): Berlin has a population of 4,090 people, Hamburg 2,446, and Bremen 1,624 per km^2 (Destatis, 2020g).

[7] Excluding the city states, the value is 9.5 in the west and 7.9 in the east, so Berlin strongly alters the average in the east.

When looking instead at the territorial states in particular, one can discern differences from the graph: Lower Saxony, Hessen, and North Rhine-Westphalia report values above average, whereas the opposite can be observed for Saxony, Brandenburg, and Thuringia. In some cases, a clear border effect can be seen, such as in Lower Saxony and Saxony-Anhalt (i.e., geographically adjacent areas show differences in the GEFI scores). Here, too, the difference between east and west becomes clearly visible.

Finally, the figure also reveals differences between rural and urban territories. We find that the latter (11.89) has higher average values compared to the former (8.74). For example, when looking at Bavaria, most rural areas are coloured rather darkly, indicating less gender equality. However, scattered areas stand out relatively brightly. These are non-district cities, such as Munich, Nuremberg, or Würzburg. Similar to city states, the population density there is much higher, which confirms the results from the literature.[8] Again, Straus and Sugarman's (1988) hypothesis that more urban areas are associated with a higher degree of equality can be confirmed. When comparing the mean values, we confirm the statistical significance of this result for every level of significance. The degree of gender equality is therefore significantly higher in urban areas than in rural areas.

In summary, companies in urban or western areas show on average higher GEFI values, suggesting they implement more equality than rural and eastern areas.

When looking at the sub-indicators, *pro-diversity-programs* confirms that companies in the western federal states are found to have an on average a slightly lower number of measures on their websites compared to the eastern areas (14.9% vs. 15.2%). When looking at the individual states, the city states Hamburg (18.8%), Berlin (17.5%), and Bremen (17.3%) can be named as the areas with the most companies with at least one hit.

They also achieve above-average scores for *Blau-executive* (Berlin: 0.13, Hamburg: 0.12, Bremen: 0.11), compared to the average for all states (0.101). It is worth mentioning that the firms in the eastern states achieved higher values on average than those in the west did (0.104 vs. 0.097). This is consistent with official data of the Federal Statistical Office, which indicates higher official women's quotas in higher management levels. While the share of women on DAX boards in the east was 75% in 2019 (as opposed to 10% in the west), it should be noted that only four eastern German board members are represented in all DAX30 companies, which might affect the validity of this figure (Destatis, 2019a).The same results are achieved when looking at *Blau-website* scores. Again, the city states (Berlin and Hamburg: 0.16, Bremen: 0.15) perform best.

When looking at *purple-washer*, an apparent inconsistency can be detected. As discussed above, *Blau-executive* scores are on average higher in the east, but those of the overall GEFI are higher in the west. The results in *purple-washer* may be able to explain this: Purple washing is most pronounced in the eastern states. In general, the average values in the city states and the western German territory states (0.25) are quite similar but lower than in the east (0.27). However, the share of firms doing purple washing relative to all firms are higher in the east.
With regard to *number-child*, we find relatively similar results for all states. The highest values for this indicator are achieved in Saxony, Saxony-Anhalt, and Brandenburg (0.08 each) and the lowest in Bremen, Baden-Württemberg, and Lower Saxony (0.07 each). However, these differences are very marginal, with a fluctuation of only about 1 percentage point.[9] This is in line with other official statistics: On average, almost one in three western households (29%) had children in 2018. In the east, the proportion of children was slightly lower (23%), yet the female employment rate was marginally higher by about 3-5% (Destatis, 2019c).

5.2 Sectors

Here we analyse GEFI scores achieved per sector across all companies in Germany. Figure 2 displays the values. The red vertical line represents the average across all sectors, and the black horizontal lines represent the 95% confidence intervals. Sectors T (private households with domestic staff) and U (exterritorial organisations) should be treated with caution, since there are very few observations (only about 0.01% and 0.017% of all firms), which cause very wide interval boundaries.

[8] The average population density of Bavaria is 186 inhabitants per km^2, thus population density varies widely within the individual districts. The population density in the Bavarian capital, Munich, is 4,777 inhabitants per km^2; in the district of Munich, 528 inhabitants per km^2; and in the district of Lichtenfels, only 66 people per km^2.
[9] We do not interpret the numbers directly because these are not the absolute numbers of children, but rather the normalized values.

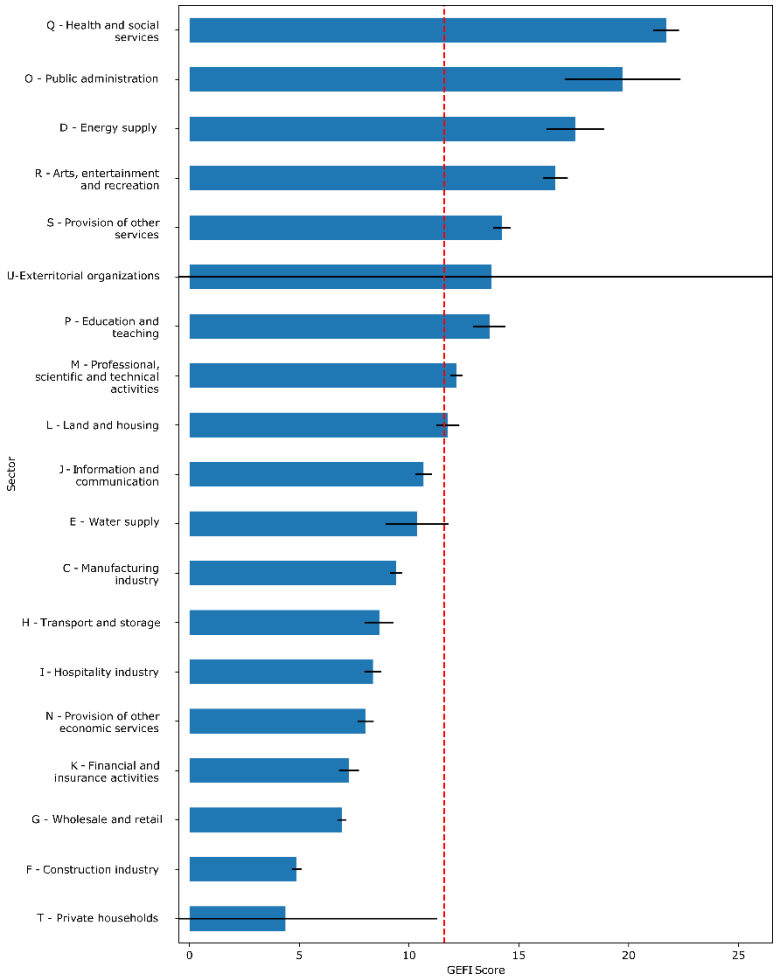

Figure 2: GEFI scores per sector in Germany

As one would expect, the highest scores are found in the health and social services sector. Compared to the average (11.8), the firms in this sector score more than 80% higher (21.7). The sector for public administration and defence follows, still being nearly 67% above average (19.7). The education sector is also in the upper range (13.7), which is consistent with previous studies. For example, Eriksson (2014) examines a secondary school in Sweden in her qualitative study on the effect of gender perspective on innovations. She emphasizes that the school emerged as the most successful of seven institutions in her investigation with regard to the generation and implementation of innovation within a gender-mainstreaming project. In line with our results, she mentions the comparatively high degree of gender equality in public sector organizations, which is advantageous to achieving desirable social outcomes (Eriksson, 2014).

In contrast, the construction industry scored the lowest (4.9), which may not be surprising because the majority of this sector is dominated by small firms, often still run by men. For example, Davey et al. (2010) investigate the position of women in the construction sector in the UK and name the educational segregation in this context that causes the occupational segregation. They point out that women were only 7% of architecture students and 8% of engineering and technology students, especially at higher educational levels, at the time of their study. The majority of women employed in the UK construction sector work in office and secretarial jobs, almost half of them part time. When looking at management and administration, women are mainly employed in areas such as human resources or public relations and are left out of concrete and strategic operations. In terms of the professional/technical category, women are severely underrepresented. Reasons cited include the image of the sector, selection criteria and male-dominated courses, recruitment practices and procedures, sexist attitudes, male-dominated culture, and the work environment (Davey et al., 2010). This is also consistent with Beede et al. (2011), who report that women are not only a minority in STEM professions, but are also less likely to pursue a profession with a STEM degree (Beede et al., 2011).

In conclusion, the GEFI results with regard to the sector dimension are in line with findings previously reported in the literature. We are also able to derive direct implications for the individual indicators. Regarding *pro-*

diversity-programs, we find that gender equality does not seem to play a central or at least noteworthy role in company policy in most cases. However, substantial differences exist between the individual sectors. While 61% of the firms in the public administration sector name at least one measure, only 9% could be found in construction.

For *Blau-executive*, our results are consistently similar to the literature. Health and social services (0.21) and public administration (0.16) have the highest values, while the construction industry (0.07) has been identified as the least diverse. Furthermore, *Blau-website* results reveal that the educational sector, which is more in the middle of the range (0.12) for the MUP data, is now one of the sectors with the highest scores (0.2). One would expect this result in view of the above-mentioned literature. Most sectors show higher average values relative to the official data. However, the trend is different in the construction sector: While it is the least gender friendly compared to other sectors, its average value also decreased (0.57).

The sectors that achieve the highest Blau scores (health and social services [0.2] and public administration [0.21]) also achieved the best results in *purple-washer* relative to the sector average (0.24).

Lastly, when looking at *number-child*, it is noticeable that the sectors that previously always performed best only achieved below-average values for this indicator (health and social services: 0.03; public administration: 0.02), while trade, private households with domestic staff, and other economic services (0.09 each) performed best.

5.3 Firm Size

Finally, we relate firm size to GEFI scores. Figure 3 shows the average GEFI score in relation to the number of employees.

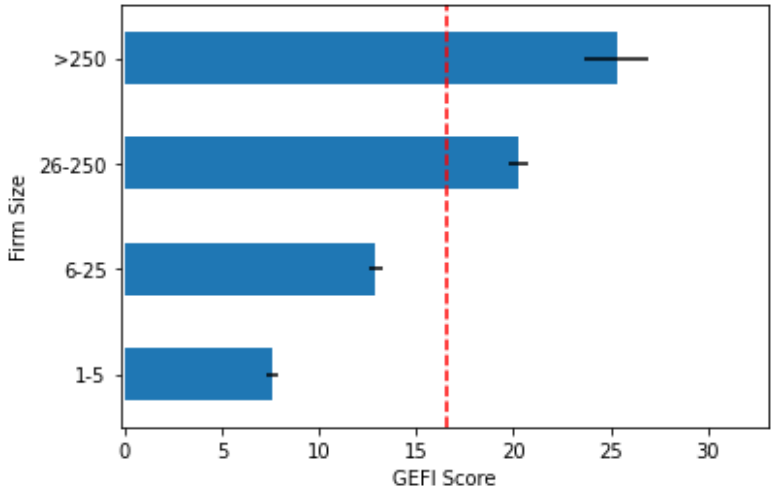

Figure 3: GEFI score per firm size group in Germany

It becomes obvious that an increase in company size is accompanied by an increase in gender equality. A positive relationship between firm size and gender friendliness can be observed here, which supports the above-mentioned theory of Segarra and Teruel (2017). Every next higher group achieves a higher GEFI value.[10] While firms in the largest size category are almost 68% above the average (25.3 vs. 15.1), the smallest firms with only 1-5 employees are just under half that (7.6). This may also be due to larger companies having more detailed and better-planned websites (e.g., providing more space to mention equality measures). We tried to account for this by performing the count normalization in *pro-diversity-programs*; however, future research needs to determine the effect of company size on web-based company measurements.

In the examination of the individual indicators, the following results can be mentioned for *pro-diversity-programs*: While in the groups of 1-5 and 26-250 employees, measures were found in only slightly more than 10% of the

[10] In some companies, individual details are missing (e.g., with regard to the sector or the size). This missing information cannot then be taken into account when calculating the mean value, which is why it differs between the respective dimensions.

companies, in the group of 6-25 employees or groups with more than 250 employees, the figures are 46% and 57%, respectively.

For *Blau-executive*, the largest companies (with more than 250 employees) also achieved the highest scores. Similar results were observed with regard to *Blau-websites*: The larger the company is, the higher the score. Again, in many cases the values are far above those from *Blau-executive*.

The *purple-washer* scores are in line with the overall results: An inverse relationship exists between the firm size and the value. However, for the group of 1-5 employees, one should be careful with the interpretation: If a company consists only of a single person, values close to zero for the Blau index result automatically. This might affect the value of this indicator, and future research needs to examine the effects of this further.

The results for *number-child* are not in line with the overall results or those of the above-mentioned indicators. While the scores increased with firm size, above-average values were achieved, especially for the group of small (1-5 and 6-25 employees) companies.

6 Sensitivity Analysis

Evaluating whether the calculated GEFI scores correspond reliably to the value originally intended to be measured is suitable. Since no comparison is possible because no equivalent index at company level exists yet, we form a sub-sample of companies and compare their GEFI scores with those of the other companies. This sample consists of companies that have signed the Charta der Vielfalt (Diversity Charter) and are thus committed to a working environment free of discrimination and prejudice, which should be reflected in a higher average score.[11] The charter currently has almost 4,000 signatories. We were able to match 1,120 companies.

Specifically, we compared the mean values of the GEFI scores of both samples. Figure 4 shows the histograms of the empirical distribution of scores for non-signers (blue) and signers (yellow). The visual analysis of the figure suggests that the scores for signers are higher than those of non-signers are.

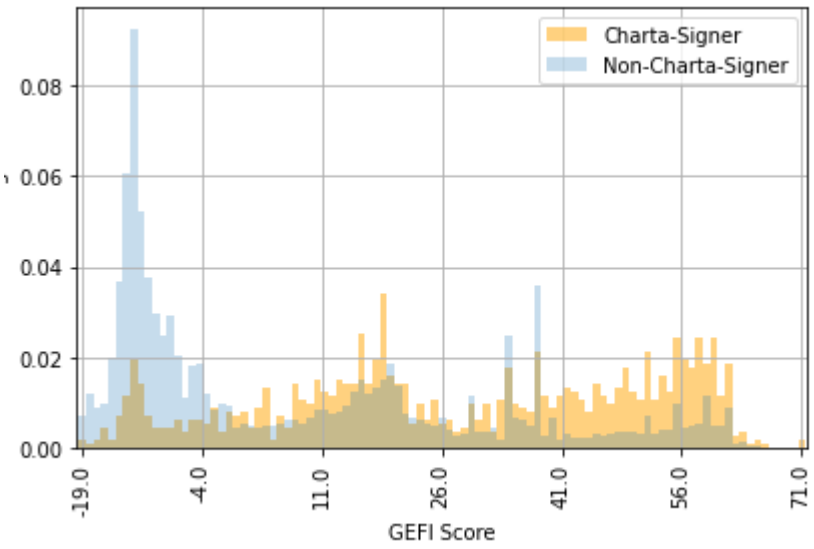

Figure 4: Distribution of GEFI scores for non-signers (blue) and signers (yellow)

The distribution of non-signers also shows a clear leftward slope. The average scores for signers is 30.29, which is much higher than the average is for the other observations (9.85). This difference is highly significant ($p < 0.01$). The results show that the GEFI is able to provide good approximations to gender equality at the firm level.

[11] Charta der Vielfalt is a self-commitment published in 2006 and an association under the patronage of the German Chancellor, which is committed to an unprejudiced working environment. By signing the charter, employers declare that they will create or promote equal opportunities for their employees (https://www.charta-der-vielfalt.de/).

7 Conclusion

The GEFI is a composite index measuring the degree of equality between men and women in firms. Inequalities still frequently exist between these two groups, which result in discrimination or preferential treatment. In our study, we incorporate not only official company data but also latent variable observations, quantified through large-scale data extraction and analysis of company websites. We proposed the GEFI, a composite index consisting of five sub-indicators, to quantify these visible and latent factors. Thereby, we were able to compute a score for each company serving as an indicator of equality achievement.

This concept is completely new and innovative relative to previous quantitative studies because it allows us to measure equality at the firm level objectively and can be fully automated for an entire economy. We have been able to gain completely new insights on a level that was previously analysed only on a more individual basis.

To gather first insights into the validity of the GEFI, we conducted a case study for Germany. Our results are consistent with expectations and the results from previous gender equality studies. Although previous studies were conducted at a different level of aggregation, we were still able to confirm their results qualitatively.

Our findings confirm the hypotheses that equality is positively correlated with urbanization and that it is enforced more in western Germany. In addition, a disproportionately high imbalance between men and women still exists at the executive level and between employees.

When focusing on the branches, the results are also in line with our expectations. Sectors such as construction are still mainly male-dominated, if only for physical reasons, and this is reflected in GEFI scores far below the average. In sectors such as healthcare, our results are in line with previous findings. For example, women with STEM degrees are also far less likely to work in their learned field, but more likely to move into the health sector. When classifying by company size, a clear trend can be observed. As the number of employees increases, higher GEFI values can also be realized. This is not surprising and can be explained by the fact that larger companies spend more financial resources on employee well-being. Among other things, this can be communicated to the public through a company's web presence, which results in a higher GEFI value.

Our findings suggest that the GEFI can be a valuable tool for policymakers to guide targeted equity and improvement efforts. First, our descriptive results point to structural deficits in the labour market that can be specifically targeted (e.g., through corresponding requirements from politics and lawmakers). Furthermore, the GEFI could be used in the future for quantitative analyses; for example, regressions to measure the influence of gender equality on the success of a company or other company-related indicators.

Finally, it can be said that although structural deficiencies still exist, they can be clearly quantified and improved. However, it should also be pointed out that exemplary equality is also being implemented in many sectors and regions. To evaluate this better, a comparison to other countries would also be an interesting direction for future research.

References

Beede, D. N., Doms, M. E., Julian, T. A., G., Khan, B., Langdon, D., & McKittrick (2011). Women in STEM: A gender gap to innovation. *Economics and Statistics Administration Issue Brief, 04(*11), http://dx.doi.org/10.2139/ssrn.1964782

Bekhouche, Y., Hausmann, R., Tyson, L. D., & Zahidi, S. (2012). The global gender gap index 2012. *The Global Gender Gap Report, 2012*, 3-27.

di Bella, E., Gandullia, L., Leporatti, L., & Maggino, F. (2020). Proposing a regional gender equality index (R-GEI) with an application to Italy. *Regional Studies*, 1-12, https://doi.org/10.1080/00343404.2020.1836341

Berglund, K., & Granat Thorslund, J. (2012). Innovative policies? Entrepreneurship and innovation policy from a gender perspective. In S. Andersson, K. Berglund, E. Gunnarsson, & E. Sundin (Eds.), *Promoting Innovation: Policies, practices and procedure.* Vinnova: Stockholm.

Bericat, E. (2012). The European gender equality index: Conceptual and analytical issues. *Social Indicators Research* 108(1), 1-28, https://doi.org/10.1007/s11205-011-9872-z

Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure* (Vol. 7). New York: Free Press.

Bloomberg (2019). Bloomberg Gender-Equality Index Doubles in Size, Recognizing 230 Companies Committed to Advancing Women in the Workplace. Retrieved from https://www. blooberg.com/company/press/2019-bloomberg-gender-equality-index/. Accessed 25 June 2020.

Borger, K., & Müller, M. (2014). In der Normalität angekommen–Deutschland 25 Jahre nach dem Mauerfall. *Fokus Volkswirtschaft. KfW Economic Research 73*, 30 September 2014.

Brader, D., & Lewerenz, J. (2006). *Frauen in Führungspositionen: An der Spitze ist die Luft dünn* (No. 2/2006). IAB-Kurzbericht, http://hdl.handle.net/10419/158209

Branisa, B., Klasen, S., & Ziegler, M. (2009). *The construction of the social institutions and gender index (SIGI)* (No. 184). IAI Discussion Papers, http://hdl.handle.net/10419/57322

Bundesagentur für Arbeit (2019). Statistik der Bundesagentur für Arbeit Berichte: Blickpunkt Arbeitsmarkt – MINT – Berufe, Nürnberg, August 2019, Bundesagentur für Arbeit.

Campbell, L. G., Dozier, M. E., Mehtani, S., & Rinehart, J. (2013). Gender-heterogeneous working groups produce higher quality science. *PloS one*, *8*(10), e79147, https://doi.org/10.1371/journal.pone.0079147

Carli, L. L., & Eagly, A. H. (2007). *Through the labyrinth: The truth about how women become leaders*. Boston, MA: Harvard Business School Press, https://doi.org/10.2189/asqu.53.2.363

Davey, C. L., Davidson, M. J., Fielden, S. L., & Gale, A. W. (2000). Women in construction: the untapped resource. *Construction Management & Economics*, *18*(1), 113-121, https://doi.org/10.1080/014461900371004

Destatis (2019a). Wie sich die Wirtschaft in Ost und West verändert, Statistisches Bundesamt (Destatis).

Destatis (2019b). Frauenanteile unter West- und Ostdeutschen in führenden wirtschaftlichen Positionen in Deutschland im Jahr 2019, Statistisches Bundesamt (Destatis).

Destatis (2019c). 30 Jahre Mauerfall: Familien in Ost- und Westdeutschland werden sich immer ähnlicher, Statistisches Bundesamt (Destatis).

Destatis (2020a). Gender Pay Gap: Verdienstabstand zwischen Männern und Frauen in Deutschland von 1995 bis 2019, Statistisches Bundesamt (Destatis).

Destatis (2020b). Frauenanteil in Führungspositionen in Deutschland nach Anzahl der Mitarbeiter im Unternehmen im Jahr 2018, Statistisches Bundesamt (Destatis).

Destatis (2020c). Frauenanteil in Führungspositionen in Deutschland nach Branchen im Jahr 2018, Statistisches Bundesamt (Destatis).

Destatis (2020d). Frauenanteil in Führungspositionen in Deutschland nach Bundesländern im Jahr 2018, Statistisches Bundesamt (Destatis).

Destatis (2020e). Bruttoinlandsprodukt (BIP) je Einwohner nach Bundesländern im Jahr 2019, Statistisches Bundesamt (Destatis).

Destatis (2020f). Anzahl der DAX, MDAX und SDAX-Unternehmen nach Bundesländern im Jahr 2020, Statistisches Bundesamt (Destatis).

Destatis (2020g). Bevölkerungsdichte (Einwohner je km²) in Deutschland nach Bundesländern zum 31. Dezember 2019, Statistisches Bundesamt (Destatis).

Destatis (2020h). Frauenerwerbstätigenquoten in den alten und neuen Bundesländern 1991 und 2019, Statistisches Bundesamt (Destatis).

Etzkowitz, H., & Ranga, M. (2010). Athena in the world of techne: The gender dimension of technology, innovation and entrepreneurship. Journal of technology management & innovation, 5(1), 1-12, http://dx.doi.org/10.4067/S0718-27242010000100001

Eriksson, A. F. (2014). A gender perspective as trigger and facilitator of innovation. *International Journal of Gender and Entrepreneurship*, https://doi.org/10.1108/IJGE-09-2012-0045

Fehre, K., Lindstädt, H., & Merklein, A. (2015). Diversity Management in Deutschland: Empirische Untersuchung der Maßnahmenebene–Fokus: Gender (Frauen). *Abschlusspräsentation und Bericht zur Studie. Karlsruhe: KIT, Institut für Unternehmensführung*.

Galvez, S. M. N., He, B., Hofstra, B., Jurafsky, D., Kulkarni, V. V., & McFarland, D. A. (2020). The diversity–innovation paradox in science. *Proceedings of the National Academy of Sciences*, *117*(17), 9284-9291., https://doi.org/10.1073/pnas.1915378117

Glick, P., & Rudman, L.A. (2012). *The social psychology of gender: How power and intimacy shape gender relations.* New York, NY: Guilford.

Hoogendoorn, S., Oosterbeek, H. & Van Praag, M. (2013). The impact of gender diversity on the performance of business teams: Evidence from a field experiment. *Management Science* 59(7), 1514-1528, https://doi.org/10.1287/mnsc.1120.1674

Kanfer, R., Neubach, B., Roth, C., Schmidt, K. H. & Wegge, J. (2008). Age and gender diversity as determinants of performance and health in a public organization: the role of task complexity and group size. *Journal of Applied Psychology*, *93*(6), 1301, https://doi.org/10.1037/a0012680

Kinne, J., & Lenz, D. (2019). Predicting innovative firms using web mining and deep learning. *ZEW-Centre for European Economic Research Discussion Paper*, 19-01, https://doi.org/10.1371/journal.pone.0249071

Kerevel, Y. (2019). Empowering Women? Gender Quotas and Women's Political Careers. *The Journal of Politics*, *81*(4), 1167-1180, https://dx.doi.org/10.1086/704434

Klasen, S., & Lamanna, F. (2009). The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries. *Feminist economics*, *15*(3), 91-132, https://doi.org/10.1080/13545700902893106

Lenz, D., & Winker, P. (2020). Measuring the diffusion of innovations with paragraph vector topic models. *PloS one*, *15*(1), e0226685, https://doi.org/10.1371/journal.pone.0226685

Lüdering, J., & Winker, P. (2016). *Forward or backward looking? The economic discourse and the observed reality* (No. 07-2016). MAGKS Joint Discussion Paper Series in Economics, https://doi.org/10.1515/jbnst-2015-1026

OECD (2019), SIGI 2019 Global Report: Transforming Challenges into Opportunities, Social Institutions and Gender Index, OECD Publishing, Paris. https://doi.org/10.1787/bc56d212-en . Accessed 23 February 2020.

Pfeffer, J. (1977). The ambiguity of leadership. *Academy of management review*, *2*(1), 104-112, https://doi.org/10.5465/amr.1977.4409175

Pian, Y., & Teo, T. S. (2004). A model for web adoption. *Information & Management*, *41*(4), 457-468, https://doi.org/10.1016/S0378-7206(03)00084-3

Segarra, A., & Teruel, M. (2017). The link between gender diversity and innovation: What is the role of firm size?. *International Review of Entrepreneurship*, *15*(3), 319-340.

Straus, M. A., & Sugarman, D. B.(1988). Indicators of gender equality for American states and regions. *Social Indicators Research*, *20*(3), 229-270, https://doi.org/10.1007/BF00302398

Temm, T. (2008). If You Meet the Expectations of Women, You Exceed the Expectations of Men: How Volvo Designed a Car for Women Customers and Made World Headlines. In Schiebinger, Londa (Ed.), *Gendered Innovations in Science and Engineering* (pp. 131-149). Stanford: Stanford University Press.

Unit, E. I. (2010). Women's Economic Opportunity–A New Pilot Index and Global Ranking. Findings and Methodology. http://graphics.eiu.com/upload/WEO_report_June_2010.pdf. Accessed 04 January 2021.

Van Staveren, I. (2013). To measure is to know? A comparative analysis of gender indices. *Review of Social Economy*, *71*(3), 339-372, https://doi.org/10.1080/00346764.2012.707398

Appendix

Appendix A

List of terms from *pro-diversity-programs* subindicator of the GEFI

Gender Equality Measure	Buzzwords (German)
1. Possibility to be legally absent from work and paid before and after having a baby (e.g. Maternity Leave, parental leave period)	Elternzeit, Mutterschaftsurlaub, Erziehungsurlaub, Mutterschutz(gesetz), Vaterschaftsurlaub, Mutterschutzzeit, Schwangerschaftsurlaub, Erziehungsurlaub, Elternurlaub, Babypause, Mutterschaftsurlaub, Mutterschutz,Babyjahr, Babyzeit, (Kinder-) erziehungszeit
2. Possibility within the company to supervise children after school (e.g. child care, infant care)	Schulkinderbetreuung, Kinderbetreuungsmöglichkeiten, Kinderbetreuung(sangebote), Kindergartenbetreuung, Babybetreuung, Kleinkindbetreuung, Betreuungsplan
3. Communication and feedback between employer and employee (employee survey, feedback conversation, ...)	Mitarbeitergespräch, Jahresgespräch, Fördergespräch, Zielvereinbarungsgespräch, Beurteilungsgespräch, Feedbackgespräch, Kritikgespräch, Mitarbeiterbefragung
4. Family-friendly firm measures for employees with children to continue with job (e.g. family friendly, child-friendly)	Familienfreundlich, kinderfreundlich
5. Measures and decisions that represent a concretization of the firm philosophy regarding gender equality (e.g. gender equality policy, women's promotion plan)	Frauenförderplan, Frauenpolitik, Gleichstellungspolitik, Mädchenförderung, Frauenförderpreis
6. A person/office that is responsible to make sure that employees and applicants are treated fairly regardless of their sex (e.g. Equal Opportunities Officer, Women's Representative)	Gleichstellungsstelle, Gleichstellungsbeauftragte(r), Gleichstellungsbüro, Gleichstellungskommission, Frauenbeauftragte(r), Gleichstellungsplan
7. Promotion of equitable access to equal positions/conditions (e.g. Equal opportunities, Freedom from Discrimination)	Gleichstellung, Geschlechtergerechtigkeit, Anti Diskriminierung, genderorientiert, Geschlechterperspektive, Geschlechter(un)gleichheit, Gleichberechtigung, Geschlechtergleichstellung, Chancengerecht(igkeit), Diskriminierungsfrei(heit), Chancengleich(heit), Geschlechterdiskriminierung
8. Additional payment a woman/couple receives to help pay for the costs of taking care of children (e.g. parental benefit, childcare support)	Familiengeld, Elterngeld, Erziehungsgeld, (Kinder-)betreuungsgeld, Landeserziehungsgeld, Kindergeld, Familienleistung, Zusatzleistung
9. A person/institution to give advice to other people about gender-related conflicts and pregnancies in an organized way (e.g. conflict advisor, pregnancy conflict advisory)	Schwangerschaftskonfliktberatung, Konfliktberater, Schwangerenkonfliktberatung, Konfliktbearbeitung, Krisenberatung, Konfliktcoaching, Konfliktklärung
10. Gender-related goals (e.g. Equality objectives, equality standards)	Gleichstellungskonzept, Gleichstellungsziele, Gleichstellungsstandards, Gleichstellungsrecht, Gleichstellungsmaßnahmen, Gleichstellungsreferat, Gleichstellungsausschuss, Gleichstellungskommission
11. Gender-based quota system for fillings to committees or posts (e.g. women's quota)	Frauenquote, Geschlechterquote
12. Legal regulations against gender discrimination (e.g. Anti-discrimination laws/regulations)	Gleichstellungsgesetz, Gleichbehandlungsgebot, Diskriminierungsverbot, Gleichberechtigungsgesetz, Gleichbehandlungsgrundsatz, Gleichstellungsarbeit, Anti Diskriminierungsgesetz, Antidiskriminierungspolitik, Chancengleichheitsgesetz, Diskriminierungsschutz, Gleichbehandlungsgesetz

13. Strategy to promote gender equality (e.g. gender mainstreaming)	Gender Mainstreaming, Genderpolitik
14. Alternative, family-friendly working time models (e.g. Home office, work life balance)	Teilzeitmodell, (Gleit-)zeitmodell, Arbeitszeitmanagement, Arbeitszeitregelung, Arbeitszeitverteilung, homeoffice, Arbeitszeitmodell, Work Life Blending, Work Life Management, Work Life Balance, Familienarbeitszeit, Beruf und Familie, Arbeitszufriedenheit
15. Compensation for an economic (dis-) advantage caused by sex (e.g. (dis-)advantage compensation)	Nachteilsausgleich, Vorteilsausgleich

Appendix B

List of sectors or economic activities, respectively. Classified by the Federal Statistical Office and used in German official statistics

A - Agriculture, forestry, fisheries

B - Mining and quarrying

C - Manufacturing industry

D - Energy supply

E - Water supply; sewerage, waste management and remediation activities

F - Construction industry

G - Wholesale and retail trade; maintenance and repair of motor vehicles

H - Transport and storage

I - Hospitality industry

J - Information and communication

K - Financial and insurance activities

L - Land and housing

M - Professional, scientific and technical activities

N - Provision of other economic services

O - Public administration and defence; compulsory social security

P - Education and teaching

Q - Health and social services

R - Arts, entertainment and recreation

S - Provision of other services

T - Private households with domestic staff; undifferentiated goods- and services-producing activities of private households for own use

U - Exterritorial organisations and corporation bodies