Study on the Confederation's statistical analyses concerning wage equality between women and men

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Executive Summary

Subject and objectives of the study

The present study examined **two analysis models**: the national statistics model, the purpose of which is to explain the existence of wage inequality between women and men at the economic level, and the Confederation's standard analysis model, which is used in the context of monitoring compliance in public procurement. The latter model establishes whether an organisation ensures wage equality between genders.

The aim of the study is to examine the suitability of these two analysis models, from a **scientific point of view** and with regard to the **administrative burden on companies and the public administration**, to fulfilling their respective objectives. To this end, the study examined the statistical methods, the factors explaining or justifying gender wage gaps and, in the case of the Confederation's standard analysis model, the tolerance threshold used.

Findings and recommendations of the study

A. National level: National statistics analysis model

- The **statistical method** hitherto used (regression analysis using the OLS method with Oaxaca-Blinder decomposition analysis, which is based on the mean value) corresponds to current state of scientific knowledge. This method clearly illustrates the explained part of the individual factors in wage differences, and the results are simple to interpret. However, the results can be greatly influenced by the presence of very high or very low wages (based on the mean value). Furthermore, this method does not check whether there is a sufficiently even distribution of women and men across the individual characteristics of the explanatory factors, which in certain configurations can lead to a distortion of results. With the quantile regression method, the influence of very high or very low wages (based on the median value) is smaller. But this method too does not check whether there is a sufficiently even distribution of women and men across the individual characteristics of the explanatory factors. Moreover, this method is technically complex to use. The "doubly robust regression" method would provide a better guarantee of a sufficiently even distribution of women and men across the individual characteristics of the explanatory factors. Consequently, the national statistics should be presented in terms of the mean value as well as the median and other quantiles. In addition to the methodology used thus far, doubly robust regression could also be used.
- The **factors** used to explain wage gaps correspond to current state of scientific knowledge, and their use should be continued.
- The three **additional factors** cited in the Noser postulate – continuing education and training, language skills and management experience – should not be included. The additional explanatory content is likely to be small, and the reliable collection of the necessary information cannot be guaranteed. For the factors working hours ratio during professional career (actual professional experience) and

working time models as well as physical and mental demands, an assessment should be made as to whether the necessary information can be collected with reasonable effort.

- Finally, an analysis model with and without potentially discriminatory factors should be developed.

B. Company level: Confederation's standard analysis model

- The **statistical method** (regression analysis using the OLS method in the specification with dummy variable for gender, which is based on the mean value) corresponds to current state of scientific knowledge. The above-mentioned strengths of this method contrast with the disadvantages of the significant influence exerted by wage extremes and of the weakness in cases where there is an insufficiently even distribution of women and men across the individual characteristics of the explanatory factors. Conversely, the other two methods tested (quantile regression and doubly robust regression) have the additional disadvantage of being technically complex for companies to implement. For these reasons, the statistical method should be maintained.
- The **factors** used hitherto for the justification of wage differences are suitable and should be maintained.
- On the other hand, the **additional factors** cited in the postulate – working hours ratio during professional career (actual professional experience), continuing education and training, language skills and management experience – are not suitable for inclusion. They present the potential for discrimination and/or the burden on companies to collect this data would be too great. In contrast, the factors working time models and physical/mental demands can be used without risk of discrimination. For this reason the explanatory content of these factors should be tested.
- The current **tolerance threshold** of 5%, although not scientifically justifiable, has proven itself in practice. If additional variables were to be included, a lowering of the tolerance threshold ought to be considered.
- In a representative survey, the majority of **companies** said they were in favour of maintaining the Confederation's standard analysis in its present form, i.e. with a reduced number of variables and a tolerance threshold of 5%.

0. Summary

0.1. Background

In its 2014 autumn session, the National Council submitted a postulate calling for the examination of "the FOGE analysis of wage discrimination". (**Noser Postulate 14.3388 "Survey on wage equality. Improvement of meaningfulness"**). The postulate called for the methods to be discussed and updated in keeping with the latest scientific findings. In particular, additional indicators for wage differences (for example actual professional or management experience, continuing education and training, language skills or working hours ratio during professional career) should be considered and the suitability of the mean value as an indicator for wage differences examined. The Federal Council subsequently commissioned the FOGE, in cooperation with the Federal Statistical Office (FSO), the Federal Office of Justice (FOJ) and the State Secretariat for Economic Affairs (SECO), to implement the postulate. Against this background, the FOGE commissioned the present study.

0.2. Two distinct contexts and analysis models

First it should be mentioned that the analyses of wage differences by the Federal administration are carried out on two different levels, and therefore two distinct analysis models are used:

- **The national statistics analysis model,** which is used for analyses at national level, i.e. across all businesses, in order to explain wage differences between female and male employees. These analyses take place on behalf of the FSO using data from the Swiss Earnings Structure Survey (ESS).
- **The Confederation's standard analysis model**, which is intended to detect systematic wage discrimination at company level, i.e. within the individual businesses. This analysis model is used as part of monitoring compliance with wage equality between women and men in public procurement and also provides the basis for the "Logib" tool, which the Confederation makes available to companies free of charge so that they can carry out voluntary wage equality analyses.

The national statistics analysis model has an explanatory aspect and, with the objective of creating a basis for policy measures, aims to establish transparency with regard to the reasons for wage inequality. To this end, the national statistics analysis model takes into account all the relevant employee characteristics that could explain the wage differences between genders. By contrast, the Confederation's standard analysis model aims to detect wage discrimination in the individual companies, in order to monitor compliance with the Federal Act on Public Procurement and to be able to take corrective measures. A justifying attitude is adopted here, in which wage differences from a legal perspective are only justified when they are based on objective, non-discriminatory reasons. Both analysis models are based on scientific processes which are well-established in the economic sciences. These processes can highlight which part of the wage inequality between women and men can be explained by differences in the labour market and by productivity-relevant characteristics (e.g. education and training, professional position etc.), and which part remains unexplained or which part of wage inequality is explained by gender when taking account of all other factors. The main difference between the divergent objectives of the two analysis models is that the Confederation's standard analysis model (company level) takes into account only characteristics which cannot be used in a

discriminatory fashion or are free from discrimination. Furthermore, with regard to monitoring of the Confederation's public procurement, a tolerance **threshold of 5%** exists**.** This means that with the Confederation's standard analysis model, there is reason to suspect gender-based wage discrimination in companies where the unexplained wage inequality is greater than 5%. In addition, the condition must be met that the gender-based wage inequality is statistically significantly higher than the tolerance threshold. The tolerance threshold and the additional significance test aim to offset any uncertainties that could lead to the standard analysis model not taking account of any other possible non-discriminatory company-specific factors. In the national statistics analysis model (national level), however, more explanatory factors are included, regardless of whether they are potentially discriminatory or not. No tolerance threshold exists here, as the aim is not to detect wage discrimination in individual companies, but to explain gender wage differences in all companies in Switzerland or in individual industries.

0.3. The study's objectives and methodology

The Noser postulate does not stipulate to which analysis model it refers. The present study, however, aims to examine both analysis models in greater depth. It intends to explore both models in order to determine whether they can be optimised while bearing in mind the administrative burden on companies. In accordance with the demands of the Noser postulate, two aspects of the analysis models should be examined:

1) statistical method (in particular suitability of the mean value as an indicator) and

2) characteristics used to explain wage differences.

Furthermore, with regard to the Confederation's standard analysis model, the study was to examine whether the tolerance threshold of 5% fixed for monitoring compliance with wage equality between women and men in public procurement is appropriate or how it would have to be adjusted if the analysis model were to be changed.

To answer these questions, the present study is based on a comprehensive analysis of the scientific literature, empirical analyses based on data of the Swiss Earnings Structure Survey, a representative survey of companies as well as telephone interviews with companies and experts.

0.4. National level: Findings for the national statistics analysis model

The existing national statistics analysis model dates back to a comprehensive evaluation of the effectiveness of the Gender Equality Act. In 2004, for the purposes of this evaluation, the FSO and the FOGE commissioned the working group of the Bureau for labour and social policy studies (BASS) and the University of Bern (Prof. Michael Gerfin) to carry out a comparative analysis of men's and women's wages on the basis of the Swiss Earnings Structure Survey (ESS). Since then, on behalf of the FSO the wage differences between women and men and their causes have been analysed on the basis of these methods and the ESS every two years.

1) Statistical methods

On which statistical methods is the national statistics analysis model based and what are its advantages and disadvantages?

The national statistics analysis model is based on the OLS regression analysis (also known as the least squares method). This method enables the influence of wage-relevant characteristics to be measured in isolation (ceteris paribus). To measure the wage difference between women and men, the national statistics analysis model estimates a separate wage equation for men and for women using OLS regression. The estimated wage equations for women and men are then used to break down the wage difference between women and men into an explained part – due to differences in the explanatory factors between women and men (e.g. differences in professional position) – and into an unexplained part (known as the decomposition method).

The OLS method (combined with decomposition) is scientifically recognised and well-known in empirical literature for determining wage inequalities. It has the advantage not only of requiring little time and computing capacity, but also of directly indicating the importance of individual characteristics for wage structure (e.g. professional experience, education and training, etc.) However, the OLS method also has two disadvantages: 1) It measures the unexplained wage gap as an average and is therefore weak in terms of extreme values in the wage data. 2) It does not take into account whether there is a sufficiently even distribution of women and men across the individual characteristics/categories of explanatory factors (e.g. a sufficiently even distribution of women and men across the various professional positions). In certain cases this can lead to distortion of the unexplained part of pay inequality.

Would alternative statistical methods improve the meaningfulness of the national statistics analysis model?

An analysis of the literature showed that the methods for the analysis of pay inequality have continued to develop in recent years. There is a move towards methods that take into account the presence of women and men in the characteristics of the individual explanatory factors. This study compared the analysis findings based on the existing OLS method with the results based on two alternative methods:

1. With a method that analyses pay equality in relation to the median – a parametric quantile regression. Quantile regressions give a low weighting to extreme wages which are not representative of the company.
2. With a non-parametric method, which ensures the presence of women and men in the individual characteristics and combinations of the explanatory factors – doubly robust regression.

The main findings were:

- Regardless of the method used or the year (2012, 2010, 2008) a statistically significant unexplained part of wage equality between women and men of at least 7.6% was established.
- Findings on the unexplained part of pay inequality vary depending on the method and differ from one another.
- With quantile regression (measured in terms of the median value instead of the mean), the proportion of the unexplained wage difference is smaller than that resulting from the existing methods. It is important to note that the results of both methods do not address the same issues: whereas with OLS regression all wages in the analysis are weighted equally, when measured with the median (using quantile regression), extreme wages which are not representative of the workforce have a lower weighting. Due to the different approaches adopted, therefore, the

unexplained proportion of pay inequality is *overestimated* with OLS regression and *underestimated* with quantile regression.

- With doubly robust regression, the unexplained part of the wage difference is smaller than that resulting from the existing methods. The difference between the results of the OLS method and those of doubly robust regression can be attributed to an insufficiently even distribution of women and men across the individual characteristics of the explanatory factors. Sufficient comparability in these aspects, however, is a prerequisite in order to reliably exclude distortion of the results for unexplained pay inequality.

What recommendations can be made with regards to the statistical methods of the national statistics analysis model?

Based on the findings of the literature analysis and the empirical analysis, we recommend the following procedure for the national statistics analysis:

- Recommendation 1: To achieve better transparency, we recommend that the national statistics analysis be presented in terms of mean value as well as the median and in terms of other quantiles.
- Recommendation 2: Ideally, a sufficiently even distribution of women and men across all characteristics of the explanatory factors should be ensured with the statistical methods selected. The doubly robust regression is one of the methods that can ensure this.

2) Variables used

Which variables are taken into account by the national statistics analysis model?

For an explanation of wage differences between women and men, the national statistics analysis model includes the following variables:

- Individual qualification characteristics: potential years of work experience (=age -15 years), number of years of service in company, highest completed level of education and training.
- Other personal characteristics: civil status, nationality/residency status.
- Job-related characteristics: professional position, qualifications required or since 2012 level of competence, area of activity.
- Company-specific characteristics: company size, economic sector, region.
- Work-time percentage and remuneration: working hours ratio, type of wage (monthly, hourly wage), wage agreement (collective wage agreement, individual employment contract), wage format (wage based on hours, period of time, other), additional wage components.

How great is the explanatory content of the variables used thus far in the national statistics analysis model and could it be increased by additional variables?

According to the most up-to-date analyses from the 2012 ESS (FSO 2015), the wage gap between women and men in the private sector is 21.3% overall. The aim of the national statistics analysis model is to explain how these wage gaps between women and men arise. According to the analyses made with the variables mentioned above, 59.1% of the wage difference can be explained, 40.9% of the difference remains unexplained.

The extent to which the explanatory content of the national statistics analysis model could be increased with the additional variables could only be estimated on the basis of literature analyses. There is a lack of reliable data for empirical analyses based on Swiss data. A comparison with the

economics literature shows that the national statistics analysis model largely takes into account the variables discussed in the empirical literature. According to the literature analysed, the following additional variables have additional explanatory potential (excluding a review of discrimination potential):

- Human capital factors: the subject area of education and training (in addition to the highest completed education and training), actual professional experience including work-time percentage during professional career (instead of the potential years of professional experience in the existing model), continuing education and change of job.
- Job-related requirements/conditions: working time model, physical and mental demands.

Some of these variables with additional explanatory potential are mentioned in the Noser postulate (continuing education, actual professional experience, work-time percentage in the professional career). According to the postulate, management experience and the ability to speak several languages should also be considered as relevant explanatory factors for wage differences. These explanatory factors are not discussed in the literature. However, the additional explanatory potential is likely to be limited. Language skills are not relevant in all sectors in terms of wages, and noteworthy gender-specific differences are unknown. Management experience ought to have greater explanatory potential for wage differences between women and men, as women are less likely to hold a managerial position. The existing model, however, already takes professional positions into account, which is strongly linked to management experience. By taking management experience into account in the analysis model, there would therefore be a strong correlation with professional position, thereby lowering the additional explanatory content.

In the context of the ESS, which additional variables could be incorporated into the national statistics analysis model with an acceptable level of burden upon companies?

Other important criteria for the inclusion of additional variables are the possibility of documenting them in the context of the LSE, the reliability of the collected data and the burden it would place upon companies. Every two years, companies have to provide the FSO with information on their employees for the Swiss Earnings Structure Survey. This aspect has been examined more closely in the online questionnaire for this survey and in telephone interviews with the companies. The possible additional variables can be divided into four groups:

a. Information that is already collected from the majority of companies; this includes working time models (e.g. evening, night or weekend shifts). The processing of this information would, however, entail a major additional burden upon both the FSO and the companies, because the existing electronic data collection systems would have to be adapted.
b. Information that could possibly be transferred from the administrative registers of the ESS: this concerns information on individual career paths such as the number and length of career breaks and the working hours ratio throughout professional life. The feasibility of this addition, the burden on the FSO and the reliability of the information will have to be further examined. If feasibility is not proven after more in-depth examination, this information would be included in category d.

c. Information that could be collected by means of an independent gender-neutral evaluation and transferred from the ESS by using the existing variable "occupation". This concerns the average physical and mental demands of each occupation. The feasibility and burden on the FSO would also have to be examined in more detail.
d. Information that could only be collected with considerable additional burden upon companies and whose quality and reliability would probably be compromised: this concerns continuing education, job changes, language skills and management experience. The explanatory content of the two last items is likely to be low.

Can the unexplained part of the wage differences in the context of the national statistics be interpreted as wage discrimination? The unexplained part of the wage gap comprises both other unexplained factors as well as discrimination (Global Wage Report 2014/15). The weight of each of these two aspects cannot be estimated. To interpret the unexplained part of wage difference exclusively as wage discrimination is not possible on the basis of a statistical analysis. Wage discrimination in the unexplained part of pay inequality can be both underestimated – if the explanatory factors are already the result of wage discrimination – as well as overestimated – if important objective explanatory factors are lacking.

Because the national statistics analysis model does not aim to prove wage discrimination but only to explain pay inequality, discussion of the discrimination potential of individual variables is in principle not necessary in this context. For the purpose of formulating policy recommendations we consider further discussion on the discrimination potential of the variables included to be useful. One possibility would be to begin with a model which only takes into account the largely discrimination-free variables, and to extend this gradually with variables which may have discrimination potential.

Which recommendations can be made with regard to the variables included in the national statistics analysis model?

In the light of the findings of the literature analysis and survey of companies, the following recommendations for further development of the analyses at national level can be made:

- Recommendation 3: The three variables called for in the Noser postulate, *language skills, continuing education* and *management experience* should not be incorporated in the national statistics analysis models. The reason for this is that the additional explanatory potential is likely to be small and a reliable collection of these variables cannot be guaranteed. The other variables mentioned in the Noser postulate, actual professional experience and work-time percentage during professional career, on the other hand, are likely to provide additional explanation of wage differences. Their inclusion in the ESS should therefore be examined in more depth (cf. next recommendation).
- Recommendation 4: In order to increase the explanatory content of the model with additional variables, the following possibilities should be considered:
  - transfer information on career path (e.g. actual professional experience, work-time percentage during professional career) from administrative ESS registers,
  - conduct an objective gender-neutral evaluation of occupations with regard to working conditions (e.g. physical and mental demands) and integrate them as variables and
  - in addition collect information on working time models from the companies.

- Recommendation 5: Lastly, in our opinion a step-by-step analysis of the national statistics with models which distinguish variables with and without discrimination potential would be useful.

0.5 Company level: Findings for the Confederation's standard analysis model

The aim of the standard analysis model is to identify systematic wage discrimination in companies. It was developed in order to monitor compliance with the Swiss Federal Act on Public Procurement of 16 December 1994, which stipulates that a federal order may only be granted to providers who guarantee equal treatment of women and men in terms of remuneration (PPA Art. 8 para. 1c). According to the Swiss Federal Constitution, women and men are entitled to "equal pay for work of equal value" (Cst. Art. 8 para. 3). This means that within a company, women and men with equivalent individual characteristics must be paid the equal pay for work of equal value (in terms of equal requirements at work and equal performance). Since 2006, the federal government has used this analysis model to conduct regular controls that companies participating in the public procurement system are complying with the principle of equal pay.

As a model using statistical methods to detect wage inequalities in companies, the Confederation's standard analysis model is something of a pioneer, as Switzerland was the first country to introduce such an instrument. Since its introduction, "Logib" has been adopted by other countries (Germany, Finland, France, Great Britain, Luxembourg, Poland and Portugal) in a slightly modified form.

1) Statistical methods

On which statistical methods is the Confederation's standard analysis model based and what are its advantages and disadvantages?

The OLS method is also the basis for the national statistics analysis model. However, in the case of the Confederation's standard analysis model, a wage equation for women and men is estimated collectively, and no wage breakdown is carried out. Instead, gender is incorporated in the wage equation as an explanatory factor. With this so-called dummy method, the gender variable reflects the gender-specific proportion of the wage differential between women and men under otherwise equal conditions. A reason for using the dummy method is that fewer cases are needed and the analysis can therefore be carried out in smaller companies too. However, in order to carry out a statistical regression analysis, a certain number of cases are generally required. A minimum number of 50 employees is recommended for the standard analysis model, including at least 10 women or 10 men.

The OLS method is a scientifically recognised method for determining wage inequalities. The regression analysis is also permitted by the Swiss Federal Supreme Court. It has the advantage of taking very little time and computing capacity, and can directly show the importance of individual characteristics for wage components (e.g. professional experience, education and training etc.). Furthermore, the OLS method is implemented in the "Logib" instrument, enabling companies to carry out a voluntary, free self-test anonymously. The disadvantages of the OLS regression method correspond to those of the national statistics analysis model: 1) In certain cases, distortion of the

estimated unexplained share of the wage differential can occur. This happens if only women or only men are represented in the individual characteristics of the explanatory factors (e.g. within a professional position). 2) Measuring the wage differential against the average results in extreme wages which are not representative of the company and in a high weighting, which – in the case of extremely high wages paid to executive positions held by men – can, for example, lead to a higher unexplained share of wage inequality. In summary, one can say that the OLS regression method is in principle suitable for the analysis of wage inequality at the company level, but that in certain configurations (uneven distribution of women and men across the characteristics of the individual variables) in companies it has its limitations.

Would alternative statistical methods improve the meaningfulness of the Confederation's standard analysis model and could these be implemented?

Alternative statistical methods that could be considered alongside the national statistics analysis model are quantile regression and doubly robust regression. Quantile regression would award extreme wages less weight and calculate wage inequalities more on the basis of wages representative of the company. In this regard, however, it should be noted that from a legal point of view, it is questionable not to take extremely high wages into account for the analysis of gender-specific wage inequality. An analysis based on doubly robust regression could solve the problem of the OLS method with regard to possible distortion due to an uneven distribution of women and men across the individual characteristics of the variables in companies. Furthermore, findings based on the existing OLS method and on the doubly robust regression on the basis of an analysis of the whole sample of the ESS (national level) did not show any notable differences. At the level of individual companies or in individual cases, however, differences could result due to the differing methods of calculation.

An important criterion for the possible use of alternative statistical methods is the degree to which they can be implemented at company level. The alternative methods require special software and specialist know-how. In particular it would be impossible to implement the "Logib" tool for the company self-assessment. Logib is based on Excel, which is usually already used by companies and employees are generally familiar with it, which does not apply to highly complex statistical software.

Which recommendations can be made with regard to the Confederation's standard analysis model?

Based on these findings the following recommendations can be made for the standard analysis model:

- Recommendation 6: The OLS regression method is a scientifically recognised method and should be maintained for practical reasons. However, it should be borne in mind that in companies in which there is an uneven distribution of women and men across the individual characteristics of the explanatory factors, there is a risk of distortion. As part of the plausibility check the monitoring of compliance in public procurement, these risks have to some extent been alleviated. In addition, an examination of the distribution of women and men could take place prior to the analysis. In the event that distortions should occur, sensitivity analyses could be carried out in order to check whether the tolerance threshold might be exceeded due to this issue.

2) Variables used

What is the explanatory content of the variables used thus far?

The standard analysis model includes 5 explanatory factors which are used to compare men's and women's wages. Three of these explanatory factors measure differences in human capital (education, potential professional experience, years of service) and two take into account the different requirements of a job (skills level required, professional position). An analysis of the scientific literature has shown that these are important wage-relevant variables which correspond to a large extent to those used in classical models for the measurement of wage inequalities. In this respect, they are suitable for assessing wage inequalities in companies.

Which additional variables could be incorporated into the Confederation's standard analysis model with reasonable burden upon companies?

With regard to the Confederation's standard analysis model, which aims to detect possible systematic wage discrimination, the main concern is the discriminatory potential of further explanatory factors because if the analysis model were to incorporate explanatory variables which are already discriminatory or could be used in a discriminatory manner, the extent of the wage discrimination could be underestimated.

The present assessment showed that for most of the additional variables (such as proposed in the Noser postulate and those mentioned in the analysis of scientific literature) inherent discrimination cannot be excluded. Discrimination can occur in particular during the survey and operationalisation. Information about employees such as actual professional experience, management experience or continuing education, for example, have to be supplied by the employer. Here, the employer has to evaluate the relevance of these explanatory factors to wages. Potential discrimination, e.g. due to stereotyping, cannot be excluded from these evaluations. Furthermore, the survey burden and the quality of data regarding information on activities occurring before the employee joined their present company must be weighed up carefully.

Only a few additional explanatory factors could be surveyed objectively. These are language skills, which can be proven objectively by language tests from independent institutions and which companies could make available. This would, however, imply a considerable burden upon companies which would be compensated by only a small return. Another possibility would be to extend the model with working conditions (working hours, physical and mental demands) which could be surveyed as part of an objective and gender-neutral job evaluation. The feasibility and burden of such an evaluation, however, should be further tested in more depth.

Which recommendations can be made with regard to the variables used in the Confederation's standard analysis model?

- Recommendation 7: The variables currently used in the Confederation's analysis model are considered to be suitable and should be maintained.
- Recommendation 8: The variables proposed in the Noser postulate (professional and management experience, continuing education and training, language skills and work-time percentage during career) are not suitable for inclusion in the standard analysis model. This recommendation is based on the fact that these variables either have discriminatory potential from a legal point of view or the burden involved in surveying this information in the companies would be disproportionate to their explanatory potential. However, the inclusion of working conditions such as physical or

mental demands as an additional variable in the model could be examined by using an independent and gender-neutral evaluation of the job.

3) Tolerance threshold

In order to take into account the potential influence of other objective company-specific factors which are not included in the analysis, a **tolerance threshold** of 5% has been established, which is also subject to a statistical significance test. Only if the gender-specific wage inequality detected by the standard analysis model is statistically significantly higher than the tolerance threshold, is this evaluated as a justified suspicion of systematic wage discrimination in the company.

Is the tolerance level of 5% appropriate in the context of the Confederation's standard analysis model?

The standard analysis model depicts wage practices in companies in a standardised manner, i.e. identically, for all companies. This means that there could be other company-specific variables, which could explain a part of the wage inequality. Moreover, the model excludes variables with discriminatory potential, which in individual cases may not be discriminatory. For this reason a tolerance threshold is necessary. A tolerance threshold is particularly useful in that it minimises the probability of companies being wrongly accused of wage discrimination. In this way the tolerance level accommodates both demands for practical manageability as well as for a "common sense" application.

The suitability of the 5% level with the additional statistical significance test cannot be addressed conclusively on the basis of theoretical and empirical bases. Due to the lack of scientific bases on this subject, we must rely upon the evaluation of experiences thus far in the context of monitoring compliance in public procurement. The auditors consider the tolerance threshold to be appropriate on the basis of their practical experience. Companies interviewed as part of this survey also considered this threshold to be appropriate.

A change to the statistical methods and the variables used in the standard analysis model would entail adjustment of the tolerance threshold, as the area of uncertainty in wage discrimination would be altered. To what extent this would have to be carried out cannot be scientifically quantified. Furthermore, the company survey showed that companies prefer a simple model with a tolerance threshold of 5% to a model with additional variables and a lower tolerance threshold.

Is the standard analysis model with a tolerance threshold of 5% fit for purpose?

Although in individual cases the standard analysis model may not measure all possible discrimination-free explanatory factors, we consider that it is fit for purpose with a tolerance threshold of 5%, i.e. to provide justified suspicion of systematic wage discrimination in companies. It contains important discrimination-free factors, which – as is also shown in the empirical analysis – can already explain a large part of the wage differences. The standard analysis model is, however, subject to certain limitations as regards conclusively proving wage discrimination. In individual cases (in individual companies) it is still possible that additional objective explanatory factors at the company (which are not included in the standard analysis model) could result in the gender-specific wage inequality not exceeding the tolerance threshold of 5%. On the other hand, the statistical significance test at small and medium-sized companies tends to indicate a lower probability for justified suspicion of systematic wage discrimination than for larger companies. Similarly, the model has limitations in detecting the wage discrimination of individual

employees. It is possible, for example, that the average gender-specific wage difference is below 5% although individual employees are discriminated against beyond the tolerance level of 5%.

Which recommendations can be made with regard to the tolerance threshold?

Based on these findings we recommend:

- Recommendation 9: Inasmuch as the standard analysis model cannot be extended with additional, discrimination-free variables (see recommendation 8), the tolerance threshold of 5% should be maintained. If additional variables were to be included in the standard analysis model, the tolerance level would have to be lowered.
- Recommendation 10: The suitability of the tolerance threshold level should be examined in the light of future experiences, as the present evaluation is based on a small number of experiences.