# Compliance with tax rules by businesses in Denmark

## Tax year 2006

**Report**

**SKAT – Danish Tax and Customs Administration**

Main Office

Division for Management and Compliance

Office for Compliance

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October 2009

# FOREWORD

The compliance strategy of SKAT, the Danish Tax and Customs Administration, differentiates between co-players and opponents. Those that try to play by the rules are, briefly stated, to receive information and guidance, while the minority that deliberately tries to skip out on their obligations can expect audits and sanctions.

Compliance activities are based on risk management principles, as recommended by the OECD and practiced by an increasing number of revenue bodies. At least once a year risks – behaviours that could contribute to the tax gap – are identified and analysed in a process that feeds into a risk management cycle.

The tax gap can be defined as the gap between theoretical tax liabilities and raised revenue. In Denmark this gap has since 1947 been calculated top-down by the national accounts method. The resulting timeline show how the tax gap has fallen from a fifth of GDP in the late forties to roughly 4 per cent of GDP today.

While these macro figures provide an important health-of-system indicator, they are not detailed or accurate enough to inform strategic decisions in the risk management cycle.

Therefore SKAT has carried out a large study to systematically map the extent of compliance with tax legislation. This has been done on the basis of more than 22.000 random audits of citizens and companies for the tax year 2006, which provides a statistically valid picture of the extent of compliance, as well as the nature and distribution of fraud and errors. The present report presents the conclusions regarding companies. A separate report is available on the compliance of citizens.

The study is the first such study undertaken by our administration and unique also in an international perspective. In effect it provides a bottom-up picture of the tax-gap that can inform risk analysis and resource allocation or be applied as a benchmark to assess the impact of treatments directed at specific risks. In this way it will provide us with a helpful tool in our efforts to secure a fair and effective financing of our public sector.

SKAT Main Office, October 2009

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# MAIN RESULTS[1]

## LEVELS OF COMPLIANCE

- The overall average *level of compliance* for businesses was 4.6, equivalent to a rating of somewhere between pale green and off white.
- The underlying distribution showed that fully 93% of all businesses could be viewed as *co-players*, while only 7% had to be regarded as *opponents*. A very large majority of businesses thus aim to follow the rules.
- The highest level of compliance with the regulations was found in Northern Jutland, while Central Jutland, Northern Zealand and Central and Southern Zealand were all roughly equivalent at the lower end of the range. The range in compliance level was from 4.5 in Central Jutland to 4.8 in Northern Jutland. The three regions on Zealand, taken together, were a fraction lower in their level of compliance than the rest of the country. Nine percent of all businesses east of the Great Belt were classed as opponents, while the level was six percent in the rest of the country. In other words, the proportion of businesses that consciously set out to cheat SKAT and thus all the other taxpayers in Denmark was fifty percent greater in the east of the country than in the west.
- Companies were more compliant with the regulations than the self-employed; the levels of compliance for the two groups were 4.8 and 4.5 respectively. The proportion of opponents was also fifty percent greater among the self-employed.
- There was a clear tendency for the level of compliance to decline with increased levels of turnover.
- The age of a business appeared to have no direct significance for level of compliance.
- There was significant variation across sectors in levels of compliance. The worst ratings by far were in the Hotels and Restaurants sector, which, with a compliance level of 3.7, was the only sector to score under 4. The Transportation and the Building and Construction sectors were also low, at the level of 4.1, followed by four other sectors scoring 4.2. At the other end of the range, Finance and Insurance, together with Unspecified Businesses, returned the best results, with compliance levels of 5.1 and 5.0 respectively.
- An in-depth analysis of error types and the distribution of levels of compliance within each sector needs to be carried out before it is possible to say whether the differences between sectors are related more to lack of knowledge of the regulations than to deliberate flouting of the rules.

[1] A number of concepts used in this section are first defined later in the report. Most of these definitions are to be found in the section entitled *Delimitations and definitions*.

## ERROR PERCENTAGES

- There was a 42% level of error occurrence among the businesses checked, excluding errors connected with VAT.
- Companies were less prone to error than the self-employed, with percentages of 35% and 45% respectively.
- The percentage of errors was clearly highest in Central Jutland and lowest in Northern Jutland. However, the many errors in Central Jutland do not appear to have been very serious, since in terms of overall compliance the region was in line with other regions for which the percentages of error were somewhat lower.
- The proportion of errors increased in relation to the size of turnover. This relationship was clearly statistically significant; the percentage of errors was almost twice as high for businesses with a turnover above DKK 10 million than for businesses with zero turnover, at 57% and 31% respectively.
- Where VAT was also checked, errors related to VAT alone were found in 30% of cases.
- The proportion errors also varied considerably between sectors. Errors occurred most frequently in four sectors: Hotels and Restaurants, Education, Health Care and Social Services, and Building and Construction. In these sectors there were errors in more cases than were error-free. The Finance and Insurance sector had the best record, with errors in "only" just over every fourth case. Next came a large group of Unspecified Businesses, where there were errors in every third instance.
- At the sector level, there was a clear correlation between high percentages of error and low levels of compliance.

## ADJUSTMENT AMOUNTS

- The average numerical adjustment amount for the whole of Denmark was DKK 134,000, or DKK 82,000 if outlying extremely large amounts are disregarded. If further correction is made for the fact that there were errors in "only" 42% of cases, then the average adjustment across all the cases checked, rather than for those where corrections were made, was DKK 35,000.
- The average numerical adjustment was six times higher in companies than among the self-employed, or almost three times higher if extreme cases are ignored – DKK 160,000 versus DKK 57,000.
- Adjustments to taxable amounts were downward in around one-eighth of cases, and upward in the rest. The amounts involved were on average DKK 81,000 for downward adjustments but significantly greater, DKK 143,000, for upward adjustments.
- The average adjustment amount rose – perhaps not surprisingly – with the turnover of the business. What might be considered surprising, on the other hand, was that businesses with very little turnover, at a level of between DKK 1 and DKK 100,000, had an average adjustment amount of almost

DKK 35,000. In the cases of businesses with no recorded turnover at all, the average numerical adjustment was fully DKK 111,000, ignoring outlying extreme cases.

### THE TAX GAP FOR BUSINESSES

- The tax gap for businesses was calculated to be DKK 26.5 billion. The calculation of the tax gap is extremely sensitive to the inclusion of very large increases and decreases. If seven extreme cases are ignored, the calculated tax gap shrinks to just over DKK 15 billion.
- It is very important to emphasise that these are the figures calculated *before tax*. It would require additional calculations to estimate the lost revenue, since widely differing tax rates would need to be used, depending on the type of adjustment and the form of ownership of the business.
- The scope of the total non-compliance is best measured by the amount of the numerical tax gap, which was calculated to be DKK 31 billion, or DKK 19 billion if the extreme cases were ignored.
- Reductions accounted for only one tenth of the numerical gap, excluding the extreme cases. East of the Great Belt the proportion of reductions was especially low, being around half that found in the rest of the country. This points to a more deliberate behaviour in the east. Together, Central Jutland and Southern Denmark accounted for almost sixty percent of the total number of reductions.
- The proportion of reductions was more than double among companies than among the self-employed, at 14% and 6% respectively. This is an indication of a greater willingness to take risks in interpreting the laws and regulations among the self-employed, which is related to the lower level of compliance for this group.
- The total gap exclusive of extremes is divided roughly equally across co-players and opponents, with a slight preponderance on the side of the co-players. From the point of view of SKAT, then, there are reasons to focus both on ensuring that the fraudulent do not escape and on helping co-players to make correct declarations through a goal-oriented effort at providing information and guidance.
- Businesses with no turnover contribute almost one-fifth of the tax gap as calculated without the extreme cases. If businesses with a turnover of up to DKK 500,000 are included, the group as a whole accounts for two-fifths of the entire tax gap. At the other end of the scale, businesses with a turnover in excess of DKK 10 million (excluding businesses with more than 250 employees) were responsible for one sixth of the tax gap, though only five percent of businesses fall into this category.

### THE VAT GAP FOR BUSINESSES

- The VAT gap for businesses was calculated to be DKK 3.7 billion. If the extremely large outlying adjustments are ignored, the gap is reduced to DKK 2.0 billion.

- In contrast to the calculation of the tax gap, the VAT gap is directly equivalent to lost revenue for the state.
- If the VAT gap for the year 2006 is compared with the total VAT revenue of DKK 110 billion – excluding revenue from businesses employing more than 250 people – then the relative VAT gap is 3.4%, or 1.8% if the figure excluding extreme values is used.

# INTRODUCTION

For the first time in the history of SKAT, the Danish tax administration, it has proved possible to map in a fully systematic manner the ability of Danes to complete their tax returns correctly. The extent of both errors and out-and-out tax fraud has been identified for the tax year 2006. The study is very comprehensive and is based on a rigorous check of more than 22,000 individual taxpayers and businesses distributed across all geographical areas of Denmark. This document presents the results of the study for businesses, including both companies and businesses run by the self-employed.

The basis for the study of businesses comprised almost 11,500 checks made by SKAT. In each of these instances, a thorough check was made of every tax-relevant aspect of the finances of the business. In just under one case in seven, a further check was made of the business's VAT returns. In general, the check involved visiting the firm in question by appointment.

In each case where errors were found in the tax declaration, the categories of the errors were recorded, and the overall change in taxable income calculated. SKAT uses the term *adjustment amount* for such alterations; the adjustment is to taxable income, and thus is not a measure of revenue from taxation.

A *level of compliance* was calculated for each taxpaying business, this being a measure on a scale of compliance with the regulations with values from 0 to 6. The grades 0 to 2 were given to businesses categorised as *opponents*, firms that had clearly made incorrect declarations despite possibly having the ability to have made correct declarations; the grades 3 to 6 were given to *co-players*, businesses that were willing to make correct declarations, but that possibly lacked the ability to do so. Actual placement on the scale was made primarily according to objective criteria.

The taxpaying businesses in the study were selected so that the checks provided a representative picture of compliance with the rules across the entire country. Consequently, it was possible to calculate the total national tax gap for businesses on the basis of the total adjustment amount found in the study.

By coupling the recorded error types and the extent of the errors to the distribution of levels of compliance, it was possible to build up a picture of the areas which are found complicated with regard to tax declaration or which are particularly susceptible to deliberate under-declaration. A high proportion of errors in a particular area can be taken as an indication that work needs to be done there on reducing the possibility of error.

If the errors are mainly the result of misunderstanding or ignorance of the rules – i.e. are connected with a high level of willingness to comply – then there may be a need to for more information and guidance, or even for a simplification of the rules in the area. If on the other hand the errors come from a deliberate attempt to cheat – i.e. are connected with low levels of willingness to comply – then the need may be for targeted checks and the use of sanctions, or the tax evasion behaviour may be discouraged by restricting or removing the opportunities for

fraudulent declaration. This could be done, for example, by legally requiring more information to be entered by third parties.

The results that are presented in this report thus provide invaluable input for determining how SKAT's resources could be best used in the future. The unique dataset which has now been produced also provides much scope for further analysis. The current report already presents a detailed picture of the existing situation, while we expect that a future analysis will also be able to elucidate *why* the situation is as it is.

The report is structured as follows. The introductory section, which includes a review of important concepts and definitions, is followed by a presentation of average error percentages, levels of compliance and adjustment amounts. Then there is a presentation, for the first time in Denmark, of the calculations of the tax and the VAT gaps for businesses. Finally, we examine more closely the error types identified, and consider the distribution of these across the different areas of legislation and sections of the regulations.

# DELIMITATIONS AND DEFINITIONS

This section introduces much of the special terminology used in this report. The concepts are therefore not presented again in the other sections of the text. We also explain in this section some of the decisions made in relation to the delimitation of what was measured, and outline some of the methods used in calculating the various results.

First, we describe the basic division between individual taxpayers and businesses. Then the term *adjustment amount* is introduced, with an explanation of the distinction between the *net* amount and the *numerical* amount. As an extension to this, we discuss the significance of outlying extreme values among the observations in the sample, and explain how we have decided to deal with the issue. Next, there is a description of the extent of the checks carried out and of the general uncertainty with regard to the results. Then we give a definition of the *error percentage*, and its relationship to the traditionally calculated *percentage of adjustments made after checks*. We then present the *compliance scale* which has been developed by SKAT in order to rank taxpayers' ability to follow the regulations. Next follows a brief explanation of the principle for the distribution of the results between tax on earnings and VAT, and then a description of how the weighted averages are calculated. The section concludes with a definition of the *tax gap for businesses* and an outline of the process of calculating the gap on the basis of the adjustment amounts.

### THE DISTINCTION BETWEEN INDIVIDUAL TAXPAYERS AND BUSINESSES

When the plans were being drawn up for the study of compliance with the regulations, priority was given to elucidating all aspects of the tax situation of individual taxpayers and businesses. In the checks made and the subsequent calculations for these two groups it was thus important not only that nothing was omitted, but also that nothing was counted twice, either for individual taxpayers and businesses.

The auditing of the self-employed involved both their private and their business spheres, since the two cannot be separated in terms of tax in any meaningful way. Consequently, the self-employed – people with their own businesses – were not investigated together with private individuals, as it was taken that there was no separation between the individual and the business.[2] The auditing of businesses registered as companies covered only the affairs of the company. The principal shareholder in the company was only covered by the audit to the extent

[2] Spouses of the self-employed, on the other hand, were covered in the individual taxpayer section of the compliance project, since they are regarded in the same way as other individuals. This means in effect that a spouse who assists in the business of a self-employed person is regarded as being an employee of the firm – though with certain differences from normal employees. In connection with the auditing of a self-employed person, checks were made of the tax relationship between the business and the spouse, to the extent that this was considered relevant from the point of view of the probability of its being of significance. All other factors in relation to the spouse's tax declaration were dealt with through any check made of the spouse as an individual taxpayer.

that a tax relationship existed between the company and the shareholder, for example in the form of free use of a company car, intercompany accounts, disguised dividends, etc.

All other factors in relation to the principal shareholder's tax declaration were dealt with through any check made of the shareholder as an individual taxpayer. In other words, people who were principal shareholders in companies could be checked in the part of the study connected with individual taxpayers, since a company and its principal shareholder were regarded as two independent taxpayers.

In the case of jointly taxed concerns, only the specific company that was selected for compliance auditing was included in the study.

With respect to the obligations of a business to provide information concerning payments to employees in the form of salaries and other benefits, these were checked as a natural part of the audit of the business, regardless of whether it was organised as a company or as a business run by a self-employed person.

These delimitations were intended to ensure that all aspects of taxation were covered. In the survey of individual taxpayers, it was assumed that information concerning payments of salaries and other benefits were declared correctly by their employers. It was thus only the taxpayer's own actions that were checked.

In the survey of businesses, checks were made of the payments of salaries and other benefits, including payments to principal shareholders, to ensure that these were correct; it was thus an important part of the compliance check of businesses to ensure that such payments were accounted for correctly. Moreover, the actions of the firm itself were naturally checked with respect to taxation issues. If any errors were discovered in the accounting of salaries or other benefits paid out, these errors were ascribed to the business, since it was here that they originated.

A detailed description of the types of checks carried out with respect to businesses is presented in Appendix 1.

Appendix table 1 shows that, on the basis of the definitions of self-employed persons and companies which were used, there were 157,706 companies and 390,695 self-employed persons in Denmark at the time of the study. Companies thus made up 29% of the total of 548,401 businesses.

### NET AND NUMERICAL ADJUSTMENT AMOUNTS

When an error is detected in a tax declaration as a result of a check, SKAT amends the amount of taxable income. The difference between the original and the revised amounts is called an *adjustment*. When the adjustment is positive, i.e. in favour of the tax authority, then this is referred to as an *increase*; conversely, a negative adjustment is referred to as a *reduction*.

When all the adjustment amounts for all taxpayers are combined, the sum is either a *numerical* or a *net* amount. Increases minus reductions produces a *net* adjustment. This is of interest in the context of tax revenue effects. However,

when we are interested in calculating the extent of lack of conformity with the regulations, the *numerical* adjustment is the one which is relevant.

This numerical adjustment amount is arrived at by calculating the total of increases *plus* reductions. Thus, whereas an increase of DKK 10,000 and a reduction of DKK 10,000 would be combined to produce a net adjustment of zero, the calculation of a numerical adjustment shows a total amount of error of DKK 20,000.

### OUTLYING OBSERVATIONS

When averages and totals for an entire population are calculated on the basis of a sample of that population, there is always a danger that a small number of extremely high or low observations will weigh too heavily in the picture. If the business which is guilty of the greatest level of tax fraud in the country should chance to have been included in the sample, this will produce too high an average for the sample in relation to the true average for the country as a whole.

In order to avoid this effect it is normal procedure to cleanse data of extreme outlying observations. However, there is no generally accepted standard method of selecting the observations to be excluded. Given that the actual distribution of values in the whole population is, clearly, unknown, the problem is that it is difficult to assess whether the largest and smallest values in the sample are actually extreme values in the context of the range for the whole country.

Provided that the numbers of observed values arranged in order of magnitude form a pattern of a "string of pearls" type, there is no need for any concern over this issue. If, however, there is a sudden break in the pattern – for example, if one has observed values of 351, 357, 360, 372, 379, 391, 1485 – great care needs to be taken over how the last value is allowed to affect the results. Another way of looking at the problem is to say that as soon as the total or average result is greatly changed if one or a few extreme observations are excluded, it is necessary to consider whether these values should indeed be omitted from the calculations, and at the very least to draw attention to the effect of including them.

In our data material there are a small number of businesses which had very large adjustment amounts – either upward or downward. In the light of SKAT's many years of experience in making checks, we are aware that every year there are cases where very large adjustments are made, and it is therefore difficult to state with certainty whether these extremes are "abnormal" and should be excluded, or whether the observations should be included.

The larger the size of the sample, the smaller the problem generally is. In the case of this study the sample is relatively large, but when the results are subdivided on a regional level, the size of the samples is significantly reduced. It is thus to be expected that if the extreme values are included, a future study may bring about some significant shifts in the results reported at the regional level.

We have therefore decided to present results both inclusive and exclusive of the outlying adjustments. When we include the very large adjustments, then, we are

including them as what we have observed to be genuinely representative of the situation in Denmark; nevertheless, the results which exclude these outliers will probably prove to be more robust in the future for purposes such as comparing figures from year to year.

### THE EXTENT OF CHECKS AND STATISTICAL UNCERTAINTY

SKAT's compliance project mapped conformity with the regulations for businesses in Denmark for the tax year 2006. The results are based on checks made of a total of 11,462 businesses distributed across the entire country, with between 373 and 385 businesses checked at each of the thirty tax centres.[3] The businesses section of the compliance survey includes both businesses that are organised on a personal level, i.e. by the self-employed, and those that are registered as companies; but it excludes firms with more than 250 employees.[4]

The selected businesses were checked with respect to all aspects of taxation of earnings – meaning that neither transfer pricing nor customs and excise duties are covered by the analysis – see appendix 1 for a detailed description of the types of check carried out. Of the unweighted total number of checks made, 8,415 involved the self-employed and 3,047 were of companies. Thus, companies made up 27% of the businesses in the sample, corresponding very well to the actual proportion of such businesses in the whole population. Further, an attempt was made to select businesses for checking in the same proportions as existed in each separate tax centre.

Businesses were selected entirely randomly, with an almost identical number of checks being made at each tax centre. This procedure ensured that representative pictures were obtained for the whole of Denmark, for each region, and for each tax centre. It is thus possible to make statements about overall compliance with the rules at all these three geographical levels, though with considerable statistical uncertainty as far as the tax centre level is concerned. Consequently, this report concentrates primarily on the results at the regional level and for the country as a whole.[5] In general, the degree of uncertainty is smaller for error percentages and levels of compliance than it is for the amounts of money. This is because the variance in the observed values for amounts is significantly greater.

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[3] At several tax centres a small number of cases had to be left out of the study, since some people who were listed in SKAT's records as self-employed turned out no longer to be so. As a result, the final number of completed cases was between 373 and 385 per tax centre; Appendix Table 1 shows how these cases were distributed across the regions.

[4] The largest companies were not included in the survey because of the scale of the resources that would have been required to audit them. In the long run it would naturally be useful to carry out a compliance study for this group, too.

[5] The statistical level of uncertainty at the **tax centre level** for the error percentage, for example, was between 4.6 and 5.0 percentage points. For the **regions** other than Copenhagen the corresponding figures were between 1.9 and 2.4 percentage points, while for Copenhagen the level of uncertainty was 5.0 percentage points. At the **national** level, however, the level of uncertainty was as low as 0.9 of a percentage point.

In addition to the checks on taxation of earnings, in the cases of approximately one business in seven – 1,584 businesses out of the total of 11,462 – coordinated checks were made of VAT returns. These VAT checks were carried out on businesses selected randomly within each region, in contrast to the checks on taxation of earnings, where the selection was made at the tax centre level.[6]

Given the adoption of a new structure for SKAT, in which five cooperating groups have become redefined as six regions, it has been decided to present the results in this document in accordance with the new regional structure. This means that Copenhagen, which at the time of the selection process constituted one tax centre out of the seven in the cooperative group Northern Zealand-Copenhagen, is separated out for reporting purposes as an independent region.

Because of the stratification of the sample, with an equal number of checks being performed in each tax centre, the effect of this choice of reporting structure is that the level of statistical accuracy for Copenhagen is significantly lower than for the other regions, each of which had between five and seven tax centres. With respect to VAT calculations the level of statistical uncertainty is even higher, in that the number of businesses checked for VAT was only one seventh of the number checked for tax on earnings. Thus, it is necessary to exercise caution in drawing firm conclusions concerning Copenhagen in comparison with the other regions on the basis of the results presented with respect to tax in general and VAT in particular.

At many points in the following, comparisons are made between, for example, error percentages or average adjustment amounts for the different regions, business sectors or forms of ownership of firms; and it is noted whether or not these differences are *significant*. In the rest of this document, the term *significant* is used to indicate whether or not the observed differences, when evaluated in accordance with the relevant statistical tests and without other explanatory variables, are found to be statistically significant at the 5% level.[7] The results which are found to be significant can thus be considered to be very robust, and more reliance can be placed upon them than upon the results which are not statistically significant.

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[6] The selections for Copenhagen and Northern Zealand were carried out randomly on the basis of the combined populations for these two regions, since the two regions were involved in cooperative operations within the structure of SKAT at the time that selections were made. Approximately the same numbers of VAT checks were carried out in each region, with Copenhagen and Northern Zealand being counted as one region.

[7] The level of significance indicates the probability that the results have been arrived at by chance. The null hypothesis is the hypothesis that is being tested – for example, that the level of compliance is the same for Northern Jutland as for Northern Zealand. If that hypothesis can be rejected then we can say that the levels of compliance for the two regions are significantly different. The level of significance is the accepted level of probability of rejecting the null hypothesis when it is in fact correct.

A rejection of the null hypothesis is thus not the same as saying that the null hypothesis is incorrect. It simply means that on the basis of the data observed it is not possible to maintain the hypothesis. Selecting a low level of significance thus reduces the risk of drawing incorrect conclusions by rejecting a hypothesis which is in fact true. The level of significance is a measure of the degree of agreement between the data and the null hypothesis proposed.

## ERROR PERCENTAGE VS PERCENTAGE OF ADJUSTMENTS AFTER CHECKS

This section introduces the concept of the *error percentage*. It is important that everyone who uses the results from the compliance project is aware of the distinction between the concept of the "error percentage" and the concept traditionally used in Danish taxation administration, namely the "percentage of adjustments made after checks".

If an adjustment is made to the amount declared, whether positive or negative, in this document we say that an *error* has been made. The *error percentage* is the proportion of cases in which there were errors. The error percentage is calculated in relation to taxable earnings in total. The decision not to use the term *percentage of adjustments made after checks*, which is conventionally used at SKAT, was made because the two concepts differ in several significant respects. The use of the same term in this presentation could therefore easily lead to misinterpretation.

The percentage of adjustments made after checks is not directly comparable with the error percentage. There are several reasons for this. First, the entity used in calculations for the compliance project with respect to checks of self-employed people is the person (as listed at the Central Office of Civil Registration) and not the business (the Central Business Register). In the normal calculations of the percentage of adjustments after audits, the unit of calculation is the number checks carried out. If a self-employed person has more than one registered business, and there are errors found in the accounts of one business but not in a second, then in SKAT's normal calculations of percentage of adjustments after audits this is recorded as a percentage of 50%, whereas in the compliance study this would represent a 100% level of error.

The second reason is that many more areas of legislation are included in the compliance project checks. In the normal checks, the audit is typically limited to one specific area, such as VAT or employment. In contrast, the compliance check is a full-scale audit. The check on tax covers tax of the earnings of the business, employment aspects, and all subordinate areas within the field of taxation, including relationships to the principal shareholders and investments in other businesses, for example as a sleeping partner. In the case of the self-employed, the compliance check includes both tax of the earnings of the business and a check of private taxation.

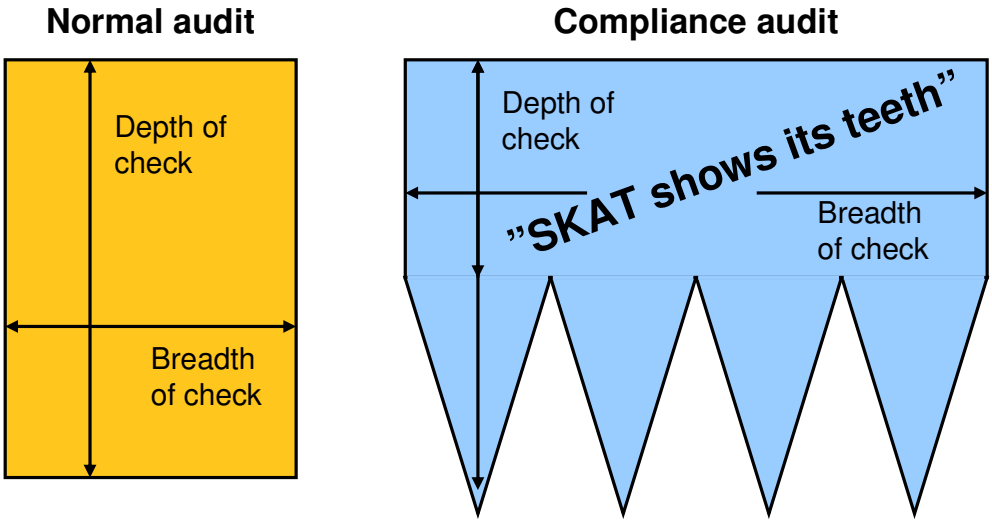
The third reason is that the compliance audit is broader in scope than the normal type of check. In this context, the breadth of the audit refers to the number of principal entries and sub-entries that are included in the check of the business concerned. In the compliance audit, there is no option – as there is in the ordinary checks – of ignoring some entries and sub-entries on the grounds that there is less likelihood of significant error with them. The compliance check is thus a total audit, where all elements of a business's balance sheet and statement of profit and loss are checked.

T he greater breadth of the compliance check thus inclines towards the detection of a larger number of cases where there are errors than are revealed by the regular check. On the other hand, there is also a tendency for a greater number

of minor errors to be detected.

While the compliance check has greater breadth, the degree of depth used is generally less than is the case for the regular checks; the process involves a sampling of all the various aspects of the tax situation. If an error is found within a particular area, the depth of the check is increased for that specific area, but this does not normally have any effect on the other checks made on the business. If errors are discovered in other areas, these too will be subjected to a fuller audit. Figure 1 is intended to represent this procedure graphically. The depth of checking in the compliance study may be either less or greater than is the case for the regular checks, but it cannot be predicted before the audit begins.

**Figure 1. Breadth and depth of the checks in normal audits and compliance audit**

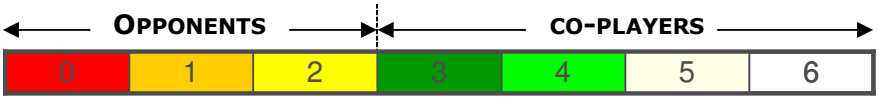



For all these reasons, the traditional measure of percentage of adjustments after checks cannot be used to make comparisons with the error percentages reported in the compliance study. It is thus quite deliberate that we use the term *error percentage* in this document to indicate the proportion of cases where adjustments have to be made to taxable income.

## SKAT'S SCALE OF COMPLIANCE

When a case worker has completed a case, he or she must assess the degree to which the regulations have been complied with. This evaluation of the case is expressed in a single figure – the *level of compliance*. This is a newly established method of grading on a scale from 0 to 6, where the higher the grade, the greater the degree of conformity with the regulations – SKAT's scale of  below.

**Figure 2. SKAT's scale of compliance for the ability of the taxpayer to abide by the rules**




An overarching distinction is made between taxpayers who are *opponents* and those who are *co-players*. *Opponents* include all those who have consciously

sought to evade taxes, irrespective of whether or not they understood the rules. The other group, the *co-players*, have the will to make a correct declaration, but are not necessarily able to do so. In the case of the latter group, then, an incorrect declaration is assessed as being the result of an unconscious error and not deliberate fraud. The compliance scale is then further nuanced through the use of seven different levels. Thus, it is possible to be an opponent or a co-player in varying degrees: opponents are given a compliance scale grade between 0 and 2, while co-players are categorised with a value between 3 and 6. Actual placement on the scale is made primarily according to objective criteria.

An important aim of the scale is thus to provide an explicit measurement of the degree to which an individual taxpayer is an opponent or a co-player. This is something which cannot be seen from the adjustment amount alone. Comparison of the levels of compliance and the adjustment amounts for the various types of error can highlight areas where the problems are greatest, and thus provide a good starting point for planning future initiatives.

If the errors are mainly the result of misunderstanding or ignorance of the rules – i.e. are connected with a high level of willingness to comply – then there may be a need for more information and guidance, or even a simplification of the rules in the area. If on the other hand the errors come from a deliberate attempt to cheat – i.e. are connected with low levels of willingness to comply – then the need may be for targeted checks and the use of sanctions, or the tax evasion behaviour may be discouraged by restricting or removing the opportunities for fraudulent declaration. This could be done, for example, by legally requiring more information to be entered by third parties.

Appendix figure 1 presents a flow chart used by all case workers to place businesses on the scale of compliance after each check had been completed. Appendix figure 2 gives a detailed description of the various categories on the scale of compliance.

When in the following we compare regions or business sectors, for example, we often refer to average levels of compliance. Such averages offer the great advantage of expressing the degree of conformity to the regulations in a single figure. It is important, however, to remember that there is variation in the figures that are expressed through such averages. For example, in an instance where half the taxpayers are assessed as dark green and the other half as off-white, the average level of 4.0 is the same as at a tax centre where all the taxpayers were categorised as pale green. In other words, identical average degrees of compliance are not necessarily the same in their underlying composition.

It is also important to note that an absolute difference of only 0.1 in the average level of compliance means that 10% more of the taxpayers in question are removed one category on the scale of compliance. Thus, even very small differences in the average level of compliance between regions or age groups, for example, can definitely be quite significant in their underlying basis.

It is also important to view error percentages, adjustment amounts and levels of compliance in context. High percentages of error may not be very worrying if they occur in combination with high degrees of compliance and/or small

adjustment amounts. Such cases may simply indicate that more information and guidance is required.

For businesses where checks were made for both tax on earnings and VAT, only one rating is given, and it is not possible to divide up the level of compliance according to the two different types of taxation. Conformity with the regulations is calculated in such cases as an overall assessment of the situation of the business with regard to tax on earnings and VAT.

### TAX ON EARNINGS AND VAT

The results for businesses are calculated both for firms where VAT checks were not made and for those where VAT checks were made. The *without VAT check* tables show adjustments made with respect to the taxable income of the self-employed (including their private taxable income), the taxable earnings of registered companies, the taxable income of principal shareholders, the taxable income of employees and spouses of the self-employed, and the taxable income of other partners.

In the *with VAT check* tables error percentages relate only to the VAT adjustments for the businesses which were checked both for VAT and tax on earnings, and the average adjustment amounts shown are for VAT alone.

With respect to level of compliance, however, the situation is rather different. As mentioned previously, it is not possible to separate out the levels of compliance according to tax on earnings and to VAT for those businesses which were checked with respect to both.

Our calculations of average levels of compliance for tax include assessments of the VAT situation in 14% of the businesses checked, i.e. 1,584 businesses of the 11,462 in the total sample. This percentage is not representative of the number of VAT registered businesses in the population, since such businesses make up 65% of the total, i.e. 359,129 out of a total of 548,401 businesses.[8]

The levels of compliance reported in the *with VAT check* tables thus provide a "truer" account, since both tax on earnings and VAT are contained in the assessment of the businesses included in the averages.

### THE CALCULATION OF WEIGHTED AVERAGES

The method used for selecting taxpayers for inclusion in the random sample is known as *stratified random sampling*. As mentioned previously, this involved selecting an equal number of businesses for checking from each tax centre, thus

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[8] Ideally, VAT would not be included in the compliance ratings of any of the businesses that were used to calculate the averages. However, in planning the checks great emphasis was placed on the considerable savings that could be achieved by checking both tax on earnings and VAT simultaneously for businesses. Later analyses will, however, attempt to map the extent to which there is a link between the errors related to tax on earnings and errors with VAT. In the light of this, it was felt that giving up the ability to state the average ratings 100% correctly for tax on earnings and VAT separately was a small price to pay.

ensuring that the level of accuracy was the same for all centres. The businesses in the sample were selected randomly from each tax centre separately, not from the total national population of businesses.

However, when results are to be presented for each of SKAT's six regions or for the country as a whole, it is not possible simply to sum or average the figures for each tax centre, since these tax centres vary greatly in size. In order to obtain an accurate picture of the situation at regional or national level, results from the tax centres have to be weighted. The weights used are the proportions of the population of taxpayers at regional or national level represented by the population served by each tax centre.

This means that the conformity with regulations of a business in, for example, Copenhagen, weighs more heavily in the results for the entire country than the corresponding behaviour of a business in a provincial town such as Hjørring, since the number of businesses in Hjørring is much lower than the number in Copenhagen. The weighted averages are thus representative of the overall national behaviour pattern.

All tables in this report and the comments upon them relate to the **weighted** numbers, averages or totals, unless explicitly stated otherwise. The actual numbers of checks on which the results are based are presented in appendix table 1, shown by tax centre and by type of business ownership.

## THE TAX GAP

There are many individual taxpayers and businesses that follow the tax regulations in every respect, but there are also taxpayers who are not sufficiently familiar with the rules, and still others who are either unable or unwilling to follow those rules. As a result, there is a difference – or gap – between what people actually declare and pay tax on, and what they should have declared. This difference is often referred to as the tax gap; however, this is not particularly precise definition of it.

### THE TOTAL TAX AND DUTIES GAP

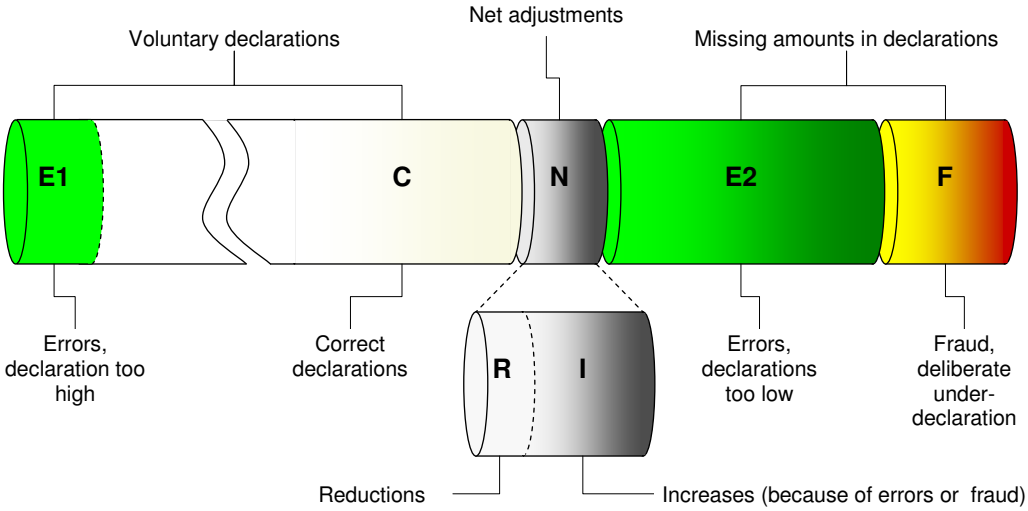
The gap can be calculated in terms of the tax base or the tax revenue, i.e. equivalent to an accounting before or after tax. In line with previous Danish research, we have elected to calculate the tax gap on the basis of the tax base. This is also clearly the simplest method.[9] If the gap is calculated from the point of view of payments owing and not taxable income, it is also necessary to take into account the question of whether – and how – the tax owing, which may relate to several different tax years, can be collected.

*Tax declarations* in Denmark consist of automated entries from third parties concerning the individual taxpayer's income and deductions, plus the taxpayer's

[9] It is simple to total the declared amounts to find the total tax base, but in order to calculate the effect of the tax gap on revenue it is necessary to know the effective rate of taxation for the non-declared portion of all taxable income. Alternatively, it would be necessary to calculate the tax due for each taxpayer who had not followed the rules to the letter, and this would not be an easy exercise.

own amendments and additions to these. Figure 3 below provides an illustration of how declared taxable income is divided into voluntarily declared income, adjustments implemented as a result of checks by SKAT, and income which should have been declared but was not, and which was not discovered later through checks by SKAT.

**Figure 3. Declarations of taxpayers' income and deductions**



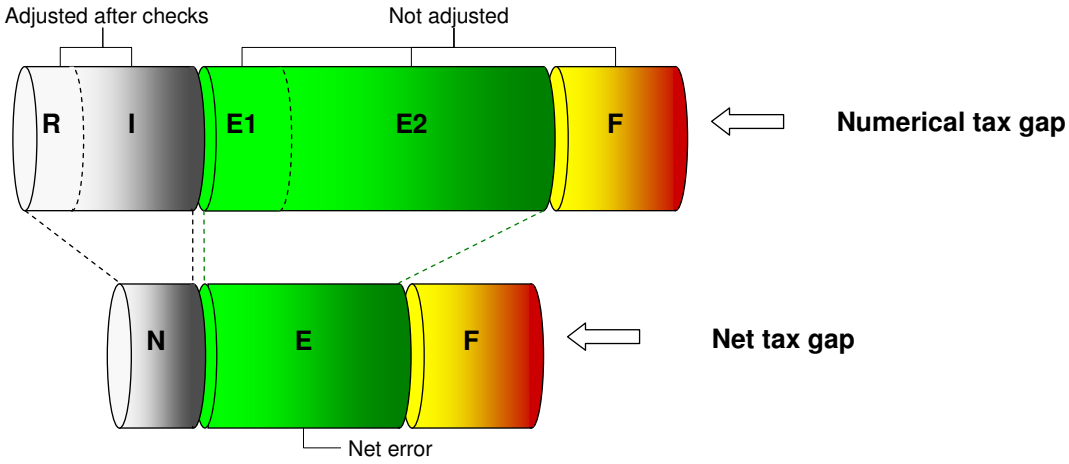

Voluntarily declared income makes up by far the largest part of the total amount, and consists almost entirely of a very large block of correctly declared income (C). In accordance with the scale of compliance, this section of the diagram is coloured white. Note the break in the block, which indicates that this part of the tax base is much larger than can be physically represented in the diagram here. The diagram is in any case not to scale. The voluntarily declared income also includes a number of entries which increase the size of the tax base beyond what it should be, either because income is incorrectly declared to be larger than it really is, or because certain legitimate deductions are not used (E1). These entries are regarded entirely as errors, since they can hardly be an indication of taxpayers deliberately "cheating" themselves.

A portion of the amount declared includes adjustments made on the initiative of SKAT. Increases (**I**) minus reductions (**R**) gives a *net* adjustment (**N**). A grey-scale is used here, since adjustments can concern both opponents and co-players. Finally, we have the income which in contravention to the regulations is not declared, and which furthermore is not discovered by SKAT. These missing amounts are the result in part of errors (E2) and in part of actual fraud (F). Figure 4 shows the tax gap calculated on the basis of the elements of figure 3.

The tax gap is a theoretical sum of the adjustments actually made plus errors and fraud that are not discovered. The gap can be presented in either numerical or net terms. In the net calculation, the amount of over-declaration is deducted from the amount of under-declaration. The numerical tax gap focuses on the overall value of lack of conformity with the regulations, and consequently adds together the increases and reductions. Thus, instead of calculating DKK 1 billion of over-

declaration and DKK 1 billion of under-declaration as a total of zero, the calculation of the numerical tax gap results in a total amount of error of DKK 2 billion.

**Figure 4. The tax gap in numerical and net terms**




It is difficult to calculate the size of the tax gap, and in practice it is impossible to measure it exactly. In the nature of things, the information which SKAT possesses is incomplete with respect to the amount of under-declaration, and it is not possible to check the declarations of all taxpayers in the county every year.

There are several different methods of calculating the tax gap, but common to them all is the fact that it is inevitably necessary to make compromises between what the measure should ideally encompass and what is possible in practice. Discussion of the tax gap therefore necessitates that the definition and delineation of the calculation be expressed very precisely. What types of taxpayer and of taxes are involved in the calculation of the gap, and which are not?

We define *the total tax and duties gap* as follows.

> The ***total tax and duties gap*** is the difference between the amount for a given tax year which is declared by all taxpayers and firms for the payment of tax, VAT, customs duties and excise duties and the amount which should have been declared if all taxpayers had provided precisely the information and amounts that they were obliged to in accordance with the rules, neither more nor less

As mentioned previously, the total tax and duties gap is calculated before tax, which is why it is defined in terms of amounts declared and not in terms of amounts paid. This delineation is the broadest conceivable, and the total tax and duties gap covers all types of taxpayer and all forms of taxes and duties. This is also the total amount that SKAT seeks to reduce through new initiatives. The total tax and duties gap can be calculated in net or numerical terms; unless stated otherwise, it is the net amount that is referred to in this paper.

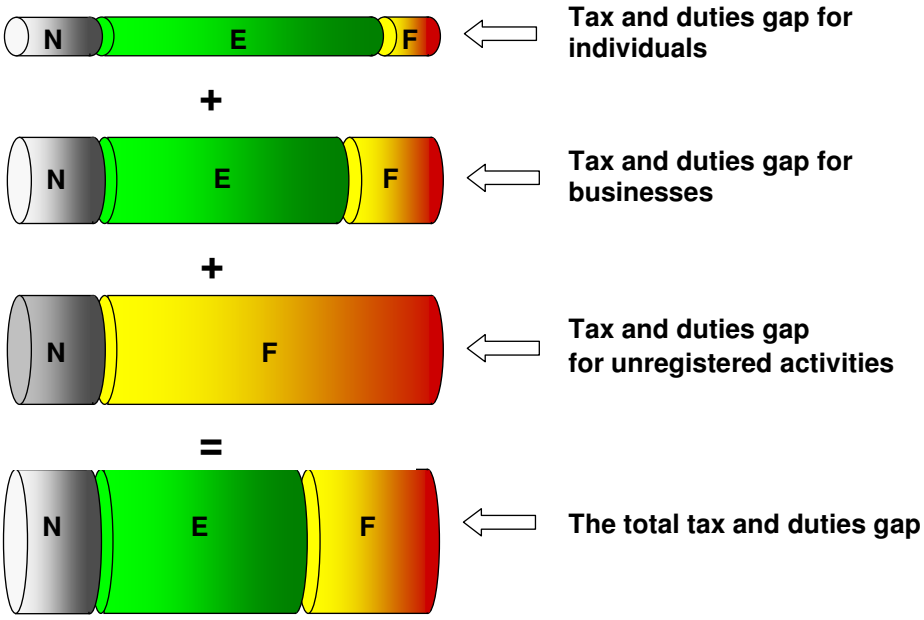
Taxpayers can be divided into three broad categories:

1. Private individuals, comprising waged employees and people receiving transfer incomes
2. Businesses, including both companies and the self-employed
3. The unregistered, comprising people who live and work in Denmark without the knowledge of the authorities, and people who run what are in effect unregistered businesses by doing undeclared work.

We use the term *private individuals* for the first group. The self-employed are of course also individuals, but for the purposes of this paper we do not include them in this category of taxpayer. Instead, the self-employed are included in group 2, which includes all types of *business*. This distinction between individual taxpayers and businesses is used in this way throughout the remainder of this paper.

The third taxable group consists of all those who are *unregistered*. A waged employee or someone receiving a transfer income who also carries out undeclared work in his or her spare time is by definition running an independent business and as such is not regarded as an individual taxpayer even though he or she has both wage or transfer income in addition to the income from undeclared work.

**Figure 5. The composition of the total tax and duties gap in terms of different types of taxpayer**




This means that the categories above cover all taxpayers without overlap between them. It is thus possible to divide up the tax gap in terms of the amount attributable to each of these categories, as shown in figure 5. The total tax and

duties gap is thus the sum of the tax and duties gaps from private individuals, businesses and the unregistered.

As the figure indicates, the proportions of errors and fraud differ somewhat for the three groups. In particular, it is important to note that all the irregularities connected with unregistered work are naturally regarded as consciously fraudulent.

As mentioned in the definition of the total tax and duties gap, the gap is made up of income tax, VAT, and customs and excise duties. The gap can thus be broken down further, as is shown in table 1.

**Table 1. The components of the total tax and duties gap. Taxpayers and tax types**

| | Individual | | Businesses | | | | Unregistered | |
|---|---|---|---|---|---|---|---|---|
| | Straightforward taxpayers | Complex taxpayers | Companies >250 employees | Companies, 0-250 employees | Self-employed | Other businesses | Unregistered businesses | Illegal residents |
| **Income** | | | | | | | | |
| **VAT** | | | | | | | | |
| **Excise** | | | | | | | | |
| **Customs** | | | | | | | | |

Note: The term *companies* covers both publicly quoted and private limited companies, partnerships and cooperatives. *Other businesses* in this context includes state-owned companies, etc.

The green colouring indicates the areas for which the compliance study provides information. There are thus no data shown relating to the tax gap for unregistered operations, but some of the most important aspects of the taxation of registered businesses are covered with respect to both taxable income and VAT for all self-employed persons and for companies employing up to 250 individuals.

Private individuals are fairly well covered, since tax evasion with respect to VAT, excise duties and customs duties is not very relevant for individual taxpayers – hence the shaded areas. In these fields, tax evasion by individuals is mainly related to the illegal import of goods for personal use. In cases where illegal importation is for the purposes of resale and thus capital gain which is not declared, this is automatically considered an unregistered business operation, and thus belongs to the unregistered operations section of the tax gap.

In this report we focus on the parts of the total tax and duties gap which concern the **tax on earnings** and the **VAT** payable by businesses. We refer to these two concepts respectively as *the tax gap for businesses* and *the VAT gap for businesses*. The first of these we define as follows.

The ***tax gap for businesses*** is the difference between the amount of taxable earnings for a given tax year which is declared by all companies and self-employed persons with up to 250 employees and which are liable to Danish tax and the amount which should have been declared if all these businesses had provided precisely the information that they were obliged to in accordance with the rules, neither more nor less

The tax gap for businesses, like the total tax and duties gap, is calculated before tax.

The *tax gap for businesses* is thus a part of the *total tax and duties gap for businesses.* In table 1 the *tax gap for businesses* comprises the two green areas at the top and in the centre, while the *tax and duties gap for businesses* includes the six areas below as well.

In the same way, we define the *VAT gap for businesses* as follows.

The ***VAT gap for businesses*** is the difference between the amount for a given tax year which is paid in VAT by all companies and self-employed persons with up to 250 employees and which are liable to pay Danish VAT and the amount which should have been paid if all these businesses had provided precisely the information that they were obliged to in accordance with the rules, neither more nor less

Unlike the tax gap, the VAT gap is comprised of tax revenue.[10]

### CALCULATION OF THE TAX AND VAT GAPS FOR BUSINESSES ON THE BASIS OF THE COMPLIANCE STUDY

The section above defines what is included in the tax gap and the VAT gap for businesses. In the following, we consider the methods of measuring the size of these gaps. There are several approaches to calculating the tax gap. In general, tax administrations worldwide differentiate between *top-down* and *bottom-up* approaches.[11]

One form of *top-down* approach is based on macro-data, the figures for the economy as a whole. The total of personal incomes shown in the national accounts is compared with the corresponding figure registered by the tax authorities. Any discrepancy can be used as a measure of the tax gap – in this case, the tax gap for individuals.

[10] Unfortunately this is not consistent with the way in which the tax gap is defined, and means that simply adding the two amounts together would not produce a meaningful result. Work is currently underway on finding a method of dealing with this problem.

[11] In research, a differentiation is often made between direct and indirect methods. The national accounts method would be considered an indirect method, while checking a randomly selected sample of individuals is counted as a direct method.

The *bottom-up* approach calculates the gap from figures at a lower level, as its name suggests. Errors and fraud are calculated at the single unit level for a representative sample of businesses, and the results are then scaled up to calculate a figure for the entire population. It is this second approach to calculating the tax and VAT gaps for businesses that has been used in this report.

In this study, separate average adjustment amounts are calculated for companies and the self-employed at each tax centre on the basis of the total of 11,462 checks carried out. These two averages for each tax centre are then multiplied by the size of the respective populations of companies and the self-employed covered by the tax centre. The amounts thus calculated can then be added together to produce a total for all the businesses covered by the tax centre, and the regional total can subsequently be calculated by summing the totals for all the tax centres in the region. Finally, a Danish national total tax gap for businesses can be calculated by adding together the figures for the six regions. This method produces a reliable picture of the size of the tax gap for the whole country, because the results for each tax centre can be relied on to be representative of the population covered by that centre, being based on a stratified random sample.

The VAT gap is calculated in an equivalent manner on the basis of the 1,584 VAT checks carried out, except that the average adjustment is calculated at the regional level rather than at the level of the tax centre.

The calculation presented here is based on a very large number of checks, which means that the level of accuracy is relatively high. In addition, this bottom-up method makes it possible to break down the results in many different ways – for example, by tax centre, turnover, age of the business, business sector, level of compliance, etc. This is not possible when a top-down approach is used. The final result of this process is a unique dataset in which the records of each type of error are linked to adjustments made to taxable amounts. This means that it is possible to subdivide the tax gap according to various types of error, which is a very useful thing to be able to do in relation to the planning of future initiatives and the use of resources.

This concludes the section on delimitations and definitions, and we will now proceed to the actual results.

# LEVELS OF COMPLIANCE, ERROR PERCENTAGES AND ADJUSTMENT AMOUNTS

This section elucidates conformity with the regulations through average levels of compliance, error percentages and adjustment amounts broken down by region, turnover, business sector, and the ownership type and age of the business. In addition to the average figures, this section presents the distributions of adjustment amounts and levels of compliance – first for tax on earnings and then for VAT.

## CONFORMITY WITH THE REGULATIONS – TAX ON EARNINGS

As table 2 shows, errors that resulted in adjustments being made to the taxable earnings were found in 42% of the checks made on businesses. The table does not include the results of VAT checks. The error percentages for the whole of Denmark for companies and the self-employed are also shown separately, these being 35 and 45 respectively.

As explained previously, it was decided to show the error percentages for the new regional structure. This means that the results for Copenhagen are actually based on only 374 observations (unweighted figure).

**Table 2. Error percentages, numerical adjustment amounts and ratings, by regions and by business ownership form. Without VAT checks**

| Region/form of ownership | No errors | Errors | Numerical adjustment amounts, DKK '000 | | Rating | Total |
|---|---|---|---|---|---|---|
| | | | All | Excl. large adjustments | | |
| | – Per cent – | | —— Average —— | | | Number |
| **Copenhagen** | 60.8 | 39.2 | 432.4 | 92.4 | 4.56 | 1,317 |
| **Central and Southern Zealand** | 56.9 | 43.1 | 139.2 | 77.9 | 4.49 | 1,701 |
| **Central Jutland** | 52.5 | 47.5 | 80.9 | 80.9 | 4.45 | 2,445 |
| **Northern Jutland** | 63.7 | 36.3 | 70.0 | 60.3 | 4.77 | 1,493 |
| **Northern Zealand** | 57.1 | 42.9 | 98.5 | 98.5 | 4.48 | 2,065 |
| **Southern Denmark** | 59.1 | 40.9 | 101.9 | 77.7 | 4.61 | 2,441 |
| **Total** | 57.8 | 42.2 | 133.7 | 81.9 | 4.55 | 11,462 |
| **Companies** | 64.9 | 35.1 | 368.4 | 159.8 | 4.79 | 3,296 |
| **Self-employed** | 54.9 | 45.1 | 59.2 | 57.3 | 4.45 | 8,166 |

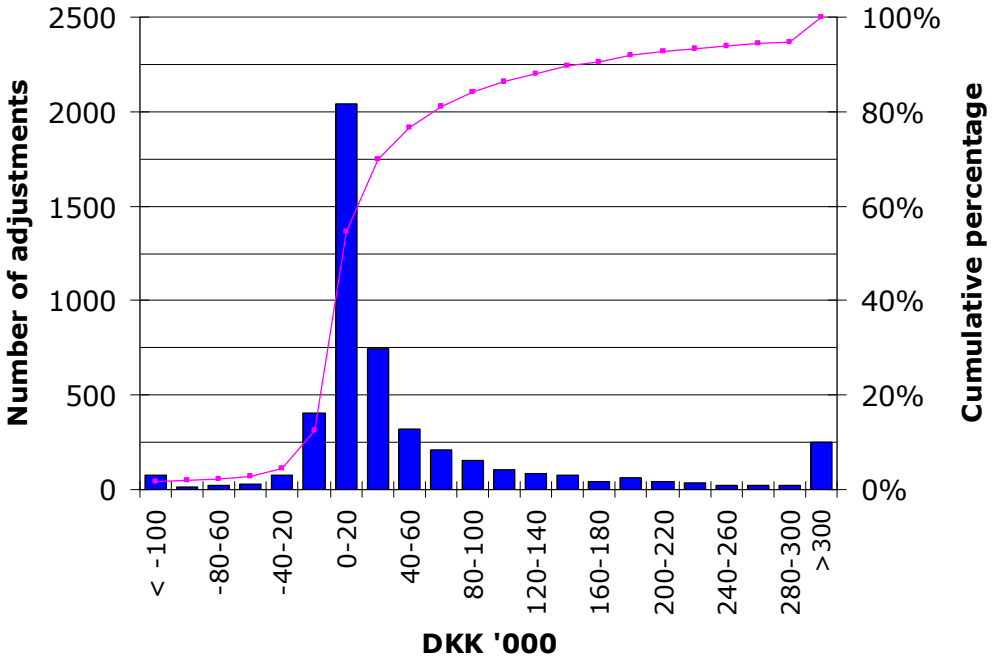
Note: The results include adjustments related to the taxable earnings of businesses, principal shareholders' tax, taxable income of employees and owners' spouses, taxable income of partners, payroll tax, and the personal taxation of the self-employed.

There was a degree of spread in the percentage of errors between the various regions: Northern Jutland had the lowest level at 36%, while the highest was in Central Jutland at 48%.

The overall average *level of compliance* for companies and the self-employed taken together was 4.55, which is equivalent to a rating of somewhere between pale green and off white. Taking businesses overall, the most generally evident type of stance was that of co-players. However, the level of compliance was significantly higher for companies than for the self-employed, the figures being 4.79 and 4.45 respectively.

Figure 6 shows the distribution of the adjustments made, by the size of the amounts. The number of adjustments is indicated by columns (scale on the left), while the s-shaped curve is the cumulative frequency in % (scale on the right).

**Figure 6. Distribution of adjustment amounts for businesses (histogram)**




The distribution is concentrated on the interval DKK 0-20,000 (the *mode*); 42% of all adjustments are in this range. A half of all adjustments made are under DKK 17,000 (the *median*), and the rest are over this amount. Amounts above DKK 55,000 account for exactly 25% of the total number of adjustments. The distribution is clearly *right-skewed*.

**Table 3. Adjustments upward or downward, and average numerical adjustment amounts. Without VAT check**

| | Adjustments | Numerical adjustment amounts, DKK '000 | Adjustments |
|---|---|---|---|
| | *Percent* | *Average* | *Number* |
| **Zero** | 0.9 | 0 | 46 |
| **Down** | 12.6 | 80.6 | 613 |
| **Up** | 86.5 | 142.9 | 4,224 |
| **Total** | 100.0 | 133.7 | 4,883 |

Note: The results include adjustments related to the taxable earnings of businesses, principal shareholders' tax, taxable income of employees and owners' spouses, taxable income of partners, payroll tax, and the personal taxation of the self-employed.

Where an adjustment was made, the amount was reduced in 13% of cases – i.e., the business in question had paid too much in tax (see table 3). In the remaining cases, the amount was increased. The proportion of businesses that had paid too much in tax was somewhat lower than the proportion of private individuals, of whom 25% of those whose tax was adjusted had paid too much.

Table 4 shows the distribution of compliance with the regulations across the seven compliance levels, by region and for companies and the self-employed.

**Table 4. Percentage distribution across levels of compliance from 0 to 6, for companies and the self-employed. Without VAT check**

| Region/form of ownership | Rating (percentage share) | | | | | | | Av. rating |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | |
| **Copenhagen** | 0.3 | 1.1 | 9.4 | 17.7 | 12.9 | 20.8 | 37.8 | 4.56 |
| **Central and Southern Zealand** | 0.2 | 1.0 | 6.3 | 22.4 | 19.1 | 14.8 | 36.3 | 4.49 |
| **Central Jutland** | 0.1 | 1.1 | 6.3 | 20.2 | 23.1 | 16.7 | 32.5 | 4.45 |
| **Northern Jutland** | 0.0 | 0.5 | 4.2 | 15.2 | 20.3 | 16.8 | 42.9 | 4.77 |
| **Northern Zealand** | 0.3 | 1.5 | 7.5 | 17.7 | 21.4 | 17.0 | 34.6 | 4.48 |
| **Southern Denmark** | 0.4 | 0.4 | 4.9 | 16.6 | 24.1 | 16.9 | 36.8 | 4.61 |
| **Total** | 0.2 | 0.9 | 6.3 | 18.4 | 20.9 | 17.0 | 36.3 | 4.55 |
| **Companies** | 0.3 | 0.9 | 4.4 | 16.9 | 15.5 | 15.8 | 46.3 | 4.79 |
| **Self-employed** | 0.2 | 0.9 | 7.1 | 19.0 | 23.0 | 17.5 | 32.3 | 4.45 |

It is worth noting that for the country as a whole, only just over 7% of the businesses checked fell into one of the three opponent categories, and that the majority of these were at the "better" end of the opponent scale, i.e. pale yellow. In other words, there were fully 93% of businesses that should be regarded as co-players wishing to follow the rules.

The proportions in categories 3 to 5 were of approximately the same size, with around one-fifth of businesses in each category. It is pleasing to note that by far the largest category was *snow white*, which means that no errors whatsoever were detected.

The proportion of opponents was generally somewhat larger in the three regions of Zealand than among the other regions. East of the Great Belt the proportion of opponents was between 7.5% and 10.8%, while the range was from 4.7% to 7.5% in the western part of the country. The proportion of businesses which deliberately under-declared their tax was thus more than twice as great in Copenhagen than in Northern Jutland.

In terms of the average rating, the worst-performing region – perhaps a little surprisingly – was Central Jutland. This was the only region where fewer than half of all businesses (49%) were placed in the categtories *off-white* or *snow white* – the categories for businesses that had made no errors that resulted in adjustments. In Northern Jutland there were fully 60% of businesses with no errors.

If companies and the self-employed are separated out, the proportions classed as opponents are 5.6% and 8.2% respectively, with the self-employed thus being around 50% more likely than companies to be among the opponents. Correspondingly, the proportion of companies represented in the snow-white category is around half as great again as the proportion of the self-employed, and as mentioned previously companies have a rather higher level of compliance overall. Companies thus clearly display a greater propensity to comply with the regulations than the self-employed.

Bearing this in mind, it is interesting to examine the results for Copenhagen a little more closely. The overall average level of compliance is roughly in line with the figure for the whole of Denmark. The self-employed in Copenhagen, however, have the lowest ratings in the whole country, and the proportion of opponents among them is clearly the highest of all the regions (not shown in the table). However, the proportion of businesses run by self-employed people is much lower in Copenhagen than in the rest of the country, being 60% in Copenhagen and between 66% and 76% in the other regions; see appendix table 1. Since companies generally have a somewhat better level of compliance than the self-employed, and companies make up a significantly larger proportion of businesses in Copenhagen, the average level in Copenhagen is reasonably good despite the low level of compliance among the self-employed there.

Table 5 shows the relationship between the size of turnover and observed conformity with the regulations. The percentage of errors clearly rises with increasing turnover. The same is also true for the numerical adjustment amount, if businesses with zero turnover and the extreme values are excluded. Both patterns are clearly statistically significant.

**Table 5. Error percentages, numerical adjustment amounts and ratings, by size of turnover. Without VAT checks**

| Turnover, DKK | No errors | Errors | Numerical adjustment amounts, DKK '000 | | Rating | Total |
|---|---|---|---|---|---|---|
| | | | All | Excl. large adjustments | | |
| | *– Per cent –* | | *—— Average ——* | | | *Number* |
| **Not stated** | 61.1 | 38.9 | 39.4 | 39.4 | 4.83 | 2,174 |
| **0** [1)] | 68.8 | 31.2 | 142.3 | 111.0 | 4.91 | 2,457 |
| **1 - 10,000** | 64.7 | 35.3 | 27.3 | 27.3 | 4.68 | 299 |
| **10,000 - 100,000** | 56.0 | 44.0 | 35.1 | 35.1 | 4.44 | 1,322 |
| **100,000 - 500,000** | 55.3 | 44.7 | 284.3 | 72.4 | 4.34 | 1,868 |
| **500,000 - 1 million** | 51.9 | 48.1 | 81.1 | 81.1 | 4.27 | 846 |
| **1 million - 10 million** | 49.4 | 50.6 | 110.4 | 99.3 | 4.26 | 1,969 |
| **> 10 million** | 43.4 | 56.6 | 336.6 | 206.7 | 4.18 | 527 |
| **Total** | 57.8 | 42.2 | 133.7 | 81.9 | 4.55 | 11,462 |

[1)] This entry includes eight observations (weighted total) where turnover was negative. Since it is not statistically meaningful to calculate an average on the basis of so few observations, these are included in the group with zero turnover, where they have little effect on the average.

At present, we have no clear explanation as to why the average adjustment amount for the group without turnover is higher than for businesses in all the other turnover bands except those with a turnover above DKK 10 million. This is something that will be investigated further. It is also interesting and somewhat surprising to note that the adjustments made for businesses with the lowest level of turnover, from DKK 1 to DKK 100,000, were as relatively large as was the case. There is certainly an issue to pursue here, even if the level of compliance is in general fairly good.

The table also clearly shows that the level of compliance falls with increasing turnover, which is very much in line with the increasing error percentages and adjustment amounts. Given that we noted previously that the level of compliance among companies was generally somewhat higher than among the self-employed, this too is perhaps a little surprising. Even though many hobby firms and very small businesses are not set up as companies, it seems that a good proportion of the self-employed generate fairly high turnover. Furthermore, many holding companies are in the group with zero turnover. It is clear that the picture is rather complex, and a thorough analysis will be required before any clear conclusions can be drawn.

The significance of the age of the business for the level of conformity with the regulations is presented in table 6.

**Table 6. Error percentages, numerical adjustment amounts and ratings, by age of business. Without VAT checks**

| Age of the business | No errors | Errors | Numerical adjustment amounts, DKK '000 | | Rating | Total |
|---|---|---|---|---|---|---|
| | | | All | Excl. large adjustments | | |
| | *– Per cent –* | | *—— Average ——* | | | *Number* |
| **Not known** | 61.2 | 38.8 | 39.8 | 39.8 | 4.83 | 2,168 |
| **0-2 years** | 59.5 | 40.5 | 113.7 | 84.0 | 4.48 | 2,010 |
| **3-5 years** | 54.5 | 45.5 | 85.7 | 85.7 | 4.45 | 1,666 |
| **6-9 years** | 56.1 | 43.9 | 102.2 | 92.0 | 4.45 | 1,522 |
| **10-19 years** | 55.2 | 44.8 | 143.6 | 104.1 | 4.41 | 1,921 |
| **> 20 years** | 58.8 | 41.2 | 293.9 | 87.5 | 4.60 | 2,176 |
| **Total** | 57.8 | 42.2 | 133.7 | 81.9 | 4.55 | 11,462 |

There does not appear to have been any clear relationship between the age of the business and error percentages, numerical adjustment amounts or levels of compliance. This may suggest that age of the business has no special signify-cance for conformity with the regulations, or that in some cases age is of significance only in combination with other factors.

If for the sake of argument we imagine that newly-established businesses tend to be less organised with respect to their tax affairs than others, but that in 2006 there happened to be, for example, a particularly large number of new firms in sectors where there is generally a higher level of compliance than the average, then these two effects might cancel each other out. It would thus appear that age

of the business did not have any effect, even if the truth were otherwise. It would be necessary to carry out a regression analysis to test this hypothesis.

Table 7 shows in more detail the error percentages and ratings (without VAT figures) by sector. There were significant variations between branches with respect to error percentages and ratings. The lowest level of error, 28%, was in the Finance and Insurance sector, while errors were greatest at 57% in the Hotels and Restaurants sector. Ratings in this sector were very low – at a level of 3.73 – and were thus significantly below the national average.

**Table 7. Error percentages and ratings, by business sector. Without VAT checks**

| Business Sector | No errors | Errors | Rating | Total |
|---|---|---|---|---|
| | – Per cent – | | Average | Number |
| **Hotels and Restaurants** | 43.4 | 56.6 | 3.73 | 271 |
| **Transportation** | 50.6 | 49.4 | 4.09 | 401 |
| **Building and Construction** | 46.8 | 53.2 | 4.11 | 677 |
| **Health Care and Social Services** | 44.9 | 55.1 | 4.17 | 424 |
| **Education** | 43.9 | 56.1 | 4.19 | 136 |
| **Trade** | 50.6 | 49.4 | 4.20 | 1,360 |
| **Travel Agents, Cleaning and other operational services** | 52.7 | 47.3 | 4.21 | 344 |
| **Information and Communication** | 53.2 | 46.8 | 4.26 | 399 |
| **Other services** | 58.0 | 42.0 | 4.27 | 256 |
| **Manufacturing** | 52.5 | 47.5 | 4.32 | 419 |
| **Leisure and Culture** | 57.5 | 42.5 | 4.34 | 157 |
| **Consultancy** | 51.7 | 48.3 | 4.39 | 1,038 |
| **Water supply and Waste disposal** | 51.2 | 48.8 | 4.66 | 13 |
| **Energy** | 58.8 | 41.2 | 4.70 | 65 |
| **Agriculture, Forestry and Fishing** | 62.8 | 37.2 | 4.73 | 1,385 |
| **Estate and property rental agencies** | 62.4 | 37.6 | 4.82 | 652 |
| **Unclassified Business** | 67.0 | 33.0 | 4.98 | 3,118 |
| **Finance and Insurance** | 71.7 | 28.3 | 5.10 | 347 |
| **Total** | 57.8 | 42.2 | 4.55 | 11,462 |

Note: The results include adjustments related to the taxable earnings of businesses, principal shareholders' tax, taxable income of employees and owners' spouses, taxable income of partners, payroll tax, and the personal taxation of the self-employed. The business sector classifications are in accordance with the 21 standard groups listed by Statistics Denmark (*Dansk Branchekode 2007*), except that some sectors have been combined because of the low number of observations in the study.

The next highest levels of error were in Education (56%) and Health Care and Social Services (55%), with average ratings of 4.19 and 4.17 respectively. The *Health Care and Social Services* sector in the compliance project primarily covers doctors and dentists in private practice, physiotherapists, ergotherapists, psychologists, masseurs, and other health-related services (pedicurists, chiro-

podists, zone therapists, acupuncture practitioners, etc.),[12] all of whom operate as private businesses; state health services are not covered by the compliance project. At 4.17, the average rating for the sector is somewhat below the national average rating of 4.55.

In the Building and Construction sector, errors were found in more than every second case, and with an average rating of 4.11 the level of compliance in this sector was only marginally better than that for Health Care and Social Services.

Studies by the Rockwool Foundation Research Unit on undeclared work in Denmark also found a relatively high level of errors in the Hotels and Restaurants sector and in Building and Construction (see *Nyt fra Rockwool Fondens Forskningsenhed. April 2006* and Søren Pedersen, *The Shadow Economy in Germany, Great Britain and Scandinavia. A measurement based on questionnaire surveys*).

It is, however, surprising that the proportion of errors is above 50% in both Health Care and Social Services and Education. There needs to be a further in-depth analysis of error types and the distribution of levels of compliance within each sector before it is possible to state whether the differences between sectors are related more to levels of knowledge of the regulations than to deliberate flouting of the rules.

## COMPLIANCE WITH THE REGULATIONS – VAT

Table 8 shows the error percentages with regard to VAT, the numerical VAT adjustment amount and the total ratings for those businesses where a VAT check was made.

The proportion of errors for the whole of Denmark was 30%. Once again there were variations between the regions, and these variations were significant. At 36%, the percentage of errors was highest in Central Jutland, while the lowest proportion at just 21% was in Copenhagen. The average numerical adjustment amount for the whole country was just under DKK 38,000.

When a decision was being made about the size of the sample to be used for the VAT checks, it was estimated on the basis of previous checks of random samples that the error percentage would be around 30%. It has turned out that the actual error percentage found was very close to that indeed.

In assessing the ratings, no separation was made between VAT and tax on earnings. The ratings shown in table 8 are thus overall ratings for businesses that were checked for both VAT and tax. As the table shows, the average rating was 4.2, and there were no great variations between the regions. Only Northern Jutland stands out with a rather better level of compliance than the rest of the country.

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[12] "Other health-related services" makes up the largest proportion of the sector, namely 24%; "General practitioners" are next at 22%.

**Table 8. Error percentages, numerical adjustment amounts and ratings, by region. VAT checks only**

| Region | No errors | Errors | Numerical adjustment amounts, DKK '000 | | Rating | Total |
|---|---|---|---|---|---|---|
| | | | All | Excl. large adjustments | | |
| | – Per cent – | | —— Average —— | | | Number |
| **Copenhagen** | 79.4 | 20.6 | 94.8 | 19.9 | 4.2 | 177 |
| **Central and Southern Zealand** | 71.8 | 28.2 | 32.0 | 25.9 | 4.2 | 245 |
| **Central Jutland** | 63.9 | 36.1 | 20.6 | 21.9 | 4.1 | 339 |
| **Northern Jutland** | 76.5 | 23.5 | 11.2 | 9.8 | 4.5 | 211 |
| **Northern Zealand** | 63.9 | 36.1 | 63.7 | 70.6 | 4.2 | 278 |
| **Southern Denmark** | 69.0 | 31.0 | 28.2 | 29.0 | 4.2 | 334 |
| **Total** | 69.6 | 30.4 | 37.6 | 31.9 | 4.2 | 1,584 |

Note: The results are given for adjustments related to VAT. The average numerical adjustment is calculated only for the cases where an adjustment was made. The unweighted number of businesses examined in Copenhagen was 126.

Given that checks were made in these cases for both tax and VAT, it is not surprising that the average levels of compliance were lower than among businesses which were only audited with respect to tax. There were simply more opportunities for error. If, however, we consider the error percentage for VAT alone, then we see that in relation to a proportion of error 42% for tax, there were significantly fewer errors with regard to VAT.

# THE TAX AND VAT GAPS FOR BUSINESSES

Research has been carried out continuously in Denmark over many years into the extent of undeclared work. This research has been the work of the Rockwool Foundation Research Unit, and Denmark is one of the few countries in the world where such comprehensive study has been carried out. On the other hand, studies of the extent of errors and fraud in tax declarations have been much less extensive. For both types of analysis the focus has been primarily on private individuals, and no research whatsoever has previously been carried out in Denmark with respect to errors and fraud by businesses related to tax on earnings and VAT. This study thus presents figures for businesses for the first time ever.

In the following, figures given for the whole of Denmark (macro figures) are derived by means of a weighted calculation of the totalled averages for each tax centre, with the actual number of businesses in each tax centre as the weighting factors. This method produces a reliable picture of the size of the tax gap for the whole country, because the results for each tax centre can be relied on to be representative of the population covered by that centre, being based on a stratified random sample.

## THE TAX GAP

As with the compliance study results for private individuals, it was decided to base the calculation of the tax gap for businesses on the net increases in the tax base resulting from checks. The calculation thus differs from the most recently published official figure for the tax gap in the USA, which is also based on net increases, but on increases in the tax actually paid. In other words, the Americans calculate the direct net increase in tax revenue rather than the increase in the tax base; see Eric Toder (2007), *What is the Tax Gap?*[13]

As mentioned previously, the calculation of the tax gap takes into account adjustments in personal taxation for the self-employed, company tax, distributions from companies in the form of salaries, distributions from companies in the form of dividends, property tax, the value of deferrable losses, and foreign allowances.

A large amount of further calculation work would have to be done in order to calculate lost revenue, since very different tax rates apply to these various adjustments. For example, personal tax rates of around 50% apply for the self-employed, whereas company tax is 25%.

Table 9 shows the tax gap for companies and the self-employed. As Appendix Figure 3 shows, there were seven very large adjustments in the survey – five increases and two reductions.[14] These outlying observations significantly affect the calculation of the tax gap. If all the adjustments are included, the tax gap

[13] Available for download at http://www.urban.org/publications/1001112.html

[14] The five largest increases were of DKK 8, 13, 22, 52 and 60 million; the two largest reductions were of DKK 4 and 6 million.

works out at DKK 26.5 billion; without the very large adjustments the gap is reduced to DKK 15.3 billion (see Section *Outlying observations* page 9 for a more detailed discussion on the treatment of extreme values).

**Table 9. The tax gap for businesses, by region. Without VAT checks**

| Region | The tax gap | The tax gap calculated without outlying observations |
|---|---|---|
| | *DKK billions* | |
| **Copenhagen** | 10.5 | 2.0 |
| **Central and Southern Zealand** | 4.6 | 2.4 |
| **Central Jutland** | 3.3 | 3.3 |
| **Northern Jutland** | 1.0 | 1.3 |
| **Northern Zealand** | 3.6 | 3.6 |
| **Southern Denmark** | 3.5 | 2.8 |
| **Total** | 26.5 | 15.3 |

Note: The tax gap is calculated as increases in taxable income minus reductions in taxable income, scaled up in accordance with the total number of businesses in Denmark. The results include adjustments related to the taxable earnings of businesses, principal shareholders' tax, taxable income of employees and owners' spouses, taxable income of partners, payroll tax, and the personal taxation of the self-employed.

Table 9 clearly shows that the inclusion or exclusion of the large outlying observations makes an appreciable difference to the size of the tax gap calculated by region. If the extremely large adjustments are included, the region which apparently contributes most to the tax gap is Copenhagen, with DKK 10.5 billion. Without the outlying adjustments, the largest tax gap is shown to be in Northern Zealand, with DKK 3.6 billion, while Copenhagen then has the next to lowest regional gap at "only" DKK 2.0 billion.

Using the information in appendix table 1, we can calculate that 44% of Denmark's businesses are based in the three eastern regions of the country. The table also shows that businesses based east of the Great Belt accounted for 52% of the tax gap. The tax gap per business can thus be calculated to have been 37% higher in Zealand than in the rest of the country. It is certainly possible, however, that this could be explained by a different mix of businesses east of the Great Belt, for example in terms of the size of the companies, the form of ownership, or the business sectors covered.

The tax gap is clearly largest for companies, with a figure of DKK 17 billion if the extreme adjustments are included, as against somewhat over DKK 9 billion for the self-employed (see table 10). Without the large adjustments the figures are over DKK 6 billion for companies but just under DKK 9 billion for the self-employed. This again shows how great a difference it makes whether or not the outlying adjustments are included in the calculations, since if they are omitted then the self-employed are shown to be the largest contributors to the tax gap.

**Table 10. The tax gap distributed between companies and the self-employed. Without VAT checks**

| Ownership structure | The tax gap | The tax gap calculated without outlying observations |
|---|---|---|
| | *DKK billions* | |
| **Companies** | 17.2 | 6.4 |
| **Self-employed** | 9.3 | 8.9 |
| **Total** | 26.5 | 15.3 |

Note: See comments on table 9.

It should also be noted that total financial activity, as measured, for example, by turnover, is significantly larger for companies than for the self-employed, even though a clear majority of businesses have the latter type of ownership structure. Companies are simply much larger firms on the whole. This means that the tax gap for companies must be viewed as being relatively small in comparison with the tax gap for the self-employed in the light of the different sizes and levels of activity of the two types of business.

Table 11 shows the tax gap with adjustments upward and downward. Overall, the number of increases was much greater than the number of reductions. Upward adjustments made up 92% of the numerical adjustment amount, or 90% if the extreme values are excluded. The numerical gap was calculated at DKK 31 billion or DKK 19 billion, depending on whether the outlying values are included. This is a measure of the total extent of failure to comply with the regulations.

**Table 11. The tax gap, showing adjustments upward and downward. By region and by form of ownership. Without VAT checks**

| Region | The tax gap | | | | Proportions up and down | The tax gap calculated without outlying observations | | | | Proportions up and down |
|---|---|---|---|---|---|---|---|---|---|---|
| | Up | Down | Net | Num. | | Up | Down | Net | Num. | |
| | *DKK billions* | | | | *Percent.* | *DKK billions* | | | | *Percent.* |
| **Copenhagen** | 10.6 | 0.2 | 10.5 | 10.8 | 98 / 2 | 2.1 | 0.2 | 2.0 | 2.3 | 93 / 7 |
| **Central and Southern Zealand** | 4.8 | 0.2 | 4.6 | 5.0 | 96 / 4 | 2.6 | 0.2 | 2.4 | 2.8 | 94 / 6 |
| **Central Jutland** | 3.9 | 0.6 | 3.3 | 4.5 | 86 / 14 | 3.9 | 0.6 | 3.3 | 4.5 | 86 / 14 |
| **Northern Jutland** | 1.4 | 0.4 | 1.0 | 1.8 | 78 / 22 | 1.4 | 0.1 | 1.3 | 1.6 | 90 / 10 |
| **Northern Zealand** | 3.9 | 0.3 | 3.6 | 4.2 | 93 / 7 | 3.9 | 0.3 | 3.6 | 4.2 | 93 / 7 |
| **Southern Denmark** | 4.2 | 0.7 | 3.5 | 4.9 | 86 / 14 | 3.3 | 0.5 | 2.8 | 3.7 | 87 / 13 |
| **Total** | 28.9 | 2.4 | 26.5 | 31.2 | 92 / 8 | 17.2 | 1.9 | 15.3 | 19.1 | 90 / 10 |
| **Companies** | 19.0 | 1.8 | 17.2 | 20.7 | 92 / 6 | 7.7 | 1.3 | 6.4 | 8.9 | 86 / 14 |
| **Self-employed** | 9.9 | 0.6 | 9.3 | 10.5 | 94 / 6 | 9.6 | 0.6 | 8.9 | 10.2 | 94 / 6 |

If we consider the regional distribution exclusive of the extreme values it is notable that the proportion of reductions was substantially greater in the three western regions. The proportion of reductions in these three regions is 13%

overall, while the equivalent proportion for Zealand as a whole is 7%, or just over half of the level. This points to a more deliberate behaviour in the east. Together, Central Jutland and Southern Denmark account for almost sixty percent of the total number of reductions.

There are also substantial differences between the two forms of ownership. Reductions for companies, accounting for 14% of the numerical adjustment, were more than double the percentage of reductions for the self-employed, at only 6%. This again suggests a greater willingness to take risks in interpreting the law and regulations, a willingness seen reflected previously in the lower level of compliance for the self-employed.

Table 12 shows the tax gap distributed according to the rating scale. If the large adjustments are included, the tax gap was greatest in the pale yellow category with DKK 14 billion, followed by the dark green category with DKK 6.6 billion. The tax gap was also large in the pale green category with DKK 2.6 billion.

The picture is unchanged with respect to the order of these three "weightiest" categories if the extreme adjustments are excluded. However, calculated in this way there was virtually no difference between the pale yellow and dark green categories in the size of the tax gap, at just over DKK 5 billion.

**Table 12. The tax gap for businesses, by level of compliance. Without VAT checks**

| The tax gap | Rating (contributions to the tax gap, DKK billions) | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | |
| **Including extreme values** | 1.5 | 1.5 | 14.0 | 6.6 | 2.6 | 0.4 | -0.1 | 26.5 |
| **Excluding extreme values** | 0.5 | 1.2 | 5.5 | 5.2 | 2.6 | 0.4 | -0.1 | 15.3 |

Note: See comments on table 9.

If the extreme values are included, 64% of the gap was accounted for by opponents; however, this figure falls to 47% if the outlying values are excluded. In other words, between a half and two thirds of the calculated tax gap was the result of deliberate fraud on the part of businesses. The remainder can be regarded as the result of errors, where businesses intended, but were unable, to declare correctly.

Table 13 shows the tax gap distributed by amount of turnover.

When the tax gap is considered for the whole of Denmark, it is relevant to include the outlying observations in the calculation. When divisions are made by region or form of ownership, as was done above, or on the basis of the size of turnover, as in the case of this table, inclusion of outlying observations can lead to misleading conclusions.

For example, the gap for businesses with a turnover of between DKK 100,000 and DKK 500,000 was almost DKK 11 billion, or 40% of the total tax gap. If we ignore the extreme adjustments this proportion is reduced to 15%. The

calculations without the extreme values are more robust, and thus more relevant in this context. In other words, extreme observations could not reasonably be expected to occur again in the same regions or within the same turnover intervals were a new sample of the same size to be taken.

**Table 13. The tax gap distributed by level of turnover. Without VAT checks**

| Turnover, DKK | The tax gap | The tax gap calculated without outlying observations | Total |
|---|---|---|---|
| | *DKK billions* | | *Number* |
| **Unspecified** | 1.3 | 1.3 | 2,174 |
| **0** [1)] | 3.7 | 3.0 | 2,457 |
| **1 – 10,000** | 0.1 | 0.1 | 299 |
| **10,000 – 100,000** | 0.9 | 0.9 | 1,322 |
| **100,000 – 500,000** | 10.8 | 2.2 | 1,868 |
| **500,000 - 1 million** | 1.1 | 1.1 | 846 |
| **1 million – 10 million** | 4.7 | 4.2 | 1,969 |
| **> 10 million** | 4.0 | 2.6 | 527 |
| **Total** | 26.5 | 15.3 | 11,462 |

[1)] This entry includes eight observations (weighted total) where turnover was negative. Since it is not statistically meaningful to calculate an average on the basis of so few observations, these are included in the group with zero turnover, where they have little effect on the average.

Almost 20% of the total tax gap exclusive of outlying values was accounted for by businesses with zero turnover. If businesses with turnover up to just DKK 100,000 are included, then these low-turnover firms accounted for a quarter of the entire tax gap. The further inclusion of businesses with a turnover of up to DKK 500,000 produces a group which accounted for 40% of the overall tax gap for businesses. It is true that this group comprises over half the total number of businesses, but it accounts for a much smaller proportion of the total economic activity measured by, for example, turnover, or number of employees.

At the other end of the scale, businesses with more than DKK 10 million in turnover accounted for one sixth of the entire tax gap, though they comprised only 5% of the total number of all businesses. It is quite probable that the volume of turnover for this group is in itself part of the explanation for this, but it is not the whole story; table 5 shows that the level of compliance for this group is lower than for the other levels of turnover.

## THE VAT GAP

The calculations *with VAT check* concern VAT alone. In this case, the calculations indicate revenue. Table 14, shows that the VAT gap totalled DKK 3.7 billion in 2006, if all adjustments are included in the calculation.

If some very large outlying observations – both positive and negative – are ignored, the VAT gap would be just under DKK 2 billion. As with the tax gap,

the extremely large adjustments make a considerable impact on conclusions regarding the regions where the VAT gap is largest. If the outlying adjustments are included, the VAT gap is largest in Northern Zealand, whereas if they are excluded, the gap is largest in Central Jutland.

**Table 14. The VAT gap for businesses, by region.**

| Region | The VAT gap | The VAT gap excluding extreme figures |
|---|---|---|
| | *DKK billions* | |
| **Copenhagen** | 0.74 | 0.10 |
| **Central and Southern Zealand** | 0.45 | 0.45 |
| **Central Jutland** | 0.54 | 0.54 |
| **Northern Jutland** | 0.06 | 0.06 |
| **Northern Zealand** | 1.33 | 0.46 |
| **Southern Denmark** | 0.61 | 0.35 |
| **Total** | 3.7 | 2.0 |

Note: The VAT gap is calculated as increases minus reductions. The results are given for adjustments related to VAT.

If the VAT gap for the year 2006 is compared with the total VAT revenue of DKK 110 billion – excluding revenue from firms employing more than 250 people – then the relative VAT gap was 3.4%, or 1.8% if the figure excluding extreme values is used.

The DKK 110 billion in VAT revenue was calculated at the macro level on the basis of the more than 11,000 businesses that were checked in the compliance project. The total is inclusive of adjustments. However, the DKK 110 billion in VAT revenue excludes VAT payments from large companies and other businesses that were not included in the compliance project.

# TYPES OF ERROR

For the purposes of the compliance survey it has been important to record the various types of error that are made. In the businesses section of the project, error types were recorded according to the laws and paragraphs under which they occurred and to the size of the amounts of money involved. This has provided SKAT with unique opportunities for analysis. It was decided not to record error types at the level separate clauses of the various Acts of Parliament, in order that the recording process did not become too complex. A more detailed and specific description of the different error types would require subsequent reprocessing.

The following provides a categorisation of errors under main headings. Appendix 2 gives a more detailed explanation of the laws and clauses that apply to each main heading. As in the previous sections, the amounts presented here have all been scaled up to the macro level.

Table 15 displays the first results of analyses of the areas in which businesses typically make errors. The table is presented with the largest errors measured in Danish kroner – inclusive of extreme adjustment values – shown at the top. The largest errors were found under the heading of **deductible expenses and undeclared deductions**. The net adjustments in this category, scaled up to the macro level for the country as a whole, amounted to DKK 6 billion before tax. These errors represented around 23% of the total tax gap for businesses.

The next largest area for errors was **declared depreciation**, where businesses made errors amounting to more than DKK 5 billion. Then followed **taxable earnings**, which at the macro-level represented under-declaration of over DKK 4 billion.

There were also errors with respect to **free use of telephone, free use of car, free housing, staff benefits, disguised payments of dividends, etc.** which jointly amounted to almost DKK 2.5 billion, or over 9% of the tax gap.

**Table 15. The tax gap for businesses, including extremely large adjustments, by main categories of error. Adjustments are shown before deduction of tax**

| Error categories | Companies | Self-employed | Total | Proportion of total |
|---|---|---|---|---|
| | *DKK billions* | | | *Percent.* |
| **Non-deductible expenses (private expenses, dividend payments, etc.) and undeclared deductions** | 4.3 | 1.8 | 6.1 | 22.8 |
| **Declared depreciation** | 4.8 | 0.58 | 5.4 | 19.9 |
| **Taxable earnings not declared, and declared tax-free earnings** | 1.8 | 2.3 | 4.1 | 15.1 |
| **Free use of telephone, free use of car, free housing, staff benefits, disguised payments of dividends etc.** | 2.3 | 0.15 | 2.5 | 9.3 |
| **Missing accounts, missing support material and obligatory information, etc.** | 0.45 | 1.7 | 2 .2 | 8.1 |
| **Declared profit and loss on the disposal of real estate** | 0.10 | 1.2 | 1.3 | 4.9 |
| **Special tax regime for businesses** | . | 0.41 | 0.41 | 1.5 |
| **Declared profit and loss on claims, debts and financial contracts** | 0.09 | 0.27 | 0.36 | 1.3 |
| **Deductions for entertainment, commitment commissions, gifts, establishment costs, etc.** | 0.27 | 0.06 | 0.33 | 1.2 |
| **Trading prices used between parties with interests in common** | 0.16 | 0.00 | 0.16 | 0.6 |
| **Deductions for car expenses and payment of claims for transportation on company business, etc.** | 0.07 | 0.10 | 0.17 | 0.6 |
| **Value of stock** | 0.09 | 0.07 | 0.16 | 0.6 |
| **Declared taxable income from earnings and capital income** | 0.02 | 0.13 | 0.14 | 0.5 |
| **Declared profit and loss on disposal of shares, etc.** | -0.02 | 0.17 | 0.15 | 0.5 |
| **Full and limited taxation liability (companies)** | 0.14 | . | 0.14 | 0.5 |
| **Deferrable deductions for losses, etc.** | 0.08 | 0.02 | 0.10 | 0.4 |
| **Salaries and withheld dividends from shares, etc.** | 0.01 | 0.11 | 0.12 | 0.4 |
| **Property value tax** | -0.12 | 0.01 | -0.11 | -0.4 |
| **Other[1)]** | 0.10 | 0.08 | 0.18 | 0.7 |
| **Remaining amount** | 2.7 | 0.36 | 3.0 | 11.2 |
| **Total** | 17.4 | 9.6 | 26.9 | 100 |

Note: Appendix 2 presents an overview of the laws and paragraphs that are included under each main heading.

[1)] This item includes the following, listed in descending order of the size of their contribution to the total of errors, but none of which contributed more than DKK 50 million to the total errors for companies and the self-employed: 1. Deduction for pension contributions and taxation of pension payments; 2. Tax-free gifts and payments, including refunds of expenses; 3. Deduction for regular payments, subscriptions, etc.; 4. Full and limited tax liability and people working and living in different countries; 5. Jointly taxed income, tax paid on account, and transfer of equity holdings; 6. Deduction for interest payments, etc. (thin capitalisation); 7. Deductions for interest payments etc. and losses on rates for cash loans; 8. Deductions for child support and maintenance payments; 9. Deductions for fees for medical treatment and further education; 10. Tax relief on tax paid overseas; 11. Joint taxation of spouses and change of generations; 12. Company mergers; 13. Payments from affiliated companies; and 14. Law on company establishment accounts.

# APPENDIX 1. ERROR REGISTRATION FOR BUSINESSES

There were nine categories for recording errors made by businesses, as follows:

*(1) Compliance – Business – Company*

*(2) Compliance – Principal shareholders*

*(3) Compliance – Employees and spouses*

*(4) Compliance – Partners*

*(5) Compliance – Private individuals – Self-employed owners of businesses*

*(6) Compliance – Partial audit – VAT*

*(7) Compliance – Spot check – VAT*

*(8) Compliance – Audit – VAT*

*(9) Compliance – Check – VAT*

The following explains each of these nine categories.

### (1) ADJUSTMENT OF THE TAXABLE EARNINGS OF BUSINESSES

This category covers the total adjustments in the taxable earnings of a business. It is calculated as the difference between declared earnings and adjusted earnings.

Consider for example a firm which has its taxable earnings raised by DKK 100,000. Subsequently, the firm asks to make deductions for depreciation and write-offs amounting to DKK 100,000. The change in the firm's taxable earnings is now DKK 0.

In the compliance rating, this income increase is counted towards the tax gap as contributing DKK 100,000, because there was a failure to comply with the regulations in the amount of DKK 100,000. The fact that the actual payment of the tax was postponed until a later tax year through the use of rules concerning depreciation and write-offs has no significance for the calculation of the tax gap.

The same reasoning would apply to increases that were offset by losses from previous years under §15 of the tax assessment law.

It is clear that there was an adjustment in the firm's taxable earnings in the example set out, and as such the change is included in the calculation of the tax gap. However, it is important to note that there are no immediate revenue consequences in these cases. The public purse gains no immediate benefit from the increase of DKK 100,000 in taxable earnings; this may, however, come later.

### (2) ADJUSTMENTS IN THE TAXABLE INCOME OF THE PRINCIPAL SHAREHOLDER

The principal shareholder in the company is only covered by the audit to the extent that there are tax relationships between the company and the shareholder, for example in the form free use of a company car, intercompany accounts, disguised payments, etc.

The reason for inclusion of these factors in the businesses section of the compliance study is that errors of this type can only be discovered and meaningfully included in calculations through examining tax declarations submitted by businesses.

All other factors in relation to the principal shareholder's tax declaration are dealt with through any check made of the shareholder as an individual taxpayer. In other words, people who are principal shareholders in companies could be checked in the section of the study connected with individual taxpayers, since a company and its principal shareholder are regarded as two independent tax entities.

The category "Compliance – principal shareholders" covers the entire adjustment to a principal shareholder's taxable income that results from a compliance check on a company, irrespective of whether the principal shareholder's taxable income from the company is treated as additional salary or as a dividend. For example, consider a principal shareholder who has received a disguised payment from the company of DKK 100,000. This payment is treated by the company as additional salary.

The adjustment to the company's taxable income will be zero, since the tax adjustment falls on the principal shareholder alone.

#### (3) ADJUSTMENTS TO TAXABLE INCOME FOR EMPLOYEES AND SPOUSES

This category covers all adjustments to taxable income of employees, spouses of self-employed owners of businesses, and spouses of principal shareholders where the adjustment results from a compliance audit of a company or a business owned by a self-employed person.

#### (4) ADJUSTMENT OF TAXABLE INCOME FOR PARTNERS

This category covers the total adjustments resulting from a compliance audit to the taxable income of partners in a business set up as a partnership (*interessentskab*) or limited partnership (*kommanditselskab*).

It should be noted that the only route to making a compliance audit of a partnership or limited partnership is through a tax assessment of one of the partners. Consequently, the result of a compliance audit of a partnership is recorded as an adjustment to the private taxable income for the individual concerned.

To illustrate this, consider a case where the compliance audit of a partnership results in an upward adjustment of the taxable earnings of the business by DKK 100,000. The partner owns a 10% share of the partnership. The change to the partner's income from the business is thus DKK 10,000.

#### (5) SECTION OF THE COMPLIANCE STUDY CONCERNING PRIVATE INDIVIDUALS: THE SELF-EMPLOYED, I.E. ADJUSTMENTS TO PRIVATE TAXABLE INCOME

The working group that prepared the audit plans for the compliance project considered it very important that in addition to businesses, the compliance audit should cover the private financial sphere with respect to the self-employed.

This category covers the total adjustments made to personal taxable income for self-employed owners of businesses. These could include adjustments to income from shares and to taxable value of property, for example – and it makes no difference that the tax rates on these two types of income are different. Adjustments related to the owner's business sphere would be included in the category "Adjustments to the taxable earnings of businesses" described above.

#### (6 AND 7) PARTIAL AND SPOT CHECK AUDITS: VAT

These categories cover the adjustment to VAT payments resulting from a tax check on a business owned by a self-employed person.

The adjustments are entered under "Compliance – Partial audit – VAT" or "Compliance – Spot check – VAT", depending on the scope of the check.

It should be noted that the compliance audits involved a large number of tax checks and a smaller number of VAT checks. In the error percentages without VAT checks, any adjustments in liability to VAT are ignored, regardless of whether such adjustments resulted from a partial audit or a spot check. For those businesses selected for a VAT check, both these categories are naturally included.

For a business selected for a compliance check of both tax and VAT, the results of the VAT check were recorded in the category "Compliance –Audit – VAT (see below).

#### (8 AND 9) DIRECT ADJUSTMENTS TO THE AMOUNT OF VAT A BUSINESS SHOULD PAY "VAT AUDIT" AND "VAT CHECK".

These categories cover the total adjustments made to VAT liability as a result of a compliance audit of VAT in either a company or a business owned by a self-employed person.

If a business selected for VAT checking in the compliance study had already been subjected to a full VAT audit for the tax year 2006, the results of this audit were included in the compliance project and replaced the projected compliance check.

Error types were also registered on the basis of the information from the full VAT audit.

If an audit that had already been carried out for the tax year 2006 had included only been a partial VAT audit, the results of the audit (i.e. the adjustment amount) were included in the compliance check, but only after further checks had been made so that the audit matched the requirements of the compliance check for breadth and depth.

# APPENDIX 2. MAIN CATEGORIES OF ERROR TYPES AND RELEVANT ACTS OF THE DANISH PARLIAMENT

Errors concerning payroll tax
Payroll Tax Act

Errors concerning obligation to pay fees, payment obligations, accounting obligations, etc.
Value Added Tax Act – §1, §2, §3, §46, §47, §49, §50, §51, §52, §55, §56, §57, §58, §59, §63, §65', §72, §77

Errors in declaration of VAT on sales
Value Added Tax Act §4, §5, §6, §7, §8, §9, §14, §15, §18, §21, §23, §27, §28, §30, §34

Errors in declaration of VAT on purchases
Value Added Tax Act §11, §12, §13, §22, §25, §31, §32, §36, §37, §38, §39, §40, §41, §42, §43

Errors concerning VAT on used goods, etc.
Value Added Tax Act §70, §71

Errors concerning trade prices between parties with interests in common
Tax Assessment Act §2

Errors in deductions for interest charges, etc. and losses on cash loans
Tax Assessment Act §5, §6, §17

Errors concerning tax-free gifts and payments, including refunds of expenses
Tax Assessment Act §7

Errors concerning deductions for entertainment, commitment commission, gifts, establishment costs, etc.
Tax Assessment Act §8

Errors concerning deductions for car expenses and payment of claims for transportation on company business, etc.
Tax Assessment Act, §9, Field 51 concerning car expenses on the extended tax declaration form, Field 29 “Other deductions” concerning car expenses on the extended tax declaration form, Field 53 concerning travel rules and car expenses on the extended tax declaration form.

Errors concerning deductions for child support and maintenance payments
Tax Assessment Act §10, §11

Errors concerning deductions for regular payments, subscriptions, etc.
Tax Assessment Act §12, §13, §14

Errors concerning deferrable deductions for losses, etc.

Tax Assessment Act §15

Errors concerning free use of telephone, free use of car, free housing, employee benefits, disguised payments, etc.
Tax Assessment Act §16

Errors concerning deductions for fees for medical treatment and further education
Tax Assessment Act §30, §31

Errors regarding tax relief on tax paid overseas
Tax Assessment Act §33

Errors concerning value of stock
Inventory Act §1, §2, §4, §6, §7

Errors concerning full and limited tax liability and people working and living in different countries
Withholding Tax Act §1, §2, §5, §8

Errors concerning joint taxation of spouses and change of generations
Withholding Tax Act §24, §25, §26, §33

Errors concerning salaries and dividends from shares, etc.
Withholding Tax Act §43, §46, §68, §69, §65

Errors concerning declared profit and loss on claims, debts and financial contracts
Gains on Securities and Foreign Currency Act §1, §2, §3, §4, §6, §7, §8, §9, §14, §16, §20, §21, §22, §23, §25, §26, §29, §31, §32, §33, Field 39 concerning taxation of gains on securities and foreign currency on the extended tax declaration form

Taxable earnings not declared, and tax-free earnings declared as taxable
State Tax Act – §4 – Holdings
State Tax Act – §4 – Own work
State Tax Act – §4 – Income from business activities
State Tax Act – §4 – Compensation
State Tax Act – §4 – Use of own commodities
State Tax Act – §4 – Income distortions
State Tax Act – §4 – Salaries, salary supplements
State Tax Act – §4 – Payments in kind
State Tax Act – §4 – Issues concerning taxation time points
State Tax Act – §4 – Grants
State Tax Act – §4 – Use of own goods
State Tax Act – §4 – Other factors, Field 37 concerning rental income from houses, holiday homes and rented rooms on the extended tax declaration form

Non-deductible expenses (private expenses, dividend payments, etc) and undeclared deductions

State Tax Act – §6 – Payments to lawyers and accountants
State Tax Act – §6 – Fees, subscriptions
State Tax Act – §6 – Depreciation and writing off
State Tax Act – §6 – Fines, etc.
State Tax Act – §6 – Grants for operating expenses
State Tax Act – §6 – Compensation
State Tax Act – §6 – Professional literature
State Tax Act – §6 – Payments made without benefit (*nulla bona*)
State Tax Act – §6 – Insurances
State Tax Act – §6 – Hobby firms
State Tax Act – §6 – Going concerns
State Tax Act – §6 – Income distortions
State Tax Act – §6 – Losses on guarantees, etc.
State Tax Act – §6 – Fees
State Tax Act – §6 – Course fees
State Tax Act – §6 – Car expenses
State Tax Act – §6 – Rental costs
State Tax Act – §6 – Salary costs, etc.
State Tax Act – §6 – Issues concerning taxation time points
State Tax Act – §6 – Travel expenses
State Tax Act – §6 – Advertising costs
State Tax Act – §6 – Entertainment costs
State Tax Act – §6 – Travel for study and conferences
State Tax Act – §6 – Other costs

Errors concerning declared depreciation
Amortisation and Depreciation Act – §1, §2, §3, §4, §6, §7, §8, §10, §11, §12, §13, §14, §15, §16, §17, §18, §19, §20, §21, §22, §24, §25, §27, §30, §38, §39, §40, §41, §42, §43, §44, §45, §49, §52, §60

Errors concerning declared taxable income and income from capital
Personal Tax Act – §1, §2, §3, §4, §5, §6, §7, §8, §13, Field 39 concerning other capital income on the extended tax declaration form.

Missing accounts, missing support material and obligatory information, etc.
Tax Audit Act – §1, §3, §4, §5, §6, §7, §16

Errors concerning company mergers
Merger Tax Act – §7, §8

Errors concerning full and limited tax liability (companies)
Corporation Tax Act – §1, §2, §4, §6, §7, §8, §9

Errors concerning deduction for interest payments, etc. (thin capitalisation)
Corporation Tax Act – §11

Errors concerning payments from companies tied to concerns
Corporation Tax Act – §13, §17

Errors concerning joint taxation of income, tax paid on account and transfer of equity holdings
Corporation Tax Act – §10, §29, §31, §33

Errors concerning declared profit and loss on disposal of shares, etc.
Capital Gains Tax Act – §1, §2, §3, §4, §6, §7, §8, §9, §14, §16, §20, §21, §22, §23, §25, §26, §29, §31, §32, §37, Field 39 concerning other income from capital on the extended tax declaration form

Errors concerning declared profit and loss on the disposal of real estate
Act on Taxation of Profit from Sale of Real Property– §1, §2, §3', §4', §5', §6', §8', §9', §11,
Field 39 concerning other income from capital (profits on real estate) on the extended tax declaration form

Errors concerning property value tax
Property Value Tax Act – §1, §2, §4, §5, §6, §7, §8, §10, §11

Errors concerning law on business establishment savings accounts
Business Establishment Savings Account Act – §7

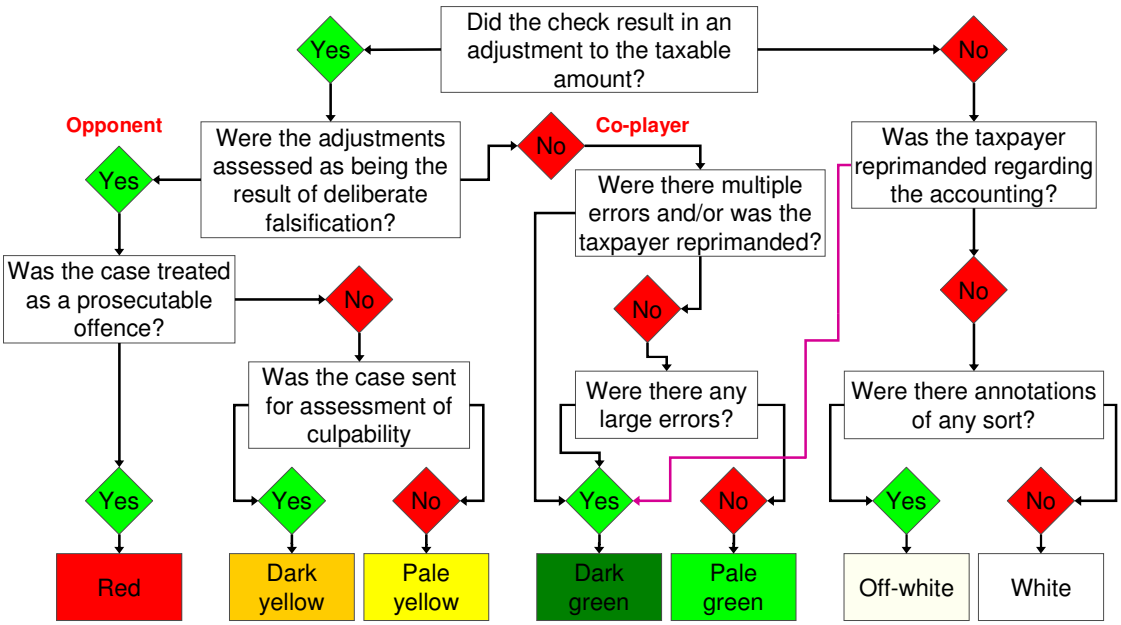
Errors concerning the special tax regime for businesses
Company Reorganisation Act – §22, Business Tax Act – §1, §2, §4, §5, §7, §8, §9, §3, §10, §11, §13, §15, §16, §22

Errors concerning deductions for pension contributions and taxation of pension payments
Pension Tax Act – §2, §5, §6, §11, §13, §15, §16, §18, §19, §21, §49, §52, §53, §56

Other non-specifiable errors

# APPENDIX FIGURES

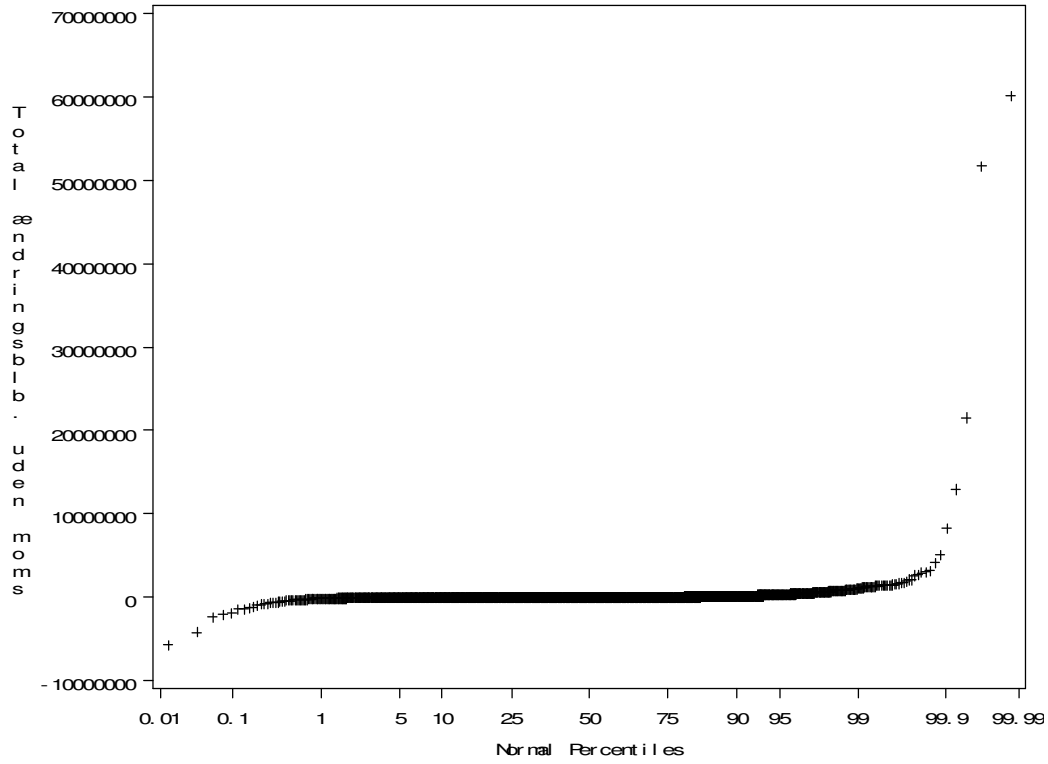
### Appendix figure 1. Process diagram for ratings




### Appendix figure 2. Explanatory comments on compliance scale for taxpayers

| | |
|---|---|
| **Level 6**<br>**Snow white** | The compliance check has **not** given rise to adjustments of any kind. There were **no** reservations giving rise to annotations. *(The case is shelved after a simple check or after a reassessment that does not result in any adjustment.)* |
| **Level 5**<br>**Off-white** | The compliance check has **not** given rise to an adjustment to taxable income or to the amount of VAT the business shuld pay. Some guidance has been given though, for example in the form of a recommendation for changes in the future. The compliance check has **not** led to a reprimand of the taxpayer with respect to the accounting. *(Reassessment does not lead to any change in the taxable amount.)* |
| **Level 4**<br>**Pale green** | The compliance check has given rise to an adjustment to taxable income or to the amount of VAT the business should pay. There is only a single error, and this error is evaluated as having been unintentional, purely a mistake. Some guidance may have been given but the taxpayer has **not** been reprimanded – specifically the compliance check has **not** led to a reprimand of the taxpayer with respect to the accounting. |
| **Level 3**<br>**Dark green** | The compliance check has given rise to an adjustment to taxable income or to the amount of VAT the business should pay. There may be several errors, but they are not evaluated as being deliberate. Some guidance may have been given and the taxpayer may have been reprimanded. If the taxpayer has been reprimanded regarding the accounting specifically, this alone will be sufficient to trigger the evalutation *dark green* regardless of whether or not the compliance check has uncovered any errors. |
| **Level 2**<br>**Pale yellow** | The compliance check has given rise to an adjustment to taxable income or to the amount of VAT the business should pay. The error is evaluated as being deliberate or based on an improbable interpretation of the law and regulations. The case is **not** sent for assessment of culpability. *(Tax avoidance)* |
| **Level 1**<br>**Dark yellow** | The compliance check has given rise to an adjustment to taxable income or to the amount of VAT the business should pay. The error is evaluated as being deliberate or based on an extremely dubious interpretation of the law and regulations – a serious error. The case is sent for assessment of culpability. *(Tax evasion.)* |
| **Level 0**<br>**Red** | The compliance check has given rise to an adjustment to taxable income or to the amount of VAT the business should pay. The error is evaluated as having been a deliberate breach of the law – a serious error. The case is treated as a prosecutable offence. |

**Appendix figure 3. Distribution of adjustment amounts for companies and businesses run by self-employed people, weighted. Excluding VAT checks**



# APPENDIX TABLES

**Appendix table 1. Number of businesses run by self-employed people and companies in the sample and in the whole of Denmark, by region**

| | Region | Number in sample | | | Number in the whole of Denmark | Proportion of businesses in total |
|---|---|---|---|---|---|---|
| Form of ownership | | Unweighted | Unweighted per tax centre | Weighted | | |
| Companies | Copenhagen | 152 | 152 | 523 | 25,037 | 40 % |
| | Central and Southern Zealand | 540 | 90 | 402 | 19,213 | 24 % |
| | Central Jutland | 587 | 98 | 677 | 32,369 | 28 % |
| | Northern Jutland | 345 | 86 | 347 | 16,618 | 23 % |
| | Northern Zealand | 720 | 120 | 709 | 33,941 | 34 % |
| | Southern Denmark | 703 | 100 | 638 | 30,528 | 26 % |
| | Total | 3,047 | 102 | 3,296 | 157,706 | 29 % |
| Self-employed | Copenhagen | 222 | 222 | 794 | 37,967 | 60 % |
| | Central and Southern Zealand | 1,762 | 294 | 1,300 | 62,180 | 76 % |
| | Central Jutland | 1,713 | 286 | 1,769 | 84,635 | 72 % |
| | Northern Jutland | 1,186 | 297 | 1,145 | 54,802 | 77 % |
| | Northern Zealand | 1,559 | 260 | 1,355 | 64,845 | 66 % |
| | Southern Denmark | 1,973 | 282 | 1,803 | 86,266 | 74 % |
| | Total | 8,415 | 281 | 8,166 | 390,695 | 71 % |
| Businesses in total | Copenhagen | 374 | 374 | 1,317 | 63,004 | 100 % |
| | Central and Southern Zealand | 2,302 | 384 | 1,701 | 81,393 | 100 % |
| | Central Jutland | 2,300 | 383 | 2,445 | 117,004 | 100 % |
| | Northern Jutland | 1,531 | 383 | 1,493 | 71,420 | 100 % |
| | Northern Zealand | 2,279 | 380 | 2,065 | 98,786 | 100 % |
| | Southern Denmark | 2,676 | 382 | 2,441 | 116,794 | 100 % |
| | Total | 11,462 | 382 | 11,462 | 548,401 | 100 % |