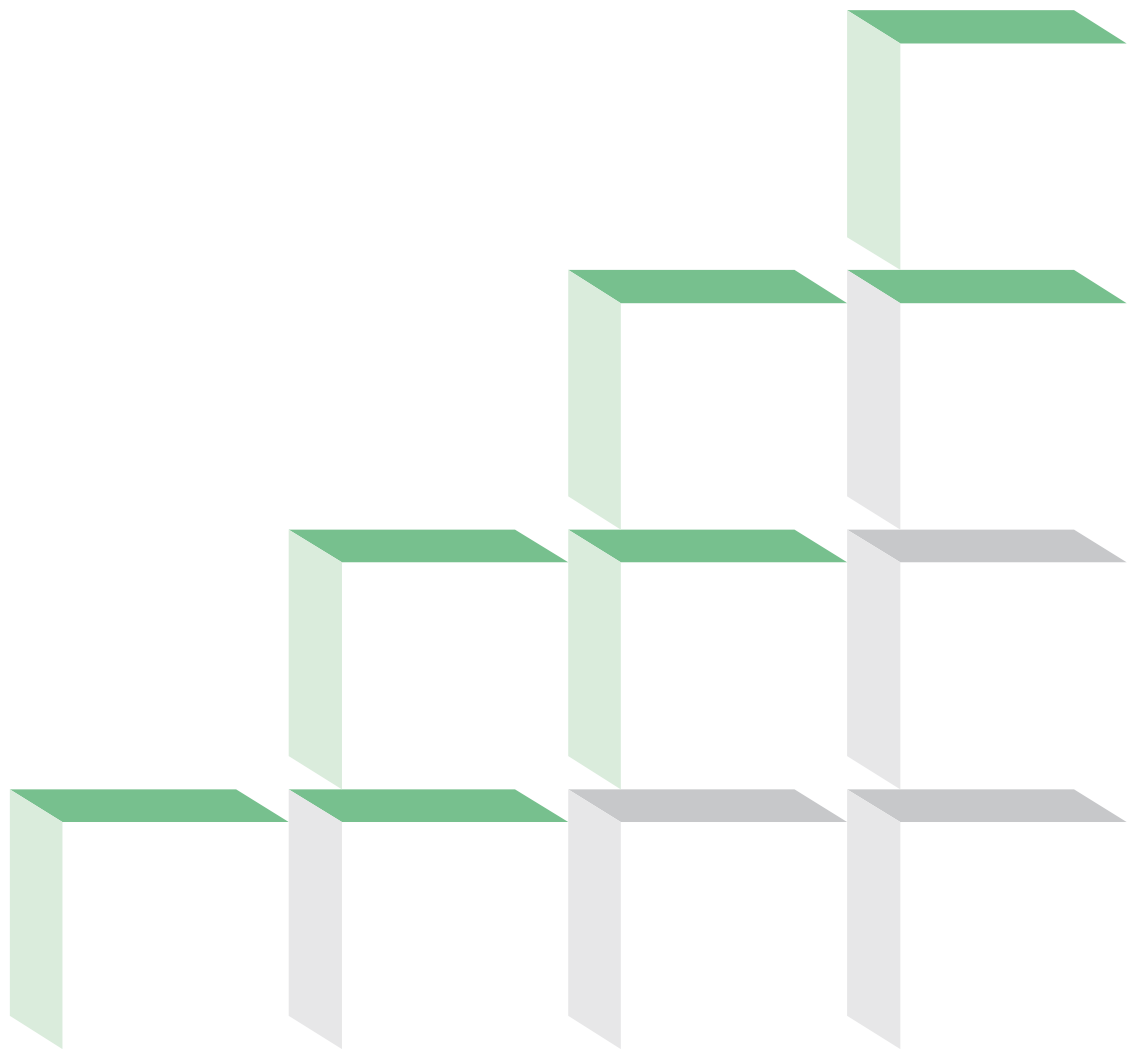


Undeclared work in Finland

Summary of reports 2022

Report 8/2022



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Summary

This document is a summary of the phenomena reports on undeclared work and wages published by the Grey Economy Information Unit in 2022. In addition to this summary, each report is published in its entirety on the Grey economy & economic crime website.

'Undeclared wages' usually refers to wages paid to employees for which taxes and other employer's contributions such as pension contributions are not paid. In the reports of the Grey Economy Information Unit, assets withdrawn by a founding shareholder without justifiable grounds are also considered undeclared wages. In addition, undeclared income and groundless expenses and additional deductions are considered undeclared wages of self-employed individuals.

Not many studies or investigations of undeclared wages have been published in Finland. To the Unit's knowledge, the monetary value of undeclared work has not previously been assessed in Finland. Undeclared work has mostly been studied in survey studies. In the present reports, the subject was studied with a data-driven approach; tax audit information was used in three of the studies. At the EU level, undeclared work has been studied with the Labour Input Method (LIM), and LIM was also used in one of the present studies.

Based on the reports of the Grey Economy Information Unit, undeclared work is a smaller issue in Finland than in most European countries. Nevertheless, the total value of undeclared wages in Finland is estimated to be around €900 to €1,400 million annually. This is estimated to result in a total of €300 to €480 million in tax losses.

Although Finland does well in comparisons at the EU level, the monetary value of undeclared work makes it a rather significant phenomenon in Finland as well. Undeclared wages not only cause losses of income for society; they also have a more extensive impact on pensions and possible benefits, including sickness and housing allowances. In the most flagrant cases, the impact on society multiplies if taxes on wages are left unpaid while unfounded social allowances are being withdrawn.

The combatting of undeclared work must be continued. As for other phenomena of the shadow economy, the systematic development of prevention is also key in preventing undeclared work. The action plans for tackling the shadow economy are one prevention method. They have enabled the continuity of development and funding for several projects to be secured.

Keyword: Measurement; Undeclared work; Tax gap; Tax audit

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1 Introduction and background

This document is a summary of four separate phenomena reports published by the Grey Economy Information Unit in November 2022. The reports examine undeclared work and wages through several methods. Undeclared work is a multifaceted phenomenon of the shadow economy and has a significant social impact in addition to resulting in tax losses.

In recent years, subjects related to different ways of working such as the platform economy, light entrepreneurship and workers' rights have been discussed in public debate. The media has also discussed some very serious issues such as work discrimination and human trafficking, and these pieces have resulted in extensive public discussion. The underside of labour issues is undeclared work. It is closely connected with the issues mentioned above, e.g. work discrimination and human trafficking. In addition, undeclared work is associated with undeclared wages and the tax and social insurance contribution losses resulting from it. The tax gap from undeclared work and wages has not been studied previously in Finland. Not many studies or investigations of undeclared wages have been published in Finland. At the EU level, the subject has been studied with survey research, among other methods. The Grey Economy Information Unit carried out the following studies on undeclared work:

Pimeän työn määrä – Mittaamisselvitys osakeyhtiöiden verotarkastustietojen perusteella ('Amount of undeclared work – Estimate based on data from tax audits performed on limited liability companies'), in which undeclared work of employees and shareholders of limited liability companies was estimated based on tax audit data. This study was the most extensive of the four, and five different methods were used in the data analysis. The period examined was from 2014 to 2020.

Pimeän työn mittaaminen profilointimenetelmällä – Osakeyhtiöiden pimeän työn määrä ('Estimating the amount of undeclared work with the profiling method – Amount of undeclared work in limited liability companies'), in which undeclared work of employees and shareholders of limited liability companies was also estimated. A method developed in the Grey Economy Information Unit was used in the data analysis. The period examined was from 2018 to 2019.

Pimeän työn mittaaminen LIM-menetelmällä – Yksityisen sektorin palkansaajien pimeän työn määrä ('Estimating the amount of undeclared work with LIM – Undeclared work of private sector employees'), in which the amount of undeclared work of private sector employees was estimated with LIM. The report examined 2019.

Pimeän työn määrä – Mittaamisselvitys elinkeinonharjoittajien verotarkastustietojen perusteella ('Amount of undeclared work – Estimate based on data from tax audits performed on self-employed individuals'), in which the amount of work and wages left undeclared by self-employed individuals was estimated based on tax audit data. Three methods were used in the data analysis. The period examined was from 2018 to 2020.

The studies produced new information on undeclared work, which is a significant phenomenon of the shadow economy and affects tax revenue, for example. The basis for the studies

was the assumption that no work or wages were left undeclared in the public sector, and that undeclared wages were purely a phenomenon of the private sector. In 2020, €61.3 billion was paid in wages in the private sector, of which limited liability companies paid some €57.6 billion and self-employed individuals around €0.7 billion. This means the studies cover the majority of private sector companies and the wages paid by them. Significant phenomena not included in the studies are, for example, underpayment and human trafficking.

This summary report has four chapters. The second chapter provides a definition for undeclared wages. The definition is different for employees, shareholders of limited liability companies and self-employed individuals. The third chapter briefly introduces the four phenomena reports summarised in this report. The fourth chapter summarises the results and key conclusions of the studies.

This report does not include references or explanatory footnotes. Sources and references to materials and legislation can be found in each phenomena report.

2 Definitions of undeclared work

This chapter provides the general definitions for undeclared work used in the studies. The terms 'undeclared work' and 'undeclared wages' are used as synonyms in the reports.

2.1 Undeclared wages of employees

Traditionally, 'undeclared wages' refers to a situation in which an employer pays wages for work but does not report or underreports the wages to the authorities and does not pay the required employer's contributions. In practice, this means the employer avoids paying the amounts withheld, health insurance contributions, earnings-related pension contributions and accident insurance contributions.

In addition to the traditional definition above, 'undeclared wages of employees' refers to all payments and benefits considered as wages under the act on prepayments (Ennakkoperintälaki 1118/1996) that have not been processed as wages. For example, tax-exempt reimbursements of expenses paid to employees that do not meet the requirements for tax exemption are considered undeclared wages. Similarly, fringe benefits with a monetary value for which the required reports are not submitted, or the value of which is reported as lower than factual, are also covered by the term. Receipt fraud is also covered, e.g. paying someone to withdraw money or issue a receipt is also considered paying undeclared wages.

The studies estimated the amount of undeclared wages paid by limited liability companies and self-employed individuals to their employees. LIM was used to estimate the amount of undeclared wages of employees in the private sector; all legal forms are included, including self-employed individuals.

2.2 Undeclared wages of shareholders of limited liability companies

In some cases, in taxation, deviations in wages paid to shareholders are processed as a disguised dividend and as wages subject to tax prepayment in others. These are both considered undeclared work in the studies. 'Disguised dividend' refers to a benefit with a monetary value that a limited liability company provides to its shareholder or a person close to a shareholder based on the person's status as a shareholder and free of charge or at an unusual price. In practice, a disguised dividend includes all benefits with monetary value provided to a shareholder by their company without paying any taxes. These include income from sales kept by the shareholder and unrecorded in the company's accounts, reporting private expenses of the shareholder as company expenses, and other benefits with a monetary value not processed as wages.

2.3 Undeclared work of self-employed individuals

Most self-employed individuals only employ themselves, and only a few have employees. Self-employed individuals cannot pay wages to themselves. After expenses are deducted, the income from the individual's business activity is considered business income that is taxed as the earned or capital income of the self-employed individual.

In the studies, 'undeclared work of self-employed individuals' primarily refers to deliberate deviations in a tax return of a self-employed individual that result in the taxable income from the individual's business activity being lower than it should be. Such deviations include unreported business income, reporting groundless expenses and expense adjustments, and private use not recognised as income.

These actions cause the business income and therefore the self-employed individual's taxable income to be considered lower than it is, which means the amount of tax collected is lower than it should be. In other words, the self-employed individual has access to assets for which no tax has been paid.

3 Key content of the phenomena reports

This chapter presents the key results of the four phenomena reports focusing on undeclared work. Each report can also be accessed in full on the Grey economy & economic crime website.

The primary purpose of all four studies was to estimate the amount of undeclared work of employees, undeclared wages of shareholders of limited liability companies, and undeclared work of self-employed individuals. Estimates were made based on these on the total of lost amounts withheld and social insurance contributions, lost amounts withheld from shareholders, and lost income tax payments from self-employed individuals.

The tax losses were calculated with coefficients based on the estimates of undeclared wages and work. The estimates of taxes lost concern the amounts left uncollected in amounts withheld and social insurance contributions when wages of employees are left undeclared. The undeclared work of self-employed individuals causes a deficit in income tax revenue. The effect of undeclared work and wages of self-employed individuals on the amount of pension insurance contributions of self-employed individuals was not examined. Each report separately describes the more detailed process for calculating the tax gap.

3.1 Amount of undeclared work – Estimate based on data from tax audits performed on limited liability companies

The phenomena report and study examined the extent of undeclared work in limited liability companies based on tax audit data. Included were all Finnish limited liability companies and all non-Finnish companies that were entered in the Finnish Tax Administration's registries.

In addition, the phenomena report includes a review of projects in Finland aimed at combating undeclared work and other studies and reports on undeclared work. This theoretical background was used in the other three studies as well, and the information is only repeated to the required extent in the other phenomena reports.

3.1.1 Data and methods used

The key data used in the study were tax audits carried out between 2014 and 2020 – a total of 7,500 audits. Only tax audits that targeted income types under the act on prepayments and the act on business tax (Elinkeinoverolaki 360/1968) were included in the study. Other audited tax types such as value added tax were not examined.

Five methods were used in the data analysis. The used algorithm-based methods were the matching methods CEM and DBSCAN, the machine-learning algorithm XGBoost, and Bayesian Logistic Regression. The last two methods were used to predict whether any individual company left work undeclared. In addition, a method of substance-based matching was used.

3.1.2 Results

The study concluded that the most probable estimate for the amount of undeclared wages is around €670 to €850 million annually. The estimated amount includes both undeclared wages of shareholders and employees. Around €260 to €300 million annually was estimated to be lost in amounts withheld and employee social insurance contributions.

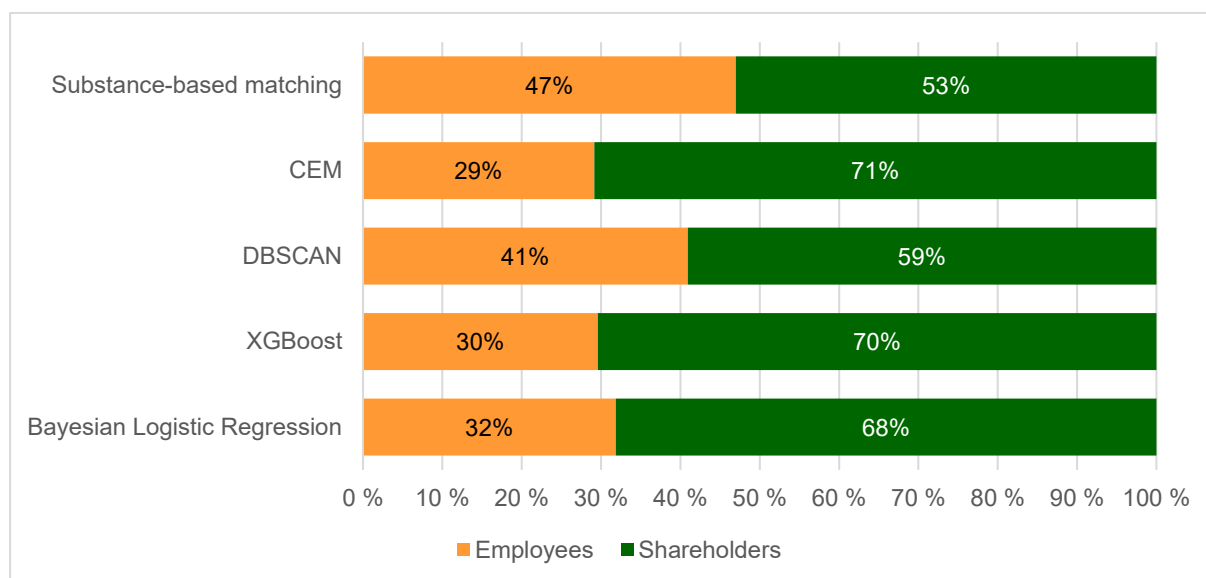
The following table (Table 1) has a year-by-year itemisation of the estimates of undeclared work produced with the different methods.

Table 1 Estimates of the amount of undeclared work in 2014–2020 (€ million) produced with the different methods.

Method	2014	2015	2016	2017	2018	2019	2020
Substance-based matching	991	828	738	673	720	--	--
CEM	--	--	--	780	797	801	814
DBSCAN	--	--	--	769	798	826	852
XGBoost	--	--	--	1 123	1 077	1 158	1 350
Bayesian Logistic Regression	--	--	--	751	748	855	1 010

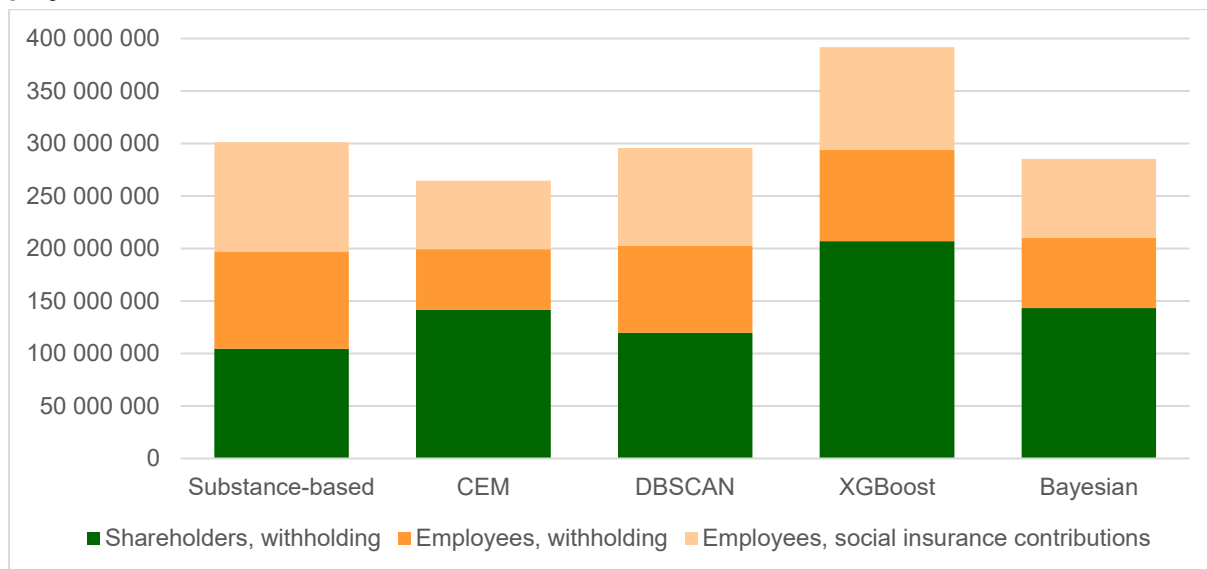
The figures in the table above are the total amounts of undeclared work. They do not show the shares of undeclared work from shareholders and employees. The shares vary based on the method used, as shown in the figure below (Figure 1). The results from most methods indicate that the largest share of all undeclared work comes from limited liability companies.

Figure 1 Distribution between employees and shareholders of the total estimated amount of undeclared work.



The summary of the size of the tax gap also shows the tax gap estimated per method. The estimate produced with CEM was the smallest – a tax gap of €260 million. The estimate produced with the XGBoost method was the largest – a total of €390 million. The estimate produced with the XGBoost method deviated somewhat from the estimates produced with the other methods. The most likely size of the tax gap was estimated to be between €260 and €300 million annually. The differences between the estimates were due to the differences in the estimated amounts of undeclared work and in the shares of undeclared work of shareholders and employees estimated with each method. Figure 2 shows the estimated amounts of taxes and social insurance contributions lost per method.

Figure 2 Amounts withheld and social insurance contributions lost due to undeclared wages (average estimated annual amount in €). Shares of undeclared work of shareholders and employees from the amounts lost. Results of the different methods.



The average limited liability company leaving work undeclared is a small business, and the beneficiaries are usually the shareholders. The industries where undeclared work was most often found included the construction, retail and wholesale, consulting and restaurant industries.

3.2 Estimating the amount of undeclared work with the profiling method – Amount of undeclared work in limited liability companies

The background, primary purpose, definitions for undeclared work and wages, and the data used in the data analysis are the same as in the study presented in section 3.1. The period of the data was more restricted – only 2018 and 2019 were included.

The data were analysed with a method developed in the Grey Economy Information Unit called the profiling method. It is a bottom-up method, i.e. deductions are made starting from the specific and moving to more general conclusions. With the profiling method, an understanding – a profile – is first formed of the specific violations of a company that is found to have violated its duties in a tax audit, and then companies with a similar profile are searched for in the group of companies under study.

The data analysis produced separate estimates of the amounts of undeclared wages of employees and disguised dividend paid to shareholders. In addition, an estimate was produced of expense allowances and fringe benefits falsely reported as tax exempt or reported with false amounts. These include daily allowances and kilometre allowances paid without any real basis.

3.2.1 Data used

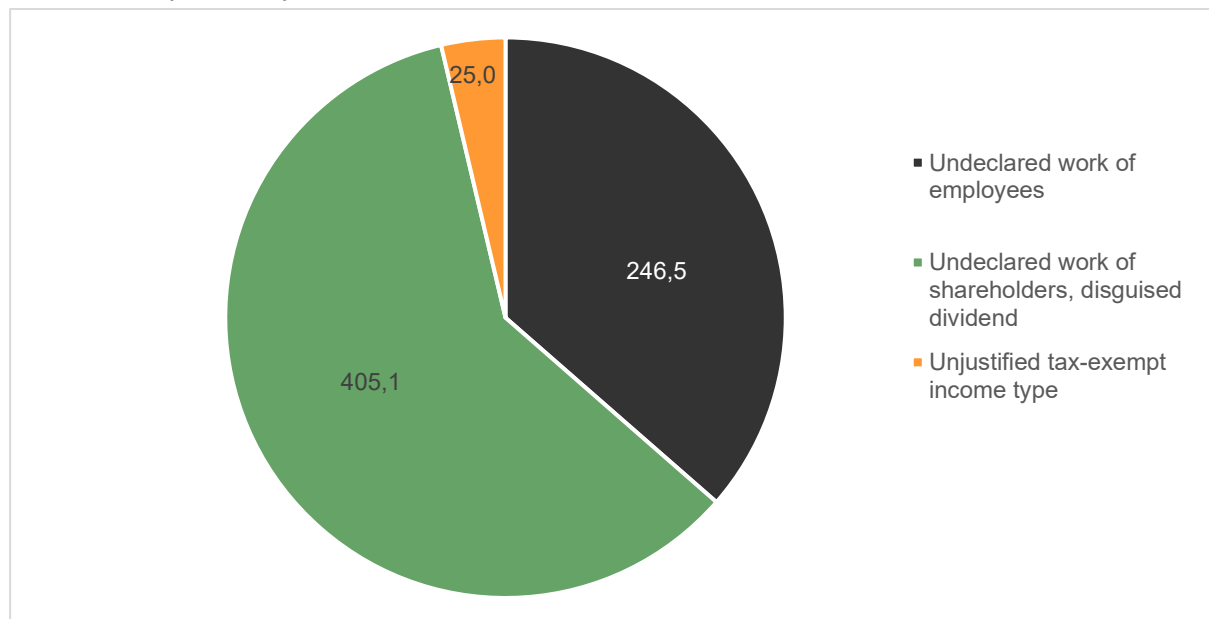
Only tax audits that targeted income types under the act on prepayments and the act on business tax were included in the study. Tax audits from 2018 and 2019 were examined, a total of around 2,500 audits. More than 1,000 cases of undeclared work were found.

3.2.2 Results

The total amount of undeclared wages was estimated to be around €680 million annually. The result is comparable with the estimates presented in the *Pimeän työn määrä – Mit-taamisselvitys osakeyhtiöiden verotarkastustietojen perusteella* phenomena report. The amount of undeclared wages estimated based on the profiling method corresponds to slightly less than two per cent of the total amount of wages reported as paid by limited liability companies in 2018 and 2019. Some €250 million annually is estimated to be lost in amounts withheld and employee social insurance contributions.

Figure 3 shows the shares of different types of deviations from the estimated total of the deviations. Of undeclared wages, the largest share (60%) went to shareholders. The share of undeclared employee wages was around 36 per cent of the estimated total. The remaining share, i.e. around four per cent of the estimated total amount of undeclared wages, is expense allowances and fringe benefits falsely reported as tax exempt.

Figure 3 The shares of different types of deviations from the estimated total amount of undeclared work (€ million).



Large companies with a turnover in the millions were most likely to leave wages paid to employees undeclared. Naturally, large companies also have larger needs for labour. Undeclared work of shareholders was mostly found in smaller companies whose annual turnover was less than €400,000. The risk of a disguised dividend, i.e. undeclared work of shareholders, was lowest in companies that reported a turnover of more than €4 million. Deviations related to tax-exempt income types were found in companies of all sizes. These were usually found in tax audits of companies whose turnover was between €400,000 and one million.

The profiling method produced estimates of the numbers of different types of deviations in the studied group of companies, and the estimates could be used to form an understanding of their prevalence in limited liability companies. The most frequent type of deviation was a disguised dividend, which was estimated to occur in eight per cent of all limited liability companies. The frequencies of undeclared wages and abuse of tax-exempt income types were nearly identical; the frequency was estimated to be slightly less than three per cent for both.

In particular, cases of undeclared wages of employees and shareholders were found in the construction, warehousing and restaurant industries. The three industries with the highest risk of undeclared wages were the same for employees and shareholders.

3.3 Estimating the amount of undeclared work with LIM – Undeclared work of private sector employees

The study was the first in Finland to use the Labour Input Method (LIM) to estimate the amount of undeclared employee wages in the private sector. With LIM, the amount of undeclared work is estimated by identifying conflicts in data from two authorities. Statistics by Statistics Finland and the data in the registries of the Finnish Tax Administration serve as examples of such data. The idea behind LIM is that the difference between the compared datasets reflects the difference between the demand and supply of labour, which in turn reflects the amount of undeclared work.

In the study, LIM was used in a novel way, as aggregate data based on the Labour Force Survey labour input data were used. Traditionally, LIM involves individual-level data and extensive analysis of various factors affecting labour input. Such factors include various sick leave, family leave, work abroad, and other possible deficiencies and deviations in data on the level of individual employees. In the study, LIM was applied straightforwardly with ready-made aggregate data, and an estimate of the amount of undeclared work was created that was sufficiently reliable to be reproduced at set intervals. This rough estimate could be used to observe trends in undeclared work, for example.

3.3.1 Data used

Data on vacancies

The data on vacancies in 2019 included in the Labour Force Survey of Statistics Finland were used for the LIM analysis. The Labour Force Survey statistics describes the labour market participation of people aged 15 to 74. Labour market participation is analysed in several different ways in the survey; for example, employment relationships, working hours and labour input are examined. The estimates of working hours, e.g. estimates of hours worked, were the key estimates for LIM. The data used for the estimates included hours worked in 2019 on the 2-digit level of the Standard Industrial Classification for both employees and self-employed persons. For LIM, the estimates were limited to those that pertained to employees only.

Data on labour demand

The data on labour demand in 2019 were extracted from the Incomes Register. This income dataset was also formed to include income earners aged 15 to 74 with 'employee's earnings-related pension insurance contribution' entered as the type of their earnings-related pension insurance in their income earner's reports.

3.3.2 Results

A difference of 15.5 million working hours was found between the estimate of the Labour Force Survey and the estimate based on the data from the Incomes Register. The deficit in wages paid is around 0.6 per cent of the total amount of hours worked. Converting the number of working hours to wages indicates that around €300 million in wages was left unreported to the Incomes Register in 2019. With the average tax rate of 25 per cent, the undeclared wages of private sector employees would have resulted in a loss of around €75 million in amounts withheld. The amount of lost social insurance contributions is even higher, around €84 million. The total of lost amounts withheld and social insurance contributions is nearly €160 million.

3.4 Amount of undeclared work – Estimate based on data from tax audits performed on self-employed individual)

This study produced information about the frequency and scale of work being left undeclared among self-employed individuals, i.e. those working under a business name, and the amount of taxes lost due to the phenomenon. The estimates of the amount of undeclared work were created with three methods: Coarsened Exact Matching (CEM); calculating customer-specific probabilities with a machine-learning algorithm; and the profiling method developed in the Grey Economy Information Unit.

Tax audit data on the undeclared work of self-employed individuals were used as the primary data in the analyses. The data included more than 600 tax audits of self-employed individuals conducted between 2018 and 2020. Deviations considered to meet the definition of undeclared work were found in around half the audits. In the analysis carried out with the machine-learning algorithm, the data were augmented by relevant data from the regular tax assessments of self-employed individuals.

3.4.1 Self-employed individuals in Finland

There were some 220,000 self-employed individuals in Finland between 2018 and 2020. Most of these were small businesses; around 80 per cent of the self-employed individuals had an annual turnover of less than €50,000, for example.

In the study, the undeclared work of self-employed individuals was examined by creating estimates of the value of the undeclared work and the monetary benefits gained from it through tax avoidance. Self-employed individuals do not pay themselves wages; instead, the profits they gain from their business activities are considered their taxable income. The effect of undeclared work on income from business activity was therefore examined. In practice,

undeclared work of self-employed individuals is manifested in a variety of deviations that lead to the reported taxable income of the individual being lower than the real amount. Since self-employed individuals only seldom employ other people, undeclared wages of employees were less relevant to this study.

Self-employment is the primary source of income for around half of self-employed individuals; for the other half, self-employment is a secondary occupation alongside working as an employee. Full-time self-employed individuals usually only employ themselves and only rarely have employees.

3.4.2 Results

In the study, the amount of work left undeclared by self-employed individuals was estimated be around €250 to €450 million annually. Around €75 to €140 million was estimated to be lost in taxes and other payments, the largest share of which was lost income taxes from self-employed individuals. A small share was lost amounts withheld and social insurance contributions from wages paid to employees.

Table 2 Estimates of the amount of undeclared work of self-employed individuals (€ million) produced with different methods, 2018–2020.

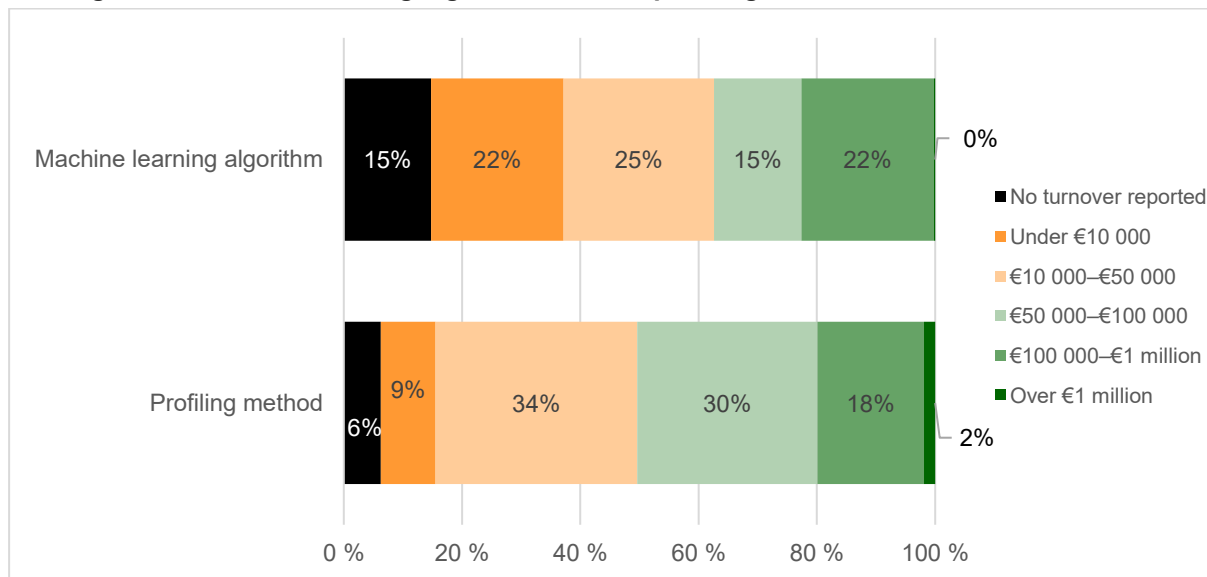
Method	2018	2019	2020
CEM	242	351	384
XGBoost	451	440	407
Profiling (*)	362	362	362

(*) The figure is the mean for the three years.

The largest share (90%) of undeclared work of self-employed individuals was estimated to result from underreporting income and filing unjustified deductions. The share of undeclared wages of employees of the total is only about ten per cent. Of the total estimated amount of undeclared work, the share of individuals employing themselves full-time was around three quarters, and a quarter were part-time self-employed individuals.

Both the profiling method and the machine-learning algorithm assigned around 80 per cent of the total estimated amount of undeclared work to self-employed individuals, whose annual turnover was less than €100,000 (Figure 4). In addition, both methods produced the largest estimated amount for self-employed individuals whose annual turnover was between €10,000 and €50,000.

Figure 4 The undeclared work of self-employed individuals per turnover category in 2019 according to the machine-learning algorithm and the profiling method.



According to both methods, the risk of self-employed individuals leaving work undeclared was highest in the restaurant and land transport industries. In addition, the accommodation and house construction industries and renting and leasing activities were among the industries with the highest risk despite the method.

4 Summary of results

The Grey Economy Information Unit has examined the phenomenon of undeclared work in Finland with several different methods. The definition used for ‘undeclared wages’ is broad and covers the unreported income of shareholders and self-employed individuals in addition to the traditional definition of undeclared wages of employees. It should be kept in mind that undeclared work is only one phenomenon under the umbrella of the shadow economy. Estimates of the amount of undeclared work are not estimates of the overall size of the shadow economy but just one part of it.

As expected, the different methods did not produce completely similar results. Nevertheless, or possibly due to this, the results gained with the different methods can be considered reliable, as they are all of the same order of magnitude. Based on the results of all the methods, the amount of undeclared work can be roughly estimated to be between €900 and €1,400 million annually. This results in a tax gap of around €300 to €480 million annually. This estimate covers all undeclared work of employees in the private sector. The undeclared work of partners of limited partnerships and general partnerships, as well as of members of cooperative societies, is not included. However, the share of wages paid by the above business forms of the total amount of wages is small.

Around €240 to €400 million in wages was paid to employees and left undeclared annually. As a result, the government lost around €130 to €210 million in income. This amount includes around €60 to €100 million in lost amounts withheld and around €70 to €110 million in

lost social insurance contributions. Based on the phenomena reports, wages are especially left undeclared in the construction, restaurant, retail and warehousing industries, and in services for the transport sector. Companies engaged in employment activities were also identified as risk companies. Generally, these companies operate in industries in which labour needs are high, and wages low. In addition, the work is usually physical in nature, and employee turnover rates high.

Shareholders of limited liability companies were estimated to leave around €430 to €590 million in wages undeclared every year. This results in a tax gap of around €110 to €150 million from uncollected amounts withheld. The estimated tax gap does not include possible self-employed individuals' pension contributions that are left unpaid. The undeclared work of shareholders was predicted to occur particularly in the house construction, warehousing, retail and restaurant industries, and in services for the transport sector. There is an overlap in the risk industries for employees and shareholders. This was expected, as if a company leaves wages of employees undeclared, it is unlikely the shareholders will declare all their wages truthfully and pay all the required taxes on them.

'Undeclared work of self-employed individuals' refers to falsely reporting a lower turnover for the self-employed individual's business activity, which reduces the amount of taxes collected. It was estimated that the amount of undeclared work and wages of self-employed individuals is around €220 to €400 million annually. The income tax gap – mostly lost earned income tax – resulting from undeclared work of self-employed individuals is around €70 to €120 million annually. It was concluded that the largest type of tax avoidance by self-employed individuals was fraudulent activity by full-time self-employed individuals. The restaurant and transport industries had the highest risk of undeclared work.

The estimates of the amount of undeclared work presented herein are rather conservative compared with the estimates of the LIM study commissioned by the European Commission. Comparisons of the results are purely indicative, as the terms, units and limitations used differ. The Commission report estimated that in 2013, the amount of undeclared work in the private sector in Finland, including self-employed individuals and shareholders, was around 9.3 per cent of the total labour input. The report estimate for the share of employee wages left undeclared was 3.6 per cent of the total labour input. The estimates of the Grey Economy Information Unit indicated that the share of employee wages left undeclared was less than one per cent of the total of wages paid in the private sector.

In the Commission report, the share work left undeclared by self-employed individuals was 45.3 per cent of their total labour input. The rough estimate of the Grey Economy Information Unit indicated that around ten per cent of the income of self-employed individuals came from undeclared work. The share of undeclared work of shareholders was less than ten per cent of all wages reported to have been paid to shareholders, and the share of undeclared work of self-employed individuals was around eight to fourteen per cent of the total business turnover of all self-employed individuals.

The reports did not discuss how undeclared work could be prevented, or its amount decreased. This theme was touched on in the *Pimeän työn määrä – Mittaamisselvitys*

osakeyhtiöiden verotarkastustietojen perusteella report by providing a review of various legislative initiatives that are related to combatting undeclared work. However, 'undeclared work' is an umbrella term related to several other phenomena of the shadow economy. There is therefore no single solution that would be effective in combatting undeclared work. Instead, we deem that undeclared work is best prevented as part of the systematic measures to combat the shadow economy that have been implemented as part of the Government's actions plans for tackling the shadow economy since the 1990s.

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