

**ROCKWOOL FONDENS FORSKNINGSENHED**  
ROCKWOOL FOUNDATION RESEARCH UNIT

TORBEN TRANÆS  
Research Director  
Ph.D. (economics)  
e-mail: tt@rff.dk

C

MODTAGET

- 7 JULI 2005 1400

2005-7-7  
TT/bj

Den Centrale Indlevering

Skatteudvalget  
Folketinget  
Christiansborg  
1240 København K

(Med Budstikken)

### Nye tal om sort arbejde i Tyskland

Rockwool Fondens Forskningsenhed udsender i morgen fredag den 8. juli en rapport – *Black Activities in Germany in 2001 and in 2004. A Comparison Based on Survey Data* – med nye tal for udbredelsen af sort arbejde i Tyskland.

Rapporten er sammenfattet i et engelsk nyhedsbrev, der vedlægges.

Yderligere eksemplarer kan – så længe lager haves – bestilles på tlf. 39 17 38 34. Nyhedsbrevet findes i øvrigt også i en tysk version med en kommentar fra finansminister Hans Eichel.

Venlig hilsen

  
Torben Tranæs

# NEWS FROM THE ROCKWOOL® FOUNDATION RESEARCH UNIT

June 2005

## - Black Activities in Germany in 2001 and in 2004. A Comparison Based on Survey Data



By Lars P. Feld, Prof. Dr. (Econ.), Philipps-University of Marburg, and Claus Larsen, M.Sc. (Econ.), the Rockwool Foundation Research Unit, Copenhagen

### Introduction

Black activities, the shadow economy, and tax evasion – each type of potential tax cheating attracts considerable interest from policymakers, the public and scientists alike. The German government has recently taken several steps to enhance tax compliance by raising the level of deterrence, mainly by increasing audit rates, but also by higher fines. These policies have been particularly aimed at fighting black activities although it is the stated goal of the German Federal Finance Ministry to fight tax evasion at all levels from the international capital markets to housekeeping services.

In this study, we investigate the size of the German black economy in 2004 compared to 2001 and supplement this descriptive evidence with the results of multivariate analyses of the impact of deterrence, tax policy, and social norms on the rate of participation in black activities. The aim is to give an account of the situation with respect to the size, structure, and development of the black labor market in Germany in recent years and to point to some possible causal connections as well as to set the stage for future analyses. Our study is based on survey data.

In August and October 2004, a total of 2,143 interviews were carried out with representative samples of the German population aged 18-74 years, while the development of black activities since 2001 is documented in comparison to a similar study conducted by the Rockwool Foundation Research Unit in 2001 (see Pedersen 2003), when

a total of 5,686 interviews were carried out from April through October.<sup>1</sup>

### Definitions and Methods of Measurement

Black activities are defined here as productive economic activities which are legal and taxable, but on which income tax, social security contributions, VAT, etc., are not paid, because they are not reported to the tax or customs authorities. Prices and wages therefore can be kept below what should have been paid at the formal market, buyer and seller are both aware of this, and both obtain an extra economic advantage in this way. Trade in goods and services, payments in cash and in kind, and significant exchanges of goods and services between friends and neighbors are included. Evasion which benefits only one party and activities which are in themselves illegal are not included.

Black activities are thus a part of the domestic product which is not regularly or explicitly accounted for in the national accounts via official statistics, and which therefore has to be estimated; the survey method in which representative samples of the population are directly asked if they have participated in such activities, is one way of doing this. There is much discussion as to the most acceptable way of “measuring the immeasurable” and how to define it, and the boundaries between “black activities”, “the shadow economy”, “tax evasion”, and other terms used are not unambiguously defined in the literature, but vary depending on the context. The definition of black activities used in this report is thus not a canonical one, but it nevertheless appears to be useful.

Because we only set out to measure a part of the total shadow economy, namely the black activities, and because some of the persons interviewed are likely to understate their involvement in such activities, the survey approach measures a lower limit of black activities in the economy. In our definition, the total shadow economy can be divided into black activities (as defined above), non-declaration of earned income and sales at full market price, illegal activities, and tax evasion in connection with capital or transfer income and deductions. The particular advantage of the survey method lies in the additional details that can be obtained, so that a very well-

<sup>1</sup> A comparison of the 2004 data with interviews carried out only during the same months in 2001 does not alter the overall conclusions.

defined and differentiated analysis of black activities is possible. Most other methods are unable to distinguish so explicitly between the various elements of which the shadow economy is made up.

An upper boundary is provided by the so-called indirect methods of measurement, which use macroeconomic data to assess the size of the shadow economy. In recent years, such methods have produced estimates of the total shadow economy in Germany (and other countries) that are about four times higher than the part accounted for by black activities according to the estimates presented in this article (see, for example, Schneider 2004).

In our research, we use the term “black activities” and “black work” because the questionnaire was designed to be used in Denmark and was later used in Norway and Sweden, where the general public are familiar with the term “sort arbejde”. The direct translation into German is “Schwarzarbeit”, and there even is a “Law against Schwarzarbeit” according to which working without paying taxes or social security contributions, failure by social-security recipients to report to the authorities if they get a job, and working, supplying services, or running a business without proper registration are considered black activities. Schwarzarbeit in the sense of the law thus covers more than black activities according to the definition we use in this study, but only activities that are covered by both are included here. There are differences between countries regarding what is taxable and what is not, especially when it comes to activities where there is no money involved, but then national fiscal legislation decides which activities to include and which to exclude.

#### The Incidence and Extent of Black Activities in 2004 Compared to 2001

How many people are engaged in black activities, how much time do they spend on such activities each week, how much are they paid or how much do they receive in return, and are there differences in black work with respect to gender, age, and occupation? These are the questions we address first and the answers are used to estimate the total extent of black activities in Germany before we continue to the questions about the impact of deterrence, tax policy, and social norms on black activities.

#### The Rate of Participation in Black Activities

Turning to the results of the interviews, *Table 1* shows, that, in 2001, 10.4 percent of the respondents answered that yes, they had carried out black activities during the last 12 months. The participation rate for men (14.5 percent) was more than twice that for women (6.5 percent). In 2004, the frequency had decreased to 8.8 percent, but the decrease was more marked among women (to 4.5 percent) than among men (to 13.4 percent). A decrease is in line with recent estimates by Schneider (2004) as well as with information from the German Ministry of Finance. Like the overrepresentation of men, an above average rate of participation among younger people is

part of a well-known pattern, and that is also what we find.

*Table 1. Participation in black activities in Germany in 2001 and 2004, 18-74-year-olds, in percent.*

	Carried out black activities?			Total	No. of persons
	Yes	No	Don't know or refusal		
2001	10.4	86.7	2.8	100	5,686
2004	8.8	89.9	1.3	100	2,143

Source: Feld and Larsen (2005) *Table 6.1*.

Looking more closely at the age structure, large decreases are found among the 20-29-year-olds (from 19.1 to 13.4 percent) and the 50-69-year-olds (50-59-year-olds from 7.4 to 5.1 percent, 60-69-year-olds from 5.6 to 2.6 percent). Increases are found only in the case of the 18-19-year-olds, from 16.6 percent in 2001 to 24.3 percent in 2004, and of the 70-74-year-olds, from one to three percent. The rates for the 30-39- and the 40-49-year-olds remain relatively constant, and this is interesting, since these age groups are the most active in legal work in the official labor market. The overall reduction in black market activities has thus been mainly driven by people at the beginning and at the end of their normal/official working lives, the exception being the 18-19- and the 70-74-year-olds, but obviously the increase in black activities in these two groups has not offset the general decline.

As to black activities in different occupations, the reduction was extremely marked among the self-employed/-assisting spouses (from 12.1 to 1.7 percent) and people undergoing education (from 27.3 to 14.6 percent). However, the decrease found for the self-employed in particular is unlikely to reflect solely an actual change in black market behavior, despite the fact that the 2004 increase in deterrence was aimed mainly at this group: it is likely that the respondents' readiness to answer such questions has changed, too. Moderate reductions are also found for skilled workers (from 19.2 to 16.6 percent), the unemployed (from 20.7 to 17.1 percent), and pensioners (from 4.2 to 3.6 percent), while increases in the participation rate are found only for salaried employees (from 7.1 to 8.9 percent) and unskilled workers (from 8.2 to 8.9 percent).

#### Black Working Hours

Respondents who had carried out black activities were asked to state the average time per week spent on such activities. First, answers from those respondents who could give an exact number of hours in the range 1 to 70 (inclusive) were accepted and entered into the calculation of a weekly average for all 18-74-year-olds who had carried out black activities. Second, if the answer was not an exact number but, for example, “less than 1 hour” or “don't know”, the respondents were given the possibility of stating the total number of hours spent during the last 12 months instead. If this resulted in a number of hours per week in the range 1 to 70 (inclusive), then that an-

swer was entered into the calculation; other respondents were assumed to have spent an amount of time corresponding to the average for all participants. The results obtained by using this method are shown in Table 2.

Table 2. Average number of black hours worked per week among men and women who participated in black activities in Germany, 2001 and 2004, 18-74-year-olds.

	2001		2004	
	Hours: minutes	No. of persons	Hours: minutes	No. of persons
Men	8:30	190	7:52	64
Women	7:48	122	6:46	39
Total	8:14	312	7:30	103

Source: Feld and Larsen (2005) Table 6.5.

As can be seen from the table, the average time spent on black activities fell from 8 hours and 14 minutes in 2001 to 7 hours and 30 minutes in 2004, which is in line with the decline in the overall figures for carrying out black activities (Table 1). In general, women spent less time on black activities than men, and women also reduced the time they spent on such activities more than men did.

The 18-29-year-olds who participated in black activities worked about the same average number of black hours in 2004 as in 2001, i.e. seven and a half hours. This is not the case as far as the 30-39- and the 40-49-year-olds are concerned. While both groups exhibit a more or less unchanged rate of participation, they differ significantly with regard to time spent on black activities. The 30-39-year-olds increased their average weekly working hours from 7 hours and 42 minutes to no less than 12 hours and 49 minutes, while the 40-49-year-olds reduced their average black hours worked per week from nine in 2001 to about five and a half in 2004. The average for the oldest age groups declined to about seven hours for the 50-59-year-olds and six hours for the 60-74-year-olds.

With respect to occupation, some groups must be commented upon with caution because they comprise relatively few individuals in the survey, so the results are uncertain. Our calculations show that the average black working week was reduced for skilled workers by about one hour to 6 hours and 26 minutes between 2001 and 2004, while pensioners spent about nine hours per week in the black economy in both years. Salaried workers and the unemployed almost halved the average number of hours spent to two and six respectively, while average time spent by unskilled workers increased by one third to 11 hours and 16 minutes.

### Black Hourly Wages

With information on the number of people participating in black activities and on the time they spend per week on such activities, we have figures about the quantity of black activities. However, in a national accounts context, for example, economic importance is determined by both the quantity and the actual price of black activities. It is

therefore necessary to obtain information on the monetary evaluation of black activities. As black activities according to our definition comprise work and sales for payment in cash as well as in kind, we had to ask about both actual and hypothetical prices and wages. In 2004, payment was the same irrespective of the method of payment, but in 2001, the average hourly rate for services paid for in cash was €9.50, whereas the estimated average hourly rate for services paid for in kind, should these services have been paid for in cash, was €11.00. Those who were paid both in cash and in kind received approximately the same average hourly wage both years.

Interestingly enough it turned out that the nominal hourly compensation for black activities remained virtually unchanged at €10.40 in 2004, compared to €10.30 in 2001. For men, average hourly wages decreased by 30 cents to €11.00, while those of women increased from €8.40 to €8.70. So – as in the official economy – women also earn less than men in the black economy. The immobility in the remuneration structure across time also holds for the age structure, with one notable exception: the 40-49-year-olds, who earned the highest average black hourly wages in 2001, experienced a decrease from €12.70 to €10.10 in 2004. In 2001, they earned about 50 percent more than the group with the lowest average hourly wages – the 60-74-year-olds – who earned about eight and half euro in both years. In 2004, the 30-39-year-olds earned the highest average black hourly wages with €11.90 (€11.30 in 2001), which is 40 percent more than the compensation for the 60-74-year-olds, who had the lowest average hourly wages both years. The 18-29-year-olds earned about nine euro per hour in both years, while the 50-59-year-olds €9.70 and €10.90 respectively.

With the caveat that quite a few occupational groups in the 2004 data set contain a small number of persons, the differences by occupation, both across groups and across time, appear to be more important than differences by age and sex. The €12.00 which skilled workers earned in the black sector in 2004 was about one euro more than in 2001, while the average hourly wage of unskilled workers went up from €8.60 in 2001 to €9.20 in 2004. The wages of the unemployed declined considerably from €8.10 to €6.80, and salaried employees also experienced a decline (from €14.60 to €11.50). Pensioners received a little more than eight euro in both years. Because of the small number of observations we refrain from saying anything about the wages of the self-employed and persons undergoing education. The relatively few observations in a number of groups also must be kept in mind when looking at average hourly wages by industry, but the overall impression is that there are considerable differences across groups. It is notable that the average hourly wage in the construction sector, which accounts for a very large part of all black hours worked, declined from well above average in 2001 to about average in 2004.

Finally, our data indicate a tendency towards a negative influence of income in the formal economy on the probability of participating in black activities; this was more evident in 2001 than in 2004. In contrast, there are no clear-cut results for the possible influence of income in the formal economy on average black hourly wages.

### The Extent of Black Activities

The participation rates, the time spent on black activities, and the actual wages and prices paid provide the means of estimating the total extent of black activities. Total number of hours spent on black activities as a proportion of the total number of "white" hours worked in the formal economy in one year is a measure of the black sector as a percentage of GDP on the assumptions that productivity is the same in the black sector as in the formal economy within the various trades and industries and that overall average productivity or value added across industries is the same. This method is used in *Table 3*. As the comparison is with the formal labor market, the age group is 18-66 years (inclusive).

*Table 3. Black hours worked as a proportion of working hours in the formal economy in Germany in 2001 and 2004, 18-66-year-olds.*

	Carried out black activities?		"White" hours per week, total population	Black sector as percent of GDP
	Yes	Hours per week		
2001	11.7	8.31	23.6	4.1
West	11.4	8.58	23.8	4.1
East	12.7	7.33	21.9	4.3
2004	9.6	7.56	23.3	3.1
West	8.5	7.65	23.4	2.8
East	13.9	7.37	23.2	4.4

Note: Minutes are expressed as fractions of an hour.

Source: Feld and Larsen (2005) *Table 7.5*.

As can be seen from the table, changes in participation rates and in black and white working hours resulted in a 24 percent decrease in the extent of black activities in Germany, from 4.1 percent of GDP in 2001 to 3.1 percent in 2004. While the proportions of black activities in West and East Germany were relatively similar in 2001 at 11.4 percent in West Germany and 12.7 percent in East Germany, a marked divergence has occurred since then. In 2004, only 8.5 percent of the population in West Germany carried out black activities, while the figure was 13.9 percent in East Germany.

An alternative calculation of the size of the black sector based on black working hours and the actual average prices and wages paid gives a 25 percent decrease in the size of the black sector, from 1.35 percent of GDP in 2001 to just over one percent in 2004.

Another way of illustrating the extent of black activities is to "convert" the number of black hours worked per year to full-time jobs. In 2001, the 2,707 million hours worked in the black sector would correspond to 1.63

million jobs in the formal economy. According to a study by the Rockwool Foundation Research Unit in 1999, in Denmark, about one third of these activities would be converted to "white" if buying on the black market was not an option. If the same distribution of alternatives to black activities applied to Germany, the impact would still amount to more than 500,000 jobs in 2001. Similarly, had all 2,100 million black hours worked in 2004 been converted to "white", it would have corresponded to 1.26 million full-time jobs – one third of which amounts to about 420,000 jobs.

In 2001, the construction sector, which is an area that the German Finance Ministry focuses upon, accounted for 29 percent of the total number of black hours worked, and this share rose steeply to 49 percent in 2004 – an increase of 70 percent. Agriculture, fishing, and quarrying (including gardening), the second most important sector for black activities in 2001, saw a reduction in its market share from 15 percent in 2001 to 2.6 percent in 2004. Similarly, public and personal services lost ground. The transport and telecommunications sector more than doubled its importance, from 5.0 percent in 2001 to 10.2 percent in 2004, thus making this the second most important sector for black activities in 2004. Financial intermediation and business activities kept its importance over time and came in third place in 2004, whereas hotels and restaurants lost importance, but still retained fourth place.

The relative extent or distribution of black activities may also be illustrated by looking at black hours worked as a proportion of "white" working hours in each industry. In 2001, the largest proportion was 16.8 percent in agriculture, fishing, and quarrying followed by 12.9 percent in construction and 8.6 percent in hotels and restaurants. From 2001 to 2004, the proportion in the primary sector decreased to 2.4 percent. As mentioned above, such dramatic changes most likely reflect both an actual change in black market behavior and a change in the respondents' readiness to answer questions about such activities. In 2004, construction replaced agriculture, fishing, and quarrying as the sector where black hours worked made up the largest proportion of "white" working hours (19.3 percent), while the proportion decreased to 4.8 percent in hotels and restaurants. This made hotels and restaurants the third largest sector once again in 2004, while transport and telecommunications had become second largest, as the proportion increased from 3.2 to 5.4 percent.

### The Impact of Deterrence, Tax Policy, and Social Norms on Black Activities

Theoretically, deterrence as the product of the probability of detection and punishment schemes often appears to be the policy instrument of choice to reduce black activities, in addition to tax policy. But black activities and tax evasion in general are also influenced by tax morale which is shaped by an implicit psychological tax "contract" according to which citizens pay their fair share due

for the public services they receive. Like a private contract, this relationship must treat taxpayers as contract partners, not as inferiors in a hierarchical relationship, and excessive deterrence may backfire on such a psychological tax contract by crowding out tax morale and thus lead to more black activities and tax evasion.

In July 2004, a new law – *Gesetz zur Intensivierung der Bekämpfung der Schwarzarbeit und damit zusammenhängender Steuerhinterziehung* (SchwarzArbG, Bundsrats-Drucksache 155/04a) – was passed in Germany to fight black activities by increasing deterrence. Though the law is only the latest in a whole series of measures in the recent past aimed at a reduction of tax evasion and the shadow economy, it is a milestone, because it is the first official document that legally defines black activities (see *Definitions and Methods of Measurement* above) and also links such different areas of the law as the tax code, economic regulation, and the different laws covering various social transfers.

*SchwarzArbG* increases fines (§1, Abs. 2), but the main deterrence measure consists of increasing the intensity of control. The law enables customs officials to investigate black activities, particularly those carried out by firms, on a broader scale than before, and further, between 1998 and 2002, the number of customs officials investigating black activities more than doubled. The more recent measures are expected to lead to an additional increase in staff. The auditors in the Federal Labor Office, who also investigate black activities, are not counted in these figures. In the view of the Ministry of Finance, these measures have already been successful. According to its information, the German shadow economy has declined in 2004 for the first time in three decades, due to increased deterrence measures.

As already mentioned, a reduction would be in line not only with the findings of the present study that the black labor market participation rate decreased from 10.4 percent in 2001 to 8.8 percent in 2004, and that the proportion of the population who had neither carried out black activities nor would be willing to do so rose from 54.2 percent in 2001 to 61.9 percent in 2004, but also with that by Schneider (2004).

While this may look like a success for the deterrence policies of recent years, the descriptive evidence is not sufficient to establish this impact, because other factors could also have led to a reduction in black activities. In particular, the recent German tax reforms, with reductions in income tax rates, or the changes in labor market policy (the “Mini-Jobs”) might equally well have induced a smaller shadow economy. When many factors have an impact, multivariate analyses of the correlations are needed to supplement the descriptive evidence.

#### Perceived Risk of Detection

In both 2001 and in 2004, we asked a question about the perceived risk of detection if one was carrying out black

activities. The results are shown in *Table 4*, and according to these figures, a rather large proportion of the population thought that the risk was very high or fairly high. Although the proportion of respondents assessing the probability of detection as very high declined from 10.8 percent in 2001 to 9.4 percent in 2004, those perceiving the risk of being caught as fairly high increased from 25.4 percent to 29.7 percent. Moreover, the number of individuals making a low assessment of the risk declined, as did the item non-response rate. The policy measures implemented between 2001 and 2004 and the campaigns accompanying these measures obviously had an impact on individual perceptions.

*Table 4. Perceived risk of detection if carrying out black activities, 18-74-year-olds, Germany, 2001 and 2004, in percent.*

	Very high	Fairly high	Fairly small	Very small	Don't know/refusal	Total
2001	10.8	25.4	30.1	18.2	15.6	100
2004	9.4	29.7	32.3	15.1	13.5	100

Source: Feld and Larsen (2005) *Table 8.1*.

Identical econometric analyses of the probability of participating in black activities (logistic regressions made separately for men and women because participation differs significantly by gender) were carried out for both 2001 and 2004 including as explanatory variables perceived risk of detection, age, marital status, having children under six years of age in the household (yes/no), occupation, education, respondent's monthly net income in the formal economy, length of unemployment (in months), region (East/West Germany), and household home ownership (owner-occupied/not owner-occupied).

In the light of the descriptive evidence, it is not surprising that we find that for men the probability of participating in black activities is significantly higher for those younger than the 40-49-years and lower for those older. For women the effect of age is not significant, whereas married women have a significantly higher probability of participating in black activities than women who are not married. While marriage had the same effect for women in both years, it was positive, but not significant for men in 2001, and became significantly negative in the interim. Whether there are children under the age of six in the household or not does not have any significant effects.

For 2004, occupation is significant at the highest (1 percent) significance level for men. Compared to the reference group (salaried workers), the self-employed/assisting spouses, unskilled workers, and students all have a significantly lower probability of being active in black work, but for the last two groups the probability is only marginally lower and at the lowest (10 percent) significance level. Female pensioners form the only group that has a significantly higher probability of par-

participating in black activities than the reference group, according to the regressions for women. For occupation, there are marked differences in the estimation results for 2004 compared to 2001, as the descriptive statistics presented above might suggest. For 2001, there were highly significant results showing that skilled workers, female unskilled workers, and female students had a higher probability of participating in black activities than the reference group; but for 2004, occupation loses its overall explanatory power for female participation in black activities.

For 2004, education does not have any significant effect in the case of women, while it is significant at the 1 percent level for men, mainly driven by a significantly lower participation rate of people with university degrees as compared to the reference group (those who had successfully completed an apprenticeship). In 2001, the probability that women who were still undergoing education would participate in black activities was significantly higher than that of the reference group. Unemployment does not have any significant effect, and the same applies to the length of unemployment for the unemployed.

According to the economic theory of tax evasion, income could have either a positive or a negative effect on black activities, depending on how risk-averse taxpayers are. The estimation results for women in 2004 indicate that lower income groups have a higher probability of participating in black activities (a negative overall impact of income). The results for men are less clear-cut, which marks a change compared with the estimation results for 2001, when the pattern was the same for men and women and revealed an overall negative impact of income.

It is surprising that region did not have any significant effect in the study for 2001, while participation in black activities was significantly less probable in West Germany than in East Germany in our survey for 2004. The impact was significant at the 1 percent level for men and marginally significant at the 10 percent level for women. Home ownership did not have any significant effects.

Finally, in 2001, if the perceived risk of being discovered was very large or fairly large, this had the theoretically expected negative (and highly significant) effect on a person's willingness to participate in black market activities, but the impact of this variable seems to have declined between 2001 and 2004. The sign is still the expected negative, but no longer significant for men and only significant at the 5 percent level for women. In line with the findings of many experimental studies, women seem to be more risk-averse than men. We will elaborate further on deterrence below, but, of course, this result is already quite interesting with respect to deterrence as a measure to restrict black activities.

#### **Perceived Sanctions**

In 2004, a question about the second component of deterrence – the size of sanctions – was included. We asked

about the perceived sanctions if the authorities found out that somebody had carried out black activities to the value of 2,500 euro, and respondents could choose between four different answers. About 20 percent expected that one would only have to pay the taxes due. More than half expected an additional punishment in the form of a fine imposed together with the payment of the taxes due, which appears to be relatively realistic. Five percent expected that a prison sentence would be imposed. Almost a quarter of the respondents did not assess the sanction. To capture the full effect of deterrence we thus included these categories measuring the perceived size of punishment in the regressions based on 2004 data.

The estimation results obtained before remain more or less robust to the inclusion of perceived punishment, although there are some marked differences. In particular, the perceived risk of discovery remains insignificantly negative in the case of men and significantly negative in the case of women, though now only marginally so at the 10 percent significance level. The new variables measuring the perceived punishment do not, however, reach any conventional significance level, which is also interesting with respect to deterrence as a measure to restrict black activities.

#### **Tax Policy**

The possibility has already been mentioned that the German tax reform act of 2000, which has been implemented in stages up until 2005, could have affected the pattern of black activities between 2001 and 2004. Further, income taxes in Germany have been cut considerably recently. While the income tax schedule had a marginal tax rate going from 22.9 percent for the lowest taxable income bracket to 51 percent for the highest income bracket in the year 2000, these figures have been reduced to 15 percent and 42 percent respectively in 2005. Taxpayers have to pay the solidarity surcharge and social security contributions, both of which increase the tax burden on labor income, but nevertheless the overall reduction in income taxes has been considerable in the recent past.

In order to investigate the possible relationship between the German tax reform and the reduction in the extent of black activities, a question was included in the survey in 2004 about how much the respondents expected to be able to keep after deduction of taxes and social security contributions of (an additional) 100 euro. Unfortunately, a relatively low frequency of positive marginal tax rates in the responses has rendered problematic the inclusion of this perceived tax rate in the multivariate analysis. Most studies find that higher marginal tax rates lead to a larger shadow economy, though this evidence is not uncontested (Feld and Frey 2005). We can only speculate as to the extent that German tax reforms have contributed to the reduction in black activities.

#### **Tax Morale and Other Social Norms**

In the end, black activities are shaped by tax morale, and in the 2004 survey, respondents were asked to place eight

kinds of cheating behavior on a scale from 1 (absolutely unacceptable) to 10 (absolutely acceptable). 73 percent deemed it totally unacceptable to receive welfare benefits and other transfers without being entitled to them. Taking a free ride on the bus or train is absolutely unacceptable to 52 percent of the respondents, but only 32.5 percent think of carrying out black activities as absolutely unacceptable. When black activities are differentiated, there are additional interesting insights: if a private household hires a private person to do black work, only 25.5 percent think this is absolutely unacceptable, but acceptance declines the more that firms are involved. If a private household hires a firm for black activities, 48.5 percent of the respondents find this absolutely unacceptable; if a private person carries out black activities for a firm, this is totally unacceptable to 62.5 percent; and if a firm has another firm working black, as many as 70.5 percent assess this as absolutely unacceptable. Tax evasion in general is considered totally unacceptable by 47.5 percent of the respondents.

We included these indicators of social norms in the regressions for 2004 with free riding on public transportation as the omitted category because it is less directly connected to black activities than the other kinds of cheating behavior. The inclusion of social norms increases somewhat the model's ability to explain the correlations between participation in black activities and the explanatory variables, and the results show that social norms have a highly significant impact on the probability of women participating in black activities, but only a marginally significant effect on the probability of men. However, given that deterrence does not have any significant effect on the probability of men participating in black activities, this is still an unexpected and significant result. Second, when the indicators of social norms are included, the perceived risk of detection no longer has any significant impact on the probability of women participating in black activities either.

The results reveal an interesting pattern of how social norms affect black activities. For men, black activities are more probable for those who find carrying out black activities in general more acceptable. For women, it is more probable for those who more readily accept black activities from private person to private person, from firm to private person, and firm to firm. This indicates that social norms shape black activities, in particular for women: the less accepted different kinds of black activities are, the less probable is participation in black activities. Only attitudes to cheating on transfer payments exhibit the opposite effect: it would then be easier to cheat on the transfer system.

### Summary and Conclusions

According to our surveys, the size of the German black economy shrank by about one fourth from 2001 to 2004, but the fall only affected West Germany. This means that there is now a significant difference between East and

West. Measured at the prices prevailing at the formal market, it decreased from 4.1 percent of GDP to 3.1 percent, and from rather more than 1.3 percent to one percent if measured at the actual prices paid in the black economy. In 2001, 10.4 percent of the German population had participated in black activities within the last 12 months, while the corresponding figure was 8.8 percent in 2004. The average time spent on such activities decreased by three quarters of an hour to seven and a half hours, while the average nominal remuneration remained virtually unchanged at €10.40. Half of black activities now take place in the construction sector which is a remarkable increase from 29 percent in 2001. While black activities are much more accepted than other types of tax evasion as long as only private individuals are involved, acceptance declines considerably if firms are involved.

So far, we have not found any consistent impact of deterrence on the probability of carrying out black activities keeping other factors such as socio-demographic characteristics and income constant. The perceived risk of detection has a marginally significant impact for women, while perceived punishment does not have any significant influence at all. It appears that the age structure, marital status and social norms are more important determinants. In particular, the impact of deterrence on black activities is not robust to the inclusion of social norms in the empirical analysis. If these findings hold, it is problematic, since social norms can be influenced less easily and less directly by short-term policy measures. How the relationship between the state and its citizens shapes tax compliance and black activities is much more complex than might appear at first sight, but so far the evidence does not point to increased deterrence as the factor behind the reduction of black activities.

### References

- Feld, L. P. and B. S. Frey (2005) *Tax compliance as the result of a psychological tax contract: The role of incentives and responsive regulation*. Unpublished manuscript, Philipps-University of Marburg.
- Feld, L. P. and C. Larsen (2005) *Black Activities in Germany in 2001 and in 2004. A Comparison Based on Survey Data*. Study No. 12, The Rockwool Foundation Research Unit, Copenhagen.
- Pedersen, S. (2003) *The Shadow Economy in Germany, Great Britain and Scandinavia: A Measurement Based on Questionnaire Surveys*. Study No. 10, The Rockwool Foundation Research Unit, Copenhagen.
- Schneider, F. (2004) *Arbeit im Schatten: Wo Deutschlands Wirtschaft wirklich wächst*. Gabler, Wiesbaden.



---

## The Rockwool Foundation Research Unit: Publications in English 1994-2005

---

Unemployment and Flexibility on the Danish Labour Market, by *Gunnar Viby Mogensen*. (Statistics Denmark 1994).

On the Measurement of a Welfare Indicator for Denmark 1970-1990, by *Peter Rørnøse Jensen and Elisabeth Møllgaard*. (Statistics Denmark 1995).

Work Incentives in the Danish Welfare State: New Empirical Evidence, ed. by *Gunnar Viby Mogensen*. With contributions by *Søren Brodersen, Lisbeth Pedersen, Peder J. Pedersen, Søren Pedersen, and Nina Smith*. (Aarhus University Press. 1995).

The Shadow Economy in Denmark 1994. Measurement and Results, by *Gunnar Viby Mogensen, Hans Kurt Kvist, Eszter Körmendi, and Søren Pedersen*. (Statistics Denmark 1995).

Actual and Potential Recipients of Welfare Benefits with a Focus on Housing Benefits, 1987-1992, by *Hans Hansen and Marie Louise Hultin*. (Statistics Denmark 1997).

The Shadow Economy in Western Europe. Measurement and Results for Selected Countries, by *Søren Pedersen*. With contributions by *Esben Dalgaard and Gunnar Viby Mogensen*. (Statistics Denmark 1998).

Immigration to Denmark. International and National Perspectives, by *David Coleman and Eskil Wadensjö*. With contributions by *Bent Jensen and Søren Pedersen*. (Aarhus University Press. 1999).

Nature as a Political Issue in the Classical Industrial Society: The Environmental Debate in the Danish Press from the 1870s to the 1970s, by *Bent Jensen*. (Statistics Denmark 2000).

The integration of non-Western immigrants in a Scandinavian labour market: The Danish experience, by *Marie*

*Louise Schultz-Nielsen*. With contributions by *Olaf Ingerslev, Claus Larsen, Gunnar Viby Mogensen, Niels-Kenneth Nielsen, Søren Pedersen, and Eskil Wadensjö*. (Statistics Denmark 2001).

Foreigners in the Danish newspaper debate from the 1870s to the 1990s, by *Bent Jensen*. (Statistics Denmark 2001).

Immigration and the public sector in Denmark, by *Eskil Wadensjö and Helena Orrje*. (Aarhus University Press. 2002).

Social security in Denmark and Germany – with a focus on access conditions for refugees and immigrants. A comparative study, by *Hans Hansen, Helle Cwarzko Jensen, Claus Larsen, and Niels-Kenneth Nielsen*. (Statistics Denmark 2002).

The Shadow Economy in Germany, Great Britain, and Scandinavia. A measurement based on questionnaire surveys, by *Søren Pedersen*. (Statistics Denmark 2003).

Do-it-yourself work in North-Western Europe. Maintenance and improvement of homes, by *Søren Brodersen*. (Statistics Denmark 2003).

Migrants, Work, and the Welfare State, ed. by *Torben Tranæs and Klaus F. Zimmermann*. With contributions by *Thomas Bauer, Amelie Constant, Horst Entorf, Christer Gerdes, Claus Larsen, Poul Chr. Matthiessen, Niels-Kenneth Nielsen, Marie Louise Schultz-Nielsen, and Eskil Wadensjö*. (University Press of Southern Denmark 2004).

Black Activities in Germany in 2001 and in 2004. A Comparison Based on Survey Data, by *Lars P. Feld and Claus Larsen*. (Statistics Denmark 2005).

---

Books published by Aarhus University Press and University Press of Southern Denmark are obtainable through booksellers. Books published by Statistics Denmark can best be obtained from the organization directly. Telephone +45 39 17 39 17.

These *News from The Rockwool Foundation Research Unit* (ISSN 1396-1217) are published to inform the public of the results of the current research of the Research Unit, also including topics of general news value. The newsletter is not copyrighted and may be reproduced with the appropriate attribution.

Editors responsible under the press law: Research Director *Torben Tranæs* and Deputy Head *Bent Jensen*. The staff of the Research Unit is besides: Research Assistant *Duy Thanh Huynh*, Researcher *Claus Larsen*, Research Assistant *Marie Martinsen*, Research Assistant *Jakob Lohilahti Møllgaard*, Research Assistant *Mark Gervasini Nielsen*, Researcher *Niels-Kenneth Nielsen*, Researcher *Marie Louise Schultz-Nielsen*, and Secretary *Mai-britt Sejberg*.

Practical questions in connection with the newsletter are answered by *Mai-britt Sejberg*. Tel. +45 39 17 38 32. Fax. +45 39 20 52 19. Address: *Sejrøgade 11, DK-2100 Copenhagen Ø*. E-mail: *forskningsenheden@rff.dk*. Home page: *www.rff.dk*.

---