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**The Distribution of UK Personal Income Tax Compliance
Costs**

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Abstract

Governments are committed to reducing the regulatory burden on business and individuals, while at the same time transferring many tasks from bureaucrats. One such example is tax compliance where self assessment has raised concerns that such transfers may place a particularly heavy burden on lower income and elderly taxpayers. This is the first study since its introduction into the UK in 1996 of the regulatory burden which self assessment imposes on individuals. We identify both the total compliance burden and its components for individuals who might be expected to incur high compliance costs because they pay tax on non business employment income. We use a specially designed questionnaire and find that within this group the burden seems to have increased by less than 25 per cent. Compliance costs are regressive, but do not impinge disproportionately on the elderly. The compliance burden is determined by income, occupation, education (but not specifically in accounting subjects) and difficulty in attending to tax affairs, indicating some possibilities for reducing these compliance costs.

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I. INTRODUCTION

In 1996 the UK introduced self assessment (SA) for personal taxpayers (Chennells *et al.*, 2000) joining the US, Canada, Spain and Australia. The transfer of substantial administrative costs from officials to individuals coincides with a declared Government objective to minimise the regulatory burden on individuals (CIOT, 2002). This is the first study of the effect of the new system in the UK, focusing on taxpayers who would be expected to have high compliance costs. We identify the components and the burden of compliance for these taxpayers, and test concerns that the new system is regressive and that pensioners may carry a disproportionate burden. To inform the government policy of reducing regulatory burden, we identify the determinants of compliance costs and discuss the implications of our findings.

Though the notion of tax compliance cost was discussed by Adam Smith in the ‘Wealth of Nations’ (Smith, 1776), the first attempt to measure such costs occurred some 150 years later (Haig, 1935, cited in Tran-Nam *et al.*, 2000). More recently the UK Government has insisted that all new regulations should be subject to a Regulatory Impact Assessment (RIA), to estimate the costs imposed on society (Rice, 2001). Taxation RIAs had focused primarily on business costs before 1998 and this study is one of comparatively few which measures costs incurred by individual taxpayers.

Sandford (1995) defines ‘tax compliance costs’ as *«the costs incurred by taxpayers in meeting the requirements laid on them by the tax law and the revenue authorities»*, in addition to the tax liability itself. Compliance costs are usually classified into three categories: monetary costs, such as payment for tax advice, personal or incidental expenses (telephone calls, travelling costs) and the financial

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costs of acquiring tax knowledge, for example through the purchase of books; time costs, in acquiring tax knowledge, keeping tax records and completing tax returns; and psychological costs such as anxiety and vexation (Sandford, 1973).

Several studies have assessed compliance costs for employers in the UK, with particular emphasis on the burden for small businesses (e.g. Rice, 2001; Hudson and Godwin, 2000)¹, which bear heavier compliance costs than the self-employed and large firms (Besim and Jenkins, 2005). The only previous publication on personal taxpayer compliance costs in the UK is by Sandford *et al.*, and predates self assessment (Sandford *et al.*, 1989). Sandford's sample covered all categories of income taxpayers, and found that most taxpayers spent little or no time on tax affairs, because they were relatively simple and conducted through the Pay As You Earn (PAYE) scheme, administered by employers. This study analyses the effect of the self assessment scheme on those who are taxed outside the PAYE scheme but for whom self employment is not the main source of income.

For taxpayers as a whole, Sandford found that an average of 3.6 hours were spent on tax matters in 1983-84 and that total compliance costs were 3.6 per cent of revenue from income tax and Corporate Gains Tax. Some 10 per cent of taxpayers paid for tax advice, and the main determinants of compliance cost level were size of income and category of employment. Compliance costs also showed a regressive pattern for self employed taxpayers, i.e. they were proportionately higher for lower income groups.

¹ See Evans (2003) for a summary of most studies on taxation operating costs published between 1980 and 2003.

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3 In Australia, as in the UK, self assessment was only recently introduced². Tran-
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5 Nam *et al.*'s study (2000) conducted two years after self assessment was introduced
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7 in Australia, shows that taxpayers allocated 8.5 hours of their time and 7.9 per cent of
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9 their revenue to tax affairs. Somewhat surprisingly, both the hours spent and
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11 financial costs were lower than those shown in a study ten years earlier, before the
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13 introduction of self assessment (Pope and Fayle, 1990).
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18 Other studies of compliance costs of individual income taxation have been
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20 undertaken in countries where self assessment is more established, such as the US
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22 (Blumenthal and Slemrod, 1992; Slemrod and Sorum, 1984), Canada (Vaillancourt,
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24 1986) and Spain (Delgado *et al.*, 2001; and Díaz and Delgado, 1995). For the tax
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26 year 1989-1990, Blumenthal and Slemrod found that a taxpayer allocated on average
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28 27.4 hours of his time and 5.6 per cent of income tax revenue to tax matters. Total
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30 compliance costs were higher for high-income and self employed taxpayers. A
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32 comparable study conducted by Slemrod and Sorum in 1982 also found that
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34 taxpayers allocated a high number of hours to tax affairs (21.7); their average
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36 compliance costs represented 5-7% of personal income tax revenue and the figures
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38 were higher for self employed taxpayers (Slemrod and Sorum, 1984).
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44 Vaillancourt (1989) found that in 1985 Canadian taxpayers who did not pay for
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46 assistance devoted on average 5.5 hours to tax matters, while taxpayers paying for tax
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48 advice spent 2.5 per cent of their revenue from tax income. He also found that the
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50 higher the complexity of a taxpayer's tax situation, the greater the time and money
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52 spent dealing with tax affairs.
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59 ² SA was introduced in Australia in 1992.
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Studies investigating tax compliance costs on personal income tax for Spanish taxpayers (Delgado *et al.*, 2001; and Díaz and Delgado, 1995) reviewed the tax years 1998 and 1999 for the former and 1991 for the later study. Delgado *et al.* compare tax compliance costs before and after the introduction of the 1999 Spanish Personal Income Tax reform, which aimed at decreasing the hidden tax burden on taxpayers. The study shows that the time spent by taxpayers on their tax matters was higher in 1998 than in 1999 (3.6 and 2.2 hours respectively) and the compliance costs as a percentage of revenue yield was 1.8 per cent in 1998 and 1.3 per cent in 1999. Before reform Díaz and Delgado show that taxpayers were spending an average of 6.8 hours and 3.3 per cent of tax revenue on tax affairs.

Analyses of tax compliance costs in countries such as Croatia, Slovenia, Sweden, the Netherlands and Germany where the tax system does not operate under self assessment, have also been conducted; results are summarised in Table 1 in Appendix 1. In these countries, the average amount of time spent by taxpayers on tax matters is relatively low, with 1.4 hours for Swedish taxpayers, 1.7 hours for Croatian and Slovenian taxpayers, 4.5 hours for the Dutch and 11 hours for German taxpayers. Compliance costs as a percentage of revenue from personal income tax in those countries vary from 0.8 per cent for Croatia to 3 per cent for the Netherlands; figures for Sweden and Slovenia are 1.7 per cent and 1.9 per cent, respectively.

The literature seems to conclude that total tax compliance costs are high in countries where self assessment is well established, low where self assessment is not part of the tax system and at an intermediate level for countries where self assessment has recently been introduced.

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3 A summary of major studies on taxation operating costs published between 1980
4 and 2003 is given in Evans (2003). Table 1 updates Evans's list of studies on
5 compliance costs, focussing specifically on personal income tax. Only three studies
6 in this area, including Blumenthal and Slemrod (1992), Vaillancourt (1989) and
7 Slemrod and Sorum (1984) have investigated the relationship between compliance
8 costs and demographic determinants.
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11 Our study extends these and earlier UK studies by assessing the influence on
12 compliance costs of demographic factors. We focus on both time and money costs,
13 and how they depend on income, sources of income, general and accounting
14 education and the usual demographic variables both for taxpayers who do and do not
15 pay for assistance with their tax affairs. The data used to measure the main personal
16 compliance costs of direct taxation in the UK are from a survey of 320 'Employment
17 income' (formerly named 'Schedule E income')³ individual taxpayers and relate to
18 the tax year 1998-1999 shortly after self assessment was introduced. They are
19 therefore likely to have complex tax affairs which are not dealt with primarily
20 through their employment. While we have made no attempt to measure psychic costs
21 directly, the data do include measures of attitude towards tax affairs and perception of
22 difficulty with tax affairs.
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46 In the next section we describe our data and in section 3 the model; section 4
47 gives results and section 5 provides a summary and concluding discussion.
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57 ³ On 6 April 2003, Schedule E was removed from the statute book under the 'The Income Tax
58 (Earnings and Pensions) Act (ITEPA) 2003'; 'Schedule E income' is now being referred to as
59 'Employment income'.
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II. DATA

Our data were generated from a questionnaire especially designed for this study and administered to 320 taxpayers in 2000. These were drawn from a sampling frame of 1000 individuals randomly selected by the Inland Revenue from UK taxpayers who were reporting their tax affairs within the Self Assessment system, and whose income was not primarily from self employment. Each of the 1000 was given the opportunity to ‘opt out’ of the study; 200 did so and a questionnaire (available on request from the authors) was mailed to the remaining 800. 320 were returned and analysed⁴. The group has higher income than the average for UK taxpayers. We compared the characteristics of our sample with those of the 4,414,512 individuals⁵ which form the population from which our sample was selected.

Table 2 shows a comparison of such characteristics⁶. We see that our sample is considerably younger than the population of taxpayers from which it is drawn, with significant non response from the over 65s and those on pensions. The sample also under represents the proportion paying for tax advice. The pattern of income sources (apart from pensions) is broadly comparable, but those receiving dividends are over-represented in our sample. While the sample skewness results in some groups being too small for meaningful analysis, it should not prevent identification of factors which affect compliance costs. In calculating average figures for compliance costs and their component parts we have weighted the sample so that the figures reflect the characteristics of the population rather than those of the sample.

⁴ This main postal survey was preceded by a pilot study.
⁵ Provided by the Inland Revenue for SA database in 1999 and whose main source of income is employment.
⁶ Since the purpose of our study was to focus on taxpayers for whom compliance costs were likely to be high, the sample of respondents was deliberately chosen to be unrepresentative of the taxpaying population as a whole.

The questionnaire collected demographic information, as well as information on whether tax advisers were used, capital gains tax, and time spent in completing the questionnaire. We focus on demographic characteristics and the use of tax advisers; and on the effect of both general education and, more specifically, whether accounting courses had been completed.

The demographic data collected included gender, marital status, age, education, occupation and income. Respondents were asked the number of hours allocated to tax matters and the preparation of tax returns over the course of the tax year 1998-99, and whether and how much they had paid for assistance with their tax affairs. Taxpayers were also asked about other expenditure incurred in association with their tax affairs, such as travel or telephone bills. Other information included the difficulty experienced with tax affairs, whether they enjoyed dealing with tax matters, and the time taken to complete the questionnaire.

Three components of compliance cost were estimated: the hours spent on tax matters; the value of those hours⁷; and monetary outlay, including payment to tax advisers when incurred. We identify as total financial compliance costs the sum of value of time spent and monetary outlay. The variables are defined and their distributions described in Table 3. The next section explores these relationships further.

⁷ Value of time was calculated as annual income divided by 1772 and multiplied by the number of hours spent on tax matters (see Sandford *et al.*, 1989).

III. MODEL

We assume that taxpayers wish to minimise the total burden associated with their tax liability, i.e. the sum of their tax paid (L) and their compliance costs (TCC):

$$L(Y) + TCC$$

where L depends mainly on income Y . Those with higher income have a greater incentive to incur compliance costs to reduce their higher potential tax liability, other things being equal. We expect a negative relationship between the time spent on tax affairs (Ch) and whether an accountancy course has been undertaken (CA) and the number of years in education (E). The variable ‘age’ is anticipated to be positively related to the time spent on tax affairs if we take into account retired individuals who have more time in general. We had no prior expectation about the role of gender in our dependent variables and other relevant studies had not found any significant relationship. We expected that married respondents would spend fewer hours dealing with their tax affairs since they could discuss matters with their spouse. To encourage an adequate response to the questionnaire we did not ask for information on tax liability, since this was thought to be too sensitive; but we are able to include (banded) information on income. Income would affect the time which a taxpayer is willing to devote to tax affairs, but in an ambiguous way. Higher income respondents would generally have higher tax bills and so might be willing to spend more time on their tax affairs in order to reduce this bill; however, these individuals have a higher opportunity cost of time which may lead to them spending less time on their tax affairs. We expect compliance cost to depend on the complexity of the tax return and the individual’s inherent ability to deal with such affairs. The complexity of the tax return would increase with the number of income sources (FY) and may depend on

the main occupation of the taxpayer (O). Employed individuals may spend less time on tax matters in comparison to other occupations, since employers deal with a large part of the taxes through the Pay As You Earn scheme. Other sources of income were divided into three categories in order to identify which generated most hours on tax affairs. How long the questionnaire took to complete provides an independent measure of the respondent's ability to deal with such forms, which are similar to those encountered in tax affairs. We would expect a positive relationship.

Taxpayers incur psychic as well as financial costs in completing their tax affairs. In common with most other studies, we did not attempt to measure psychic costs of compliance directly, but we explored the relation between the costs of compliance, whether the respondent enjoyed or disliked dealing with tax affairs, and how difficult they found them. The effect of disliking tax affairs on compliance cost is unclear, and depends on causality: individuals who dislike it do not want to spend a lot of time on tax affairs; but respondents who need to spend much time and/or money dealing with their tax matters will come to dislike it. We consider the relationship with the time taken to complete the questionnaire (as an arbitrary bureaucratic exercise) to test whether difficulty with tax affairs is an intrinsic personal characteristic. If it is, then the coefficient will be positive once other determinants of compliance costs are taken into account. Just as these factors help explain the financial costs, they also provide some indication of psychic costs. In the remainder of the analysis we focus on the financial costs (C) and their constituent parts, and return later to a qualitative discussion of psychic costs. The direction of expected relationships between variables is summarised in Table 4.

Apart from the initial balance between tax liability and compliance costs, each taxpayer faces some further trade off between the three different constituents of financial compliance cost which we have measured, namely investing their own time, paying a tax adviser, and incurring incidental expenses. However, while this is true for each individual within our cross-section sample, we expect that those with highly complex tax affairs are likely to require both expert advice and to devote a substantial amount of their own time to collect the necessary information. Indeed the raw correlations in Table 5 confirm this across our sample. We are therefore unable to model the trade off for any one taxpayer. However we are able to explore the relationship a little further by including a dummy for those who pay for assistance with tax affairs in modelling time spent on tax affairs. Our main objective is to explain the total figure, providing analysis of each component separately to help explain how the total is composed. For this reason we do not report the results of a simultaneous choice model in which payment for tax advice is modelled contingent on choosing to consult advisors⁸. Our basic model is therefore:

$$\begin{aligned} \textit{Time and Financial Compliance Costs} = & C(\textit{income; education; age; gender;} \\ & \textit{marital status; main occupation of taxpayers; number of income sources;} \\ & \textit{attitude to tax affairs; difficulty with tax affairs; time to complete} \\ & \textit{questionnaire}) \end{aligned}$$

We use a similar model for each of the constituent parts and consider each of these in turn. These results are reported in Appendix 2.

⁸ Such a two stage modelling process might be appropriate if the focus of explanation was the determinants of the presence and the quantity of such payments to advisers.

To identify any functional form misspecification or heteroscedasticity in the error variance, we used Ramsey's reset test (Ramsey, 1969) and White's heteroscedasticity test (White, 1980). Results indicated that the models were not misspecified and there was not heteroscedasticity in the data. The MWD test was conducted to choose between linear and log-linear regression models (MacKinnon, White and Davidson, 1983). The results of the test showed that a double-log functional form was appropriate for the models. All four dependent variables (hours spent, value of time, fees to advisers and total compliance costs) as well as continuous dependent variables (income, education, age and number of income sources) were rescaled by a logarithmic transformation. The main regression equation discussed above is described in Box 1.

BOX 1 REGRESSION EQUATIONS

The regression equation for each type of compliance cost, t , takes the following form:
 $\ln C_{it} = \gamma + \mu_1 \ln Y_i + \mu_2 \ln E_i + \mu_3 CA_i + \mu_4 \ln A_i + \mu_5 F_i + \mu_6 M_i + \mu_7 O_i + \mu_8 \ln FY_i + \mu_9 AT_i + \mu_{10} DT_i + \mu_{11} \ln T_i + \varepsilon_i$

Where:

$\ln C_{it}$	= natural logarithm of 'total financial compliance costs' (calculated, see Table 3)
$\ln Y_i$	= natural logarithm of 'income'
$\ln E_i$	= natural logarithm of 'education'
CA_i	= course in accountancy undertaken (bivariate variable)
$\ln A_i$	= natural logarithm of 'age'
F_i	= female (bivariate variable)
M_i	= married (bivariate variable)
O_i	= occupation (dummy variable)
$\ln FY_i$	= natural logarithm of 'number of income sources'
AT_i	= attitude towards tax affairs (categorical variable)
DT_i	= difficulty with tax affairs (categorical variable)
$\ln T_i$	= natural logarithm of 'time taken to complete the questionnaire'
ε_i	= error term

Note: the subscript 'i' refers to an individual taxpayer.

Similar equations were run for each of the constituent parts of compliance costs (see Appendix 2).

To test whether financial tax compliance costs as a whole were regressive with respect to income (regardless of other determinants) we analysed the relationship between the average compliance costs per £ of income and the level of income. If compliance costs are regressive, we would expect the relationship to be negative.

IV. RESULTS

Our sample spent an average of 8 hours a year on their tax affairs, with a mean value (based on individuals’ income) of £326. 27% employed tax advisers, paying on average of £698 for this service. An average of £15 was spent on incidental costs, and the average total cost of compliance was £498. Correcting for the known unrepresentativeness of the sample, the average time spent on tax affairs for this population is estimated at 4.5 hours, with average compliance cost (including value of time) £285. Table 6 shows how the weighted averages compare with the sample statistics; Table 7 shows the average compliance costs for different income groups.

Within our sample (as in the population), a majority of respondents (73 and 62 per cent, respectively) did not pay for tax advice; the main reasons chosen from 12 specified options by these taxpayers were ‘I feel quite capable of handling my own affairs’ (26 per cent) and ‘My tax affairs are too simple to require any expert advice’ (23 per cent). For those who did pay for tax advice, the main reasons given from 11 specified options were ‘I feel happier knowing my returns are accurate’ (16 per cent), ‘I can’t find or afford the time to deal with it myself’ (13 per cent), and ‘I want to be sure of getting the allowances I am entitled to’ (12 per cent). The ranking of these reasons was similar to results reported by Pope and Fayle (1990), in their study on compliance costs in Australia.

Table 5 shows some simple correlations among our variables. Older taxpayers have more sources of income, have undertaken fewer years of post compulsory education, and have a more positive attitude to tax affairs than younger respondents. On average, women have lower income than men and a more negative attitude to tax affairs. Both older respondents and women took more time to complete the questionnaire, while respondents with a higher income spent less time. Taking a course in accountancy and being male are associated with higher income, and also with higher value of time, but not with more hours spent on tax affairs. There are some shifts in the effect of different occupation categories because of their different implications for income; and finally, taxpayers with a higher income have higher total compliance costs (consistent with higher potential liability). Some relationships shown in Table 5 seem intuitively surprising. Those with more years of post compulsory education spend more time on tax affairs (probably because of higher income, tax liability and incentives); those who have completed courses in accountancy pay higher fees to tax advisors; respondents employing tax advisors spent more time on their tax affairs, and, within this group, the fees paid to advisers also increased as taxpayers' own time did. These results from the simple correlations motivate the regressions to enable further exploration. Since the value of time spent on tax affairs was calculated by multiplying the hours spent on tax matters by an average hourly rate calculated from each individual's total income, there is a strong correlation between the value of those hours, the number of hours expended and income.

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Table 8a⁹ shows the results of the regressions. Total compliance costs increase with income, both because income itself is used to calculate the value of hours spent, and because the incentive to minimise tax liability increases with income.

More surprisingly, total compliance costs also increased with the length of post compulsory education, even controlling for income; amongst components of compliance costs, this was also true for the time spent on tax affairs and the value of this time. Undertaking courses in accountancy did not affect the total cost of compliance, but respondents who had followed courses in accountancy had a higher value of time and paid higher fees than those who did not.

Age or marital status affected neither compliance, nor any of its components. Women spent the same number of hours on tax affairs as men, but their lower income meant that the monetary value of that time was lower.

Taxpayers who were retired, self employed, unemployed or full time home-makers spent more time on tax affairs and had higher total compliance costs than employed taxpayers. The relatively high costs of self employed, unemployed or full time home-makers arise from this group spending more time and money than others on tax affairs.

Those who received income from different sources paid higher fees and the value of their time spent on tax affairs was higher. We note a positive association between the value of the time spent on attending to tax affairs, and employment of a tax adviser. We therefore have no direct evidence that taxpayers view these two components of their compliance costs (time and fees to advisers) as substitutes, though neither do our findings contradict such a hypothesis, and we certainly do not

⁹ Table 8b displays the preliminary results of the regressions; note that our analysis is based on the results of the parsimonious equations presented in Table 8a.

conclude that they are necessarily complements¹⁰. The likely explanation is that as the complexity of tax affairs increases, they demand more of both the taxpayer's time and advice from a tax specialist.

Finally, we observe a positive relationship between total compliance cost (and each of its component parts) and difficulty in attending to tax affairs.

The factors which influence the hours of time seem to differ somewhat from those that determine the value of time, since income is excluded as an independent variable in the latter case (because of multicollinearity). Turning to payment to advisers, we note that general education is not an influence; however those who have undertaken accounting courses are no more likely than others to employ advisers, but if they do so, they pay more. The number of income sources raises the payment, as does having difficulty with tax affairs.

We did not attempt to measure the psychic costs of compliance directly, but we note a positive relationship between the total costs of compliance and whether the respondent found dealing with tax affairs difficult. Both the time (and its value) devoted to tax and fees paid to advisors also increased with difficulty in attending to tax affairs.

We find little relationship between dislike of tax affairs and the amount of fees paid to advisers amongst those who do pay for tax advice. The positive relation between compliance costs and difficulty of attending to tax affairs suggests that if psychic costs were included, these would increase the value of high compliance costs relative to the average even further. We found no relationship between the time spent completing the form and hours spent on tax affairs, suggesting that time spent on tax

¹⁰ This could occur if tax advisers used more detailed information, imposing a data gathering cost on their clients.

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affairs seems to be specifically related to tax matters, rather than a characteristic of the individual concerned.

Evidence on potential regressivity of compliance costs is shown in Table 9. Both the ratio of fees paid to income and of total compliance costs to income decrease as income increases, indicating regressivity both for those individuals paying for tax advice, and for the whole sample. We therefore conclude that overall compliance costs are regressive with respect to income within this income group.

The sample is deliberately drawn to explore compliance costs amongst high income and high-complexity ‘Employment income’ taxpayers who filed their self assessment return before the penalty period; the majority of taxpayers in this study (approximately 62 per cent) have incomes over £48,000, twice the average income in the UK at this period. Relative to the population of this category of taxpayers, the over 65s are under represented, and higher income levels over represented. Like all such studies the survey suffers from an inherent potential problem of the methodology, namely that the results rest on the respondent’s ability to recall data on estimates of time and money spent on tax matters over a twelve-month period. However, we are encouraged by its similarity to other findings and believe it does throw some interesting light on the nature and extent of compliance costs under self assessment, with the implications discussed in the discussion and conclusion section below.

The international comparison in Table 1 shows that the time spent by our respondents, a weighted average of 4.5 hours per annum when corrected for sample bias, is not dissimilar to Sandford *et al.*’s study in the UK in 1983-84, when the average time spent on tax affairs (by all tax payers) was 3.6 hours. The unweighted

average figure for those with incomes above £50,000 pa, 12.6 hours, is a little higher than that obtained for the same group in the Sandford study¹¹, undertaken before self assessment was introduced. Tran-Nam *et al.*'s analysis in Australia, conducted in the same circumstances as our study, i.e. 2 years after the introduction of self assessment, shows much higher average time spent on federal tax across all taxpayers. The lower value of average time in our sample is rather surprising, given that we would expect their tax affairs to be particularly onerous. The introduction of self assessment in the UK seems to have increased somewhat the time spent on tax affairs by taxpayers, but compliance costs remain a small proportion of income.

Amongst other countries with self assessment, only Delgado's *et al.* estimates for Spain suggest lower compliance costs, with costs in Canada a little higher, and in Australia and the US much higher. In the US, in particular, average hours spent are of the order of five times higher than for our sample, probably associated with the federal income tax self assessment process and the fact that many States also levy income tax.

In terms of what determines compliance costs, a positive relationship with income was identified in both Blumenthal and Slemrod (1992) and in Sandford *et al.* (1989), who agree with our findings that higher-income taxpayers have greater compliance costs. In our analysis, the level of income directly affects and is associated with higher compliance costs. We find evidence that total compliance costs are regressive (i.e. higher relative to income for low income respondents) among this group of taxpayers. A similar pattern was identified by Sandford *et al.* (1989).

¹¹ We did not have sufficient information on the characteristics of this income group to weight the results.

Our findings concur with Blumenthal and Slemrod who argue that compliance costs are not influenced by differences in age or marital status. Further, we find no evidence that the elderly bear a higher burden of total tax compliance among the particular category of taxpayers in the study. However, we do find that retired taxpayers spend more time dealing with their tax affairs and have higher compliance costs than other groups.

V. DISCUSSION AND CONCLUSION

We find that the average compliance cost is surprisingly low relative to findings from similar studies in the UK before self assessment was introduced, and elsewhere. Compliance costs seem to have increased by only about a quarter (less than a fifth for the higher income group) since the introduction of self assessment. We are not able to compare amounts paid to advisers because we do not have details from earlier studies, so it may be that these have increased, though we note that only a minority of our sample have employed them. This is encouraging for the UK government and others planning to introduce self assessment schemes.

The positive relationship between total compliance costs and the difficulty in attending to tax affairs is unsurprising. It highlights the negative effects of complexity on personal compliance costs and strengthens the argument for considering compliance costs in designing tax regimes. The difficulty in dealing with tax affairs is a surrogate for the psychic costs of compliance.

Better educated tax payers are more able to identify opportunities for reducing their tax payments and so devote time to doing so. This finding is consistent with our incentive model of tax compliance expenditure. Such an explanation provides a

timely reminder that policy makers should consider the total welfare effects of tax mechanism design. Changes which make the system more complex to address incentive issues in other markets are likely to impose costs on taxpayers. They will seek to lower their own tax bills at the cost of more time spent on tax affairs. While such behaviour is rational for the individual, it raises the total burden of tax on the economy because the lower tax bill is not an aggregate saving, representing a transfer from government to taxpayer. If better educated taxpayers are incurring higher compliance costs because they recognise opportunities to reduce their tax bills, this may represent a net loss to social welfare. It reinforces the argument for governments to analyse carefully the increased compliance costs associated with increased complexity which we have identified in this study. In designing and extending tax schemes, it is important that governments take account of the compliance costs which they impose.

Those who have taken courses in accountancy and who employ tax advisers are likely to pay more for the advice perhaps because they encourage tax advisers to spend more time searching for potential savings in the tax bill.

Compliance costs were related to the nature of the tax affairs and measurable characteristics of the individuals, rather than to unmeasured differences in taxpayers' aptitude for bureaucratic tasks (which would be highly correlated with speed of questionnaire completion).

In terms of the incidence and distribution of compliance costs, we find high absolute costs among our sample, even considering the complex nature of their tax affairs, with over 3 per cent expending more than £3,000 per year in time and money, and 1 per cent more than £5,000. Although these figures appear large, they represent

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a very small percentage of personal income tax revenue for this group of high income taxpayers. Self assessment does not impinge unfavourably on the elderly. However the regressive nature of compliance costs among the taxpayers surveyed indicates the importance of designing a system in which the total burden of tax (tax liability plus compliance costs) is related appropriately to income.

Compliance costs constitute an important deadweight loss in the economy, and affect the incentives of employees to participate in the labour market. Our survey provides information about the factors and the incidence of compliance costs which have recently been transferred from government to individuals through self assessment. The findings enable governments to assess the total benefit from introducing self assessment and raising complexity, providing useful guidance both to other countries who may be contemplating such a move, and to the UK government in reviewing the reform. Our findings can help in the design of greater efficiency and to achieve more equitable outcomes.

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APPENDIX 1 TABLES

TABLE 1 SUMMARY OF MAJOR PUBLISHED STUDIES OF COMPLIANCE COSTS FOR PERSONAL INCOME TAX SINCE 1984

Author(s) and year of publication	Year under review	Country	Self assessment	Sample studied	Main demographic factors having an influence on compliance costs	Average time (hrs)
This study	1998-99	UK	X ¹	Employment income → income > £50,000	Category of employment; Number of years in education; Number of income sources.	4.5 ⁴ → 12.6
Blažić (2004)	2001	Croatia	-	Taxpaying population	n.a.	1.7
Klun (2004)	2000	Slovenia	-	<i>id.</i>	n.a.	1.7
Delgado <i>et al.</i> , (2001)	1998/99	Spain	X	<i>id.</i>	n.a.	3.6/2.2
Tran-Nam <i>et al.</i> , (2000)	1994-95	Australia	X ²	<i>id.</i>	n.a.	8.5
Malmer (1995)	1983-93	Sweden	-	<i>id.</i>	n.a.	1.4
Díaz and Delgado (1995)	1991	Spain	X	<i>id.</i>	n.a.	6.8
Allers (1994)	1990	The Netherlands	-	<i>id.</i>	n.a.	4.5
Blumenthal and Slemrod (1992)	1989	USA	X	<i>id.</i>	Category of employment; Size of income.	27.4
Pope and Fayle (1990)	1986-87	Australia	-	<i>id.</i>	n.a.	10.7
Vaillancourt (1989)	1986-87	Canada	X	<i>id.</i>	Category of employment; Size of income; Number of income sources.	5.5
Sandford <i>et al.</i> , (1989)	1983-84	UK	-	Taxpaying population ³ Employment income → income ≥ £50,000	n.a.	3.6 7.5 → 10.7
Tiebel (1986)	1984	Germany	-	-	n.a.	11
Slemrod and Sorum (1984)	1982	USA	X	<i>id.</i>	Category of employment.	21.7

Note: studies from developing countries are not included in this table. ¹ SA was introduced in 1996; ² SA was introduced in 1992; ³ Analysed by income group and Schedule; ⁴ Weighted average (corrected for the unrepresentativeness of the sample).

TABLE 2 COMPARISON BETWEEN SAMPLE AND POPULATION

	Current sample	Original population
Paying for tax advice		
Yes	27 %	38 %
No	73 %	62 %
Age		
16-24	0 %	0 %
25-34	8 %	6 %
35-44	29 %	18 %
45-54	33 %	19 %
55-64	18 %	16 %
65 and over	12 %	41 %
Income		
Less than £10,000	5 %	39 %
£10,000-£50,000	33 %	52 %
Over £50,000	62 %	10 %
Types of income		
Salaries (other than Company Director)	73 %	68 %
Interest	73 %	67 %
Dividends	62 %	39 %
Pensions	18 %	30 %
Rent	10 %	12 %
Self employment	2 %	6 %

TABLE 3 DESCRIPTIVE STATISTICS OF VARIABLES USED IN THE STUDY

Variable	Mean	S.D.	Min	Max.	Definition
Hours spent on tax affairs	8.35	10.22	0.50	65	Number of hours spent on tax affairs (1 outlier removed)
Value of time spent on tax affairs	326	442	3.39	2540	Total personal income divided by 1772 and multiplied by the number of hours spent on tax matters (in £) (See Sandford <i>et al.</i> , 1989) (3 outliers removed)
Fees to advisers	698	731	50	3500	Amount in fees paid to advisers for help with tax affairs (in £) (3 outliers removed)
Incidental expenses	14.65	65.63	0	650	Incidental expenses associated with tax affairs (in £); include travel, telephone charges and other personal expenses (1 outlier removed)
Monetary expenditure	186	484	0	3510	Fees paid to adviser for help with tax affairs and incidental expenses (in £) (4 outliers removed)
Total compliance costs	498	804	3.39	6622	Value of time and total monetary expenditure (in £) (4 outliers removed)
Income	69477	44535	2000	150000	Total personal income (mid-points: £2,000 to £150,000, 17 categories)
Education	5.11	2.74	0	13	Number of years spent in formal education after school (1 outlier removed)
Course in accountancy	0.41	0.49	0	1	1 if education includes courses in accountancy, 0 otherwise
Age	50	12	30	72	Respondent's age (mid-points: 29.5 to 70 years old, 5 categories)
Gender	0.14	0.35	0	1	1 if female, 0 otherwise
Marital status	0.80	0.40	0	1	1 if married, 0 otherwise
Company director ^o	0.24	0.43	0	1	1 if company director, 0 otherwise
Retired ^o	0.13	0.34	0	1	1 if retired, 0 otherwise
Other ^o	0.01	0.08	0	1	1 if self employed, unemployed, FT homemaker, 0 otherwise
Number of income sources	3.41	1.60	1	13	Number of various forms of income received by respondents (salaries, director's salaries/fees, income received in kind, business profits, partnership income, rent, royalties, annuities, interest from banks or building societies, dividends from stocks and shares, state and other pensions, other state benefits, trust income, capital gains, earned income from abroad, investment income from abroad)
Attitude towards tax affairs	3.66	0.82	2	5	1 if 'I very much enjoy it'; 2 if 'I enjoy it'; 3 if 'I neither enjoy nor dislike it'; 4 if 'I dislike it'; 5 if 'I very much dislike it'
Difficulty with tax affairs	2.00	0.77	1	4	1 if 'I find my tax affairs simple to deal with'; 2 if 'I find a few difficulties in attending to my tax affairs'; 3 if 'I experience considerable difficulty in attending to my tax affairs'; 4 if 'I find very great difficulty in attending to my tax affairs'
Time taken to complete the questionnaire	15.46	10.10	2	60	Time taken to complete the questionnaire (in minutes)
Paying for tax advice	0.27	0.45	0	1	1 if taxpayer pays for tax advice, 0 otherwise

Note: extreme values were dropped to avoid possible negative influence on the results.

^o The dummy variable 'occupation' includes employee, company director, retired and other; the reference category is employee.

TABLE 4 EXPECTED RELATIONSHIPS BETWEEN VARIABLES

Independent Variables ↓	Dependent Variables →	Hours spent on tax affairs	Value of time spent on tax affairs	Fees paid to tax adviser(s)	Total compliance costs prediction
Income		+ / -	not included	+	+
Education		-	+	not included	+
Courses in accountancy undertaken		-	+	+ / -	dk
Age		+	+	dk	+
Female		dk	-	dk	-
Married		-	+	dk	dk
Company director		+	+	+	+
Retired		+	+	+	+
Other (=self employed, unemployed, FT homemaker)		+	+	+	+
Number of income sources		+	+	+	+
Attitude towards tax affairs		-	+	.	dk
Difficulty with tax affairs		+	+	+	+
Time taken to complete the questionnaire		+	-	dk	dk
Paying for assistance with tax affairs		-	+	not included	not included

+, positive relationship between variables; -, negative relationship between variables; dk, do not know.

TABLE 5 CORRELATION BETWEEN VARIABLES

	Hours spent on tax affairs	Value of time spent on tax affairs	Fees to advisers	Total compliance costs	Income	Education	Courses in accountancy	Age	Gender	Number of income sources	Whether paying for tax advice	Attitude towards tax affairs	Difficulty with tax affairs	Time taken to complete the questionnaire
Hours spent on tax affairs	1	.773***	.372***	.496***	.014	.174***	-.048	.019	-.039	.197***	.104*	.175**	.284***	.014
Value of time spent on tax affairs		1	.372***	.727***	.482***	.199***	.123*	-.027	-.111*	.340***	.187***	.100*	.296***	-.076
Fees to advisers			1	.858***	.051	.018	.351***	-.005	.020	.095	n.a.	.142	.307***	.034
Total compliance costs				1	.308***	.069	.114*	.058	-.036	.275***	.506***	.080	.343***	.015
Income					1	.167***	.181***	-.070	-.277***	.277***	.131**	-.116**	.026	-.170**
Education						1	.021	-.196***	-.067	.181***	-.093	-.060	.089	-.013
Courses in accountancy							1	-.100	.031	.105*	.038	-.139**	-.098	-.101
Age								1	-.027	.109*	.069	-.143**	-.016	.189***
Gender									1	.055	.045	.190***	.175***	.158**
Number of income sources										1	.171***	.019	.152***	.006
Whether paying for tax advice											1	.119**	.296***	.079
Attitude towards tax affairs												1	.492***	.053
Difficulty with tax affairs													1	.061
Time taken to complete the questionnaire														1

Note: all variables are defined in Table 3. *** Correlation is significant at the 0.01 level; ** Correlation is significant at the 0.05 level; * Correlation is significant at the 0.1 level.

TABLE 6 WEIGHTED AVERAGE COMPLIANCE COSTS

	Average		Weighted average	
	Hours spent on tax affairs	Total compliance costs (in £)	Hours spent on tax affairs	Total compliance costs (in £)
Paying for tax advice	11.03	1157.15	4.19	439.72
Not paying for tax advice	7.48	306.61	4.64	190.10

TABLE 7 AVERAGE COMPLIANCE COSTS FOR DIFFERENT INCOME GROUPS

Income	Paying for tax advice	Hours spent	Total compliance costs (in £)
Less than £10,000	yes	5.00	241.77
	no	5.71	18.58
Between £10,000 and £50,000	yes	7.50	692.75
	no	7.47	200.53
Over £50,000	yes	12.59	1357.38
	no	7.76	392.75

TABLE 8A DETERMINANTS OF TAX COMPLIANCE COSTS: PARSIMONIOUS EQUATIONS

Independent Variables ↓	Dependent Variables →	Hours spent on tax affairs ^a	Value of time spent on tax affairs ^a	Fees paid to tax adviser(s) ^{a,b}	Total compliance costs ^a
	Constant	-1.171* (0.656)	2.744*** (0.401)	4.139*** (0.443)	-7.775*** (0.768)
Income^a		0.116* (0.059)	Not included		1.059*** (0.069)
Education^a		0.368*** (0.082)	0.561*** (0.188)		0.168* (0.097)
Courses in accountancy undertaken ('no' as reference)					
Yes			0.322** (0.148)	0.543** (0.242)	
Gender (male as reference)					
Female			-0.794*** (0.214)		
Occupation (employed as reference)					
Retired		0.425*** (0.148)			0.511*** (0.173)
Other (=self employed, unemployed, FT homemaker)		0.773** (0.307)		1.163* (0.679)	1.041*** (0.349)
Number of income sources^a			0.473*** (0.136)	0.569** (0.257)	
Paying for assistance with tax affairs ('no' as reference)					
Yes			0.384** (0.185)	Not included	Not included
Difficulty with tax affairs		0.443*** (0.061)	0.384*** (0.102)	0.353** (0.161)	0.625*** (0.077)
	R Squared	0.245	0.252	0.316	0.547
	ANOVA sig.	0.000	0.000	0.001	0.000
	Number of observations	290	232	55	274

Note: standard errors are given in parenthesis. ^a The natural logarithm if these variable are used in estimation; ^b Note that Y included but not significant. *** Significant at the 0.01 level; ** Significant at the 0.05 level; * Significant at the 0.1 level.

TABLE 8B DETERMINANTS OF TAX COMPLIANCE COSTS (NON PARSIMONIOUS EQUATIONS)

Independent Variables ↓	Dependent Variables →	Hours spent on tax affairs ^a	Value of time spent on tax affairs ^a	Fees paid to tax adviser(s) ^a	Total compliance costs ^a
	Constant	-2.911* (1.731)	2.613*** (0.923)	4.643 (3.842)	-8.724*** (1.920)
Income ^a		0.212** (0.098)	Not included	0.165 (0.201)	1.020*** (0.110)
Education ^a		0.257 (0.163)	.475** (0.231)	-0.506 (0.478)	0.353* (0.183)
Courses in accountancy undertaken ('no' as reference)		0.074 (0.134)	.305 (0.187)	0.526* (0.293)	-0.035 (0.151)
Age ^a		0.048 (0.358)	.010 (0.011)	-0.466 (0.734)	0.143 (0.400)
Gender (male as reference)		-0.178 (0.222)	-.784** (0.303)	0.444 (0.649)	-0.173 (0.243)
Married		-0.071 (0.161)	-.139 (0.225)	0.724* (0.379)	-0.174 (0.176)
Occupation (employed as reference)					
Company director		-0.138 (0.157)	.008 (0.219)	0.217 (0.412)	0.029 (0.167)
Retired		0.405 (0.253)	-.347 (0.360)	1.042* (0.602)	0.523* (0.277)
Other (=self employed, unemployed, FT homemaker)		1.117*** (0.372)	-.221 (0.589)	2.016** (0.850)	1.147*** (0.404)
Number of income sources ^a		.177 (0.121)	.359** (0.170)	0.666* (0.348)	0.160 (0.139)
Attitude towards tax affairs		.076 (0.093)	-.049 (0.129)	0.071 (0.266)	-0.072 (0.104)
Difficulty with tax affairs		.519*** (0.104)	.463*** (0.148)	0.298 (0.286)	0.729*** (0.118)
Time taken to complete the questionnaire ^a		.050 (0.108)	.071 (0.152)	-0.238 (0.292)	0.195 (0.120)
Paying for assistance with tax affairs ('no' as reference)		.031 (0.031)	.194 (0.224)	Not included	Not included
	R Squared	0.338	0.264	0.443	0.611
	ANOVA sig.	0.000	0.000	0.071	0.000
	Number of observations	153	150	45	143

Note: standard errors are given in parenthesis. ^a The natural logarithm if these variable are used in estimation.
*** Significant at the 0.01 level; ** Significant at the 0.05 level; * Significant at the 0.1 level.

TABLE 9 REGRESSIVITY OF COMPLIANCE COSTS

Independent variable ↓	Dependent variable →	Ratio hours/income	Ratio fees/income	Ratio total compliance costs/income
	Constant	0.001*** (0.000)	0.044*** (0.007)	0.012*** (0.002)
Income		-3.92E-09*** (0.000)	-3.18E-07*** (0.000)	-5.10E-08** (0.000)

Note: standard errors are given in parenthesis. *** Significant at the 0.01 level; ** Significant at the 0.05 level.

APPENDIX 2 CONSTITUENT PARTS OF COMPLIANCE COSTS

BOX 1A REGRESSION EQUATIONS

The regression equations take the following forms:

$$\ln C_{ih} = \gamma + \beta_1 \ln Y_i + \beta_2 \ln E_i + \beta_3 CA_i + \beta_4 \ln A_i + \beta_5 F_i + \beta_6 M_i + \beta_7 O_i + \beta_8 \ln FY_i + \beta_9 AT_i + \beta_{10} DT_i + \beta_{11} \ln T_i + \beta_{12} TA_i + \varepsilon_i$$

$$\ln C_{iv} = \gamma + \alpha_1 \ln E_i + \alpha_2 CA_i + \alpha_3 \ln A_i + \alpha_4 F_i + \alpha_5 M_i + \alpha_6 O_i + \alpha_7 \ln FY_i + \alpha_8 AT_i + \alpha_9 DT_i + \alpha_{10} \ln T_i + \alpha_{11} TA_i + \varepsilon_i$$

$$\ln C_{if} = \gamma + \mu_1 \ln Y_i + \mu_2 \ln E_i + \mu_3 CA_i + \mu_4 \ln A_i + \mu_5 F_i + \mu_6 M_i + \mu_7 O_i + \mu_8 \ln FY_i + \mu_9 AT_i + \mu_{10} DT_i + \mu_{11} \ln T_i + \varepsilon_i$$

Where:

$\ln C_{ih}$	= natural logarithm of 'hours spent' (provided directly by respondents)
$\ln C_{iv}$	= natural logarithm of 'value of time' (calculated, see Table 3)
$\ln C_{if}$	= natural logarithm of 'fees paid to advisers' (provided directly by respondents)
$\ln Y_i$	= natural logarithm of 'income'
$\ln E_i$	= natural logarithm of 'education'
CA_i	= course in accountancy undertaken (bivariate variable)
$\ln A_i$	= natural logarithm of 'age'
F_i	= female (bivariate variable)
M_i	= married (bivariate variable)
O_i	= occupation (dummy variable)
$\ln FY_i$	= natural logarithm of 'number of income sources'
AT_i	= attitude towards tax affairs (categorical variable)
DT_i	= difficulty with tax affairs (categorical variable)
$\ln T_i$	= natural logarithm of 'time taken to complete the questionnaire'
TA_i	= paying for tax advice (bivariate variable)
ε_i	= error term

Notes: C3 only includes respondents who did pay for tax advice; the subscript 'i' refers to an individual taxpayer.

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We first examine the determinants of time spent on tax affairs (first equation, Box 1a). We expect similar causality as for overall financial compliance. The dummy “paying for tax advice” was used to identify whether there was a substitution between time spent and paying for tax advice. If so then individuals who pay for tax advice should spend less time on their tax affairs.

In our second equation (Box 1a), the dependent variable is the value of time calculated by multiplying the hours spent by average hourly personal income. It is clearly closely related to the previous equation, and the explanatory variables are the same, with the exception of income, which was dropped to avoid problems of multicollinearity. While we expect the pattern of this equation to be similar to equation 1 from which it derives, details will vary where there is a relationship between an explanatory variable and hourly income. For example gender will have a different effect because the average income of women is lower than for men. Similarly, education is positively correlated with income.

The third equation (Box 1a) relates the amount paid to advisers to similar independent variables for the subset of respondents who pay for tax advice (the variable ‘paying for tax advice, TA, was consequently not included in the equation). We expected that both the incentive effect and the value of time effect would result in level of fees paid to advisers increasing with the level of income. If courses in accountancy have been undertaken, individuals may need to seek less outside advice. For the variables age, female and marital status, we had no prior expectations. We expect employees to need to pay less than other professions, and individuals with a

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5 large number of income sources to pay more. Attitude towards tax affairs should not
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7 make a difference to the amount of fees paid, but respondents who find dealing with
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9 their tax affairs difficult, and those who dislike tax affairs are likely to pay more,
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11 reflecting the disutility of handling their own tax return. The time taken to complete
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13 the questionnaire should not affect the amount paid to tax advisers, though it might
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15 affect whether such help was sought.
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