POLICY FORUM

THE DISTRIBUTIONAL IMPACT OF IRELAND'S INDIRECT TAX SYSTEM

Combat Poverty Agency

working for a poverty-free Ireland

ALAN BARRETT & CAEMAN WALL

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Caeman Wall is an economist with Mazars, specialising in public sector projects. Most recently he worked on calculating the tax foregone to the Exchequer arising from the Area-Based Tax Incentive Renewal Schemes. However, he increasingly works with private clients on strategic planning projects. Prior to joining Mazars Caeman worked for Farrell Grant Sparks Consulting and Fitzpatrick Associates. Earlier he worked as an economist for the Competition Authority. He started his professional career as a lecturer in Queen's University Belfast.

Foreword

Combat Poverty is a state agency developing and promoting evidence-based proposals and measures to combat poverty in Ireland. It is the main public organisation for promoting and commissioning research on poverty and for evaluating and advising on the impact of public policies on poverty. One of the four functions of Combat Poverty, set out in the Combat Poverty Agency Act 1986, is 'the examination of the nature, causes and extent of poverty in the State and for that purpose the promotion, commission and interpretation of research'. Our research programme seeks to achieve a better public understanding of poverty and to influence appropriate policy responses to poverty in the context of the National Anti-Poverty Strategy.

Combat Poverty works towards a reduction in poverty levels by promoting the re-distribution of income and resources in favour of those living in poverty through reform of the taxation and social welfare systems, and by working to ensure that everyone has at least a minimally adequate income.

Taxation is a key way to redistribute resources in society. Ireland has seen dramatic change in its tax regime over the past decade, with an emerging new paradigm of low (direct) taxes on work but with an increasing tax take on consumption (i.e. indirect taxes). 2005 is the first year

historically that receipts for VAT alone have exceeded those for direct taxes in Ireland.[1] The poverty implications of this paradigm shift have not been explored in any depth heretofore. In light of this research deficit, and to inform public policy on tax reform, Combat Poverty commissioned Farrell-Grant-Sparks to review the redistributive nature of the Irish tax system, paying particular attention to indirect taxation. This is because there is a considerable literature in Ireland on equity and direct taxation, but far less work on the equity or distributional impacts of indirect taxation.

The study also considers how the tax base can be widened in a more equitable manner and proposes ways to improve the redistributive nature of the tax system as a whole. The overall research methodology comprises:

- a review of national and international literature
- an empirical analysis employing the most recent (2000) CSO Household Budget Survey of the distributional outlay on VAT and excise duty
- policy analysis of the key findings.

Dr Alan Barrett and Mr Caeman Walls undertook the research on behalf of Combat Poverty. The authors found that indirect taxes are inherently regressive because they do not take into account the ability of the taxpayer to pay the tax. This research sheds important new light by quantifying the burden of indirect taxes and the attendant degree of regressivity facing low-income households in the form of VAT and excise

[1] www.revenue.ie

duties. As there is little that can be done effectively to improve the progressivity of the indirect tax element, attention should be paid as to how to make the direct taxation system more progressive, particularly through addressing tax expenditures.

Combat Poverty acknowledges the positive steps announced in Budget 2006 with regard to such expenditures and recommends that policymakers should implement the base-broadening recommendations of the three reviews of tax schemes published by the Department of Finance in 2006.[2] Finally, readers who wish to read more on Combat Poverty's perspective on taxation and equity should consult our 2006 Policy Statement, *Promoting Equity in Ireland's Tax System.*[3]

[2] See Department of Finance (2006). *Budget 2006: Review of Tax Schemes Volumes I-III*, Department of Finance: Dublin.

[3] Available at: www.combatpoverty.ie

Executive Summary

The purpose of this paper is to explore the extent to which Ireland's indirect taxes (VAT and excise duties) may be regressive. By regressive, we mean a situation in which taxes account for a higher proportion of household income at the lower end of the income distribution relative to the higher end. We undertook this analysis largely because the indirect element of taxation in Ireland has generally been omitted from discussions of distribution[1] although VAT and excise duties combined make up almost 45 per cent of total tax revenues.

In broad terms, the approach taken is as follows. The Household Budget Survey (HBS) 1999/2000 provides a rich source of data on expenditure patterns across Irish households and so is the starting point in the analysis. Taking account of household size and structure, we rank households by income and form deciles. Based on the HBS data, we know what the average household in each decile spends on a wide range of products and services. By combining the data on spending with information from the Department of Finance and the Revenue Commissioners on tax rates, it is possible

[1] One exception to this has been work undertaken by Dr David Madden of UCD.

to calculate how the level of indirect taxes paid varies across the income deciles. By expressing the level of tax as a proportion of household income, we can assess the issue of regressivity.

Our main findings are as follows:

- The indirect tax system appears to be regressive in the sense that households in the lowest decile (based on equivalised income) pay a higher proportion of their incomes in indirect taxes relative to households in the higher deciles.
- Based on VAT and excise rates in 2004, the estimates suggest that indirect tax payments for households in the lowest decile amounted to almost 21 per cent of income – the corresponding figure at the upper end of the distribution is 9.6 per cent.
- A third of the difference in tax share between the lowest and highest deciles can be accounted for by taxes on drink and tobacco.
- The exempting of food from tax makes the system less regressive – hence, while the taxing of food would assist in broadening the tax base, it would do so at a distributive cost.
- The taxing at fuel at the reduced rate, as opposed to the higher rate of 21 per cent, also reduces the degree of regressivity.

Given the desirability of exempting food from VAT and the non-desirability of reducing taxes on alcohol and tobacco (for health reasons) or fuel (for environmental reasons), there appear to be limits on the extent to which the system

of VAT and excise can be altered to reduce regressivity. For this reason, our recommendations do not include adjustments to indirect taxes. Instead, we recommend the following:

- If a change in indirect taxes is being considered, its distributional implications should be assessed. The use of the ESRI's SWITCH model in considering the distributional implications of income tax and social welfare changes provides a model for this type of analysis. It also raises the question of why such analysis is not currently undertaken for indirect tax changes.
- The regressivity inherent in the indirect tax system places an onus on policy-makers to ensure that other elements of the tax system are characterised by a high degree of progressivity.
- This onus to ensure progressivity elsewhere in the system should be met partly by poverty-proofing existing tax-expenditures to assess the extent to which they are regressive – specific recommendations should then be made in the light of the analysis.
- With regard to pension-related reliefs, the work of Hughes (2000) and Hughes and Watson (2005) provides us with information on the distribution of those reliefs and hence a basis on which to recommend the following:
  - Giving the tax relief at the standard rate rather than at the marginal rate of tax
  - Lowering the income cap on contributions allowable for tax purposes.

Section 1

Introduction

In this paper, our core objective is to quantify how the amount of indirect taxes (i.e. VAT plus excise duties) paid by households varies across the income distribution. Before getting into the detail of the analysis, we will use this introduction to set out why this is an important exercise and why the analysis should be used as an input to debates on Ireland's taxation system. In essence, our motivation for analysing indirect taxes from a distributional perspective arises from (a) their large share in total taxes (especially when considered relative to income taxes) and (b) the general lack of attention paid to indirect taxes in policy discussions, especially discussions on distributional issues.[2]

In order to provide a sense of the relative importance of VAT and excise duties, Table 1 presents the percentage of total current revenues for each tax category for the years 1995, 2000 and 2005 (for the latest year, the values are the projected values from Budget 2005). A number of points are worth highlighting. First and most importantly for our purpose

[2] Exceptions to this general point are Madden (1989, 1995 and 1996) and Scott and Eakins (2004).

here, for the year 2005 VAT on its own is the largest tax category. When combined with excise duties, their 44 per cent share is considerably larger than any other category, including income tax. Second, within the 'VAT/Excise' category, there has been a significant shift over time towards VAT. The overall share of the two elements combined has remained remarkably stable over the ten-year period but the increasing importance of VAT is noteworthy.

Table 1: Breakdown of Current Revenues, 1995–2005

	1995 %	2000 %	2005 %
Customs	1.9	0.7	0.5
Excise duties	18.9	16.7	13.5
Capital taxes	0.8	2.7	4.5
Stamp duties	2.5	4.2	5.6
Income tax	35.1	32.3	29.6
Income levy	0.1		
Corporation tax	11.6	15.5	15.4
Value added tax	25.3	27.9	31.0
Agricultural levies	0.1	0.0	0.0
Motor vehicle duties	2.2		
Employment and training levy	1.5	0.0	
Total	100.0	100.0	100.0
Total VAT plus excise	44.2	44.5	44.5

Source: Department of Finance, Budgets 1995, 2000 and 2005

Notes: The income levy which is shown for 1995 had been abolished by 2000. Motor vehicle duties were being collected and retained by local authorities by 2000. Values of 0.0 indicate the existence of revenue but a share below 0.1 per cent of the total.

In Table 2, we present data on indirect taxes as a share of total tax revenue for a number of countries. It can be seen that Ireland's reliance on indirect taxes is high relative to elsewhere. Of the countries shown, only Portugal has an indirect tax share that is similar to Ireland. The figures for the EU-15 and EU-25 show that while EU countries on average raise just over a third of revenue through indirect taxes, the figure for Ireland is well over two fifths.

Table 2: Indirect Tax as a Percentage of Total Tax

Country	Indirect tax as percentage of total tax
Germany	30.5
France	35.2
Ireland	43.7
Italy	35.9
Netherlands	33.5
Portugal	42.1
UK	38.9
EU-15	34.6
EU-25	34.8

Source: Eurostat (2004) Structure of Taxation Systems in the European Union

From Tables 1 and 2, it is clear that indirect tax accounts for a large share of tax revenue in Ireland and a larger share than in other EU countries. In spite of this, we would argue that indirect taxes have been somewhat neglected in policy discussions. We will illustrate this with reference to two recent policy statements of national importance.

The first policy statement we consider is the Programme for Government of the two governing parties (Fianna Fáil and the Progressive Democrats, 2002). It is interesting to read what the Government parties said on the topic of taxation and so we will quote directly from the document (page 7):

- Fianna Fáil and the Progressive Democrats have delivered dramatic reductions in taxation over the last five years.
- The policy has helped to generate unprecedented growth in the Irish economy, a spectacular increase in the number of people at work and the effective elimination of long-term unemployment.
- The parties remain committed to the achievement of the taxation objectives set out in the Action Programme for the Millennium. Over the next five years our priorities with regard to personal taxation will be:
  - To achieve a position where all those on the national minimum wage are removed from the tax net, and
  - To ensure that 80 per cent of all earners pay tax only at the standard rate.
  - To use the potential of the tax credit system to effectively target changes and to pursue further improvements in the income tax regime if economic resources permit.
- We will complete the reduction of the standard rate of corporation tax to 12.5 per cent in 2003.
- We will increase Capital Gains Tax Exemption limits.
- We will examine the tax treatment of share options.
- We will keep down taxes on work in order to ensure the competitiveness of the Irish economy and to maintain full employment.
- We will vigorously pursue actions to ensure that everyone is tax compliant.

What is interesting about this list is the absence of any comment on indirect taxation. This may be because of a belief that no changes are required in the indirect system. However, it is still noteworthy that almost half the tax receipts (i.e. VAT and excise duties) should go unmentioned in a policy document of such importance.

The second policy statement that we will consider is the most recent agreement between the social partners, *Sustaining Progress* 2003. This document does not contain many specific proposals on taxation but instead includes a number of points that 'will guide all taxation policy decisions'. These points include the following:

- Promoting competitiveness and growth
- Removing minimum wage workers from the tax net and moving towards the target where 80 per cent of earners pay tax at the standard rate
- Keeping tax expenditures under review
- Using tax credits to effectively target changes
- Ensuring tax compliance.

While references to indirect taxes are included they relate to the specific issues of carbon taxes in the context of the Kyoto agreement and VAT on labour-intensive services in the context of a possible common EU VAT system. Hence, there is again no discussion around VAT or excise rates or bases.

These two policy statements would appear to show that indirect taxation in Ireland is not currently a high priority issue. While both the Government and the social partners have specific targets with respect to taxation, these relate very much to direct taxes and include the removal of the low

paid from the tax net. This lack of priority may relate to belief in the appropriateness of the current rates and structure of VAT and excise duties. However, as no analyses have been undertaken in recent times on the distributional impact of indirect taxes, such beliefs may be misplaced. Our goal here is to draw attention to the distributive impacts of indirect taxes and thereby ensure that such considerations are not overlooked in discussions of taxation policy.

The remainder of the paper is structured as follows. In Section 2 we review research on the distributional impacts of indirect taxes, both Irish and international. In Section 3 we describe the data that we use in our analysis and also the techniques used in constructing elements of our data. In Section 4 we present the results of our analyses. These include both benchmark estimates of the redistributive impact of indirect taxes and also some policy simulations. In Section 5 we draw together the lessons and offer some conclusions.

Section 2

Studies on Indirect Taxation and Distribution

While a number of studies have been undertaken on the Irish indirect tax system, the objective of these studies and hence the approach is different from ours. Our objective is to quantify how payments of indirect taxes vary by household income. We restrict ourselves to the distribution question and do not consider issues surrounding the amount of revenue raised. Other studies have not looked at the level of indirect taxes paid but instead have sought to examine if marginal changes in indirect tax rates could be made which would improve the outcomes from the tax system, where outcomes are defined in terms of both revenue raised and the distribution of taxes.

An early example of this approach is found in Ahmad and Stern (1984). The essence of their approach is to analyse how a change in the tax on a particular good will impact upon revenue raised relative to its impact on household welfare. In their model, higher weights are given to the welfare of lower-income households. Hence, a tax change which raises a lot of revenue but which impacts more heavily on low-income households will score less well than a tax change which raises the same amount of revenue but which does not

impact so heavily upon low-income families. The data required for this approach are considerable since the operation of the model involves, amongst other things, the use of demand responses and a social welfare function in which the weights to be given to households of different incomes are specified.

Madden applied this approach to Irish data in a series of papers (Madden 1989, 1995 and 1996). We will look only at the results from the 1995 paper because it uses more recent data than the 1989 paper (i.e. 1994 Household Budget Survey as opposed to the 1987 version) and because the 1996 paper is a methodological development of the 1995 piece rather than a development of results. A general finding is that a balance between revenue raising and distributional considerations would point to a lowering in tax on alcohol, tobacco and fuel and power and to an increasing of taxes on services and, to a lesser extent, food. In the case of the tax lowering recommendation, no account is taken of health or environmental considerations. In the case of food, the paper does show food to be a relatively large item for lower-income families. However, the potential for raising revenue through taxing it is large because demand responses are low.

One other study of Irish indirect taxes and distribution is that of Scott and Eakins (2004). Their objective is to examine expenditure on fuels across households with a view to establishing the potential redistributive implications of a carbon tax and also possible compensatory strategies. They find that expenditure on residential fuel is higher as a proportion of income for lower-income groups. However, for transport fuel, expenditure as a percentage of income is highest for middle-income groups. This is a somewhat surprising result although the authors explain it in terms of

longer commutes in private cars for middle-income families. The result does point to the value of looking explicitly at expenditure patterns in analysing the impact of indirect taxes, as we do here.

Two other strands of research that should be mentioned before turning to our own analysis are the following. First, Creedy (2001) uses the structure of indirect taxes to derive an estimate of the government's concern for inequality. The idea is that a government with high taxes on goods that are extensively purchased by low-income households is 'revealing' a low concern for inequality. Using data for Canada, his estimates show an implicit government position of neutrality rather than any concern, or liking, for inequality.

The second strand of research involves cross-country comparisons of the degrees to which the indirect tax systems reduce inequality. Like the Madden work discussed above, this involves the specification of a social welfare function – by this we mean a formula whereby the utility of households at different income levels can be weighted and summed to give a measure of societal well-being.

An example of this type of work is Kaplanoglou (2004) where she compares the Greek, British and Hungarian systems. One useful result from this paper is that the simpler British system (in terms of the number of rates and exemptions) does not perform worse in terms of redistributive impact relative to the Greek and Hungarian systems. This raises a question over the extent to which redistributive objectives can be achieved through the indirect system. We return to this point below.

Section 3

Data Sources and Construction

As our objective is to estimate how the payment of indirect taxes varies across the income distribution we needed data from a number of sources. In particular, we needed information on spending across households and on the indirect taxes that applied to the range of goods and services purchased by households. The information on spending patterns was taken from the Central Statistics Office Household Budget Survey 1999/2000, while the Revenue Commissioners and the Department of Finance provided information on indirect taxes. An amount of data construction was also required. We will now provide fuller details of our data sources and data construction, before moving on to our findings in Section 4.

Expenditure data

As just noted, our data on expenditure patterns are taken from the CSO Household Budget Survey 1999/2000 (HBS). The main purpose of the HBS is to gather detailed information that is used in the construction of the Consumer Price Index. The data are generated by asking households in a nationally representative sample to maintain a detailed diary of household expenditure over a two-week period. Data are

also collected on the characteristics of the households such as income, numbers in the household and the ages of household members.

The CSO publishes a range of outputs from the HBS, including tables on the pattern of expenditure by households where the households are divided into income deciles. However, for the purposes of this study, it was necessary to have a special tabulation undertaken. The reason for this is as follows. Rather than looking at the distribution of expenditure and hence indirect taxes by household income, we want to look at the distribution by income having adjusted for household size and composition. In order to calculate household 'equivalised income', we followed the approach used by the ESRI in its series of studies on the measurement of poverty (see for example Layte *et al*, 2003). Under this approach, individuals in the household are weighted as follows:

- The first adult is weighted as 1.
- All other adults are given a weight of 0.66.
- Each child is weighted as 0.33.

We could have used other scales but this one was chosen because it is the one that the ESRI tend to stress in presenting their results. It is also unlikely that the pattern of results below would alter significantly through the use of minor variants of this scale.

Under our special tabulation, the number of adult equivalents was calculated for each household; gross household income was then divided by this amount to generate equivalised household income. Households were then ranked according to equivalised income and deciles created. The CSO provided

us with the expenditure data for each of the deciles and our analysis was then conducted on these deciles.

Indirect taxes

The HBS data provide us with information on how much the households spend on a wide range of goods and services. In order to distil the portion of the expenditure that is either VAT or excise, it was necessary to have information on the VAT and excise rates that applied to each of the goods and services. Some of the information that we used was taken from published sources of information such as the Revenue Commissioners' *Guide to Value-Added Tax* (1999 and 2003 editions). We were also able to draw on the Revenue Commissioners' extensive on-line database that shows the rate of VAT applicable to over 2,500 goods and services.[3]

However, in attaching VAT and Excise Rates to goods and service categories from the HBS, we relied very heavily on assistance provided directly by the Department of Finance and the Revenue Commissioners. Goods and services fall into four VAT categories. The standard rate is 21 per cent and the reduced rate is 13.5 per cent. Examples where the reduced rate applies include certain fuels, newspapers and repair, cleaning and maintenance services. Some goods and services are exempt such as financial, medical and educational services. Other goods are zero-rated – examples include food and drink and children's footwear and clothing. Personnel within the Department of Finance provided guidance on which of these rates of VAT applied to each category in our expenditure data.

[3] See www.revenue.ie/services/tax_info/vatrate/vatrate.htm

Applying excise rates to our data was slightly more complicated than in the case of VAT because excises are levied as euro amounts on volumes and quantities rather than as percentages of price as is the case with VAT. As our expenditure data were in terms of euros spent on each category, we needed to know how the volume and quantity levies translated into proportions of expenditure. The Excise Statistics Branch of the Revenue Commissioners provided the necessary data for the following categories of excise tax: pack of 20 cigarettes; litre of auto diesel; litre of unleaded petrol; pint of stout; pint of lager; glass of whiskey; bottle of whiskey; bottle of table wine.

A number of assumptions were still needed in mapping the excise information into the HBS data. For example, ale, beer and stout are classified as one in the HBS so we took an average of the excise rates that applied to stout and lager and applied it to this category. We used the rate of excise applied to a glass of whiskey for 'spirits consumed outside the home' (as per the HBS classification) and used the rate applied to a bottle of whiskey for 'spirits consumed at home'. Similarly, we applied the rate of excise on cigarettes to tobacco and cigars. Finally, the excise rate applicable to unleaded petrol was used for 'petrol'.

Combining expenditure and tax data

Our two sets of information are as follows: (a) household expenditure where the households have been broken up into deciles based on equivalised income; (b) VAT rates and excise rates for all of the categories of expenditure in the HBS. Combining the two, we can work out what proportion of expenditure is accounted for by indirect taxation. For

example, if a good is taxed at 13.5 per cent, we divide the amount spent by a household by 135 and multiply by 100 to give the tax-exclusive expenditure. The difference between the full expenditure and the tax-exclusive expenditure is our measure of indirect tax paid. As we have information on household income, we can then express indirect taxes paid as a percentage of household income and in this way examine how regressive or otherwise indirect taxes are.

We should note that in making this type of calculation we are making a number of assumptions. First, we are assuming that all the incidence of the tax falls on the household. In reality, the imposition of a tax on a good or service may lead to a producer absorbing some of the tax by not increasing price rise to the full extent implied by the tax. In attributing all the tax to the household, we may be over-stating the actual tax burden. Second, to the extent that a tax leads to switches in the purchases of commodities, they will lead to utility reductions. We are not able to capture this effect and so in a sense are using tax-paid as an indicator of utility loss.

Section 4

Results

Before getting into the details of our results, it is useful to make one simple point. While it might be thought that a uniform tax applied to the purchase of all goods and services would be distributionally neutral, this will not be the case if the proportion of income saved differs across the income distribution. In particular, if low-income households spend all their income but high-income households save some of theirs, even a uniform tax will be regressive. According to our data, the expenditure by households in the lowest decile exceeds income so this potential source of regressivity is indeed present. It is possible that the exemption or zero-rating of some items will offset the potentially regressive impacts. Our analysis aims to uncover if this is so.

Baseline estimates

We begin the presentation of our results by looking at our estimate of the distribution of total indirect taxes. The results are shown in Table 3 so we will talk through the details with reference to the table. The first row of the table shows gross household weekly income in each of the ten deciles. We decided to use gross income as opposed to net because our interest is in the distribution of taxation and so gross income seemed to be the more appropriate base.

The next three rows show our calculated values of VAT, excise and their total in money amounts. As our expenditure data are from 1999/2000, the appropriateness of using VAT and excise rates from 2004 is open to question since changes in such rates are likely to lead to demand responses and so an altered pattern of expenditure. However, we also thought there was value in looking at more recent values of excise and VAT rates. In the end, we decided to present results using rates from both 2000 and 2004. For the lowest decile it can be seen that weekly VAT payments are estimated to have been £13.06; the estimated figure for excise payments was £5.72. In total, the lowest income households paid £18.78 per week in indirect taxes.

The next three rows show the money values as a percent of gross household income. The lower half of the table repeats the presentation, this time showing the results when VAT and excise rates from 2000 are used.

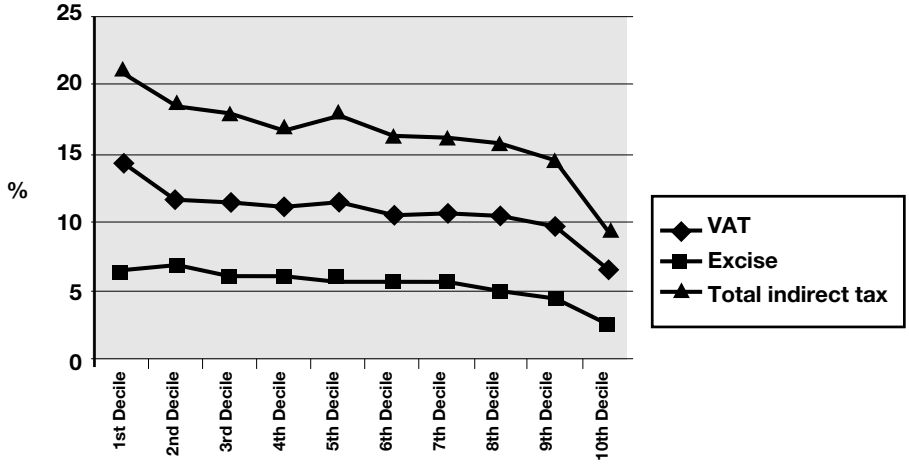
The results in Table 3 reveal the following. The indirect tax system would appear to be quite regressive. Looking at the results using the 2004 rates, households in the lowest income decile spent almost 21 per cent of their income on indirect taxes (14.5 per cent in VAT and 6.4 per cent on excise). At the other end of the distribution, households in the top decile spent under 10 per cent of this income on indirect taxes (6.8 per cent on VAT and 2.8 per cent on excise). As the top decile contains a small number of very high-earning households that distort the results somewhat, it is helpful to look at the ninth decile to ensure that the pattern is not solely related to the outliers. For this decile, we also see that indirect taxes as a proportion of gross household income are lower than those in lower deciles.

Table 3: VAT, Excise and Total Indirect Taxes Paid by Equivalised Income Decile

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Gross Weekly Household Income £	90.17	121.49	155.18	196.17	232.97	278.01	325.98	391.52	497.63	1085.23
VAT Paid at 2004 Rates £	13.06	14.54	18.31	22.01	27.40	29.49	35.20	41.44	49.35	74.16
Excise Paid at 2004 Rates £	5.72	8.17	9.71	11.85	14.53	16.06	18.31	20.35	22.76	29.99
Total Indirect Tax Paid in 2004 £	18.78	22.71	28.02	33.86	41.93	45.55	53.51	61.79	72.11	104.15
VAT as % of Income 2004	14.49	11.97	11.80	11.22	11.76	10.61	10.80	10.58	9.92	6.83
Excise as % of Income 2004	6.34	6.72	6.25	6.04	6.24	5.78	5.62	5.20	4.57	2.76
Indirect tax as % of Income 2004	20.83	18.69	18.06	17.26	18.00	16.38	16.41	15.78	14.49	9.60
VAT Paid at 2000 Rates £	12.84	14.28	18.01	21.67	26.99	29.05	34.70	40.90	48.72	73.19
Excise Paid at 2000 Rates £	5.76	8.24	9.77	11.91	14.63	16.21	18.48	20.59	23.06	30.55
Total Indirect Tax Paid in 2000 £	18.60	22.52	27.79	33.58	41.62	45.26	53.19	61.48	71.78	103.75
VAT as % of Income 2000	14.24	11.76	11.61	11.05	11.58	10.45	10.65	10.45	9.79	6.74
Excise as % of Income 2000	6.38	6.78	6.30	6.07	6.28	5.83	5.67	5.26	4.63	2.82
Indirect tax as % of Income 2000	20.63	18.54	17.91	17.12	17.86	16.28	16.32	15.70	14.42	9.56

By showing the results in Table 3 in graphical form, a broad overview of the pattern can be provided. The biggest differences occur at the top and bottom of the distribution. We can also see that the pattern of regressivity is not entirely linear – total indirect taxes as a proportion of household income rises between the fourth and fifth deciles. In spite of this, the broad pattern of regressivity is apparent.

Figure 1: VAT, Excise and Total Indirect Taxes as Proportions of Income



We can look more closely at the results by looking at the distribution of tax paid across different categories of goods and across the different tax rates. In Table 4, we show VAT paid at 21 per cent and 13.5 per cent as a proportion of household income.[4] As the different rates are designed to

[4] Tables from here on only show data for the lowest three and highest three deciles. This eases the readability of the tables while still presenting the broad trend of results.

reduce regressivity in the system (by taxing 'luxuries' at higher rates), we would expect to see payments under the 21 per cent rate being more progressive, or at least less regressive. As can be seen from the table, it actually turns out that the 13.5 per cent rate is relatively more regressive. Whereas the top decile pays 1.3 per cent of their household income in VAT at 13.5 per cent, the percentage for the lowest decile is almost three time that amount (3.6 per cent). In the case of the 21 per cent rate, the proportion of income paid by the lowest decile is only twice that of the top decile. While this result may be somewhat surprising, the earlier note on the difficulty of using indirect taxes to achieve distributive objectives should be kept in mind.

Table 4: VAT Payments at 13.5% and 21% as a Percentage of Income

	1st decile	2nd	3rd	8th	9th	10th
% of income paid in VAT at 13.5%	3.6	3.0	2.7	2.0	1.8	1.3
% of income paid in VAT at 21%	11.5	9.1	9.4	8.9	8.4	5.8
Total	14.49	11.97	1.80	10.58	9.92	6.83

Note: Totals in this table will not correspond precisely with totals in Table 3 due to the need to impose a number of additional assumptions.

In Table 5, we turn our attention to tax payments by commodity groups. In the cases of drink and tobacco and transport, both VAT and excise are included – the figures for clothing and footwear include only VAT. Of the three broad

categories, the indirect taxes on drink and tobacco are clearly the most regressive. The indirect taxes paid by households in the lowest income decile on drink and tobacco amount to 6.2 per cent of gross household income – the corresponding figure for the ninth decile is 4.4 per cent and for the top decile is 2.5 per cent.

These figures imply that a sizable portion of the difference in indirect tax shares between the top and the bottom of the distribution is accounted for by taxes on drink and tobacco. From Table 3, we know that the difference in total shares between the top and bottom deciles was 11.2 percentage points (20.8-9.6). For drink and tobacco taxes, the difference is 3.7 percentage points (6.2-2.5). Hence, a third of the difference between top and bottom is accounted for by this one category.

Based on Layte *et al* (2002), this result is not surprising. They present figures on smoking by income quintile that demonstrate a strongly negative relationship between the two variables. In the case of men, over a third in the lowest income quintile smoke compared to under a quarter in the highest quintile. In the case of women, the figures are 31.5 per cent compared to 23.4 per cent. Hence, the higher relative tax take is to be expected.

In the case of clothing and footwear, no pattern of regressivity exists, especially if we compare the lowest decile with the eighth and ninth. The absence of regressivity may well be because of the non-taxing of children's clothes and footwear. In the case of transport, while there is a difference between the lowest and highest deciles, the pattern is not uniform across the income distribution. The second and third deciles have lower shares than the eighth and ninth.

This result is consistent with Scott and Eakins (2004) who show that transport spending is not linearly related to household income. They hypothesise that part of the explanation may relate to larger commuting distances for middle- and lower-income people who cannot afford to live close to their place of work. It is also the case that rural dwellers have higher transport needs but lower incomes, on average, especially relative to Dublin-based people (CSO, 2004).

Table 5: Indirect Tax Payments by Broad Commodity Group as a Percentage of Income

	1st decile	2nd	3rd	8th	9th	10th
Drink and tobacco	6.2	8.6	7.0	4.9	4.4	2.5
Clothing and footwear	1.03	0.90	0.84	1.03	1.02	0.76
Transport	4.91	1.75	2.77	3.99	3.69	2.73

Simulations

As part of the analyses, we simulated some possible scenarios in which changes are made to the structure of VAT rates. The first such simulation involves imposing VAT on food at a rate of 13.5 per cent. In selecting this option for analysis we are not suggesting that it be pursued. Instead, we are simply interested in finding out what the effects would be from a distributional perspective. Some may argue that it is an option worthy of consideration because it would fulfil another policy goal of broadening the tax base.

Such broadening is considered to be a desirable feature of tax changes because by broadening the base, the scope for lowering rates is increased, thereby reducing the distortionary effects that taxes are likely to have.

The results of this simulation are shown in Table 6, where it can be seen that any benefits from broadening the tax base need to be set against a clear cost in terms of regressivity. The row labelled 'VAT paid at test rate' shows the total amount of VAT that would be paid in money terms if food was taxed at 13.5 per cent. In saying this, we are assuming that the demand for food does not change in response to the tax change. In reality, such an assumption is unlikely to hold. However, the results are at least illustrative, especially when it is noted that food may well have a low price elasticity and so demand responses may be limited.

By looking at the last two rows of Table 6 we can compare the distribution of taxes under the baseline estimates and the estimates under the simulation. It can be seen that the imposition of VAT at 13.5 per cent would add substantially to the regressivity of the system. Conversely, the current zero-rating reduces the potential regressivity. For the lowest decile, total indirect taxes paid would rise from just under 21 per cent of gross household income to over 25 per cent. At the other end of the distribution, the increase is lower – for the ninth decile, indirect taxes as a percentage of gross household income would rise from 14.5 per cent to 16.3 per cent.

Our second simulation involved increasing VAT from 13.5 per cent to 21 per cent, a move that might be prompted in an effort to reduce energy usage and hence greenhouse gas

emissions. The results are presented in Table 7. Again, we should stress that we are making the unrealistic assumption that there are no demand responses and so the results should be read with this limitation in mind. While the impact on the regressive distribution of indirect taxes is not as strong as in the case of food, it is still present. For the lowest decile, indirect taxes rise from 20.8 per cent of income to 21.7 per cent – for the top decile, the rise is only from 9.6 per cent to 9.7 per cent.

There are two possible reasons for the lower impact in the case of fuel. First, the HBS data show that spending by lower-income households on fuel is only a third of that on food. Second, as shown by Scott and Eakins (2004), spending on transport fuel does not follow a simple linear relationship between income and proportion spent.

The value of undertaking these simulations is to highlight the important distributional implications of indirect taxes. Primarily through the use of the ESRI's SWITCH model, there are now a large number of analyses of the distributional implications of income tax changes in the Budget.[5]

However, indirect tax changes are regularly introduced without any systematic analyses of the distributional implications. This may partly relate to the fact that changes in excise duties in particular are often deemed to have important benefits in addition to raising revenue, for example reducing smoking or fuel usage. Even where such benefits arise, it seems somewhat unbalanced that little or no distributional analysis is undertaken for some tax changes.

5 See for example Callan *et al* (2004).

Table 6: Distribution of Indirect Taxes with VAT on Food at 13.5% (see Appendix Figure A.1 for a graphical representation of the 10 deciles)

		1st	2nd	3rd	8th	9th	10th
Gross Weekly Household Income	€	90.17	121.49	155.18	391.52	497.63	1085.23
VAT Paid at Test Rate	€	16.98	19.62	24.86	49.96	58.32	84.75
Excise Paid at 2003 Rates	€	5.72	8.17	9.71	20.35	22.76	29.99
Total Indirect Tax Paid	€	22.70	27.79	34.57	70.32	81.08	114.74
Proportion of Income VAT Test	%	18.83	16.15	16.02	12.76	11.72	7.81
Proportion of Income Excise	%	6.34	6.72	6.25	5.20	4.57	2.76
Proportion of income indirect taxes test	%	25.17	22.87	22.27	17.96	16.29	10.57
Proportion under baseline	%	20.83	18.69	18.06	15.78	14.49	9.60

Table 7: Distribution of Indirect Taxes with VAT on Fuel at 21% (see Appendix Figure A.2 for a graphical representation of the 10 deciles)

		1st	2nd	3rd	8th	9th	10th
Gross Weekly Household Income	€	90.17	121.49	155.18	391.52	497.63	1085.23
VAT Paid at Test Rate	€	13.87	15.44	19.33	42.59	50.59	75.57
Excise Paid at 2003 Rates	€	5.72	8.17	9.71	20.35	22.76	29.99
Total Indirect Tax Paid	€	19.59	23.61	29.04	62.94	73.35	105.55
Proportion of Income VAT Test	%	15.39	12.71	12.46	10.88	10.17	6.96
Proportion of Income Excise	%	6.34	6.72	6.25	5.20	4.57	2.76
Proportion of income indirect taxes test	%	21.73	19.43	18.71	16.08	14.74	9.73
Proportion under baseline	%	20.83	18.69	18.06	15.78	14.49	9.60

Section 5

Discussion

Our analysis of the indirect tax system has led us to a number of findings. These include the following:

- The indirect tax system appears to be regressive in the sense that households in the lowest decile (based on equivalised income) pay a higher proportion of their incomes in indirect taxes relative to households in the higher deciles.

- Based on VAT and excise rates in 2004, the estimates suggest that indirect tax payments for households in the lowest decile amounted to almost 21 per cent of income – the corresponding figure at the upper end of the distribution is 9.6 per cent.

- A third of the difference in tax share between the lowest and highest deciles can be accounted for by taxes on drink and tobacco.

- The exempting of food from tax makes the system less regressive – hence, while the taxing of food would assist in broadening the tax base, it would do so at a distributive cost.

- The taxing of fuel at the reduced rate, as opposed to the higher rate of 21 per cent, also reduces the degree of regressivity.

While the above findings might suggest that the structure of rates be altered so as to reduce the regressivity of the system, we do not arrive at this conclusion and for three main reasons.

First, it appears that the scope to use the indirect tax system for redistributive purposes is limited. Our analysis of the 13.5 per cent and 21 per cent rates shows that attempts to use different rates for different products may not be successful. Part of the difficulty is that there are few products that are bought exclusively by higher-income households whereby sufficient revenue could be raised without taxing lower-income households.

Second, the most effective way of reducing regressivity would be to eliminate taxes on drink and tobacco but this would not be desirable partly from a revenue raising perspective but also from a health promotion perspective.

Third, and perhaps most importantly, the scope to address distribution issues through both expenditure and direct taxes is greater than that within the indirect tax system. Hence, while actions that would add to the regressivity of the indirect tax system should be avoided, efforts to remedy the regressivity of the indirect tax system should be pursued through progressive expenditures and direct taxes.

Given this conclusion, it is useful to look at some provisions of the direct tax system whose existence may work to reduce progressivity. While the focus of this study is largely on indirect taxes, this shift in focus is warranted by the belief

that the greatest scope for re-balancing the regressivity in the indirect system probably lies elsewhere. It is worth noting that while increasing progressivity in the direct tax system is an important goal in and of itself, our findings in respect of indirect taxes add weight to the importance of the goal.

The provisions within the direct tax structure that may work to reduce progressivity are the set of reliefs (or tax expenditures) that allow taxpayers to reduce their liabilities by directing otherwise taxable income towards certain activities. According to the Tax Strategy Group (2003), these tax reliefs have the following objectives:

- Encouraging investment in certain activities or geographical areas – such as the Business Expansion Scheme, film relief and urban, rural and town renewal schemes
- Reducing the cost of capital and encouraging business investment – such as interest relief and various capital allowances
- Encouraging certain expenditures – such as contributions to pensions and medical insurance
- Encouraging savings – SSIAs
- Assisting in particular costs incurred by individuals – such as mortgage interest relief and health expenses
- Assisting certain individuals or activities – such as Revenue Job Assist for the long-term unemployed.

While all of these objectives are potentially worthy, the use of the tax system in pursuing them leads to a reduced tax base and hence the need for higher tax rates. In addition, the potential exists for the tax relief to be simply subsidising activity that might have occurred anyway, i.e. the reliefs may

amount to a transfer to the individuals involved. However, from the perspective of this study, a major concern relating to the reliefs is the reduction in progressivity that they tend to bring to the tax system. As a corollary, the elimination of at least some of them would act to redress the regressivity found in the indirect system.

It is generally not possible to present an estimate of the distributional impact of tax reliefs because such estimates have not been published. What we can do is to present figures from the Tax Strategy Group on the total costs of some of the reliefs, in order to give some sense of the amounts of money involved relative to the total tax take. We can also refer to two relevant studies:

- a study by the Revenue Commissioners which has considered the main reliefs claimed by Ireland's top earners
- an ESRI study which has attempted to quantify the distributional impact of pension-related reliefs.

In Table 8 (which is taken from Tax Strategy Group, 2003), we list some of the schemes and the estimated costs. In the table we list only those schemes (or collection of schemes) which were estimated to cost over €200 million. Given that the total tax take in 2000 was €28 billion, the figures in Table 8 demonstrate just how significant some of the allowances are.

In their study of Ireland's top 400 earners in 2001, the Revenue Commissioners showed that just over a quarter of this group (115) had effective tax rates that were lower than 30 per cent (Revenue Commissioners, 2005). According to the study, the majority of this group used property-based capital allowance incentives. The total amount of expenditure on which the tax relief was claimed by the individuals was €42 million. While

Table 8: Tax Expenditure Schemes and Estimates of their Costs

Scheme	Number benefitting	Estimated cost (€m), 2000/1
Capital allowances (includes business capital allowances and capital allowances to incentivise certain behaviour such as urban and rural renewal)	n/a	1,720
Exemption of the income of Approved Superannuation Funds (Net of Pension Payments)	n/a	1,292
Employers' Contributions to Approved Superannuation Schemes	n/a	645
Employees' Contributions to Approved Superannuation Schemes	n/a	472
Special Savings Investment Accounts	1,143,400	433
Retirement Annuity Premiums by Self-employed	109,300	205
Child-benefit – exemption from income tax	730,000	315
Loans relating to principal private residence – interest relief	488,400	211
Principal private residence – CGT	n/a	1,322

Source: Tax Strategy Group (2003)

this study focuses on a very specific group of tax-payers, it does point to a clear distributional difficulty with reliefs. Even if the tax foregone can be justified in terms of the economic activity generated (and this is by no means proven), the distributional costs should be factored into the analysis.[6]

[6] It is worth noting that the Revenue Commissioners' study found 50 of the top earners to have effective tax rates of less than 10 per cent; 20 had a zero effective rate.

As regards broader studies of the distribution of benefits across taxpayers of the various schemes, we are only aware of work on reliefs in respect of pensions. Hughes (2000) shows how the value of the tax relief (expressed as a percentage of gross weekly income) rises from 0.06 per cent in the lowest decile to 0.8 per cent in the middle of the distribution and to 1.6 per cent at the top of the distribution. In terms of the total value of the relief, the top 20 per cent of earners receive 60 per cent of the benefits while the bottom 20 per cent receive less than 0.5 per cent. The reasons for this are two-fold – higher earners are more likely to be in pension plans and will be making higher contributions.

In a more recent paper on pensions, Hughes and Watson (2005) have returned to the issue of the costs of pension reliefs and the distribution of those reliefs. Although they do not make specific recommendations, they do say that 'consideration should be given' to options that would make the system of pension reliefs more equitable. Among the options they list are the following:

- Giving the tax relief at the standard rate rather than at the marginal rate of tax
- Phasing out the tax-free lump-sum
- Lowering the income cap on contributions allowable for tax purposes
- Taxing the returns on pension investments.

We would recommend that, at a minimum, the first and third items on this list be implemented. It might be argued that at a time of concern around pension coverage and adequacy, it is not a good idea to reduce the generosity of tax reliefs for pensions. However, we would argue that much of the relief

given at the top marginal rate and on very high incomes is likely to be characterised by deadweight. It is possible that some funds that are currently put into pension funds may be diverted into other forms of saving but we do not foresee a situation in which high earners stop making pension arrangements.

While the distributional impact of other reliefs has not been calculated in as systematic a manner as Hughes (2000), recent media and political discussion on the non-payment of taxes by certain high earners arising from their use of reliefs has highlighted the potential unfairness that reliefs can give rise to. The findings here in respect of the distributional impact of the indirect system add an extra impetus for reform in this area. If lower-income groups must pay a higher proportion of their incomes in the form of indirect taxes, every effort must be made to ensure that those taxes and taxes on low incomes are kept as low as possible. As tax reliefs make higher rates necessary, they work against this goal and so should, at a minimum, be reviewed, as is currently the case.

Distilling our policy recommendations from this discussion, we can say the following:

- If a change in indirect taxes is being considered, its distributional implications should be assessed. The use of the ESRI's SWITCH model in considering the distributional implications of income tax and social welfare changes provides a model for this type of analysis. It also raises the question of why such analysis is not currently undertaken for indirect tax changes.
- The regressivity inherent in the indirect tax system places an onus on policy-makers to ensure that other elements of the tax system are characterised by a high degree of

progressivity. The scope for achieving increased progressivity within the indirect system itself is limited because:

  - one main way of doing this is already in use (i.e. the exemption of food)
  - another way is through reducing taxes on alcohol and tobacco but this would not be desirable for well-known reasons.

- This onus to ensure progressivity elsewhere in the system should be met partly by poverty-proofing existing tax-expenditures to assess the extent to which they are regressive – specific recommendations should then be made in the light of the analysis.
- With regard to pension-related reliefs, the work of Hughes (2000) and Hughes and Watson (2005) provides us with information on the distribution of those reliefs and hence a basis on which to recommend the following:
  - Giving the tax relief at the standard rate rather than at the marginal rate of tax
  - Lowering the income cap on contributions allowable for tax purposes.

The current system of pension reliefs whereby up to €254,000 of earnings can be placed in a pension fund by an employee with relief given at the higher rate appears to us to work against equity.

It may well be the case that other reliefs are equally inequitable and so should be reformed. However, without the sort of analysis that has been undertaken by Hughes (2000) and Hughes and Watson (2005), we are not in a position to

make definitive recommendations. Our hope would be that the current review of tax expenditures will provide information on the distributional impacts of the reliefs so that such impacts can be factored into decisions on the reform or otherwise of the reliefs.

Appendix

Figure A.1: VAT, Excise and Total Indirect Taxes as Proportions of Income with VAT on Food at 13.5%

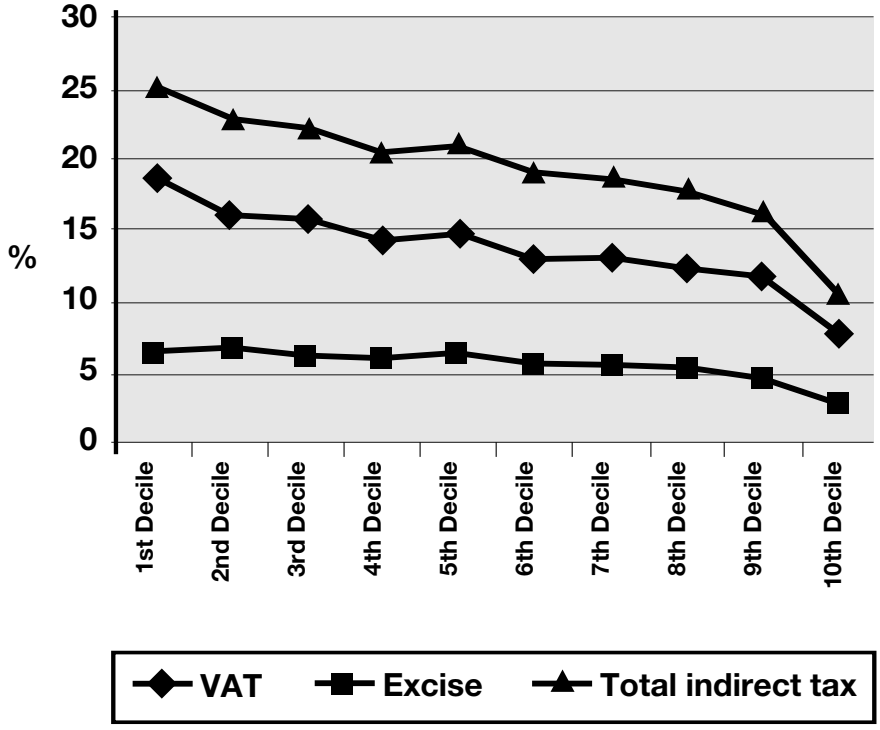
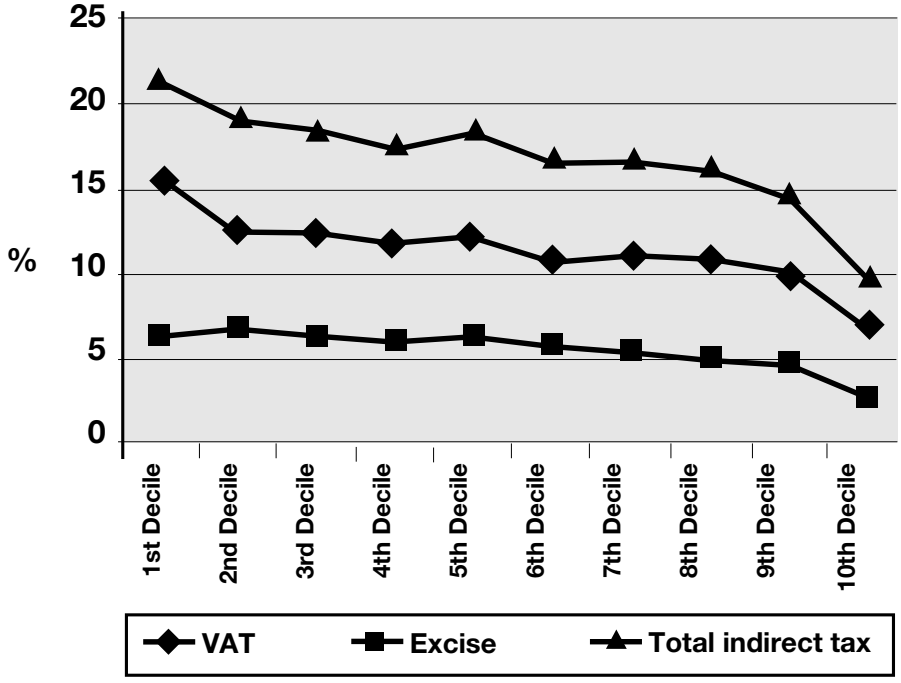


Figure A.2: VAT, Excise and Total Indirect Taxes as Proportions of Income with VAT on Fuel at 21%



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To inform public policy on tax reform, Combat Poverty commissioned Farrell-Grant-Sparks to examine the distributional effects of the indirect tax system in Ireland. The study considers how the tax base can be widened in an equitable manner and proposes ways to improve the redistributive nature of the tax system as a whole. By focusing on indirect taxation, the research addresses the current imbalance in the literature on Irish taxation policy, which has been predominantly concerned with analysing direct taxation measures.

The research methodology includes a review of national and international literature, an empirical analysis of the distributional outlay on VAT and excise duty employing the 2000 CSO Household Budget Survey, and policy analysis of the key findings. The research sheds important new light by quantifying the burden of indirect taxes and the attendant degree of regressivity facing low-income households in the form of VAT and excise duties. The study recommends no further increases in indirect taxes, and further base-broadening measures including the closing of all unnecessary tax expenditures.

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