SPIT VERSION 6

Document Upgrade from version 3 0

The major changes in SPIT version 6 from earlier versions is m the way in which the parameters for simulation are estimated This implies that the structure of the simulation files and their installation is very similar across versions The followmg is a list of the old filenames referred to in the manual (Baker and Symons, 1991) and the filenames in Version that correspond to them

Version 3 x	Version 6 0
SPIT CTL	SPITV3 CTL
SPIT EXE	SPITV6 EXE
SPITC EXE	SPITV6C EXE
SPITS EXE	SPITV6S EXE
SPITR EXE	SPITV6R EXE
SPITSR PAR	TO87SR PAR
SPITLR PAR	TO87LR PAR
FES86 BIN	SPIT884 BIN
NATGROSS	NATGR88
PRICES86 SPT	PRICES88 SPT

In addition there are some extra files included m version 6 0 The two files TO88SR PAR and TO87LR PAR correspond to short and long run parameter files estunated up to and including 1988 data The user can choose these instead of the parameters estimated up to 1987 only

Finally there is an extra option in version 6 allowing the user to edit and save a new 'tax base' which can be recalled in future simulations as the starting base for reform Selectmg the ophon 'CREATE NEW BASE' from the mam menu takes the user through the tax definition screens and then prompts the user for a filename The parameters of the tax base will be saved as FILENAME BSE in the current SPIT directory The user can thus create a set of tax-bases under different names from which the reforms can be run by selecting 'USE PREVIOUSLY SAVED BASE' from the mam menu before simulation

SETTING UP SPIT

1) **Create a directory called SPIT by typing:**

   c:\md spit

2) **Copy the contents of Disc 1 to that directory by typing**

   c:\SPIT\copy a:

3) **The data set is contained in a file called SPIT884.bin which is "zipped up" to fit onto Disc 2. This must be "unzipped" using the pkunzip.exe also on Disc 2. Type.**

   a:\pkunzip * c:\spit

4) **Start the program by typing:**

   c:\spit\SPITV6

1 Introduction

SPIT Simulation Program for Indirect Taxation is a microcomputer based program designed to predict the effects of changes in the system of indirect taxation on government revenue and its sources, and on household expenditure decisions and living standards. It is menu driven and provides a policy tool that may give a reasonably accurate indication of the consequences of tax changes for government revenue, household living standards and its distribution across households.

Embedded within the simulation routine are parameter estimates attained from a model of consumers expenditure estimated from a sample of over 100.000 households drawn from the U.K. Family Expenditure Survey (1974-88). These estimates reveal that household expenditure patterns for specific commodity groups are dependent upon the relative price of other goods in addition to their own price. Also the response of households to price changes is found to differ significantly across household types. The significance and magnitude of both own and cross price effects indicate that the response of households, and hence government revenues. to price changes that result from changes to the indirect tax system will differ from those expected in the absence of any behavioural response. Thus. in evaluating indirect tax policy, it is important to allow both for the effects of tax changes on the demand for the goods directly concerned (say, vatted goods) as well as the cross price effect on other goods (non-variables)

The simulation routine uses data from the 1988 FES sample survey, excluding Northern Ireland. The user can define a reform to the tndirect tax system and simulate the effects of the resulting changes in tax rates on government revenue. The user can also investigate the effect on household expenditure and living standards in great detail. Thus, in addition to a straightforward positive analysis the program is geared to providing the user with the ability to undertake an analysis of the normative effects of indirect tax changes. The software is motivated by the inadequacy of simple intuition and simple models for detailed policy analysis of this type.

The model of consumer demand used within SPIT incorporates models for different types of households according to smokers and non-smokers. car owners and non-car owners. The demand system encompasses 14 commodity groups (food, beer, wine, spirits, household fuel. clothing, motoring, travel fares, leisure services, leisure goods. petrol, tobacco, and *personal goods* and services, household services). Two other *components of consumer*

expenditure, housing and household goo(durables), are treated as rationed commodities, rationed by quantity. Thus if the price of one good witdurables increases expenditure on that good will increase by the same percentage.

The program predicts pre-reform budget shares using the estimated equations with appropriatelyreflated prices and incomes. The post-reform prices are generated by the new implicit tax rates. Expenditure on the rationed goods is evaluated under the new prices, the remaining income being distributed between the 14 groups accordithe demand system predicdons. These predictions are used to compute government revenue on the assumption that taxes are entirely incident on consumer prices. A change in pof ithe components of rationed goods are fully reflected in revenues.

A more detailed discussion of the economic model and estimation that is embedded withinSPIT is givenin Baker etal (1990).

2 Hardware

The program iswritten inMicrosoft Fortran(v4.1) foIBM and compatible microcomputers to allow it to be used as widely as possible. It can bewithIBM (PC/XT,PC/AT and PSR) and compatible microcomputers running under PC or MS DOS 2.0 or above. It requires a hard disk and the appropriate maths coprocessor. SPIT reads and writes large datfiles so afast hard disk makes a considerable difference to performa.Ane. IBM 'AT'compatible is desirable and advised because of computationally intensive nature of the routine. AXT compatible is relatively slow to use. SPwill work with any graphics display cardndany monitor. A parallel printer is also useful.

While SPIT is a 'well-behaved' DOS program cannot guarantee that it will work with all possiblesoftware and hardware configurations. particular, networks and memory resident software may causproblems, not least because you may run out of memory. Networked users should maktheir network managerawarethat SPIT createsfiles that should not bewrite protected and memorconstraints may imply thaSPIT be runon a machine that halittle of the network softwarinstalled as possible. Contact the authors with problems

3 Installing SPIT

Create a directory called SPIT by typing MD\SPIT. Change tothat directory by typing CD\SPIT and copy the contents oall the programdistribution disks intothat directory by typing COPY A:*.*. The dataset is contained in afile calledSPITV3.BIN which is archived

on a high density (1 4mb) disk. This must be unarchived using the program provided on the program disk. The command is. PXICARC A • C.\SPIT when C.\SPIT is the default directory The following files should be present in the directory

SPITV3 CTL	SIM.BAT
SPITV3 EXE	PRICES88.SPT
SPITV3C.EXE	TO87LR PAR
SPITV3S.EXE	TO87SR.PAR
SPITV3R.EXE	TO88LR.PAR
SPITV3.BIN	TO88SR.PAR
NATGR88.	

SPIT consists of a small parent program. SPITV3.EXE, linking the 3 main programs:

SPITV3C. which allows the user to specify the two tax systems to be compared and define the structure of the simulation.

SPITV3S: which conducts the simulation, i.e. investigates the behaviour of the 1988 FES sample to the reform specified above

SPITV3R. which outlines the effects of the reform on government revenue yielded by the sample and the national grossed-up value. and allows the user to analyse the results.

The parameters for the econometric model of consumer expenditure are contained in the files TO87LR.PAR, TO87SR PAR, TO88LR PAR, TO88SR PAR. Subdirectories can be created and used to store the results of simulations, e g. type MD\SPIT\RESULTS to create a directory called RESULTS This directory can be specified as part of a filename in order to send the results of a simulation co this directory

4 Running SPIT

To start a SPIT session type SPIT The credits will appear followed by the main menu. The following options are available:

```
MAIN MENU
A. Define/Conduct a reform
B. Analyse the results of a reform
X. Exit to DOS
```

The first option allows the user to generate the pre- and post-reform indirect tax systems of interest. It uses SPITV3C to create a file with all the necessary tax rates and other information. The simulation module. SPITV3S, of the package can be run either from within SPIT under this opaon or from the DOS command line the user will be asked for their

preference. The lacer choice is sometimes useful when performing several simulations in sequence since a batch file can be used. While the simulation module is running the screen will indicate progress by displaying the household count. When the simulation is complete and has been run from within the package the Main Menu will appear once the user presses <return>.

A 'comprehensive' simulation over the whole sample takes approximately 15, 25, 45 or 80 minutes to complete on a 486 machine, 386 machine, 'AT' compatible. and 'XT compatible respectively. The corresponding figures for a 'quick' simulation are 10, 20.35 and 50 minutes. The user does not have to analyse the results immediately since they are stored in the file named by the user. If a comprehensive simulation is performed beware that the file created will be approximately 0.2Kb per household so that a simulation over the full sample will be approximately 1.36Mb. Saving additional variables from the sample data set will make files bigger by around 42Kb extra per variable. The program does not monitor available disk space and will 'crash' if there is not enough.

The second option. 'B'. runs SPITV3R to allow the user co examine the tax revenue and household results of a previously conducted simulation. It produces a default set of output which contains tax revenue and a table of summary statistics on household expenditure and income. If individual household information was savedduring the simulation the user is able to interrogate this to generate the distributional effects of the tax reform. These options are described in detail below.

4.1 The Reform Menu

Choosing option A in the Main Menu will be followed by a choice for the base tax system

```
Which system do you wish to reform ?
A. 1988189
B. 1990/91
C. Create New Base
D. Use Previously Created Base
X. Exit to Main Menu
```

The user is able to impose tax changes on the observed data period. 1988. to a more recent tax system, 1990/1, *or to create their own* tax/price/income system. For the first two options the data is reflated to August of the appropriate year and the tax rates for the financial year are applied to this data. The program will load the appropriate pre-reform tax parameters

from the file SPIT3 CTL. The third opnon enables the user to save a tax system that can be used as a base for a variety of tax reforms with the subsequenr choice of opaon D The taxes, prices and earnings levels appropriate co 1990 are loaded as default. Under all opaons the user can follow a series of menus to change the parameters of the tax system.

The program covers the three main areas of indirect tax (VAT rates. VAT commodity base and representative excise duties), to vary the level of child benefit and allows the user to select the model for consumer expenditure

These menus are accessed via the Reform Menu:

```
REFORM_MENU
A. Change VAT Rates
B. Change VAT Base
C. Change Excise Duties
D. Change Child Benefit
E. Model, Sample and Variable Selccaon
F  Earnings Growth
G. Price Changes for Commodity Groups
X. Run Simulation/Exit to Main Menu
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VAT rates

Two basic VAT rates can be set, a higher rate, H, in addition to the standard rate, L. Exempt taxation, E, is allowed to attract a percentage of the standard VAT rate This is set at zero by default.

VAT *base*

This allows the user to set the VAT rate for specific goods within the commodity groups. This is done by selection of group and then the required good at the subsequenr menu The program takes pre-reform as default, indicating the current value at the appropnau menu. The user can change the tax treatment of any/all goods by entering L for standard, H for high, Z for zero or E for exempt. Appendix A shows the breakdown of each commodity group, the FES definition and their tax treatment in 1988.

Excise Duties

This option brings up the following list of goods which carry excise duty:

Excise Duties
A. Beer (pint of bitter)
B. Wine (bottle of table)
C. Spirits (whisky bottle)
D. Cigarettes (pkt of 20)
E. Pipe Tobacco (100 grams)
F. Hand Rolling (25 grams)
E. Petrol (gallon of 4 star)
F. Tax on New Cars
G. Vehicle Licence (£ pa)
X. Exit to Reform Menu

The program indicates the current value of these duties. The user can change any or all by entering the corresponding letter and responding to the prompt for a new duty with an entry in the appropriate units. For example, beer requires a specific duty to be entered in pence per pint. Cigarettes carry a specific and an ad valorem tax both of which can be altered within the program, the specific duty in pence per 20 cigarettes and the ad valorem component as a proportion. Specific duties are translated to proportional taxes and thus to price changes that the consumer experiences. It assumed that the change in tax is entirely incident on the consumer. The proportional tax rates for each good are applied to the consumer expenditure group that contains that good. For example, the tax applied to expenditure on beer. shandy, cider etc. is derived from the duty for a pint of beer.

The program also allows for fixed expenditure on private transport through the vehicle excise duty (VED). This is treated as a rationed expenditure within the simulation program. An increase in VED reduces the amount of income remaining for all other goods if that household owns a vehicle. VED is £ per year.

Child Benefit

Changes to total expenditure for households with children can be made by altering the level of child benefit It is assumed that the change in child benefit is fully reflected by a change in total expenditure of the household. They are measured in £ per child per week. The benefit for the first child may be set independently to that for subsequent children.

Model. sample and variable selecnon

This opuon allow the user to detail the overal structure of the simulation. The following opnons are available:

Specification of Simulation Menu
A. Model Selccaon
B. Sample Size
C. Household Variables to Save
D Real Income/Money Incor Constant
E. Quick/Comprehensive Run
X. Exit to Reform Menu

Under opuon A there is a choice from four economemc models of consumer demand There are two types of models. long or short run models, the short run containing durable ownership dummies while the l o n g -mod el does no condition on these. These arc csamat cusing FES data for the pcnod 1974-87. and for extended pcnod which includes 1988 Baker. McKay and Symons (19 describe the model in detail. The user is able to implement an altcmaavc dema sy'stem that has been estimated within the AIDS framework la mmending the parame te files. Details of the parame te files arc given in Appendix C. Th program toggles between the 4 opuons. e g the defaults the short-run model csumat to 1987 Tables 1 an 2 in Appendix B give a broad idea of the csumatcc elastucities. The figures arc calculated using the parame te estimates fmm the 'short-ru expenditure system. for the estimation pcnod 1974-1987 in Table 1 and 1974-198 in Table 2. The elastucities arc calculated fo the 1988 sample

Opaon B allow the *user* to choose the number of households include in the simulation. The default valu is the full sample of 7149 The households arc randomly ordered so that the first 1000 household give a good indicaaon of the full sample results.

Opnon C allow the user to sav additional variables on the household charactcnsacs. Expenditure data. total VAT and Excise payments can be recorded for u in later analysis. Appendix B gives a list of the variables available. This is a useful opnoi since it allows the user co break down the effects of the reform by, say, region, household composition, type of tenure, etc A maximum of 25 variables can be requested. The user will be asked to enter the number of the variable, as given in Appendix B. and a variable name of 8 alphanumeric characters o less.

Option D details whether real or money income should be held constant for each household. Default takes real income as constant. In this case the program will adjust money income to enable the household to buy the pm-reform quantity of goods. This allows the user to assume that incomes adjust to reflect price changes in the long run. *Typing* D will toggle between the two.

Option E provides the ability to choose a 'Quick' or 'Comprehensive' run. The former will give a summary of the effects of the reform but will store no individual household data. It is taken as the default. A simulation using this option will run more quickly since there is less reading and writing to the disk and enables a large number of simulations to be run without using large amounts of disk storage. A full simulation run will create files of 1.36 megabytes or more. Typing E will toggle between the two.

Earnings Growth

This option allows the user to specify earnings growth rates from the base period (or from 1990 if creating a base system). Earnings growth rates are disaggregated according to their source: employment income[1]; pensions; state benefits etc. Growth rates for employment income may be different according to gender and income quantile. SPIT categorises the quantile for income according to those given in the New Earnings Survey, 1990. The growth in earnings is entered as an index e.g. an index of 1.2 would imply a 20% increase in earnings from the base level.

Price Changes for Commodity Groups

This option allows the user to specify change in prices for the commodity groups. These may be introduced either by specifying a percentage changes in the general level of prices and/or identifying percentage price changes for individual groups. A change to the overall price level will affect the price of only those groups that do not have a previously given price change. The menu shows the appropriate overall price change as the weighted sum of the commodity groups. the weights taken from Employment Gazette, 1990.

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1 Employment income is household , not individual, variable. The uprating factor is calculated by applying the weighted sum of uprating factors for the householder and his wife (if present) which are also included in the data. Thus a third earners income is uprated by the husband and wifes factors. This affects a *13%* of the sample and may result either over or under uprating of those households.

The user can pas through the menus as often as desired and correct previous changes since the reform is only saved when X is chosen at the Reform Menu.

The Reform Menu &splays a summary of the current changes implemented to the tax system It includes all excise duaes, simulation parameters and vat rates (changes co the vat base, prices and earnings are not displayed) This information is carried through to the results file in addition to the price effects to help interpretation.

Once all the required changes have been entered and X chosen the use will be asked for a title for the sunulaaon (up to 60 characters) and to provide a filename (up to 16 characters, including a drive and path if desired but not followed by an extension) This filename will be used to identify all files created an associated with this reform. We suggest that users provide names that remind them of the nature of the reforms they relate to for example, D:\RESULTS\VATFOOD for a reform that imposes VAT on food expenditures and stores the results in the RESULTS directory on drive D.

The tax parameters and och necessary information will be saved in a file given this name In order to perform the simulation the user should type SPITSV3 (filename] at the DOS prompt specifying this filename. The diskette includes a batch file as an illustration. It is straightforward to create batch files using an editor. The file must have the extension BAT. The cxamplc SIM BAT will run the sunulaaon rouan twice for the tax parameter files VAT16 and VED50 that would have been previously created by the user This illustrates how to perform several simulations in scncs without attending the machine

4.2 Interpreting the Results

On choosing opuon B in the Main Menu the user will initially be asked to identify which results file which is to be examined and whether the subsequent output to the screen should also be either simultaneously printed or sent to a disk file.

The output begins by listing a summary of the tax parameters used for the reform. This is followed by the government revenue generated by the FES sample - both aggregate figures and a breakdown of rcvcnuc into the excise and VAT componcnt of the commodity groups. The pn-reform figures arc model prcdicaoas using the August price figures for the chosen year The post-respons figures are predictions of government revenue generated after allowing households crespond to the tax changes_ The aggregate set *of figures show revenue*

including vehicle excise duty and child benefit (as negative revenue) while the figures for Excise and VAT revenue do not The u are f per week and the entri are the revenue components summed ov all the households used in simulation.

Next, the corresponding national figu are presented. These are calculated from the FES sample. adjusted for the non-representative nature of FE S appropriate grossing up factors. The units are Em per annum the or
UK. The grossing-up levels a read from the file NATGR88. They are calculated from the proportion of national expenditu that is accounted for by reported FES expenditure in 1985 and can be changed using a standard text editor to amend the file. This is discussed in detail in Baker et al. (1990).

This is followed, if desired, by a table of summary statistics showing expenditures for the 16 commodity groups, VAT and Excise revenue, total expenditure under both tax systems.

If the user examines the results of a comprehensive simulation it is then possible follow a selection general statistical procedures to interrogate the implications of the tax change on individual households.

The program is menu driven. the options available being:

RESULTS MENU
1. Select Sample
2. Crosstabulations/Histograms
3. Ranking an Quantiles
4. summary statistics
5. Data Transformations
6. Inequality Measures
7. Output Data to Te File
8. Open Spoo File
9. Return to Main Menu

SELECT SAMPLE allo the user to create a sub-sample by selecting observations by the value of variables. For example, it is possible to create a sub-sample containing, say, only pensioner households in Scotland living in pr rented accommodation. This facility should be borne in mind when deciding on what variables to sa the data set when setting up a simulation. Once a subs selected a menu similar to the one above will enable the user to analyse this subset alone.

CROSSTABULATIONS provides for both simple histograms and two way crosstabulations. The user is prompted for variable names, the number of ranges into which the data is to be divided, and the range intervals.

RANKING & QUANTILES will prompt for a variable by which the data is to be ranked and the number of groups into which the data is to be divided. The user is then prompted for the number of variables for analysis and their names. The output gives the means. etc. of these variables for each group in ascending order of the sort variable. This facility is useful for doing "eyeball" distributional analysis where the data is ranked by, say, net income.

SUMMARY STATISTICS will prompt for the number of vanablcs and their titles. Note that the program will remember the last set of variables nominated by the user and this set CM be repeated by simply prcssmg enter All vanablcs can be nominated by entering a number greater than 60, the maximum number available with the program

TRANSFORMATIONS allows simple data transformations to be conducted. The general procedure is to choose the transformation, nominate the variable(s) and a name for the transformed vanablc. There is a limit to the number of vanablcs that can be stored. a maximum of 60. and if you create too many new vanablcs you can. if you wish, nominate old ones to be overwritten.

INEQUALITY MEASURES produce Atkinson Inequality Indices for user specified levels of inequality aversion (between 1 and 30) and Gini coefficients for user determined vanablcs. The first step is co enter the number of indices (ie different levels of aversion) and their values. The last sup is to enter the number of vanablcs and their names

OUTPUT TO TEXT FILE is a facility to save variables for more comprehensive analysis in an alternative package The user is prompted for a filename and the vanablcs co be written co the out-put file The file wffl be a text file in free format which is suitable for reading into most statistical and spreadsheet packages. Note however that the data is written by variable not obscrvaaon.

OPEN SPOOL FILE is offered to avoid having to exit and specify this opaon at the beginning. The prompt is for a filename. Any previous spool file will be closed.

RETURN TO MAIN MENU returns to the main menu.

Throughout this section, whenever the user is asked for a variable name they may obtain a list of currently defined vanablcs by pressing <enter> Usually the user can 'change their mind' in the middle of opaons by pressing <esc> or 0 to terminate that opaon

3 References

Baker P . McKay S.. Symons EJ.. (1990) 'The Simulation of Indirect Tax Reforms: The IFS Simulation Program for Indirect Taxation (SPIT)'. IFS Working Paper, WP90/1 1.

6 Appendix A • FES Coding for Commodity Breakdown and Household Variables:

Commodity Group	Vat	FES codes
Food		
Basic food	Z	D101-2,D108-34, D140-62
Ice cream, sweets. soft drinks	L	D103-6,D182-5, D851-3
Hot takeaways, meals out	L	D138,D197,D840-50, D854-7,B260
Alcohol - home and away consumpdon		
Beer. stout, ale, shandy, cider, perry	L	D260,D261,D270,D271, D280,D281
Wine	L	D263-5,D273-5,D283-5
Spirits	L	D266,D276,D286
H[redacted]		
G[redacted]	Z	D226,P249,B170,B221
Electricity	Z	D225,P250,B175,B222
Other Fuels (coal, coke, oil, other)	Z	D240,D242,D258,B017, B027,B321
Clothing		
Adult clothing and footwear	L	D301,D305,D311,D315, D330-2,D337-8,D341-2, D349
Children's clothing and footwear	Z	D321-2,D325-6,D335-6, D343
Household Services (HS)		
Post work assoc. subs, licenccs	E	D751,D766, D770,D772, D797,D804-5,B 180
contents Insurance	E	B168
Telephone a/c, domestic help, clothing repair, household cleaning	L	D227,D752,D780,D782, D788,D790-1,D799, D806-7,B 166
Other Household Services	L	D228,D796

Personal Goods and Services (PGS)		
Spectacles	E	D611
Medicines, Drugs (NHS)	Z	D621,D625,D773
Jewellery, watches, clocks	L	D649,D650
Cosmchcs, personal cleanliness	L	D622,D624,D745,D793, D775,D1622,D1624,D1743
Other PGS - leather, travel goods, decorative fancy goods	L	D642,D645,D646
Leisure Goods (LG)		
Electrical Goods - TV, computers. audio. videos	L	D408-10,D420,D422
Toys, photographic, garden plants, hobbies	L	D631-4,D641,D733-4
Books, newspapers, magazines	L	D721-3
Other LG - telephones, music instruments, records. TV repair	L	D414,D601,D603-4,D784
Fares and Other Travel		
Public transport	Z	B158,B216-8,D550-4, D558-D559
Taxis, car hire	L	D505,D508,D511, D556.D560
Tobacco		
Cigarettes	L	D211,D1211
Pipe Tobacco	L	D212,D1212
Other Tobacco (cigars, hand-rolling)	L	D213,D1213
Motoring		
New cars and motor cycles	L	D501,D503,B244
Secondhand cars and motor cycles	Z	D502,B245,B247
Repairs, accessones. servicing	L	D510,D513-4,D545, D548-9
AA and RAC subscnpaons	L	D546
Motor Oil	L	D539
Driving Liccncc. Car insurance, VED	L	D512,B188,B187 less B179
Petrol		
Petrol, diesel	L	D538,D539,D542
Leisure Services (LS)		
Entertainment - cinemas, theatre, sports matches. dances TV Rental	L	D753,D761,D763-5 B181,B195,B253-4,D229, D768 less B194
Holidays - hotels, holiday expenses	L	D756-7,D759
Education fees	E	B160,B162,B164
Other LS - credit card interest, gifts, maintenance pay-menu ea.	L	B265,D789,D802,D798

Housing Goods (Durables)		
Furniture, flooring, textiles, mattresses	L	D401-7
Electrical - minor appliances and equipment, consumables, repair to these items	L	D423,D425-8,D437,D786
Kitchen - cookers, washing machine fridges, freezers, minor appliances	L	D411-3,D417-9
China glassware, pottery, kitchen utensils	L	D431,D439,D440
Other HG - gardening goods, appliance pets etc.	L	D434,D438,D623,D648, D731-2,D742,D746,D1623, D1742,D1746

Housing		
House - imputed rent and rates	Z	P281
Repairs, decorations. tools and fittings	L	D224,D232-3,D235-8, D785
Insurance on dwelling structure	E	B110

Other Household Variables	FES Codes
Month	A055
Household Type	A069
Standard Region	A098
Housing Tenure	A121
Number of Cars	A124
Number of Adults	A043-A047
Number of Workers	A048
Number of Retired	A050
Number of Adult Females	A033-A037
Number of Children 0-1	A020,A030
Number of of Children 2-4	A021,A031
Number of of Children 5- 18	A022,A032
Age of Head of Household	P396
Sex of Head of Household	A004
Employment Status of Head of HHold	A202
Central Hearing Dummy	A150-A154
Normal Gross Income of Hhold	P344
Normal Disposable Income of Hhold	P389
Current Gross Income of Hhold	P352
Gross Wage of Head of Hhold	P301
Gross Wage of Wife	P302

7 Appendix B: Data Description

	Variable	Min	Ave	Max
1	Household Number	1000	3886 13	7775.0
2	l-oral Food Expenditure	000	3821	339 3
3	Basic (most) Food Items	000	24 83	193 1
4	Take-away Food	000	8.951	310.3
5	sweets etc.	000	4.422	72.58
6	Total Fuel Expenditure	-3 827	10 40	153.4
7	Gas	-7 884	4.215	4454
8	Electricity	-11 08	4.926	69 62
9	Other Fuels	000	1.256	1500
10	Total Fares and other Travel Costs	000	4.886	11210
11	Public Fares	000	3 623	1116.9
12	Other Travel	000	1.263	167 6
13	Total Clothing Expenditure	000	1444	4182
14	Adult Clothing	000	1195	415.2
15	Children's Clothing	000	2.484	88 42
16	Total Alcohol Expenditure	000	9 228	6172
17	Beer	000	5 712	158 4
18	Spirit	000	1480	124.2
19	Wine	000	2 036	493 3
20	Total Motoring Expenditure	-1'31	25 27	907 0
21	Purchase of New Car	000	3 774	806 2
22	Purchase of Secondhand Car	000	7 102	529 7
23	Road Tax	-1.231	1 601	15 96
24	Car Insurance	000	2313	28 22
25	Repair and Maintenance	000	3 714	405 6
26	Driving Licence	000	0131	7 500
27	AA. RAC subscnpnons etc	000	1683	39 00
28	Petrol Expenditure	000	6 488	218 5
29	Motor Oil Expenditure	000	0985	10 98
30	Total Household Goods Expenditure	000	1499	1004 0
31	Furniture	000	5 366	1002 0
32	Electrical and Gas Appliances	000	2.166	482 4
33	Car Kitchen Equipment	000	1 193	350 0
34	China	000	1 165	145 5
35	Other Household Goods	000	5 096	512.0
36	Total Leisure Service Expenditure	-3.000	18.21	57510
37	Entertainment	000	2.079	109 8
38	Education	000	2.757	1295
39	Holidays	000	7 156	964 5
40	TV Rental	-3 000	1.987	22.42
41	Ocher Leisure Services	000	4 234	5750

	Variable	Min	Ave	Max
42	Total Leisure Goods Expenditure	.000	9.686	603.0
43	Other Leisure Goods	.000	1.548	300.0
44	Electrical goods	.000	1.850	565.4
45	Toys	.000	3.226	261.2
46	Books	.000	3.061	59.43
47	Total Personal Goods/Services Exp.	.000	8.155	1272.
48	Spectacles	.000	.4931	100.0
49	Medical goods	.000	1.301	116.8
50	Jewellery	.000	1.184	1250.
51	Cosmetics	.000	4.067	456.5
52	Other Personal goo and services	.000	1.110	750.0
53	Total Household Services Expenditure	.000	9.815	1914.
54	Postal	.000	1.599	1118.
55	contents Insurance	.000	.9263	47.82
56	Telephone	.000	5.923	743.0
57	Other household services	.000	1.366	1909.
58	Total Housing Expenditure	-16.43	37.23	2147.
59	Housing Costs	-16.43	30.51	297.1
60	Housing repa and maintenance	.000	5.445	2085.
61	Housing Insurance	.000	1.271	88.62
62	Total Tobacco Expenditure	.000	4.435	72.14
63	Cigarettes	.000	4.149	72.14
64	Pipe Tobncco	.000	.1408	17.25
65	Other Tobacco products	.000	.1449	27.00
66	Household Gross Wage	.000	177.5	3067.
67	Household Self-employment Income	.000	29.74	10000.
68	Investment Income	.000	13.39	2375.
69	Private Pension Income	.000	13.85	924.3
70	State Pension Income	.000	16.47	171.8
71	State Benefit Income	.000	14.87	230.2
72	Other Income	.000	3.042	705.1
73	Month	1.000	6.482	12.00
74	Household Type	1.000	1.916	3.000
75	Standard Region	1.000	6.164	11.00
76	Housing Tenure	1.000	4.127	7.000
77	Number o Cars	.000	.9190	7.000
78	Number of Adults	1.000	1.876	7.000
79	Number of Workers	.000	1.169	7.000
80	Number of Retired	.000	.4066	3.000
81	Number of Adult Females	.000	9782	6.000
82	Number of Children 0-1	.000	.0723	2.000
83	*Number* of of Children 2-4	.000	.1099	3.000
84	Number of of Children 5-18	.000	.4497	9.000
85	Age of Head of Household	18.000	50.58	96.00
86	Sex of Head of Household	1.000	1.235	2000
87	Employment Status o Head of HHold	1.000	4.190	11.00

	Variable	tin	Ave	Max
88	Central Heating Dummy	000	7647	1 000
a9	Normal Gross Income of Hhold	1920	284 7	10052
90	Normal Disposable Income of Hhold	-38 66	233 8	10047
91	Current Gross *Income of* Hhold	000	2841	10052
92	Gross Wage of Head of Hhold	000	1201	2154
93	Gross Wage of wife	000	3144	1077
94-109	Post-reform Tax on commodity groups'		-	
110-125	Post-reform Tax on commodity groups		-	-
126	Change in total tax paid by household	-	-	-

2 The order of the goods is:
beer, wine, spirits, food. fuel clothing, household services, personal goods and services, leisure goods travel fares. tobacco motoring, petrol, leisure services, household goods (durables) and housing.

8 Appendix C: Amending the Estimated Demand System

The user can employ an alternative model to those embedded within the program. This requires a thorough knowledge of the structure and estimation of consumer demand systems, in particular the AIDS system To incorporate an alternative model a parameter file should be edited using any Ascii text editor, e.g. EDLIN. The layout of the parameters should not be altered. They have the following structure: each block of rows corresponds to an quation e.g. the first block of numbers represent the parameters within the food budget share equation, the second block corresponds to beer consumpdon etc. For the ith quation the parameters are ordered as follows.

price coefficients:

$$\gamma_{ij} \log p_j \qquad j=1,10$$

coefficients on terms for real expenditure interacting with household characteristics:

$$\beta_i \ln(y/p)$$

where

$$\beta_i = \beta_{i0} + \beta_{i1} IKID + \beta_{i2} IWCL + \beta_{i3}(S1 - 0.25) + \beta_{i4}(S2 - 0.25)$$

$$+\beta_{i5}(S3 - 0.25) + \beta_{i6} IPENS$$

y/p	total expenditure on the 14 goods deflated by the Stone price index
IKID	dummy for presence of children
IWCL	" white collar worker
S1	" Quarter 1
S2	" Quarter 2
S3	" Quarter 3
IPENS	" pensioner head of household

coefficient for real expenditure squared

$$\lambda_i \left(\ln\left(\frac{Y}{P}\right) \right)^2$$

There are 4 sets, each with 10 blocks of numbers in each parameter file. The first correspond to those consumers that neither smoke or own a car, the second to non-smoking car owners. the third to smoking non-car owners the last to smoking car-owners. The simulation routine allocates the parameters according to their position in the file so, when editing, care should be taken to maintain the relative positions of the parameters.

The parameters are read in free format but must be kept as real numbers rather than input as integers.

The order of the goods for both equations and price coefficients within each equation is: beer. wine, spirits, food. fuel. clothing, household services. personal goods and services, leisure goods, travel fares, tobacco. motoring, petrol.

Table 4: Real Expenditure Constant Price and Budget Elasticities (Long-run Model, 1974-1988)

		Price Group														Budget
ommodity Group	H-Hold type	Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	
Beer	N/N	-0 504	-0 271	-0 017	-0193	0 029	0 285	-0 074	-0325	0096	-0089	0 000	0000	0 000	0063	1279
	N/Y	-0 961	-0 213	-0 099	0270	-0609	-2134	-0142	-0104	-0016	0507	0 000	1460	0250	0712	0793
	Y/N	-1 135	-0 046	0 072	0 009	0 090	-0402	0026	0024	0236	0 005	0 009	0 000	0 000	0111	1486
	Y/Y	-0 950	0 009	0 079	-0 036	-0 260	-0579	-0032	-0437	0106	0170	0145	0550	0 053	0182	0 730
	ALL	-0 955	-0 084	0 020	0 048	-0276	-0928	-0056	-0 251	0094	0240	0 069	0670	0096	0311	0924
Wine	N/N	-0 666	-1.332	-0 009	0030	0448	-0241	-0080	0358	0488	-0103	0 000	0 000	0 000	0107	1 413
	N/Y	-0 288	-1 001	-0 043	-0074	0595	0614	0279	-0478	0609	-0217	0 000	-0 681	-0 146	-0168	1741
	Y/N	-0 141	-1 244	-0 243	0007	0567	-0157	0030	-0509	0393	-0013	0 004	0 000	0 000	0305	1 290
	Y/Y	0 021	-1 026	-0 226	-0 205	0643	0331	-0088	-0005	-0054	0054	-0120	-0256	-0 041	-0 029	1621
	ALL	-0 184	-1 045	-0 123	-0112	0603	0408	0 104	-0253	0338	-0 095	-0 045	-0 438	-0 089	-0 069	1 648
Spirits	N/N	-0 027	-0 006	-1 592	0083	-0011	-0294	0075	0224	0189	0155	0 000	0 000	0 000	0205	1 076
	N/Y	-0 145	-0 047	-1 084	0112	0029	0421	0399	-0105	0088	-0220	0 000	-0250	-0 088	-0112	1 014
	Y/N	0 150	-0 164	-1 104	0105	-0071	-0351	0140	0332	0143	-0139	-0197	0 000	0 000	0 157	1 354
	Y/Y	0 179	-0 222	-0 911	0677	-0 223	-0355	0113	0734	-0213	-0 188	-0 578	-0 125	0 074	0037	1 156
	ALL	0 044	-0 134	-1 056	0347	-0095	-0076	0214	0339	-0 023	-0163	-0272	-0141	0 000	0016	11213
Food	N/N				-0 650	-0 126	-0139	-0072	-0038	-0051	0001	0 000	0 000	0 000	0101	0 466
	N/Y	0039	-0008	0011	-1 037	-0 113	-0105	0024	-0159	-0035	0073	0 000	0250	-0 087	0145	0 542
	Y/N	0 003	0 001	0015	-0 544	-0 141	-0067	-0013	-0 040	-0101	-0013	-0164	0 000	0 000	0 064	0 624
	Y/Y	-0 009	-0022	0073	-0 853	-0 041	0113	-0015	-0136	-0170	0029	-0023	0095	-0 085	0 044	0 406
	ALL	0 009	-0011	0033	-0 869	-0 093	-0028	-0005	-0123	-0 092	0039	-0 029	0137	-0066	0095	0 496
Fuel	N/N	-0040	0 003	0011	-0.345	-0 502	-0 009	-0 033	-0082	-0 007	-0024	0 000	0 000	0 000	-0114	0 253
	N/Y	0016	0104	-0004	-0 446	0 291	0 355	-0 363	0558	0156	-0360	0 000	-0390	-0389	-0326	00715
	Y/N	-0350	0253	0012	-0 435	-0 987	0023	0 029	0 446	-0 088	0 026	0 043	0 000	0 000	-0279	014'3
	Y/Y	0083	0170	-0032	-0 165	-0 111	-0177	0077	0347	0 311	-0 161	-0203	-0 365	-0 303	-0 171	0 424
	ALL	-0257	0275	-0097	-0 340	-0 142	0083	-0117	0381	0145	-0 190	-0058	-0267	-0247	-0239	022'2
Clothing	N/N	-0203	0226	-0032	-0.313	-0 007	-0 428	-0 075	-0170	0055	0025	0 000	0000	0 000	-0084	1 107
	N/Y	0133	-0 046	-0088	-0 226	0 193	-0 560	0 003	0321	0384	0 066	0 000	-0351	-0183	-0212	1 011
	Y/N	-0667	0142	0090	-0 180	0 020	-0 803	-0 078	0 187	-0 009	0141	0 149	0 000	0 000	0066	1451
	Y/Y	-0318	-0 041	-0134	0.253	-0 098	-1 063	-0 109	0274	0 206	-0018	-0 005	-0 038	-0 088	0013	0 870
	ALL	-0.318	0079	-0086	-0054	0051	-0 756	-0 053	0246	0251	0039	0013	-0 170	-0 114	-0 091	1 010
H-Hold Services	N/N	-0432	0084	-0012	-0 283	-0 048	-0 131	-0 541	-0 085	0 003	0 149	0 000	0 000	0 000	-0 016	1 666
	N/Y	-0 061	-0 027	0 039	0 084	-0.317	0 004	-0 531	-0 188	0 219	0 060	0 000	-0 371	-0 008	-0 122	1 367
	Y/N	-0 071	0 103	0 137	-0 083	0 059	-0 184	-0 861	-0 146	0 008	0 058	0 044	0 000	0 000	-0 088	1 664
	Y/Y	0 049	0 018	0 126	-0 058	0 073	-0 185	-0 766	-0 150	0 117	0 130	-0 002	-0 109	-0 060	0 028	1 567
	ALL	-0 030	-0 035	0 046	-0 016	-0 124	-0 091	-0 639	-0 161	0 145	0 094	0 003	-0 213	-0 025	-0 055	1 490

Table 2: Real Expenditure Constant Price and Budget Elasticities (Short-run Model; 1974-1988)

Commodity Group	H-Hold type	Price Group: Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	Budget
Beer	N/N	-0.554	-0.257	-0.017	-0.168	0.045	0.275	-0.064	-0.350	0.078	-0.056	0.000	0.000	0.000	0.068	.379
	N/Y	-0.961	-0.213	-0.099	0.270	-0.610	-2.134	-0.142	-0.104	-0.016	0.587	0.000	1.460	0.250	0.712	0.793
	Y/N	-1.141	-0.046	0.075	0.046	0.104	-0.423	0.041	0.022	0.245	-0.007	0.007	0.000	0.000	0.077	1.603
	Y/Y	-0.958	0.024	0.081	-0.001	-0.212	-0.577	-0.043	-0.403	0.042	0.161	0.118	0.551	0.061	0.154	1.103
	ALL	-0.963	-0.076	0.022	0.073	-0.250	-0.931	-0.057	-0.237	0.065	0.236	0.056	0.671	0.099	0.293	1.125
Wine	N/N	-0.633	-1.314	-0.025	0.060	0.432	-0.207	-0.072	0.327	0.445	-0.090	0.000	0.000	0.000	0.076	1.347
	N/Y	-0.288	-1.001	-0.043	-0.074	0.595	0.614	0.279	-0.478	0.609	-0.217	0.000	-0.681	-0.146	-0.168	1.742
	Y/N	-0.139	-1.256	-0.270	0.031	0.599	-0.124	0.043	-0.567	0.414	-0.042	0.021	0.000	0.000	0.291	1.231
	Y/Y	0.056	-1.035	-0.247	-0.181	0.608	0.379	-0.085	0.016	-0.081	0.071	-0.115	-0.302	-0.034	-0.052	1.570
	ALL	-0.169	-1.048	-0.133	-0.100	0.591	0.431	0.106	-0.251	0.327	-0.090	-0.042	-0.455	-0.086	-0.081	1.622
Spirits	N/N	-0.026	-0.016	-1.603	0.100	-0.002	-0.290	0.089	0.191	0.180	0.172	0.000	0.000	0.000	0.204	1.098
	N/Y	-0.145	-0.047	-1.084	0.112	0.029	0.421	0.399	-0.105	0.088	-0.220	0.000	-0.250	-0.088	-0.112	1.014
	Y/N	0.156	-0.183	-1.110	0.109	-0.046	-0.346	0.144	0.331	0.140	-0.153	-0.199	0.000	0.000	0.157	1.355
	Y/Y	0.185	-0.242	-0.938	0.684	-0.185	-0.321	0.126	0.725	-0.213	-0.219	-0.593	-0.112	0.085	0.017	1.289
	ALL	0.047	-0.146	-1.070	0.352	-0.074	-0.061	0.221	0.332	-0.024	-0.177	-0.279	-0.135	0.005	0.008	1.186
Food	N/N	-0.035	0.005	0.013	-0.642	-0.135	-0.135	-0.082	-0.037	-0.055	0.014	0.000	0.000	0.000	0.087	0.499
	N/Y	0.039	-0.008	0.011	-1.037	-0.113	-0.105	0.024	-0.159	-0.035	0.073	0.000	0.250	-0.087	0.145	0.542
	Y/N	0.014	0.003	0.016	-0.543	-0.151	-0.066	-0.021	-0.040	-0.103	-0.007	-0.158	0.000	0.000	0.056	0.622
	Y/Y	0.000	-0.019	0.074	-0.820	-0.047	0.140	-0.027	-0.140	-0.187	0.045	-0.017	0.053	-0.086	0.031	0.506
	ALL	0.014	-0.009	0.034	-0.856	-0.097	-0.018	-0.011	-0.124	-0.099	0.047	-0.026	0.123	-0.066	0.088	0.535
Fuel	N/N	0.025	0.100	-0.001	-0.371	-0.479	-0.022	-0.056	-0.083	0.015	-0.035	0.000	0.000	0.000	-0.094	0.190
	N/Y	-0.350	0.253	0.012	-0.446	0.291	0.355	-0.363	0.558	0.156	-0.360	0.000	-0.390	-0.389	-0.326	0.076
	Y/N	0.095	0.180	-0.021	-0.466	-1.023	0.006	0.023	0.465	-0.098	0.034	0.046	0.000	0.000	-0.243	0.147
	Y/Y	-0.210	0.260	-0.080	-0.190	-0.245	-0.166	0.083	0.323	0.385	-0.097	-0.173	-0.445	-0.299	-0.146	0.186
	ALL	-0.185	0.222	-0.024	-0.357	-0.187	0.082	-0.119	0.376	0.170	-0.170	-0.048	-0.293	-0.246	-0.223	0.138
Clothing	N/N	0.129	-0.039	-0.087	-0.302	-0.018	-0.441	-0.096	-0.169	0.068	0.036	0.000	0.000	0.000	-0.079	1.110
	N/Y	-0.667	0.142	0.090	-0.226	0.193	-0.560	0.003	0.321	0.384	0.066	0.000	-0.351	-0.183	-0.212	1.011
	Y/N	-0.335	-0.032	-0.132	-0.176	0.005	-0.814	-0.064	0.203	-0.010	0.148	0.134	0.000	0.000	0.072	1.393
	Y/Y	-0.317	0.090	-0.078	0.313	-0.092	-1.053	-0.115	0.318	0.165	0.010	-0.036	-0.105	-0.101	0.001	1.003
	ALL	-0.434	0.090	-0.009	-0.031	0.051	-0.754	-0.056	0.264	0.237	0.050	0.000	-0.195	-0.118	-0.095	1.054
H-Hold Services	N/N	-0.053	-0.024	0.047	-0.322	-0.080	-0.168	-0.508	-0.035	0.034	0.107	0.000	0.000	0.000	0.001	1.501
	N/Y	-0.071	0.103	0.137	0.084	-0.317	0.004	-0.531	-0.188	0.219	0.060	0.000	-0.371	-0.008	-0.122	1.367
	Y/N	0.075	0.026	0.129	-0.132	0.048	-0.151	-0.883	-0.139	0.029	0.037	0.018	0.000	0.000	-0.059	1.422
	Y/Y	-0.040	-0.034	0.052	-0.101	0.078	-0.195	-0.741	-0.133	0.198	0.102	-0.049	-0.097	-0.068	0.028	1.471
	ALL	-0.048	0.036	0.097	-0.039	-0.126	-0.096	-0.628	-0.149	0.179	0.078	-0.016	-0.209	-0.028	-0.052	1.422

Table 2 (cont.)

Commodity Group	H-Hold type	Price Group: Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	Budget
PGS	N/N	-0 357	0136	0 126	-0 182	-0148	-0 371	-0 044	-0 904	0 640	0 072	0 000	0 000	0 000	0 031	I 171
	N/Y	-0 064	-0218	-0044	-0671	0 599	0 633	-0231	-1 016	0 543	-0316	-0 165	0 000	0 000	-0 110	0977
	Y/N	0041	-0355	0307	-0261	0971	0492	-0 143	-1 735	0750	-0923		-0 259	-0 194	0021	1 081
	Y/Y	-0 417	0 007	0 331	-0588	0338	0 599	-0 148	-1064	0 662	-0036	-0 005			-0 225	1 051
	ALL	-0216	-0 111	0 142	-0559	0461	0513	-0 174	-1084	0 614	-0 225	-0016.	-0 062	-0 155	-0 129	1 032
Leisure Goods	N/N	0070	0164	0 105	-0237	0023	0 133	0037	0 567	-1 167	-0452	0 000	0 000	0 000	-0 242	1 234
	N/Y	-0008	0234	0 031	-0 125	0 141	0637	0226	0457	-0702	-0439	0 000	-0 830	-0214	-0 407	0 984
	Y/N	0349	0193	0096	-0495	-0 151	-0 017	0022	0 557	-1072	-0 228	-0144	0 000	0 000	-0 110	I 171
	Y/Y	0039	-0 032	-0087	-0703	0359	0211	0196				-0 315	-0 356	-0 104	-0 126	1 056
	ALL	o w o	0.129	-0 001	-0371	0190	0420	0186	0521	-0 657	-0389	-0 125	-0 534	-0 142	-0271	1 043
Travel	N/N	-0045	-0029	0088	0054	-0049	0 061	0 105	0057	-0 399	-0847	0 000	0 000	0 000	0 004	1 318
	N/Y	0430	-0118	-0 110	0370	-0 460	0 154	0087	-0 376	-0 620		0 000	-0 037	0 262	0 027	1 230
	Y/N	-0009	-0020	-0 107	-0033	0 054	0271	0029	-0 090	-0 231	-0393 -0608	0 044	0 000	0 000	0 092	1 404
	Y/Y	0 252	0048	-0150	0281	-0 153	0028	0 171	-0 055	-0 558	-0948	-0 204	0 211	0 163	-0 093	1 254
	ALL	0228	-0 040	-0088	0227	-0220	0 123	0 104	-0 267	-0501	-0707	-0050	0 045	0 147	0 000	1 280
Tobacco	N/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	N/Y	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	Y/N	0 007	0 006	-0 092	-0507	0 048	0 161	0 009	-0 082	-0 096	0 029	-0445	0 000	0 000	-0 039	0477
	Y/Y	0 132	-0 055	-0 291	-0079	-0 195	-0073	-0058	-0 005	-0 380	-0 146	-0 077	0 110	0 052	0 067	0246
	ALL	0 090	-0 034	-0 224	-0223	-0113	0 006	-0036	-0031	-0 285	-0087	-0201	0073	0 034	0 031	0124
Motoring	N/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000 -0794	0 000 0 043	0 000	0 000
	N/Y	0 309	-0 107	-0 036	0 363	-0 144	-0 237	-0 156	0 027	-0 338	-0 011	0 000	0 000	0 000	0 043	0081	1 145
	Y/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	-0871	0 030	0 000	0 000	0 000
	Y/Y	0 221	-0 052	-0 020	0087	-0 180	-0 077	-0 042	-0 100	-0 155	0054	0 040	-0814	0 037	0030	0 065	1 357
	ALL	0.267	-0 082	-0 029	0242	-0 157	-0 166	-0 106	-0027	-0256	0017	0017			-0814 0037	0 073	1 217
Petrol	N/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	N/Y	0150	-0 065	-0 036	-0 358	-0 407	-0 351	-0 009	-0 180	-0 248	0 214	0 000	0 123	0 038	0 129	0 774
	Y/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	Y/Y	0 061	-0 015	0037	-0 350	-0 303	-0 184	-0 073	-0 187	-0 112	0 104	0 046	0 074	-0 181	0 080	0 667
	ALL	0106	-0 041	-0 002	-0.346	-0 350	-0 267	-0038	-0 179	-0 181	0 159	0 021	0 098	-0 062	0 104	0 707
Leisure Services	N/N	0 041	0019	0 079	0252	-0 099	-0101	0001	0 018	-0 160	0 003	0 000	0 000	0 000	-1 053	1 947
	N/Y	0 185	-0032	-0020	0259	-0 148	-0 177	-0 063	-0046	-0 204	0 009	0 000	0 099	0 056	-0 918	1 770
	Y/N	0079	0098	0079	0 197	-0214	0 093	-0033	0 011	-0080	0 066	-0 042	0 000	0 000	-1 196	I 785
	Y/Y	0076	-0 011	0004	0 061	-0073	0 001	0 015	-0 107	-0 067	-0 029	0 030	0 079	0 039	-1 018	1 805
	ALL	0122	-0007	0 007	0182	-0 129	-0079	-0027	-0 056	-0 139	0 001	0 006	0 073	0 039	-0 993	I 80:

Table 3: Real Expenditure Constant Price and Budget Elasticities (Long-run Model; 1974-1987)

ommodily Group	H-Hold type	Price Group: Beer	Wiie	Spirits	Food	Fuel	Clothes	I IS	PGS	LG	Travel	Tobacco	Motor Petrol	I S	Budget
Beer	N/N	-0.434	-0.240	-0.047	-0.227	0.006	0.365	-0.005	-0.393	0.064	-0.131	0.000	0.000	0.042	1.260
	N/Y	-1.018	-0.293	-0.091	0.187	-0.472	-2.180	-0.135	-0.179	0.235	0.527	0.000	1.444	0.181	0.793	0.513
	Y/N	-1.130	-0.043	0.049	-0.023	0.131	-0.310	0.033	0.030	0.166	-0.002	0.015	0.000	0.000	0.084	1.444
	Y/Y	-1.082	0.010	0.090	-0.053	-0.161	-0.588	-0.094	-0.440	0.128	0.206	0.184	0.539	0.073	0.188	0.731
	ALL	-1.032	-0.100	0.023	0.007	-0.173	-0.900	-0.072	-0.267	0.161	0.228	0.086	0.636	0.082	0.321	0.857
Wine	N/N	-0.463	-1.266	-0.037	0.000	0.352	-0.128	0.035	0.198	0.373	-0.085	0.000	0.000	0.000	0.090	1.328
	N/Y	-0.398	-1.135	-0.004	-0.078	0.835	0.680	0.232	-0.541	0.743	-0.289	0.000	n.757	-0.165	-0.124	1.659
	Y/N	-0.156	-1.344	-0.293	-0.024	0.775	-0.105	0.042	-0.585	0.427	-0.076	-0.016	0.000	0.000	0.357	1.310
	Y/Y	0.023	-1.018	-0.262	-0.270	0.713	0.348	-0.069	-0.118	-0.059	0.064	-0.114	-0.188	-0.050	-0.001	1.692
	ALL	-0.225	-1.113	-0.123	-0.143	0.752	0.448	0.087	-0.334	0.392	-0.126	-0.045	-0.440	-0.099	-0.031	1.627
Spirits	N/N	-0.073	-0.030	-1.714	0.146	0.088	-0.394	0.094	0.234	0.252	0.130	0.000	0.000	0.000	0.268	1.078
	N/Y	-0.146	-0.004	-1.140	0.085	0.028	0.389	0.460	-0.202	0.179	-0.220	0.000	-0.232	-0.122	-0.075	n.935
	Y/N	0.114	-0.188	-1.105	0.073	0.017	-0.291	0.114	0.359	0.091	-0.152	-0.184	0.000	0.000	0.152	1377
	Y/Y	0.190	-0.233	-0.933	0.592	-0.144	-0.458	0.129	0.582	-0.207	-0.206	-0.590	0.096	0.068	0.114	1.135
	ALL	0.055	-0.140	-1.078	0.326	-0.050	-0.163	0.228	0.279	-0.010	-0.179	-0.304	-0.028	-0.006	0.071	1.104
Food	N/N	-0.045	0.000	0.018	-0.665	-0.109	-0.134	-0.072	-0.031	-0.054	0.000	0.000	0.000	0.000	0.091	0.473
	N/Y	0.028	-0.009	0.008	-0.931	-0.137	-0.084	0.036	-0.080	0.011	0.054	0.000	0.073	-0.090	0.120	0.367
	Y/N	-0.007	-0.002	0.010	-0.537	-0.120	-0.074	-0.019	-0.043	-0.087	-0.025	-0.164	0.000	0.000	0.067	0.604
	Y/Y	-0.013	-0.028	0.068	-0.784	-0.039	0.134	-0.024	-0.099	-0.162	0.020	-0.025	0.000	-0.081	0.033	0.340
	ALL	0.001	-0.013	0.031	-0.792	-0.097	-0.012	-0.005	-0.076	-0.071	0.025	-0.032	0.028	-0.064	0.078	0.404
Fuel	N/N	0.003	0.094	0.029	-0.287	-0.678	-0.119	-0.066	0.002	0.033	0.072	0.000	0.000	0.000	-0.083	0.387
	N/Y	-0.266	0.348	0.010	-0.511	0.055	0.308	-0.254	0.433	-0.015	-0.287	0.000	-0.115	-0359	-0.346	0.421
	Y/N	0.113	0.184	0.006	-0.332	-1.102	-0.138	0.015	0.435	0.000	0.035	0.008	0.000	0.000	-0.223	0.270
	Y/Y	-0.147	0.275	-0.062	-0.146	-0.237	-0.191	0.110	0.389	0.304	-0.185	-0.245	5.377	-0.307	-0.180	0.507
	ALL	-0.122	0.258	-0.011	-0.330	-0.350	0.007	-0.063	0.356	0.096	-0.145	-0.077	-0.161	-0.226	-0.233	0.417
Clothing	N/N	0.187	-0.034	-0.129	-0.350	-0.118	-0.420	-0.042	-0.199	0.106	0.076	0.000	0.000	0.000	-0.076	1.163
	N/Y	-0.708	0.163	0.078	-0.180	0.177	-0.546	0.064	0323	0.467	0.008	0.000	-0.406	-0.193	-0.246	0.919
	Y/N	-0.250	-0.023	-0.101	-0.192	-0.130	-0.818	-0.051	0.222	-0.058	0.191	0.160	0.000	0.000	0.050	1.474
	Y/Y	-0.312	0.078	-0.115	0.292	-0.111	-1.040	-0.086	0.309	0.203	-0.027	-0.012	-0.093	-0.081	-0.005	0.825
	ALL	-0.429	0.092	-0.033	-0.017	0.008	-0.754	-0.015	0.262	0.276	0.022	0.014	-0.206	-0.112	-0.107	0.970
H-Hold Services	N/N	-0.004	-0.015	0.050	-0.303	-0.107	-0.068	-0.480	-0.157	-0.008	0.130	0.000	0.000	0.000	-0.037	1.619
	N/Y	-0.075	0.096	0.160	0.134	-0.253	0.110	-0.532	-0.282	0.208	0.081	0.000	-0.489	-0.021	-0.137	1.346
	Y/N	0.059	0.021	0.088	-0.108	0.032	-0.114	-0.806	-0.141	-0.041	0.066	0.046	0.000	0.000	-0.103	1.670
	Y/Y	-0.103	-0.032	0.067	-0.107	0.132	-0.179	-0.752	-0.167	0.126	0.192	0.031	-0.156	-0.071	0.019	1.663
	ALL	-0.063	0.033	0.110	-0.019	-0.080	-0.029	-0.627	-0.216	0.132	0.122	0.015	-0.275	-0.034	-0.070	1.514

Table 3 (cont.)

Commodity Group	H-Hold type	Price Group: Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	Budget
PGS	N/N	-0.383	0 100	0 146	-0 154	0 004	-0 381	-0 185	-0 924	0614	0 102	0 000	0 000	0 000	0 063	1 277
	N/Y	-0 121	-0 270	-0 085	-0.356	0 519	0673	-0340	-0 559	OS45	-0261	0 000	-0 403	-0 139	-0 203	0 863
	Y/N	0 062	-0.334	0.319	-0 287	1 046	0 568	-0 162	-1 804	0 738	-0 964	-0 169	0 000	0 000	-0 012	1 217
	Y/Y	-0 507	-0 057	0.317	-0 472	0 490	0 673	-0 175	-0 945	0 867	-0 106	-0 054	-0 547	-0 227	-0 257	0 827
	ALL	-0 272	-0 160	0 127	-0.370	0 508	0.553	-0 245	-0 864	0 690	-0 237	-0 037	-0 373	-0 143	-0 176	0 928
Leisure Goods	N/N	0 064	0194	0162	-0278	0 064	0208	-0010	0 631	-1 275	-0 472	0 000	0 000	0 000	-0288	1237
	/Y	0 123	0286	0058	0039	-0 014	0 750	0194	0 420	-0 761	-0 313	0 000	-1 099	-0 209	-0 474	0 869
	Y/N	0 248	0 177	0 059	-0 421	-0 001	-0 108	-0034	0 536	-0 967	-0 265	-0 154	0 000	oooo	-0071	1 170
	Y/Y	0 118	-0 023	-0 090	-0 616	0.306	0352	0105	0 693	-0 587	-0 247	-0 255	-0517	-0082	-0 157	1010
	ALL	0 124	0 131	-0 004	-0.310	0 139	0 482	0127	0 566	-0 724	-0 289	-0 127	-0 698	-0125	-0292	0 974
Travel	N/N	-0 123	-0 041	0077	0 000	0131	0 138	0146	0 097	-0 439	-0 984	0 000	0 000	0 000	-0 004	1 348
	/Y	0.382	-0154	-0 099	0258	-0 369	0019	0 105	-0280	-0434	-0777	0 000	0083	0194	0073	0 753
	Y/N	-0 002	-0 031	-0 098	-0 119	0 060	0353	0 055	-0 695	-0263	-0397	0 054	oooo	0 000	0 084	1371
	Y/Y	0.331	0 043	-0 156	0 135	-0 325	-0 083	0 279	-0 147	-0430	-0957	-0 211	0382	0164	-0024	0 411
	ALL	0 226	-0 058	-0 092	0 115	-0 208	0 069	0152	-0271	-0401	-0 784	-0 051	0144	0122	0 037	0 85C
Tobacco	N/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	N/Y	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	Y/N	0013	-0 004	-0 070	-0470	0 009	0176	0 023	-0 073	-0 09 I	0 032	-0 526	0 000	0 000	-0019	0 394
	ALL	0196	-0 033	-0298	-0 112	-0 287	-0 023	0031	-0 050	-0 296	-0 141	-0 140	oo64	0 032	0075	-0071
					-0 250	-0 173	0 054	0 028	-0059	-0217	-0074	-0289	0 040	0 020	0 039	0 108
Motoring	N/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0000	0 000	0 000	0 000	0 000	0 000		ooa
	N/Y	0 306	-0 118	-0031	0102	-0 043	-0 265	-0 185	-0126	-0446	0024	0 000	-0410	0 049	0143	1 53:
	Y/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
	Y/Y	0 214	-0 031	0 018	0 000	-0 164	-0 070	-0 057	-0 189	-0 223	0 095	0 024	-0685	0 009	0 059	201:
	ALL	0 260	-0 079	-0 009	0 056	-0 093	-0 176	-0 126	-0 149	-0341	0 053	0010	-0516	0 031	0 104	1 69:
Petrol	N/N	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	o o o o	0 000	0 000	0 000	0 000	0 000
	N/Y	0 098	-0 066	-0 041	-0 321	-0.345	-0 323	-0 020	-0 111	-0217	0145	0 000	0126	-0 041	0 115	1 12
	YIN	0 000	0 000	0 000	0 000	0 000	0 000	0 000	ooal		0 000	0 000	0 000	0 000	0 000	0 000
	Y/Y	0 069	-0 020	0030	-0.313	-0315	-0 143	-0 061	-0 185	-0 084	0 096	0 028	0021	-0 182	0 058	1 27
	ALL	0082	-0 043	-0 008	-0.308	-0.321	-0 233	-0 038	-0141	-0 151	0 119	0013	0075	-0 103	0 086	1 16
Leisure Services	N/N	0 030	0 033	0119	0325	-0 113	-0 104	-0 031	0 045	-0 200		0 000	0 000	0 000	-1101	2 08
	/Y	0221	-0 025	-0013	0220	-0170	-0211	-0 068	-0 084	-0 253	-0 003	0 000	0187	0059	-0891	1 75
	Y/N	0117	0137	0 091	0301	-0361	0087	-0 079	-0 008	-0 066	0 027	0 078	0030	0 000	0 000	-1 267	2 04
	Y/Y	0 068	0 000	0 019	0 049	-0 071	-0 004	0 006	-0081		-0 062	-0 005	0 025	0 053	0 022	-1 021	1 54
	ALL	0 138	0 007	0 021	0 176	-0 151		-0 094	-0 040	-0 063	-0158	0 019	0 006	0 102	0 034	-0 998	1 74

Table 4 (cont.)

Commodity Group	H-Hold type	Price Group: Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	Budget
PGS	N/N	-0.332	0.149	0.147	-0.186	-0.148	-0.373	-0.107	-0.930	0.635	0.112	0.000	0.000	0.000	0.032	1.213
	N/Y	-0.064	-0.218	-0.044	-0.671	0.599	0.633	-0.231	-1.016	0.543	-0.316	0.000	0.080	-0.185	-0.110	0.977
	Y/N	0.045	-0.318	0.308	-0.256	0.932	0.453	-0.151	-1.689	0.724	-0.889	-0.159	0.000	0.000	0.001	1.161
	Y/Y	-0.453	-0.002	0.335	-0.575	0.363	0.516	-0.166	-1.054	0.705	-0.032	0.001	-0.233	-0.204	-0.199	0.980
	ALL	-0.226	-0.110	0.146	-0.554	0.467	0.478	-0.188	-1.079	0.628	-0.216	-0.013	-0.052	-0.159	-0.121	1.016
Leisure Goods	N/N	0.087	0.179	0.110	-0.220	-0.011	0.106	0.004	0.562	-1.200	-0.388	0.000	0.000	0.000	-0.229	1.246
	N/Y	-0.008	0.234	0.031	-0.125	0.141	0.637	0.226	0.457	-0.702	-0.439	0.000	-0.830	-0.214	-0.407	0.984
	Y/N	0.336	0.183	0.099	-0.484	-0.136	-0.016	0.006	0.538	-1.077	-0.214	-0.127	0.000	0.000	-0.107	1.201
	Y/Y	0.098	-0.022	-0.086	-0.637	0.291	0.345	0.116	0.628	-0.565	-0.238	-0.216	-0.463	-0.100	-0.149	1.027
	ALL	0.062	0.133	-0.001	-0.345	0.164	0.443	0.153	0.533	-0.717	-0.346	-0.088	-0.573	-0.141	-0.278	1.035
Travel	N/N	-0.071	-0.034	0.080	0.004	-0.033	0.042	0.146	0.087	-0.343	-0.899	0.000	0.000	0.000	0.021	1.283
	N/Y	0.430	-0.118	-0.110	0.370	-0.460	0.154	0.087	-0.376	-0.620	-0.608	0.000	-0.037	0.262	0.027	1.230
	Y/N	0.008	-0.006	-0.097	-0.061	0.041	0.258	0.045	-0.671	-0.217	-0.407	0.008	0.000	0.000	0.099	1.373
	Y/Y	0.266	0.037	-0.129	0.185	-0.253	-0.051	0.217	-0.048	-0.403	-0.963	-0.207	0.232	0.163	-0.046	0.713
	ALL	0.231	-0.042	-0.082	0.186	-0.248	0.095	0.127	-0.256	-0.446	-0.723	-0.057	0.051	0.147	0.017	1.117
Tobacco	N/N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N/Y	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Y/N	0.008	0.001	-0.091	-0.525	0.045	0.179	0.022	-0.079	-0.085	0.006	-0.462	0.000	0.000	-0.020	0.308
	Y/Y	0.161	-0.058	-0.284	-0.104	-0.229	-0.009	-0.002	0.001	-0.261	-0.148	-0.152	0.006	0.016	0.062	-0.067
	ALL	0.110	-0.038	-0.219	-0.246	-0.136	0.054	0.006	-0.026	-0.202	-0.096	-0.256	0.004	0.010	0.035	0.059
Motoring	N/N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N/Y	0.309	-0.107	-0.036	0.363	-0.144	-0.237	-0.156	0.027	-0.338	-0.011	0.000	-0.794	0.043	0.081	1.145
	Y/N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Y/Y	0.221	-0.044	-0.022	0.155	-0.148	-0.027	-0.047	-0.090	-0.201	0.060	0.002	-0.920	0.036	0.027	1.793
	ALL	0.267	-0.079	-0.030	0.270	-0.143	-0.145	-0.108	-0.023	-0.275	0.019	0.001	-0.835	0.039	0.057	1.400
Petrol	N/N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N/Y	0.150	-0.065	-0.036	-0.358	-0.407	-0.351	-0.009	-0.180	-0.248	0.214	0.000	0.123	0.038	0.129	0.774
	Y/N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Y/Y	0.053	-0.018	0.033	-0.344	-0.306	-0.161	-0.064	-0.197	-0.109	0.105	0.014	0.089	-0.159	0.065	1.143
	ALL	0.103	-0.042	-0.004	-0.343	-0.351	-0.256	-0.034	-0.183	-0.179	0.159	0.006	0.105	-0.053	0.097	0.922
Leisure Services	N/N	0.038	0.026	0.079	0.291	-0.120	-0.108	-0.012	0.019	-0.152	0.016	0.000	0.000	0.000	-1.076	1.948
	N/Y	0.185	-0.032	-0.020	0.259	-0.148	-0.177	-0.063	-0.046	-0.204	0.009	0.000	0.099	0.056	-0.918	1.770
	Y/N	0.115	0.103	0.079	0.222	-0.314	0.086	-0.049	0.000	-0.078	0.070	-0.022	0.000	0.000	-1.213	1.843
	Y/Y	0.089	-0.006	0.008	0.088	-0.085	0.011	0.015	-0.095	-0.079	-0.015	0.027	0.033	0.032	-1.024	1.743
	ALL	0.131	-0.004	0.009	0.197	-0.139	-0.077	-0.029	-0.053	-0.142	0.007	0.008	0.057	0.037	-1.000	1.784

Table 1 Real Expenditure Constant Price and Budget Elasticities (Short-run Model, 1974-1987)

Commodity Group	H-Hold type	Price Group: Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	Budget
Beer	N/N	-0 482	-0 229	0 048	-0 203	0 022	0 358	0 006	0 418	0 044	-0 100	0000	0000	0 000	0 050	1 374
	N/Y	-1 038	-0 277	-0 094	0 149	-0 415	-2 153	0 132	-0 199	0 060	0 515	OOM	1 582	0 227	0 774	0 796
	Y/N	-1 142	-0 042	0 052	0 015	0 153	-0 328	0 047	00Z9	0 175	-0 018	0 011	0 000	0 000	0 049	I 563
	Y/Y	-1 082	0 026	0 093	0 013	0 109	-0 573	-0 107	-0 413	0 047	0 204	0 158	0 SOd	0 077	0 159	I 178
	ALL	-1 044	-0 087	0 024	0 024	0 128	-0 890	-0 07d	-0 262	0 077	0 222	0 074	0 6 7 I	0 096	0 296	I 168
Wine	N/N	-0 441	-1 253	-0 053	0 026	0 339	-0 107	-0 024	0 172	0 343	-0 071	0000	0 000	0 000	0 070	1 285
	N/Y	-0 375	-1 107	-0 014	-0 057	0 820	0 731	0 230	-0 539	0 654	-0 269	0000	-0 766	-0 152	-0 155	I 783
	Y/N	-0 153	-1 362	-0 325	0 006	8I8	-0 061	0 060	-0 659	0 453	-0 117	COOO	0 000	0 000	0 339	1 246
	Y/Y	0 062	-1 025	-0 283	0 245	0 678	0 409	-0 065	-0 098	0 084	0 075	-0 110	0 242	-0 043	-0 031	I 632
	ALL	-0 198	-1 102	-0 140	0 119	0 734	0 501	0089	-0 332	0 339	-0 115	-0 042	-0 465	-0 090	-0 060	1 657
Spirits	N/N	-0 074	-0 043	-1 7[redacted]	0 162	0 098	0 386	0 111	0 201	0 238	0 147	0 000	0 000	0 000	0 269	1 104
	N/Y	-0 152	-0 017	-1 138	0 065	0 075	0 411	0 457	-0 248	0 140	-0 232	0 000	0 178	-0 108	0 075	I 018
	Y/N	0 121	-0 208	-1 1[redacted]	0OT9	0 043	-0 284	0 120	0 356	0089	-0 167	0 187	0 000	0 000	0 150	I 377
	Y/Y	0 196	-0 252	0 9[redacted]	0 603	-0 095	-0 409	0 136	0 573	-0 216	-0 236	-0 603	0 096	0 076	0090	I 326
	ALL	0 057	-0 157	-1 0[redacted]	0 326	-0 008	-0 132	0 233	0 258	-0 028	-0 198	-0 311	0 0 I I	0 002	0 059	1 221
Food	N/N	-0 040	0 003	0 020	-0 656	0 118	-0 129	-0 081	-0 030	-0 059	0 013	0 000	0 000	0 000	0 078	0 507
	N/Y	0 023	-0 006	0 006	-0 919	-0 [redacted]	0062	oozs	-0 093	-0 034	0 062	0 000	0 089	-0 071	0 107	0 537
	Y/N	0 005	0 001	0 011	-0 536	-0	-0 072	0 026	-0 044	-0 090	-0 019	-0 158	0 000	0 000	0 060	0 602
	Y/Y	0 003	0 025	0069	-0 756	-0 047	0 158	-0 035	-0 105	-0 180	0 035	-0 019	0 030	-0 081	0 020	0 459
	ALL	0 004	-0 011	0 031	0 I I I	0 099	0 007	-0 016	-0 083	-0 096	0 035	-0 029	0 024	-0 056	0 066	0 515
Fuel	N/N	0 011	0 090	0 032	-0 310	-0 654	0 135	-0 087	0 003	0 055	0 060	0 000	0 000	0 000	-0 067	0 314
	N/Y	-0 234	0 341	0 026	-0 d77	-0 067	0 205	-0 264	0 488	0 131	0 275	0 000	-0 193	-0 373	-0 308	0 115
	Y/N	0 131	0 194	0 016	-0 361	-1 140	-0 156	0 007	0 452	-0 013	0 047	0 013	0 000	0 000	-0 190	0 260
	Y/Y	-0 099	0 261	-0 041	-0 178	-0 374	-0 193	0 110	0 374	0 373	-0 127	-0 219	-0 dEd	0 299	-0 155	0 260
	ALL	-0 091	0 253	0 004	0 3EE	-0 441	-0 036	0 071	0 374	0 172	0 122	-0 068	-0 208	0 229	-0 203	0 216
Clothing	N/N	0 183	-0 028	-0 126	-0 338	-0 133	-0 432	-0 063	-0 200	0 120	0 087	0 000	0 000	0 0 0 0	-0 070	I 169
	N/Y	-0 699	0 175	0 083	-0 132	0 118	-0 489	0 051	0 346	0 451	0 071	0 000	-0 517	-0 187	-0 271	I 088
	Y/N	-0 264	-0 014	-0 098	-0 188	-0 147	-0 827	-0 039	0 235	0 061	0 200	0 148	0 000	0 000	0 056	1 421
	Y/Y	-0 304	0 091	-0 102	0 345	-0 112	-1 033	-0 091	0 353	0 155	0 002	0 W 7	-0 148	-0 091	8100	0 9618
	ALL	-0 424	0 104	-0 026	0 025	-0 021	-0 729	-0 023	0 290	0 252	0061	0 001	-0 274	-0 113	-0 120	I 088
H-Hold Services	N/N	0 005	-0 010	0 059	-0 345	-0 139	-0 102	-0 447	-0 108	oozz	0090	0 000	0 000	0 000	-0 024	1 434
	N/Y	-0 074	0 095	0 159	0 093	-0 263	0 088	-0 524	-0 256	0 246	0 06.9	0 000	-0 475	-0 023	-0 136	1 270
	Y/N	0 084	0 030	0 093	0 154	0 014	-0 086	-0 829	-0 133	-0 021	0 050	0 028	0 000	0 000	-0 076	1 446
	Y/Y	-0 118	-0 030	0 071	0 158	0 133	-0 189	-0 723	-0 144	0 229	0 163	-0 020	-0 150	-0 080	0 018	1 538
	ALL	-0 064	0 035	0 112	0 064	0 089	-0 043	-0 612	-0 190	0 189	0 101	0 004	-0 267	-0 037	0 067	1 395

Table 1 (cont.)

Commodity Group	H-Hold type	Price Group: Beer	Wine	Spirits	Food	Fuel	Clothes	HS	PGS	LG	Travel	Tobacco	Motor	Petrol	LS	Budget
PGS	N/N	-0.408	0.087	0.125	-0.149	0.005	-0.382	-0.127	-0.903	0.623	0.063	0.000	0.000	0.000	0.065	1.2313
	N/Y	-0.135	-0.270		-0.415	0.586	0.722		-0.607	0.527						0.967
	Y/N	0.059	-0.376	-0.104 0.316	-0.293	1.088	0.601	-0.353	-1.842	0.771	-1.003	-0.479	-0.363	-0.216	-0.286	1.134
	Y/Y	-0.476	-0.048	0.312	-0.500	0.471	0.768	-0.150	-0.965	0.835	-0.124	-0.057	-0.355	-0.139	-0.183	0.9018
	ALL	-0.269	-0.162	0.115	-0.406	0.534	0.612	-0.216	-0.893	0.674	-0.273	-0.039				0.991
Leisure Goods	N/N	0.044	0.178	0.153	-0.301	0.108	0.236	0.026	0.641	-1.234						
	N/Y	0.031	0.252	0.045	-0.116	0.121	0.725	0.229	0.406	-0.721	-0.549 -0.404	0.000 0.000	0.000	O.WO	-0.304	1.228
	Y/N	0.262	0.187	0.057	-0.434	-0.023	-0.113	-0.017	0.560	-0.960	-0.275	-0.173	-0.924	-0.202	-0.442	0.973
	Y/Y	0.043	.....		-0.684	0.376	0.269	0.192	0.668	-0.414	-0.341	-0.356	0.000	0.000	-0.071	1.133
	ALL	0.051	-0.032 0.112	-0.094 -0.012	-0.408	0.229	0.435	0.185	0.550	-0.625	-0.376	-0.175	-0.406	-0.088	-0.133	1.057
Travel	N/N	-0.094											-0.573	-0.125	-0.269	1.037
	N/Y	0.373	-0.034 -0.144	-0.104 0.088	0.060	0.108	0.158	0.101	0.061	-0.510	-0.915	0.000	0.000	0.000	-0.023	1.4018
	Y/N				0.298	-0.353	0.158	0.089	-0.332		-0.703	0.000	0.025	0.233	0.021	1.215
	Y/Y	-0.026	-0.048 0.051	-0.107 -0.179	-0.091	0.082	0.369	0.041	-0.723	-0.862	-0.390	0.088	0.000	0.000	0.078	1.403
	ALL	0.228	-0.054	-0.101	0.232	-0.223	0.006	0.237	-0.173	-0.593	-0.942	-0.208	0.374	0.161	-0.070	1.1212
Tobacco	N/N	0.000	0.000	0.000	0.172	-0.170	0.154	0.125	-0.309	-0.509	-0.741	-0.044	0.119	0.136	0.000	1.2510
	N/Y	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Y/N	0.010	0.001	-0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Y/Y	0.169	-0.050	-0.305	-0.454	0.013	0.162	0.014	-0.077	-0.102	0.053	-0.511	0.000	0.000	-0.037	0.549
	ALL	0.108	-0.030	-0.215	-0.084	-0.256	-0.095	-0.020	-0.053	-0.413	-0.138	-0.070	0.171	0.062	0.082	0.255
Motoring	N/N	0.000	0.000	0.000	-0.227	-0.152	0.004	-0.007	-0.062	-0.293	-0.065	-0.240	0.105	0.038	0.036	0.369
	N/Y	0.000	-0.120	-0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000
	Y/N		0.000	0.000	0.125	-0.072	-0.338	-0.179	-0.109	-0.375	0.000	0.000	-0.433	0.013	0.170	1.159
	Y/Y	0.213	-0.041	0.018	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	ALL	0.275	-0.083	-0.005	-0.050	-0.189	-0.111	-0.054	-0.195	-0.175	0.093	0.064	-0.668	0.001	0.095	1.497
Petrol	N/N	0.000	0.000	0.000	0.048	-0.120	-0.234	-0.122	-0.142	-0.282	0.043	0.027	-0.521	0.007	0.134	1.274
	N/Y	0.123	-0.061	-0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
	Y/N	0.000	.....	0.000	-0.253	-0.357	-0.312	-0.022	-0.111	-0.210		0.000	0.032	-0.075	0.109	0.804
	Y/Y	0.072	-0.017 0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.174 0.000	0.000 0.000	0.000	0.000	0.000	0.000
	ALL	0.096	-0.039	-0.001	-0.315	-0.307	-0.161	-0.068	-0.176	-0.090	0.094	0.054	0.002	-0.193	0.071	0.722
Leisure Services	N/N	0.035	0.025	0.120	-0.274	-0.324	-0.235	-0.042	-0.137	-0.150	0.133	0.024	0.018	-0.126	0.089	0.744
	N/Y	0.068	-0.032	-0.013	0.277	-0.090	-0.096	-0.020			-0.017		0.000			2.075
	Y/N	0.057	0.130	0.089 0.015	0.197	-0.152	-0.232	-0.068	-0.082	-0.238	0.008	0.000	0.223	0.000	-0.885	1.775
	Y/Y	.....	-0.005		0.268	-0.308	0.096	-0.059	0.007	-0.066 -0.052	-0.0 0.073 16	-0.058	0.000 0.087	0.000	-1.243	1.976
	ALL	0.127	0.001.	0.020	0.030	-0.061	-0.012	0.006	-0.090			0.028		0.028	-1.015	1.598
					0.151	-0.132	-0.104	-0.038	-0.064	-0.148	0.005	0.004	0.130	0.035	-0.987	1.759

N/N: Non-smokers and non-car owners; N/Y: Non-smokers and car-owners:
Y/N: Smokers and non-car owners; Y/Y: Smokers and car-owners:

S.P.I.T.
Users Guide: Tune 1991

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Abstract
This guide describes the use of SPITV3, a simulation program for indirect taxation. It is a menu driven microcomputer program that allows the user to change the structure and rates of indirect taxation and to incorporate forecasts of earnings growth and price changes. It evaluate the effect of such changes on consum expenditure and thus government revenue from indirect taxation. The program features estimates of a system of demand equations obtained using over 100,000 observations from the Family Expenditure Surveys in order to predict consumer behavioural reactions to the tax. income and price changes.

Acknowledgements
Research finance was provided by HM Customs and Excise and HM Treasury We are indebted to them for suggcsaons and critical comments on this and previous versions of SPIT which has lead to considerable unprovemcnt in the operation of the program. Thanks also co Vanessa Brechling and James Banks for their help in identifying programming errors. Responsibility for any errors remain with the authors.

SPIT -THE ANALYSIS OF INDIRECT TAXATION USING MICRO-ECONOMIC DATA

Non Technical descnp tion prepared for the
IFS Conference on the Simulation of Tax Reforms

James Banks
December 1991

Summary

The IFS Simulation Program for Indirect Taxation (SPIT) is a standalone microcomputer simulation program for the analysis of indirect tax pohcy that runs on IBM personal computers (286 and above). The program simulates Household responses to Indirect tax or price changes in a way that embodies a "theory-consistent" microeconomic model of household expenditure behaviour

The use of micro (ie individual level) data allows us to introduce variation into behaviour according to demographic characteristics - thus avoiding the "representative consumer' assumption often made in macroeconomic models In addinon, when analysmg a pohcy reform one is able to focus on distributional effects, or alternatively consider how a pohcy affects any particular sub-group of the population

Essentially, the program comprises four main elements

- The estimation of an economic model of household preferences for goods and services.

  The simulation of the sample response to a change in economic factors faced by the household

- The 'grossing-up" of the sample response to national levels

- The use of "sample" and "grossed-up" results for policy analysts

ESTIMATION[1]

Methodology

The Simulation Program embodies parameters from a behavioural model of household preferences estimated on 15 years of microeconomic data for the United Kingdom. The behavioural model assumes a simple "two-stage" budgeting framework where a household first allocates total income to saving, housing, durable consumption, and all non-durable consumption. This non-durable expenditure is then shared out over the commodity group which we estimate (according to the relative prices of each group) at the second stage of the budgeting process.

The share of total expenditure allocated to each commodity group is allowed to depend on all relative prices, the level of total expenditure, a large set of characteristics of the household and also a set of deterministic variables (such as a time trend) and the functional from we choose is an extension of the well-known Almost Ideal Demand System of Deaton and Muellbauer (1980). The extension takes the form of allowing the share equations to be *quadratic* in the log of total expenditure. There are two reasons for this. Firstly, it allows goods to be "luxuries" in some income ranges and "necessities" in others, and secondly, statistically the model appears to fit the data more effectively when $\log(x)^2$ is included (appearing to confirm the luxury-necessity nature of some commodity groups).

From this model we can completely recover a set of households responses to price changes in terms of levels of expenditure / demand for each commodity group or elasticities -expressions describing how these demands change in response to price or income changes.

Since any indirect tax policy can be expressed as a change in prices / incomes that the consumer faces this then becomes a tool for the analysis and simulation of any such policy[2].

Data

The estimation underlying SPIT uses UK household data from the Family Expenditure Survey (FES) 1974-1988 inclusive. SPIT requires relative price variation to identify commodity demands so the use of as large a sample (in the time dimension) as possible, while computationally expensive, is extremely advantageous. However, the model is not estimated for household in Northern Ireland due to data reliability problems.

We split the sample into four groups according to the household status of having a smoker in the household (or not), and having a car (or not). This allows us to account for such households having entirely different preferences, and also for the fact that a non-smoking households will (usually) consume no tobacco (a separate commodity group) whatever the price, which we can control for by completely eliminating tobacco prices from a non-smokers preference function.

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1 For detailed documentation on the estimation stage. the interested reader is referred to Baker, McKay and Symons (1990) or Blundell, Pashardes and Weber (1989). Other stages are described in Baker and Syrnons (1991) - the SPIT ver. 3.0 user manual.

2 Incidentally, the model assumes full (100%) pass-on of duties from producers to consumers immediately. This is, however, found to be not too unreasonable (for the excisable goods) in Baker and Brechling (1991, forthcoming).

In total we have approxunately 105,000 households over the 15 years, and each, in the FES, has reported expenditure levels for a two-week diary period.

In addition we have demographic information for the household regarding

- tenure
- occüpation/employment
- number of children, adults and pensioners
- age of all individuals
- ownership of durable goods (e g central heatmg)
- region
- education of household members

all of which enter the functional form describing the household behavioural system In addition we add in deterministic variables such as tune trends and seasonal dummies, and also use macroeconomic information on mterest rates and unemployment to help explain household behaviour We choose to split household expenditure allocations into 16 broad categories corresponding to the new (post 1987) RPI groupings apart from in alcohol where we disaggregate further for the explicit analysis of excise duhes These commodities are

1	Be&	9	Leisure services
2	Wine	10.	Motoring
3	Spirits	11.	Petrol
4.	Food	12.	Tobacco
5	Fuel and light	13	Fares and other expenses
6	Clothing and footwear	14.	Leisure goods
7	Personal goods and services	15	Household goods
8	Household services	16	Housing

where categories 15 and 16 are allocated at the first stage of the budgehng process - so we consequently have a "second stage" estimation of 14 groups of commodities, each with their own relative price.

Clearly, with only a two-week diary period in the survey there will be some problem with infrequency of purchase and measurement error in the data, which (along with the two stage budgehng procedure) we can take into account by estimating with an instrumental variable technique similar to that described in Keen (1986)

Results

With a system of 14 equahons - each with over 50 parameters presentation of results is a problem, particularly when there are four separate sets of parameters - for non-smokmg car owners, smoking *car* owners, non-smokmg no-car owners and smoking non-car owners[3] Consequently in this section we will only present aggregate own price and budget elasticities (ie weighted averages of each group's elasticities where the weights depend on the group's contribution to expenditures on that commodity).

3 In addition, due to some question about the FES data picking up the expenditure boom of 1988 indicated in macro data, we also estimate a complete model from 1974-1987 only - which *we* will report from now on

Table 1 Short Run Estimation 1974-1987		
Commodity group	Own price elasticity $\frac{\Delta q_i}{\Delta p_i}$	Budget elasticity $\frac{\Delta q_i}{\Delta \log(\text{Expend})}$
Beer	-1.044	1.168
Wine	-1.102	1.657
Spirits	-1.091	1.221
Food	-0.777	0.51s
Fuel	-0.441	0.216
Clothing	-0.729	1.088
Pers goods & serv.	-0.893	0.991
HH services	-0.612	1.395
Leisure services	-0.987	1.759
Motoring	-0.521	1.274
Petrol	-0.126	0.744
Tobacco	-0.240	0.369
Fares & other travel expenses	-0.741	1.250
Leisure goods	-0.625	1.037

It is not the elasticities, however, but the underlying behavioural parameters that are programmed into SPIT to allow the construction of household responses to changes in indirect taxes, prices and incomes.

SIMULATION

The simulation program itself is a standalone package written in MS-Fortran for operation on IBM compatible 286 or above microcomputers. The package presents a series of menus allowing the user to reform the tax system, simulate responses, and then analyse the results.

Designing **A** Reform

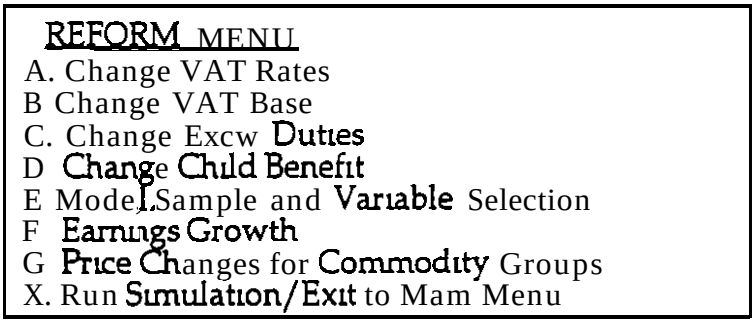
Choosing to define / conduct a reform from the Main Menu will be followed by a choice for the base tax system.

```
Which system do you wish to reform ?
A. 1988/89
B. 1990/91
C Geate New Base
D. Use Previously Created Base
X. Exit to Main Menu
```

The user is able to impose tax changes on the observed data period, 1988, to a more recent tax system, 1990/1, or to create their own tax/price/ income system. For the first two options the data is reflated to August of the appropriate year and the tax rates for the financial year are applied to this data. The third option enables the user to save a tax system that can be used

as a base for a variety of tax reforms with the subsequent choice of option D The taxes, prices and earnings levels approprtate to 1990 are loaded as default Under all options the user can follow a series of menus to change the parameters of the tax system

The program covers the three main areas of indirect tax (VAT rates, VAT commodity base and representative excise duties), to vary the level of child benefit and allows the user to select the model foi consumer expenditure
These menus are accessed via the Reform Menu



VAT rates

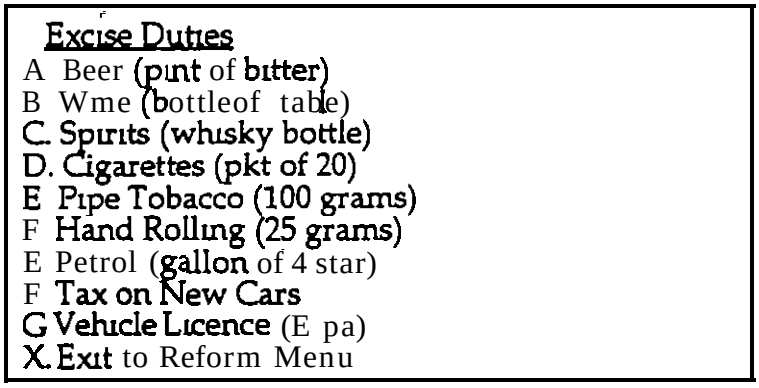
Two basic VAT rates can be set, a higher rate, H, in addition to the standard rate, L. Exempt taxation, E, is allowed to attract a percentage of the standard VAT rate This is set at zero by default

VAT base

This *allows* the user to set the VAT rate for specific goods within the commodity groups This is done by selection of group and then the required good at the subsequent menu. The program takes pre-reform as default, mdicahng the current value at the appropriate menu. The user can change the tax treatment of any / all goods by entering L for standard, H for high, Z for zero or E for exempt

Exase Dunes

This option brings up the following list of goods which carry excise duty



The program indicates the current value of these duties. The user can change any or all by entering the corresponding letter and responding to the prompt for a new duty with an entry in the approprtate units For example, beer requires a specific duty to be entered in pence per pmt Cigarettes carry a specific and an ad valorem tax both of which can be altered within the program, the specific duty in pence per 20 cigarettes and the ad valorem component as a proportion Specific duties are translated to proportional taxes

and thus to price changes that the consumer experiences. It is assumed that the change in tax is entirely incident on the consumer. The proportional tax rates for each good are applied to the consumer expenditure group that contains that good. For example, the tax applied to all expenditure on beer, shandy, cider etc. is derived from the duty for a pint of beer.

The program also allows for fiied expenditure on private transport through the vehicle excise duty (VED). This is treated as a rationed expenditure within the simulation program. An increase in VED reduces the amount of income remaining for all other goods if that household owns a vehicle. VED is in £ per year.

Child Benefit

Changes to total expenditure for households with children can be made by altering the level of child benefit. It is assumed that the change in child benefit is fully reflected by a change in total expenditure of the household. They are measured in £ per child per week. The benefit for the first child may be set independently to that for subsequent children.

Model, sample and variable selection

This option allows the user to detail the overall structure of the simulation. The following options are available:

Specification of Simulation Menu
A. Model Selection
B. Sample Size
C. Household Variables to Save
D. Real Income / Money Income Constant
E. Quick / Comprehensive Run
X. Exit to Reform Menu

Under option A there is a choice from four econometric models of consumer demand. There are two types of models, long or short run models, the short run model containing durable ownership dummies while the long-run model does not condition on these.

Option B allows the user to choose the number of households to include in the simulation The default value is the full sample of 7149. The households are randomly ordered so that the first 1000 households give a good indication of the full sample results.

Option C allows the user to save additional variables on the household characteristics. Expenditure data, total VAT and Excise payments can be recorded for use in later analysis. Appendix B gives a list of the variables available. This is a useful option since it allows the user to break down the effects of the reform by, say, region, household composition, type of tenure, etc. A maximum of 25 variables can be requested. The user will be asked to enter the number of the variable, as given in Appendix B of the manual , and a variable name of 8 alphanumeric characters or less.

Option D details whether real or money income should be held constant for each household. Default takes real income as constant. In this case the program will adjust money income to enable the household to buy the pre-reform quantity of goods. This allows the user to assume that incomes adjust to reflect price changes in the long run. Typing D will *toggle* between the two.

Option E provides the ability to choose a 'Quick' or 'Cpmprehenstve' run The former will give a summary of the effects of the reform but will save no individual household data It LS taken as the default A simulation using this option will run more quickly since there is less readmg and writing to the disk and enables a large number of simulations to be run without using large amounts of disk storage A full simulation run will create files of 136 megabytes or more Typing E will toggle between the two

Earnings Growth

This option allows the user to specify earnmgs growth rates from the base period (or from 1990 if creating a base system) Earnings growth rates are disaggregated accordmg to their source employment mcome', pensions, state benefits etc Growth rates for employment mcome may be different accordmg to gender and mcome quantile SPIT categorws the quantile for *mcome* accordmg to those given in the New E-gs Survey, 1990 The growth in earnings is entered as an mdex, e g an index of 12 would imply a 20% increase in earnmgs from the base level

Price Changes for Commodity Groups

This option allows the user to specify change in prtces for the commodity groups These may be introduced either by specifying a percentage changes in the general level of prices and/or identifying percentage price changes for individual groups A change to the overall price level will affect the price of only those groups that do not have a previously given price change The menu shows the appropriate overall price change as the weighted sum of the commodity groups, the weights taken from Employment Gazette, 1990

The user can pass through the menus as often as desued and correct previous changes since the reform is only saved when X is chosen at the Reform Menu.

The Reform Menu displays a summary of the current changes unplemented to the tax system It includes all excise duhes, simulation parameters and vat rates (changes to the vat base, prices and earnings are not displayed) This information is carried through to the results file in addition to the price effects to help interpretation.

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4 Employment mcome is a household , not individual, variable The upratmg factor is calculated by applying the weighted sum of upratmg factors for the householder and his wife (if present) which are also included in the data Thus a thud earners mcome is uprated by the husband and wifes factors This affects a 13% of the sample and may result in either over or under upratmg of those households

Analysing a Reform

Having run a simulation a user can then analyse the results of an experimental reform through a separate system of menus.

Initially the post- and pre-reform parameters are displayed for ease of reference - see Figure 1. In Figure 1 and those that follow we take an extremely ad-hoc approximation to a move to EC alcohol tax harmonisation targets rates for the sake of demonstration only. These reforms are not complete representations of any proposal or adjustment process and are NOT TO BE QUOTED UNDER ANY CIRCUMSTANCES.

From then on the user is taken through a series of screens describing the sample response to the reform in terms of Excise Duty and VAT groupings, and then similar screens for the grossed up levels [see Figures 2-6].

Finally, (if the simulation used a "comprehensive Run") the user is taken to an options menu (Figure 7) to facilitate analysis of sub-samples, data transformations or summary statistics by quantile. (For further details see Baker & Symons (1991)).

In addition the user is allowed to output variables for every household to an ASCII file for further in depth analysis with any specialist statistical package.

Recent IFS Publications using SPIT

Pearson & Smith, 1991, "The European Carbon Tax: an assessment of the EC proposals"

Baker & McKay, 1989, "The Structure of Alcohol Taxes - a hangover from the past"

Johnson, McKay and Smith, 1989, "The Distributional Consequences of Environmental Taxes".

References

Baker & Brechling, 1991, "The Impact of Excise Duties on UK Prices: evidence from UK data", forthcoming in *Fiscal Studies*

Baker, McKay and Symons, 1990, "The Simulation of Indirect Tax Reforms: The IFS Simulation Program for Indirect Taxation (SPIT)", IFS Working Paper 90/11

Baker & Symons, 1991, "SPIT ver 3 - a user Manual", IFS mimeo

Blundell, Pashardes & Weber, 1989, "What do we learn about consumer demand from Micro-data", IFS Micro to Macro series, 3.

Keen, M. J., "Zero Expenditure and the estimation of Engel curves", *Journal Of Applied Econometrics*, 1, 3, 277-286.

FIGURE 1

Results for modsem1

Number of households in simulation 7149

Summary of Tax Parameters

		Pre reform	Post reform
VAT	lower rate	150	150
	higher rate	150	150
Excise	Beer	20 40	6 00
	Wine	77 20	9 00
	Spirits	520 50	183 20
	New cars	10	10
	Petrol	102 20	102 20
	Cigarettes	69 80	69 80
	(ad valorem)	210	210
	Pipe Tobacco	2 49	2 49
	Other Tobacco	1 42	1 42
	VED	100 0	100 0
	Child benefit		
	Oldest	7 250	7 250
	Other	7 250	7 250

FIGURE 2

Real Income held constant
Short run model estimation to 1987

Government Revenue yield from FES sample

Pre reform (£/wk)	173914 100
Post reform (£/wk)	164060 100

Breakdown of Tax Revenue (£/wk)

Excise Duty

	Pre reform	Post reform	% change
Beer	8878 03	3095 66	65 13
Wine	3227 31	551 39	82 91
Spirits	4129 38	2053 32	50 28
Motoring	2446 11	2412 96	1 36
Petrol	23577 22	23395 63	77
Cigarettes	20948 38	21932 36	4 70
Pipe Tobacco	441 75	481 29	8 95
Other Tobacco	448 99	501 78	11 76
Total Excise	64097 18	54424 39	15 09

FIGURE 3

VAT Commodity Groups

	Pre reform	Post reform	% change
Beer	5999 22	5997 88	02
Wine	1918 05	2184 22	13 88
Spirits	1518 12	1577 65	3 92
Food	13819 94	13572 35	1 79
Fuel	00	00	00
Clothing	11458 79	11928 90	4 10
HH Services	7026 63	6835 70	2 72
Pers G & S	5814 84	6112 46	5 12
Leisure Good	6583 33	6269 67	4 76
Fares	1320 16	1313 56	50
Tobacco	4453 52	4678 83	5 06
Motoring	8208 41	8024 75	2 24
Petrol	6818 88	6766 35	77
Leisure Serv	16016 06	15512 73	3 14
Durables	16028 12	16028 12	00
Housing	8161 35	8161 35	00
TOTAL	115145 40	114964 50	16

FIGURE 4

National adjusted predictions

Breakdown of Tax Revenue (£m/annum)

Excise Duty

	Pre-reform	Post reform	% change
Beer	2267 77	790 74	65 13
Wine	778 98	133 09	82 91
Spirits	1781 28	885 73	50 28
Motoring	505 75	498 89	1 36
Petrol	3989 07	3958 35	77
Cigarettes	5249 34	5495 91	4 70
Pipe Tobacco	110 70	120 60	8 95
Other Tobacco	112 51	125 74	11 76
Total Excise	14795 40	12009 06	18 83

FIGURE 5

VAT - Commodity Groups

	Pre-reform	Post-reform	% change
Beer	1532.42	1532.08	-.02
Wine	462.96	527.21	13.88
Spirits	654.87	680.55	3.92
Food	2692.57	2644.33	-1.79
Fuel	.00	.00	.00
Clothing	2105.71	2192.10	4.10
HH Services	2367.89	2303.55	-2.72
Pers G & S	1135.59	1193.71	5.12
Leisure Good	1267.30	1206.92	-4.76
Fares	381.64	379.73	-.50
Tobacco	1115.98	1172.44	5.06
Motoring	1697.14	1659.17	-2.24
Petrol	1153.70	1144.81	-.77
Leisure Serv	2561.22	2480.73	-3.14
Durables	2280.02	2280.02	.00
Housing	1438.29	1438.29	.00
TOTAL	22847.29	22835.63	-.05

FIGURE 6

National Expenditure Predictions
Commodity Groups (£m/annum)

	Pre-reform	Post-reform	
Beer	11749.23	11745.58	-.03
Wine	3549.49	4041.28	13.86
Spirits	5020.50	5217.87	3.93
Food	58541.66	57614.02	-1.58
Fuel	12276.80	11543.65	-5.97
Clothing	19490.48	20349.66	4.41
HH Services	24428.54	23749.17	-2.78
Pers G & S	11145.40	11723.40	5.19
Leisure Good	13918.79	13047.66	-6.26
Fares	11451.40	11457.60	.05
Tobacco	8555.86	8989.39	5.07
Motoring	31409.64	30493.22	-2.92
Petrol	8845.45	8776.50	-.78
Leisure Serv	23160.81	22452.00	-3.06
Durables	17480.39	17480.39	.00
Housing	76297.25	76297.25	.00
TOTAL	337321.70	334978.60	-.69

FIGURE 7

TABLE OF OPTIONS

1. Select Sample currently 7149 households
2. Crosstabulations/Histograms
3. Ranking and Quantiles
4. Summary Statistics
5. Data Transformations
6. Inequality Measures
7. Output Variables to Text File
8. Open Spool File
9. Return to Main Menu

Enter Option _