

# **Calculating the Final Incidence of Australian Indirect Taxes**

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**Melbourne Institute Working Paper No. 18/97**

**August 1997**

**ISSN 1328-4991**

**ISBN 0 7325 0951 3**

\*This paper results from work undertaken for the research project “Taxation Reform: Efficiency and Equity”, a collaborative research project using the resources of the Melbourne Institute, The Brotherhood of St Laurence and the Committee for Economic Development of Australia, and funded by the Australian Research Council. I particularly wish to thank Rajat Sood for the initial work in the construction of this paper. I would also like to thank David Johnson, John Freebairn and John Creedy for helpful comments.

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## 1. Introduction

Many indirect taxes operate in Australia, each with its own legislation and administering department which may be at Federal, State or Local level. Indirect taxes are taxes assessed on producers in respect of the production, sale, purchase or use of goods and services which are charged to the expense of production (ABS, 1995, p.29). The main Australian indirect taxes are wholesale sales tax, excise, financial institutions duty, payroll tax, land tax, stamp duties, municipal rates and primary production tax<sup>1</sup>. Table 1.1 presents the tax revenue collected by each level of government for the main Australian indirect taxes in 1992-93. It is evident from this table that the Commonwealth and State Governments raise roughly the same amount of revenue from indirect taxes, however the two taxes raising most revenue are excise and wholesale sales tax, which are raised by the Commonwealth Government.

Unpublished data by the Australian Bureau of Statistics provide a breakdown by industry of the statutory incidence of the major indirect taxes in Australia (ABS, 1996a). This statutory incidence is the amount of revenue collected from each industry for each indirect tax. In other words it shows who actually writes the cheques to the government. This information does not show who bears the ultimate burden of the tax as each industry may pass on its initial burden to purchasing industries and/or final consumers through higher prices. Thus, the burden of the tax is passed on round by round to indirect business purchases and final demand until the total burden of the tax is passed on to final demand. The following example illustrates this process.

Payroll tax is imposed on medium and large sized firms. In medium to large size firms in the textiles industry for example, employers are thus liable to pay payroll tax on the wages, salaries, fringe benefits and superannuation paid to their employees. Suppose that the textiles industry pays a total of \$200 in payroll tax. This extra cost is seen as an increase in the cost of inputs used in textiles. Now imagine that a half of textile products are purchased by the transport equipment industry, for seats, etc. and the remaining half by the clothing and footwear industry. This \$200

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<sup>1</sup> While the ABS classifies land tax and municipal rates as indirect taxes, they are arguably more of an asset or wealth tax. If classified as an asset tax, the assumption that statutory incidence of the taxes are fully passed forward is debatable.

**Table 1.1: Australian indirect taxes by level of Government, 1992-93, (\$m)**

Indirect tax	Commonwealth	State	Local	Share of all indirect taxes (%)
Wholesale sales tax	9,252	-	-	17.7
Payroll tax	-	5,807	-	11.1
Excises and levies	10,294	473	-	20.6
Crude oil and LPG	116	-	-	0.2
Other excises	9,560	-	-	18.3
Agricultural production taxes	618	15	-	1.2
Levies on statutory authorities	-	459	-	0.9
Franchise taxes	-	3,394	-	6.5
Taxes on immovable property <sup>a</sup>	-	2,056	4,598	12.7
Taxes on financial and capital transactions	19	4,881	-	9.4
Stamp duties	-	3,341	-	6.4
Financial institutions' transactions taxes	1	1,483	-	2.8
Government borrowing guarantee levies	19	57	-	0.1
Taxes on gambling	-	2,236	-	4.3
Motor vehicle taxes	21	2,780	-	5.4
Other indirect taxes	4,933	1,497	-	12.3
<i>Total indirect taxes<sup>b</sup></i>	<i>24,519</i>	<i>23,124</i>	<i>4,598</i>	<i>100</i>

Source: ABS (1994, Tables 5, 6 and 9).

Notes: a) Includes land taxes, municipal rates, metropolitan improvement rates and property owner' contributions to fire brigades.

b) Does not include fees and fines.

tax burden is split into an increased cost of \$100 on each industry. Finally imagine that households purchase motor vehicles and clothing directly from each respective industry. The \$200 is passed onto the purchasers of clothing and footwear and transport equipment as \$100 price increases on initial values of the motor vehicles and clothing produced by the two industries. By assuming that the initial incidence of the tax is passed forward onto direct and indirect purchasing industries and final demand, this payroll tax on the textile industry ends up being indirectly passed forward as an increased price to the final consumer (in this case as private domestic consumption but in other cases it may be passed on to government consumption and/or exports).

This paper explains the process involved in evaluating the final incidence of indirect taxes in Australia. Section 2 discusses the method used to calculate the final incidence of indirect taxes as provided by Chisholm (1993). Section 3 highlights the problems with this methodology and a method to correct this problem by redistributing margin services, while Section 4 provides the

process involved to undertake this redistribution. Applications of this procedure to 1992-93 data are illustrated in Section 5 with some of the more detailed results outlined in appendix 2. Concluding comments are made in Section 6.

## **2. Measuring final incidence of indirect taxes**

The method used to derive final indirect tax incidence is developed from Chisholm (1993). The major innovation is to include the use of margin industries in the initial flows of the input output matrix ensuring that taxes on inputs to margin services are fully passed forward onto the good or service that the consumer purchases. Margin industries are service industries which add value to a product on its way from the producing industry to the purchasing industry. Margin industries include all or part of four different classes of transport (rail, road, sea and air); services to transport; marine insurance services; retail trade; wholesale trade; and accommodation, cafes and restaurant services. The methodology is differentiated by type of tax so it is possible to investigate the impact of any plausible change in indirect tax on household consumption and hence on household welfare.

Warren (1989), developing on earlier work in Warren (1979), attempted to calculate the impact of both direct and indirect taxation in Australia on the household sector in the form of an intertemporal study of the Australian tax system between 1975-76 and 1984-85. Warren (1991) furthers the study by looking at the changing incidence of indirect taxes between 1975-76 and 1988-89. This analysis includes the effects of Australian tax on the distribution of household income incorporating various tax shifting assumptions rather than full passing forward onto final demand.

The Fiscal Incidence Study (FIS) performed by the ABS also looks at calculating the final incidence of indirect taxes in Australia. The method used is outlined in ABS (1996b pp. 75-81). In this the ABS attempts to calculate indirect tax rates and applies these to each household's average weekly expenditure (as recorded in the Household Expenditure Survey) on respective commodities. Results of the study are reported in ABS Catalogue No. 6537.0.

By calculating the final incidence of indirect taxes on final consumption it is possible to evaluate the effect of indirect taxes on households. Given the different pattern of purchases of groups of households defined by demographic type or by income range, it is possible using a method derived by Creedy (1997) to evaluate the effect of the changes in the tax mix on household welfare and on the distribution of household income. The method involves the use of the Household Expenditure Survey (HES) collected by the ABS to estimate consumer demand equations for various HES commodity groups, for different income levels. After these are estimated it is possible to evaluate the likely change in welfare for each household in the survey thus allowing for distributional analyses to be carried out. Creedy and Martin (1997) report the initial stage of estimation of this model using the 1993 HES. This model combined with the results of this paper make it possible to evaluate the equity effects of a change in the tax structure.

Both a long run and short run model may be used to calculate the final incidence with this paper reporting the method and results of the long run model.

### ***2.1 Short run model***

The short run model consists of the original input-output absorption matrix, in the case of the 1992-93 data for 113 industries. Private and public enterprise gross fixed capital expenditure remain as final demand categories, however the increase in stocks component is deleted as it is assumed that the capital stock is fixed in the short term.

### ***2.2 Long run model***

The methods described below apply to the long run model with indirect taxes falling both initially and subsequently on private and public enterprise gross fixed capital expenditure assumed to be passed forward into higher prices on goods and services bought by final buyers for consumption or for export. The process involved in building this long run model is simply to sum private and public enterprise gross fixed capital expenditure and move the column into the intermediate demand component of the input output matrix. Thus, with the 1992-93 input output data, we identify 114 industries (compared to 113 industries in the short run model). To account for capital inputs to industries the gross operating surplus row is moved to the intermediate flow

matrix. Thus, we now have an extra column and row in our industry by industry absorption matrix.

### **2.3 Methodology to calculate final incidence of indirect taxes**

This section describes the method used by Chisholm (1993). The steps involved in the methodology, in calculating final incidence of indirect taxes are:

- calculating statutory incidence;
- setting up an exemptions matrix;
- calculating the first round output coefficients;
- calculating first round incidence on business inputs and final demand;
- flowing the tax on business inputs through to final demand;
- calculating total final incidence of indirect taxes by final demand category; and
- calculating the effective tax rates on final demand.

#### **2.3.1 Calculate the Statutory Incidence Vector, SI**

The statutory incidence of indirect taxes represents the actual revenue collected from business by the Government due to statutory tax obligations. Statutory incidence split by industry for the main Australian indirect taxes are shown in Table 2.1 and Table 2.2. Equation 1 shows that the statutory incidence vector of indirect taxes on industry  $i$ ,  $SI_i$ , comprises the sum of the statutory incidence on industry  $i$  over type of indirect tax  $j$ ,  $SI_{ij}$ , where there are  $m$  industries and  $s$  types of indirect tax.

$$SI_i = \sum_{j=1}^s SI_{ij} \quad \text{for } i = 1, \dots, m \text{ and } j = 1, \dots, s. \quad (1)$$

$$\mathbf{SI} = \begin{bmatrix} SI_1 \\ SI_2 \\ \vdots \\ SI_i \\ \vdots \\ SI_m \end{bmatrix}$$



**Table 2.1: Statutory incidence of main indirect taxes, 1992-93 (\$m.)**

<i>Industry</i>	<i>Business</i>						<i>Other indirect taxes<sup>b</sup></i>	<i>Total indirect taxes</i>
	<i>Sales tax</i>	<i>Excise duties</i>	<i>Franchise Fees<sup>a</sup></i>	<i>FID</i>	<i>Stamp Duties<sup>b</sup></i>	<i>Payroll tax</i>		
Agriculture; hunting and trapping	0	0	0	0	58	48	1035	1141
Forestry and fishing	0	0	0	0	8	13	100	122
Mining	0	159	0	0	23	189	153	525
Meat and Dairy Products	81	0	0	0	11	87	275	455
Other food products	298	0	0	0	12	121	76	507
Beverages and Tobacco products	830	2317	2205	0	4	42	661	6059
Textiles	69	0	0	0	3	38	21	131
Clothing and footwear	28	0	0	0	4	52	25	108
Wood and wood products	16	0	0	0	6	35	28	85
Paper and paper products; printing and publishing	1232	0	0	0	13	167	74	1485
Petroleum and coal products	0	7200	1174	0	3	14	55	8446
Chemicals	551	0	0	0	10	101	73	735
Rubber and plastic products	595	0	0	0	5	58	35	693
Non-metallic mineral products	67	0	0	0	7	62	48	185
Basic metals and products	0	0	0	0	8	156	74	238
Fabricated metal products	457	0	0	0	11	95	61	625
Transport equipment	2677	0	0	0	7	120	62	2866
Other machinery and equipment	1901	0	0	0	14	164	77	2156
Miscellaneous manufacturing	450	0	0	0	6	30	29	515
Electricity, gas and water	0	0	15	0	29	110	530	684
Construction	0	0	0	0	158	244	378	780
Wholesale trade	0	0	0	0	95	538	678	1311
Retail trade	0	0	0	0	108	491	582	1181
Repairs	0	0	0	0	6	143	216	365
Accommodation, cafes and restaurants	0	0	502	0	7	84	130	723
Transport and storage	0	0	0	0	566	574	802	1942
Communication services	0	0	0	0	58	250	120	428
Finance and insurance	0	0	0	1483	848	577	1871	4780
Ownership of dwellings	0	0	0	0	12	0	3067	3079
Property and business services	0	0	0	0	48	821	651	1520
Government administration	0	0	0	0	0	6	161	167
Education	0	0	0	0	6	94	296	396
Health and Community services	0	0	0	0	18	102	352	472
Cultural and recreational services	0	0	1225	0	80	46	708	2061
Personal and Other services	2	0	0	0	4	102	131	239
Capital	0	0	0	0	2166	0	0	2166
<i>Total</i>	<i>9252</i>	<i>9676</i>	<i>5121</i>	<i>1483</i>	<i>4420</i>	<i>5776</i>	<i>13637</i>	<i>49365</i>

Source: ABS (1996a, unpublished data, Commodity taxes and indirect taxes investigation)

Notes: (a) Franchise fees in this analysis include taxes on gambling

(b) Stamp duties in this analysis include motor vehicle taxes

(c) Included in 'Other' are land taxes, primary production taxes, municipal rates, customs duty on exports, fringe benefits taxes, taxes on insurance and regulatory service fees.

**Table 2.2: Statutory incidence of excise duties and franchise fees on petroleum products, tobacco products and alcohol, 1992-93, (\$m.)**

	Excise	Franchise fee	Total excise duty and franchise fee
Petroleum and coal products	7,200	1,174	8,374
Tobacco products	1,355	1,575	2,930
Alcohol	962	630	1,592

Source: ABS (1996a, unpublished data, Commodity taxes and indirect taxes investigation)

### 2.3.2 Set up Exemptions Matrix, E

This matrix comprises the full industry by industry flow matrix but with flows between exempt industries set at zero. This is to recognise the fact that some industries are exempt from certain types of tax; for example, goods sold to defence forces are exempt from wholesale sales tax therefore the column showing purchases by defence is set to zero. Where there is only a partial exemption for one item out of a range of items covered by a particular industry classification, only a partial adjustment is made. Summing across the rows of the exemptions matrix and adding in non-exempt final demand,  $FDX_i$ , gives industry  $i$ 's total non-exempt supply of commodities or services,  $TSX_i$ . Final demand categories that are exempt, for instance government consumption and exports are exempt from sales tax, are also excluded when calculating total non-exempt supply. Therefore the exemptions matrix for flows between industry  $i$  and industry  $j$  for  $m$  industries is:

$$\mathbf{E} = \begin{bmatrix} E_{11} & E_{12} & \dots & E_{1j} & \dots & E_{1m} \\ E_{21} & E_{22} & \dots & E_{2j} & \dots & E_{2m} \\ \vdots & & & & & \vdots \\ E_{i1} & E_{i2} & \dots & E_{ij} & \dots & E_{im} \\ \vdots & & & & & \vdots \\ E_{m1} & E_{m2} & \vdots & E_{mj} & \vdots & E_{mm} \end{bmatrix} \quad (2)$$

and total non-exempt supply of commodity  $i$  is the sum of intermediate non-exempt demand, that is the exemptions matrix, over  $j$  industries for commodity  $i$  plus non-exempt final demand for commodity  $i$ :

$$TSX_i = \sum_{j=1}^m E_{ij} + FDX_i \quad \text{for } i = j = 1, \dots, m \quad (3)$$

For this study, the sales tax exemption matrix is not needed (although may be calculated) as the Australian Bureau of Statistics provides a margin analysis for the wholesale sales tax, already providing the first round incidence on business inputs and final demand. For other taxes, it needs to be determined how exemptions in the relevant legislation should be modelled in matrix form.

### 2.3.3 Calculating the first round output coefficients, $OX$

This involves dividing each element of each row in the exemptions matrix by total non-exempt supply for that row or supplying industry. This gives a first round non-exempt output coefficients matrix,  $OX_{ij}$ . This matrix expresses industry  $i$ 's intermediate non-exempt supply of a commodity or service to purchasing industry  $j$  as a percentage of total non-exempt supply of that commodity or service where there are  $m$  industries.

$$\mathbf{OX} = \begin{bmatrix} E_{11}/TSX_1 & E_{12}/TSX_1 & \dots & E_{1j}/TSX_1 & \dots & E_{1m}/TSX_1 \\ E_{21}/TSX_2 & E_{22}/TSX_2 & \dots & E_{2j}/TSX_2 & \dots & E_{2m}/TSX_2 \\ \vdots & \vdots & \ddots & \vdots & \ddots & \vdots \\ E_{i1}/TSX_i & E_{i2}/TSX_i & \dots & E_{ij}/TSX_i & \dots & E_{im}/TSX_i \\ \vdots & \vdots & \ddots & \vdots & \ddots & \vdots \\ E_{m1}/TSX_m & E_{m2}/TSX_m & \dots & E_{mj}/TSX_m & \dots & E_{mm}/TSX_m \end{bmatrix} \quad (4)$$

### 2.3.4 First round incidence on business inputs, $TI$

Increases in costs to various industries due to taxes such as wholesale sales tax are assumed to be fully passed forward to purchasing industries or final demand. The outcome on purchasing industries represents first round incidence on business inputs,  $TI_i$ . First round incidence on business inputs is obtained by multiplying the statutory incidence vector with the first round output coefficients matrix.

$$TI_i' = SI_i' OX_{ij} \quad (5)$$

$$\mathbf{TI}' = [SI_1 \quad SI_2 \quad \dots \quad SI_i \quad \dots \quad SI_m] \begin{bmatrix} E_{11}/TSX_1 & E_{12}/TSX_1 & \dots & E_{1j}/TSX_1 & \dots & E_{1m}/TSX_1 \\ E_{21}/TSX_2 & E_{22}/TSX_2 & \dots & E_{2j}/TSX_2 & \dots & E_{2m}/TSX_2 \\ \vdots & \vdots & & \vdots & & \vdots \\ E_{i1}/TSX_i & E_{i2}/TSX_i & & E_{ij}/TSX_i & \dots & E_{im}/TSX_i \\ \vdots & \vdots & & \vdots & & \vdots \\ E_{m1}/TSX_m & E_{m2}/TSX_m & \dots & E_{mj}/TSX_m & \dots & E_{mm}/TSX_m \end{bmatrix}$$

$$\mathbf{TI} = \begin{bmatrix} SI_1 \times E_{11}/TSX_1 + SI_2 \times E_{21}/TSX_2 + \dots SI_m \times E_{m1}/TSX_m \\ SI_1 \times E_{12}/TSX_1 + SI_2 \times E_{22}/TSX_2 + \dots SI_m \times E_{m2}/TSX_m \\ \vdots \\ SI_1 \times E_{1j}/TSX_1 + SI_2 \times E_{2j}/TSX_2 + \dots SI_m \times E_{mj}/TSX_m \\ \vdots \\ SI_1 \times E_{1m}/TSX_1 + SI_2 \times E_{2m}/TSX_2 + \dots SI_m \times E_{mm}/TSX_m \end{bmatrix}$$

### 2.3.5 First round incidence on final demand

Some industries that are exposed to indirect taxes sell products or services directly to households, governments or foreign consumers. For these the incidence of the tax is passed forward to final demand in the first round. First round incidence on final demand,  $TA_i$ , is obtained by multiplying the statutory tax paid in each industry by non-exempt final demand as a percentage of total non-exempt final supply for each industry. The # and the division symbol in equation 6 refer to element by element multiplication and division and not standard matrix multiplication and division respectively.<sup>2</sup> This notation is used throughout this paper.

$$TA_i = SI_i \# (FDX_i / TSX_i) \quad \text{for } i = 1, \dots, m \quad (6)$$

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<sup>2</sup> Element by element division in matrices may be calculated using matrix operations by the following. Consider m-vectors such that:

$$c_i = a_i / b_i \quad i = 1, \dots, m.$$

The symbol  $\hat{\cdot}$  diagonalises a vector so that:

$$\hat{b} = \begin{bmatrix} b_1 & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & b_m \end{bmatrix}$$

Then,  $c = \hat{b}^{-1}a$

$$\mathbf{TA} = \begin{bmatrix} SI_1 \\ SI_2 \\ \vdots \\ SI_i \\ \vdots \\ SI_m \end{bmatrix} \# \begin{bmatrix} FDX_1/TSX_1 \\ FDX_2/TSX_2 \\ \vdots \\ FDX_i/TSX_i \\ \vdots \\ FDX_m/TSX_m \end{bmatrix} = \begin{bmatrix} SI_1 \times FDX_1/TSX_1 \\ SI_2 \times FDX_2/TSX_2 \\ \vdots \\ SI_i \times FDX_i/TSX_i \\ \vdots \\ SI_m \times FDX_m/TSX_m \end{bmatrix}$$

The result is the statutory incidence for each industry multiplied by the proportion of final non-exempt demand in total non-exempt supply, for each industry.

In the case of sales tax, the above steps are not necessary thanks to ABS data on margin matrices. For other taxes, when the exemption matrix was created, the non-exempt final demand and non-exempt total supply vectors were also computed.

### 2.3.6 Final incidence of indirect taxes

Calculating the final incidence of indirect taxes requires generating a matrix which does not allow for exemptions, because those industries which are exempt from, say, sales tax, only get the benefit of the exemption for taxes on their direct inputs, not for tax on inputs to their inputs. Thus rather than using the exemptions matrix to calculate the output coefficients the original industry by industry flow matrix is used with no exemptions. Each flow in this matrix is divided by total supply of that supplying industry to obtain the new output coefficients matrix,  $O_{ij}$ .

#### *Flowing Tax on Business Inputs through to Final Demand*

Now that we have our new output coefficients matrix the next step is to see how taxes on business inputs flow through the output coefficients matrix to find how those taxes fall on final demand. However, because a final good may use inputs that have been through several stages of production, it is not possible to shift *all* of the taxes on business inputs through to final demand in one round. Each round, a portion of an industry's output will be purchased at a final demand level and the remainder will be used by other industries as an input to their production which they will in turn supply to either final purchasers or used as inputs to other industries production processes and so on. Eventually, after many rounds, all of the inputs will end up in final demand and correspondingly all of the tax on business inputs will be forwarded to final demand.

In each round, the portion of tax passed on to final demand in each industry,  $Z_i$ , is given by dividing the components of the final demand vector by the total supply vector:

$$Z_i = FD_i / TS_i \quad \text{for } i = 1, \dots, m \quad (7)$$

In this case, no exemptions are made from either vector as tax on inputs is borne by all sectors and final demand components. When the amount of input tax remaining from a previous round is multiplied element by element by  $Z_i$  it gives the amount of tax forwarded on to final demand in the current round. The amount of tax remaining on business inputs is  $TI_i \times I_{ij}$  in round 2,  $TI_i \times O_{ij}$  in round 3,  $TI_i \times O_{ij}^2$  in round 4 and  $TI_i \times O_{ij}^{n-2}$  in round n. After n+2 rounds, the amount of tax that has been forwarded to final demand is given by the series:

$$(\mathbf{TI}' \times \mathbf{I})' \# \mathbf{Z} + (\mathbf{TI}' \times \mathbf{O})' \# \mathbf{Z} + (\mathbf{TI}' \times \mathbf{O}^2)' \# \mathbf{Z} + \dots + (\mathbf{TI}' \times \mathbf{O}^n)' \# \mathbf{Z}$$

Which simplifies to:

$$[\mathbf{TI}' \times (\mathbf{I} + \mathbf{O} + \mathbf{O}^2 + \dots + \mathbf{O}^n)]' \# \mathbf{Z}$$

When n gets very large, the  $O_{ij}^n$  term becomes very small. When n is infinite the expression in the round brackets is an infinite geometric series and so can be simplified to:

$$TB_i = [TI_i \times (I_{ij} - O_{ij})^{-1}]' \# Z_i \quad \text{for } i = j = 1, \dots, m \quad (8)$$

giving  $TB_i$ , the subsequent rounds incidence on final demand.

If we let:  $\mathbf{A} = (\mathbf{I} - \mathbf{O})^{-1}$

Then:

$$\mathbf{TB} = [\mathbf{TI}' \times \mathbf{A}]' \# \mathbf{Z}$$

$$\mathbf{TB} = \left\{ \begin{bmatrix} TI_1 & TI_2 & \dots & TI_j & \dots & TI_m \end{bmatrix} \begin{bmatrix} A_{11} & A_{12} & \dots & A_{1j} & \dots & A_{1m} \\ A_{21} & A_{22} & \dots & A_{2j} & \dots & A_{2m} \\ \vdots & \vdots & & & & \vdots \\ A_{i1} & A_{i2} & \dots & A_{ij} & \dots & A_{im} \\ \vdots & \vdots & & & & \vdots \\ A_{m1} & A_{m2} & \dots & A_{mj} & \dots & A_{mm} \end{bmatrix} \right\} \# Z_i$$

$$= \begin{bmatrix} (TI_1 \times A_{11} + TI_2 \times A_{21} + \dots + TI_j \times A_{i1} + \dots + TI_m \times A_{m1}) \times (FD_1 / TS_1) \\ (TI_1 \times A_{12} + TI_2 \times A_{22} + \dots + TI_j \times A_{i2} + \dots + TI_m \times A_{m2}) \times (FD_2 / TS_2) \\ \vdots \\ (TI_1 \times A_{1j} + TI_2 \times A_{2j} + \dots + TI_j \times A_{ij} + \dots + TI_m \times A_{mj}) \times (FD_i / TS_i) \\ \vdots \\ (TI_1 \times A_{1m} + TI_2 \times A_{2m} + \dots + TI_j \times A_{im} + \dots + TI_m \times A_{mm}) \times (FD_m / TS_m) \end{bmatrix}$$

*Total final incidence of tax by final demand category, TFI*

Total final incidence of indirect taxes,  $TFI_i$ , is the sum of first round incidence on final demand and subsequent rounds incidence. Thus,

$$TFI_i = TA_i + TB_i \quad \text{for } i = 1, \dots, m \quad (9)$$

Total final incidence represents the dollar amount of tax paid by total final demand. To calculate the final incidence on each final demand component one needs to take each final demand components share of total demand and multiply it by both first round incidence on final demand and subsequent rounds incidence. For instance when calculating total final incidence on private consumption expenditure,  $TFIPC_i$ , in the case of the wholesale sales tax first round incidence on private consumption expenditure is equivalent to first round incidence on final demand as other final demand components are exempt from wholesale sales tax in the first round. When calculating subsequent rounds incidence on households, however, only the proportion of that incidence attributable to private consumption expenditure must be taken. This is shown formally in equation 10 where  $PC_i$  refers to private final consumption expenditure.

$$TFIPC_i = TB_i \times (PC_i / FD_i) + TA_i \quad \text{for } i = 1, \dots, m \quad (10)$$

Retaining the wholesale sales tax example, final incidence on exports only consists of subsequent rounds incidence on exports. Thus, final incidence on exports,  $TFIX_i$  is represented by equation 11 where  $X_i$  refers to exports.

$$TFIX_i = TB_i \times (X_i / FD_i) \quad \text{for } i = 1, \dots, m \quad (11)$$

In the case of many other indirect taxes, such as payroll tax, all final demand components are effected in the first round thus equation 10 and 11 will thus be replaced by equations 12 and 13 respectively where  $PCX_i$  and  $XX_i$  represent non-exempt private final consumption expenditure and non-exempt exports respectively.

$$TFIPC_i = TB_i \times (PC_i / FD_i) + TA_i \times (PCX_i / FDX_i) \quad \text{for } i = 1, \dots, m \quad (12)$$

$$TFIX_i = TB_i \times (X_i / FD_i) + TA_i \times (XX_i / FDX_i) \quad \text{for } i = 1, \dots, m \quad (13)$$

Effective tax rates for each final demand component can be calculated by dividing the final incidence of the tax by the level of each final demand component, for example, private final consumption expenditure.

### 3. Problem with margin services

Margin industries are service industries which add value to a product on its way from the producing industry to the purchasing industry. They include amounts paid to industries that are involved in the transport and marketing of goods for sale to intermediate or final purchasers. Those industries that provide margin services are Wholesale and Retail Trade (ANZSIC 4501 and 5101 respectively), Accommodation, cafes and restaurants (5701), Road Transport (6101), Rail Transport (6201), Water Transport (6301), Air and Space Transport (6401), Services to Transport (6601) and Insurance (7401).

Chisholm (1993) makes no mention of ‘margins’. His method uses the basic values table to derive the exemptions and output coefficients’ matrix. Using the Chisholm method, margins are represented by flows from the margin industries to the usage industries and to final demand, as



the case may be. If margin services were included when valuing flows, margins would flow first to the supplying producer whose output, including margin payments, is then absorbed by users.

To illustrate this distinction, consider the following illustration: Grain is used by the bakery products industry to create bread. The grain is road transported to the bakery. After the grain has been made into bread, it is acquired by a supermarket (retail trade) to be sold to final private consumers. Under basic values, flows are recorded from grain and road transport into bakeries while finished bread and road transport flow into final private consumption, a total of four flows. Conversely when margins are included with the basic value transactions the value of road transport would be incorporated in the flow between grain and the purchasing industry, bakeries. The retail sales margin would also be represented as an added value in the flow between bakeries and final consumption demand. In this method all the transactions are represented by just two flows. In considering margin flows it is noted that not all of the supplies of the traditional margin industries outlined above are margin services. For example, road transport includes non-margin services such as passenger bus services which is a final service in its own right.

Chisholm's technique allows for the passing on of taxes on inputs to final demand. However, his method fails to allocate taxes on margin industries, or inputs to margin industries, to the final sales of commodities that use those margins. To understand the problem, consider a tax on a regular (non-margin) supply commodity like Other Basic Chemicals (OBC). OBC is an input for a number of usage industry groups, but assume that it is not used by any margin industries. A commodity tax on OBC would be passed on to the relevant non-margin industries, as well as to final demand, through the matrix inversion outlined above in Section 2.

Compare a tax on a commodity that is heavily used by some margin industries: petroleum and coal. A tax on petrol would not only affect the price of intermediate inputs to the car industry, but would increase the price of road transport, wholesale trade and retail trade. These increased margins would in turn increase the cost of car production. All this is accounted for in the matrix inversion carried out above. However, what is not accounted for is the effect that increased prices for transport and wholesale trade would have on the final purchase price of motor vehicles for final consumers. Chisholm's method pushes taxes on inputs to margins through to the basic values of the final sales of margins. But he does not allocate the tax-boosted basic value of margin industries at the final demand level to those commodities that use margin services to get

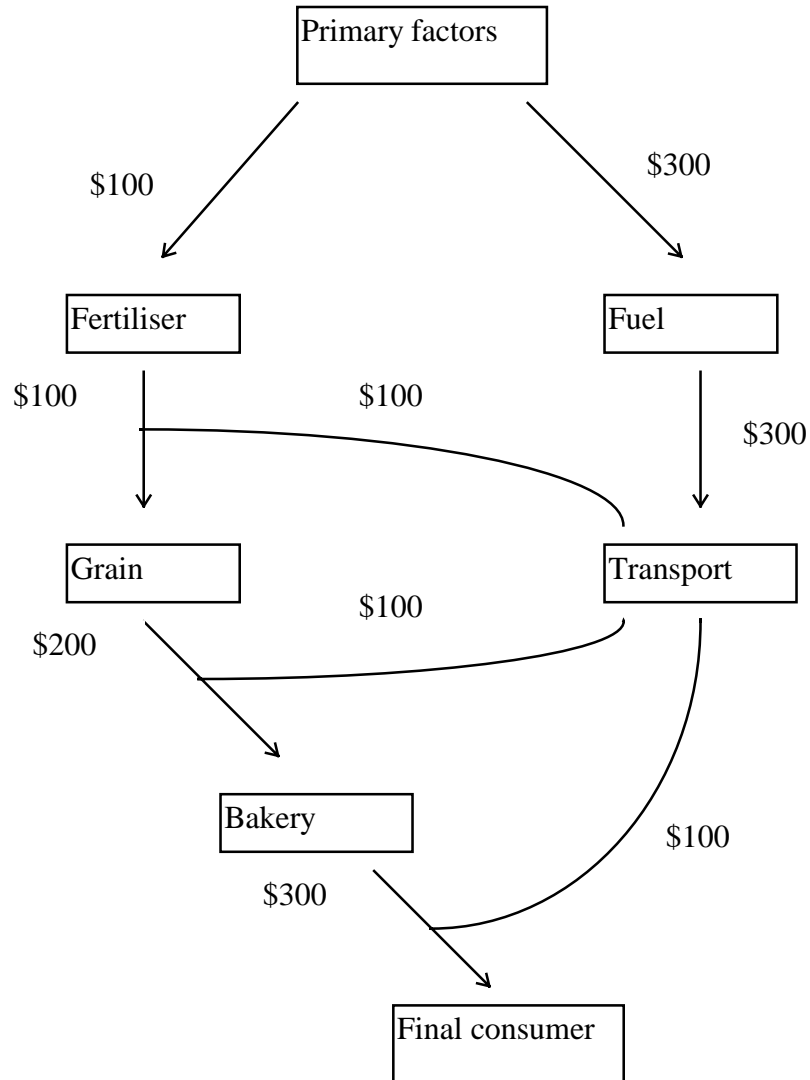
goods to final purchasers. Looking at final demand, a tax on an input to, say, road transport, would affect only the basic value figure. Assume that it increases that figure by \$300 million. To correctly show how the prices of final commodities that use road transport are affected, one needs to allocate the \$300 million to motor vehicles, paints, clothing and whatever other commodities use road transport at the final stage of delivery to the consumer.

Consider the following illustration represented in Figure 3-1. Fuel and fertiliser are two products derived from inputs of primary factors, say for example labour. Fuel feeds entirely into transport and fertiliser entirely into grain. Transport feeds into grain, bakeries and final consumption because it is required to move fertiliser to the land used to grow grain, grain to bakeries and from bakeries to the final user as finished bread is transported to consumers. Intuitively from this diagram, as bread is the only good directly purchased by the final consumer, it is expected that a tax falling on any direct or indirect input to bread would ultimately impact on final consumers usage of bread from the bakery. The Chisholm method outlined above, does not ensure this will occur.

In basic values this diagram suggests the absorption matrix presented in Table 3.1. Note that the usage of transport at basic values is represented by direct flows from the transport industry to the industries (or final consumer) purchasing the goods. For instance the transport industry is used to deliver fertiliser to the grain industry. This is recorded at basic values as a transaction between the transport industry and the grain industry.

**Table 3.1: Absorption matrix at basic values**

Industry Commodity	<i>Fertiliser</i>	<i>Fuel</i>	<i>Grain</i>	<i>Transport</i>	<i>Bakery</i>	<i>Final Consumption</i>	<i>Total Supply</i>
<i>Fertiliser</i>	0	0	\$100	0	0	0	\$100
<i>Fuel</i>	0	0	0	\$300	0	0	\$300
<i>Grain</i>	0	0	0	0	\$200	0	\$200
<i>Transport</i>	0	0	\$100	0	\$100	\$100	\$300
<i>Bakery</i>	0	0	0	0	0	\$300	\$300
<i>Primary factors</i>	\$100	\$300	0	0	0		

**Figure 3-1: Flow diagram for industry by industry transactions**

Following the method outlined in Section 2 the output coefficients matrix (also the exemptions matrix in this case) is:

$$\mathbf{OX} = \mathbf{O} = \begin{bmatrix} 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & \frac{1}{3} & 0 & \frac{1}{3} \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

Suppose that a 10% tax on fuel is levied.

$$\mathbf{SI}' = [0 \ 30 \ 0 \ 0 \ 0]$$

Thus, first round incidence on business inputs is:

$$\mathbf{TI}' = \mathbf{SI}' \times \mathbf{OX} = [0 \ 0 \ 0 \ 30 \ 0]$$

First round incidence on business inputs falls, as expected, on transport. As there is no first round incidence on final demand equation 8 gives us final incidence thus:

$$\mathbf{TB} = \left\{ \mathbf{TI}' \times \begin{bmatrix} 1 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & \frac{1}{3} & 1 & \frac{2}{3} \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \right\} \# \begin{bmatrix} 0 \\ 0 \\ 0 \\ \frac{1}{3} \\ 1 \end{bmatrix}$$

$$\mathbf{TB} = \begin{bmatrix} 0 \\ 0 \\ 10 \\ 30 \\ 20 \end{bmatrix} \# \begin{bmatrix} 0 \\ 0 \\ 0 \\ \frac{1}{3} \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 10 \\ 20 \end{bmatrix}$$

Thus the original \$30 tax on fuel ends up on final consumption of transport and final consumption of bakery products in \$10 and \$20 shares respectively. But the only final good purchased by the consumer is bread. Hence, the \$10 of tax making its way into the final basic value of transport must be reallocated to the purchaser price of final bakery products. Whilst this is a trivially simple exercise in the above example, where there are many margin industries and many non-margin industries that use margins, the allocation becomes more complicated. To take account of margin services to push the final incidence of indirect taxes to final consumers an extra step is needed in the methodology. Prior to calculating any sort of incidence, the supply of margin services must be redistributed to the commodities that use them, and inputs to margin services must be redistributed to the industries which rely on margin services to increase the value of their products. The previous example with this extra step is shown below.

The new transformed absorption, final demand and total supply matrices are illustrated in Table 3.2.

**Table 3.2: Absorption matrix with margin transactions redistributed**

Industry Commodity	<i>Fertiliser</i>	<i>Fuel</i>	<i>Grain</i>	<i>Bakery</i>	<i>Final Consumption</i>	<i>Total Supply</i>
<i>Fertiliser</i>	0	0	\$200	0	0	\$200
<i>Fuel</i>	\$100	0	\$100	\$100	0	\$300
<i>Grain</i>	0	0	0	\$300	0	\$300
<i>Bakery</i>	0	0	0	0	\$400	\$400
<i>Primary factors</i>	\$100	\$300	0	0		

In Table 3.2 the transport industry row and column from Table 3.1 have been eliminated due to the redistribution of all outputs of, and inputs to, transport. The \$100 of transport used by grain to transport fertiliser to grain has been redistributed in the flow between fertiliser to grain. The \$100 of transport used to move grain to the bakery has been redistributed to the flow between grain and the bakery, and the \$100 of transport used to move bread to the final consumer has been redistributed in the flow which brings the good which the final consumer uses, bread (or the bakery) to the consumer. To redistribute the inputs to transport the \$300 of fuel used by transport is split evenly into fertilisers usage of fuel, grains usage of fuel and the bakery's usage of fuel, as these three industries all rely on transport to get their products to purchasers thus adding value to their products. The sum of primary factors, final demand and total supply do not change with the redistribution. The new transformed output coefficients matrix is:

$$\mathbf{O} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 1/3 & 0 & 1/3 & 1/3 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

If the previous example of a 10% tax on fuel is imposed, first round incidence falls on fertiliser, grain and the bakery (as the margin service transport has been redistributed):

$$\mathbf{TI} = \begin{bmatrix} 10 \\ 0 \\ 10 \\ 10 \end{bmatrix}$$

Final incidence now falls solely on final consumers consumption of bread (bakery) as can be seen below.

$$\mathbf{TB} = \mathbf{TFI} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 30 \end{bmatrix}$$

This is the required result and thus the larger task of including these extra steps to the larger absorption matrix must be applied. This is complicated as there are many flows to take account of and margin services use more than one input, unlike the above example. Fortunately, detailed data is available in ABS (1996a, Tables 25 to 34) on the value of each margin used by each commodity at both the intermediate level and for the various final demand categories. This allows the redistribution of the usage of margin services to simply involve adding the margin tables to the initial input-output table. When working out how tax ending up on final basic values of margins should be reallocated to non-margin commodities, one must allow for the non-margin production of the margin industries. It would be erroneous to allocate non-margin basic values of margin industries to non-margin industries. For example, passenger bus services (or any increase in their value) should remain a flow between road transport and final consumers and not be allocated to other commodities along with the margin component of road transport. To calculate the correct proportion of basic value for margin industries that should remain with each margin industry, one needs to calculate the margin proportion of their output. These proportions for 1992-93 are presented in Table 3.3.

**Table 3.3: Proportion of traditional margin industry output attributable to actual margin services, 1992-93**

<i>Margin industry</i>	<i>Proportion of margin industry output that is 'margin service'</i> <i>(\$m.)</i>	<i>(per cent)</i>
Wholesale Trade	[32,469.0/34,002.7]	= 95.5
Retail Trade	[34,216.5/34,953.7]	= 97.89
Accommodation and restaurants	[4,189.8/16,314.5]	= 25.7
Road Transport	[10,096.1/14,606.4]	= 69.0
Rail, pipeline and other transport	[2,944.8/4,992.2]	= 58.99
Water transport	[815.2/4,189.8]	= 19.5
Air and space transport	[439.6/11,495.7]	= 3.8
Services to transport; storage	[441.4/11,050.2]	= 4.0
Insurance	[68.7/8,352.6]	= 0.82

Source: ABS (1996c, Table 1)<sup>3</sup>

#### 4. Methodology to redistribute margin services

As mentioned above the margin matrices are added to the original absorption matrix to redistribute the usage of margin services. After this, margin services supply must be deleted from each corresponding margin row. This applies to the commodities wholesale trade (denoted by subscripts  $i$  and  $j = 83$ ); retail trade ( $i, j = 84$ ); accommodation, cafes and restaurants ( $i, j = 87$ ); road transport ( $i, j = 88$ ); rail, pipeline and other transport ( $i, j = 89$ ); water transport ( $i, j = 90$ ); air and space transport ( $i, j = 91$ ); services to transport, storage ( $i, j = 92$ ); and insurance ( $i, j = 97$ ). Note that only the proportions on actual margin services are deleted which were calculated in Table 3.3 above. The operations needed for the calculations are as follows:

$$\begin{aligned}
 AA_{ij} &= (1-.955)ADDMARG_{ij} && \text{if } i = 83, \\
 &= (1-.9789)ADDMARG_{ij} && \text{if } i = 84, \\
 &= (1-.257)ADDMARG_{ij} && \text{if } i = 87, \\
 &= (1-.69)ADDMARG_{ij} && \text{if } i = 88, \\
 &= (1-.58988)ADDMARG_{ij} && \text{if } i = 89,
 \end{aligned} \tag{14}$$

<sup>3</sup> The values in this publication correspond to the sum of total supply in each of the margin tables in ABS (1996a).

$$\begin{aligned}
&= (1-.195)ADDMARG_{ij} && \text{if } i = 90, \\
&= (1-.038)ADDMARG_{ij} && \text{if } i = 91, \\
&= (1-.04)ADDMARG_{ij} && \text{if } i = 92, \\
&= (1-.0082)ADDMARG_{ij} && \text{if } i = 97, \text{ and} \\
&= ADDMARG_{ij} && \text{otherwise.}
\end{aligned}$$

Where the matrix  $ADDMARG_{ij}$  is the original intermediate industry by industry flow matrix from the input output table with margin matrices added on. This also needs to be performed on final demand where  $PCAUG_i$ ,  $GGIAUG_i$ ,  $STOCAUG_i$  and  $XAUG_i$  in equations 15 to 18 refer to private final consumption expenditure, general government gross fixed capital expenditure, increases in stocks and exports respectively with margin flows added on. The reason why government consumption expenditure is not included in the following calculations is because there are no margin flows to government consumption expenditure reported in ABS (1996a, Tables 25-34). Thus, final demand and total supply with margin flows redistributed are; for

Private final consumption expenditure,

$$\begin{aligned}
PCA_i &= (1-.955)PCAUG_i && \text{if } i = 83, \\
&= (1-.9789)PCAUG_i && \text{if } i = 84, \\
&= (1-.257)PCAUG_i && \text{if } i = 87, \\
&= (1-.69)PCAUG_i && \text{if } i = 88, \\
&= (1-.58988)PCAUG_i && \text{if } i = 89, && (15) \\
&= (1-.195)PCAUG_i && \text{if } i = 90, \\
&= (1-.038)PCAUG_i && \text{if } i = 91, \\
&= (1-.04)PCAUG_i && \text{if } i = 92, \\
&= (1-.0082)PCAUG_i && \text{if } i = 97, \text{ and} \\
&= PCAUG_i && \text{otherwise; for}
\end{aligned}$$

General Government gross fixed capital expenditure,

$$\begin{aligned}
GIA_i &= (1-.955)GGIAUG_i && \text{if } i = 83, \\
&= (1-.9789)GGIAUG_i && \text{if } i = 84, \\
&= (1-.257)GGIAUG_i && \text{if } i = 87, \\
&= (1-.69)GGIAUG_i && \text{if } i = 88, \\
&= (1-.58988)GGIAUG_i && \text{if } i = 89, && (16)
\end{aligned}$$



$$\begin{aligned}
&= (1-.195)GGIAUG_i && \text{if } i = 90, \\
&= (1-.038)GGIAUG_i && \text{if } i = 91, \\
&= (1-.04)GGIAUG_i && \text{if } i = 92, \\
&= (1-.0082)GGIAUG_i && \text{if } i = 97, \text{ and} \\
&= GGIAUG_i && \text{otherwise; for}
\end{aligned}$$

increase in stocks,

$$\begin{aligned}
ISA_i &= (1-.955)STOCAUG_i && \text{if } i = 83, \\
&= (1-.9789)STOCAUG_i && \text{if } i = 84, \\
&= (1-.257)STOCAUG_i && \text{if } i = 87, \\
&= (1-.69)STOCAUG_i && \text{if } i = 88, \\
&= (1-.58988)STOCAUG_i && \text{if } i = 89, && (17) \\
&= (1-.195)STOCAUG_i && \text{if } i = 90, \\
&= (1-.038)STOCAUG_i && \text{if } i = 91, \\
&= (1-.04)STOCAUG_i && \text{if } i = 92, \\
&= (1-.0082)STOCAUG_i && \text{if } i = 97, \text{ and} \\
&= STOCAUG_i && \text{otherwise; and for}
\end{aligned}$$

exports,

$$\begin{aligned}
XA_i &= (1-.955)XAUG_i && \text{if } i = 83, \\
&= (1-.9789)XAUG_i && \text{if } i = 84, \\
&= (1-.257)XAUG_i && \text{if } i = 87, \\
&= (1-.69)XAUG_i && \text{if } i = 88, \\
&= (1-.58988)XAUG_i && \text{if } i = 89, && (18) \\
&= (1-.195)XAUG_i && \text{if } i = 90, \\
&= (1-.038)XAUG_i && \text{if } i = 91, \\
&= (1-.04)XAUG_i && \text{if } i = 92, \\
&= (1-.0082)XAUG_i && \text{if } i = 96, \text{ and} \\
&= XAUG_i && \text{otherwise.}
\end{aligned}$$

Therefore, final demand ( $FDA_i$ ) and total supply ( $TSA_i$ ) are equivalent to the following expressions,

where  $GC_i$  refers to general government consumption expenditure,

$$FDA_i = PCAUG_i + GC_i + GGIAUG_i + STOCAUG_i + XAUG_i \quad (19)$$

and,

$$TSA_i = \sum_{j=1}^n AA_{ij} + FDA_i \quad (20)$$

Inputs to margin services (columns) also need to be redistributed. In order to do this we need to determine the increases in the total supply of each non-margin commodity due to margin services. These can be found in the total supply vectors from each margin table. The rail transport margin referred to in the following discussion includes pipeline margin services.

Once we have these vectors, non-margin inputs to margin services share of intermediate input usage for each margin is calculated. This is due to the many inputs which margin services use. If, as in the example in Section 3, margin services used only one input each, then each margins share of that input to its total intermediate input usage would be one. Intermediate input usage is calculated as the sum of all intermediate inputs, that is:

$$U_j = \sum_{i=1}^{114} AA_{ij}, \quad \text{for all } j \quad (21)$$

The shares are calculated as follows:

$$\begin{aligned} SWT_i &= 0.955 \times AA_{ij} / U_{1j} && \text{if } j = 83 \\ SRT_i &= 0.9789 \times AA_{ij} / U_{1j} && \text{if } j = 84 \\ SACC_i &= 0.257 \times AA_{ij} / U_{1j} && \text{if } j = 87 \\ SRD_i &= 0.69 \times AA_{ij} / U_{1j} && \text{if } j = 88 \\ SRL_i &= 0.58988 \times AA_{ij} / U_{1j} && \text{if } j = 89 \\ SWTR_i &= 0.195 \times AA_{ij} / U_{1j} && \text{if } j = 90 \\ SAIR_i &= 0.038 \times AA_{ij} / U_{1j} && \text{if } j = 91 \\ SSER_i &= 0.04 \times AA_{ij} / U_{1j} && \text{if } j = 92, \quad \text{and} \\ SINS_i &= 0.0082 \times AA_{ij} / U_{1j} && \text{if } j = 97. \end{aligned} \quad (22)$$

Multiply the shares by the increases in total supply due to the use of margin service:

$$\begin{aligned}
WT_{ij} &= SWT_i \times WSTS_i' \\
RT_{ij} &= SRT_i \times RSTS_i' \\
ACC_{ij} &= SACC_i \times RESTS_i' \\
RD_{ij} &= SRD_i \times ROADTS_i' \\
RL_{ij} &= SRL_i \times RAILTS_i' \\
WTR_{ij} &= SWTR_i \times WATRTS_i' \\
AIR_{ij} &= SAIR_i \times AIRTS_i' \\
SER_{ij} &= SSER_i \times PORTTS_i' \\
INS_{ij} &= SINS_i \times MARITS_i'
\end{aligned} \tag{23}$$

Now that the inputs to margin services have been redistributed they can be deleted from each respective margin column in the  $AA_{ij}$  matrix, that is:

$$\begin{aligned}
AB_{ij} &= (1 - 0.955) \times AA_{ij} && \text{if } j = 83, \\
&= (1 - 0.9789) \times AA_{ij} && \text{if } j = 84, \\
&= (1 - 0.257) \times AA_{ij} && \text{if } j = 87, \\
&= (1 - 0.69) \times AA_{ij} && \text{if } j = 88, \\
&= (1 - 0.58988) \times AA_{ij} && \text{if } j = 89, \\
&= (1 - 0.195) \times AA_{ij} && \text{if } j = 90, \\
&= (1 - 0.038) \times AA_{ij} && \text{if } j = 91, \\
&= (1 - 0.04) \times AA_{ij} && \text{if } j = 92, \\
&= (1 - 0.0082) \times AA_{ij} && \text{if } j = 97, \text{ and} \\
&= AA_{ij} && \text{otherwise.}
\end{aligned} \tag{24}$$

The final step is to add the matrices resulting from equations 18 and 19 to the resulting  $AB_i$  matrix from equation 24:

$$AC_{ij} = AB_{ij} + WT_{ij} + RT_{ij} + ACC_{ij} + RD_{ij} + RL_{ij} + WTR_{ij} + AIR_{ij} + SER_{ij} + INS_{ij} \tag{25}$$

Now we have a new transformed absorption matrix denoted by  $AC_{ij}$ . Final demand categories are  $FDA_i$  (for total demand),  $PCA_i$  (private final consumption expenditure),  $GC_i$  (government consumption expenditure),  $GIA_i$  (general government gross fixed capital expenditure),  $ISA_i$

(increase in stocks), and  $XA_i$  (exports) respectively. Total supply is  $TSA_i$ . For convenience rename these;

$$A_{ij} = AC_{ij}$$

$$FD_i = FDA_i$$

$$PC_i = PCA_i$$

$$GC_i = GC_i$$

$$GGI_i = GIA_i$$

$$STOC_i = ISA_i$$

$$X_i = XA_i$$

$$TS_i = TSA_i$$

#### 4.1 Redistributing statutory incidence on margin services

Statutory incidence of taxes on margin services also need to be redistributed. To do this calculate each non margin service industry's usage of margin services. If  $A_{ij}$  denotes the original undistributed intermediate flow matrix, then intermediate usage of margin services is:

$$\begin{aligned}
 IU_i &= \sum_{j=1}^{114} A_{ij} - (1 - 0.955)A_{i83} - (1 - 0.9789)A_{i84} - (1 - 0.257)A_{i87} - (1 - 0.69)A_{i88} \\
 &\quad - (1 - 0.58988)A_{i89} - (1 - 0.195)A_{i90} - (1 - 0.038)A_{i91} - (1 - 0.04)A_{i92} \\
 &\quad - (1 - 0.0082)A_{i97} \quad \text{for } i = 83, 84, 87, 88, 89, 90, 91, 92 \text{ and } 97, \quad \text{and} \\
 &= \sum_{j=1}^{114} A_{ij} \quad \text{for any other } i.
 \end{aligned} \tag{26}$$

$$\begin{aligned}
SIS_{ij} &= (1 - 0.955)A_{ij} / IU_i && \text{if } j = 83, \\
&= (1 - 0.9789)A_{ij} / IU_i && \text{if } j = 84, \\
&= (1 - 0.257)A_{ij} / IU_i && \text{if } j = 87, \\
&= (1 - 0.69)A_{ij} / IU_i && \text{if } j = 88, \\
&= (1 - 0.58988)A_{ij} / IU_i && \text{if } j = 89, \\
&= (1 - 0.195)A_{ij} / IU_i && \text{if } j = 90, \\
&= (1 - 0.038)A_{ij} / IU_i && \text{if } j = 91, \\
&= (1 - 0.04)A_{ij} / IU_i && \text{if } j = 92, \\
&= (1 - 0.0082)A_{ij} / IU_i && \text{if } j = 97, \text{ and} \\
&= A_{ij} / IU_i && \text{otherwise}
\end{aligned} \tag{27}$$

for  $i = 83, 84, 87, 88, 89, 90, 91, 92$  and  $97$ .

The transpose of the share matrix<sup>4</sup> is used in calculations. Therefore, let:

$$SIS_{ij} = SIS_{ij}'$$

Once the share matrix has been calculated it is possible to redistribute the statutory incidence on margin services to non-margin commodities and services which use margins in their production process. Recall from equation 1 that the matrix  $SI_{ij}$  is the statutory incidence on industry  $i$  for indirect tax  $j$ . Thus if we treat the statutory incidence of each indirect tax as separate vectors the redistributed statutory incidence vector for each  $j$  are:

$$\begin{aligned}
WT_{ij} &= 0.955SI_{83j} \times SIS_{i83} \\
RT_{ij} &= 0.9789SI_{84j} \times SIS_{i84} \\
ACC_{ij} &= 0.955SI_{87j} \times SIS_{i87} \\
RD_{ij} &= 0.9789SI_{88j} \times SIS_{i88} \\
RL_{ij} &= 0.955SI_{89j} \times SIS_{i89} \\
WTR_{ij} &= 0.9789SI_{90j} \times SIS_{i90} \\
AIR_{ij} &= 0.955SI_{91j} \times SIS_{i91} \\
SER_{ij} &= 0.9789SI_{92j} \times SIS_{i92} \\
INS_{ij} &= 0.955SI_{97j} \times SIS_{i97}
\end{aligned} \tag{28}$$

---

<sup>4</sup> Note that this matrix may be interpreted as nine separate vectors rather than one matrix, one for each corresponding margin industry.

The matrices referred to in equation 28 are calculated separately for each tax (denoted by the subscript  $j$ ). Thus rather than thinking of  $SI_{ij}$  and say,  $WT_{ij}$ , as matrices think of them as groups of  $j$  vectors each of which should be treated separately in the calculation of each taxes final incidence.

Margin services statutory incidence must be deleted from the corresponding row in  $SI_{ij}$  for each tax:

$$\begin{aligned}
SI_{ij} &= (1 - 0.955)SI_{ij} && \text{if } i = 83, \\
&= (1 - 0.9789)SI_{ij} && \text{if } i = 84, \\
&= (1 - 0.257)SI_{ij} && \text{if } i = 87, \\
&= (1 - 0.69)SI_{ij} && \text{if } i = 88, \\
&= (1 - 0.58988)SI_{ij} && \text{if } i = 89, \\
&= (1 - 0.195)SI_{ij} && \text{if } i = 90, \\
&= (1 - 0.038)SI_{ij} && \text{if } i = 91, \\
&= (1 - 0.04)SI_{ij} && \text{if } i = 92, \\
&= (1 - 0.0082)SI_{ij} && \text{if } i = 97, \text{ and} \\
&= SI_{ij} && \text{otherwise.}
\end{aligned} \tag{29}$$

Finally the results of equations 28 must be added to the statutory incidence vectors resulting from equation 29 for each tax;

$$SI_{ij}^* = SI_{ij} + WT_{ij} + RT_{ij} + ACC_{ij} + RD_{ij} + WTR_{ij} + AIR_{ij} + SER_{ij} + INS_{ij} \tag{30}$$

Again,  $j$  refers to a particular tax's statutory incidence. In appendix 1 the  $SI_{ij}^*$  vectors are denoted as  $SIEXC_i$  for excise,  $SIWST_i$  for the wholesale sales tax and so forth. These vector names simply replace the  $j$  subscript in order to simplify the notation in the equations.

Given a new transformed input-output table and transformed statutory incidence, the method outlined in Section 2 can be applied to calculate the final incidence of indirect taxes. The results of this will be presented in the next section. See appendix 1 for the detail behind the equations used to derive the incidence of various indirect taxes in Australia.

## 5. Final incidence of Australian indirect taxes in 1992-93

This section outlines the major results of combining the redistribution method of Section 4 with the methodology to find final indirect tax incidence presented in Section 2.

Table 5.1 shows that over half of Australia's tax incidence initially gets passed onto business inputs in the first round. Thus, Australia's indirect tax system is far from being a consumption tax system in which first round incidence is largely restricted to consumption expenditure.

**Table 5.1: First round incidence of Australian indirect taxes, 1992-93, (\$m.)**

	<i>Business inputs</i>	<i>Private final consumption expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Stamp duty	3745	430	132	669
Wholesale sales tax	4833	4419	0	4419
Municipal rates	977	1304	432	2236
Primary production tax	261	3411	169	3720
Payroll tax	3487	144	235	373
Land tax	1038	535	72	899
Business franchise fees	1108	3782	114	3889
Financial institutions duty	1180	303	13	303
Excise duties	5328	4445	0	4348
Other indirect taxes	2878	2486	341	3317
<i>Total</i>	<i>24835</i>	<i>21260</i>	<i>1508</i>	<i>24173</i>

Passing on this first round incidence on business inputs through to final demand round by round and adding first round incidence of final demand gives the final incidence of Australian indirect taxes presented in Table 5.2. Although private final consumption expenditure bears the majority of the final burden of indirect taxes, exports and general government consumption and investment are also significantly effected by the Australian indirect tax system. The table shows that incidence on exports (in dollars) is relatively high for Australia's traditional export industries such as primary produce and wool; mining; and metal products. Private consumers bear the brunt of indirect taxes through goods such as alcohol and tobacco products, petroleum and coal products and motor vehicles and parts. Service industries like sport, gambling and recreational services and accommodation, cafes and restaurants also have a high impact on private consumers.

**Table 5.2: Final incidence of Australian indirect taxes, 1992-93, (\$m.)**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	4	0	0	423	422
Grains	16	0	0	382	458
Beef cattle	9	0	0	12	19
Dairy cattle	0	0	0	0	1
Pigs	1	0	0	0	1
Poultry	46	0	0	0	45
Other agriculture	536	0	0	162	689
Services to agriculture; hunting and trapping	3	13	0	8	24
Forestry and logging	4	29	2	3	38
Commercial fishing	168	8	0	42	205
Coal; oil and gas	14	0	0	793	804
Iron ores	0	0	0	315	312
Non-ferrous metal ores	0	0	0	637	632
Other mining	0	0	0	98	97
Services to mining	0	9	0	5	15
Meat and meat products	872	0	0	561	1375
Dairy products	599	0	0	171	739
Fruit and vegetable products	390	0	0	55	430
Oils and fats	48	0	0	7	50
Flour mill products and cereal foods	150	0	0	46	183
Bakery products	452	0	0	4	442
Confectionery	266	0	0	9	269
Other food products	533	0	0	255	746
Soft drinks, cordials and syrups	475	0	0	3	465
Beer and malt	2041	0	0	33	2040
Wine and spirits	1369	0	0	92	1442
Tobacco products	3223	0	0	6	3169
Wool scouring	0	0	0	150	145
Textile fibres, yarns and woven fabrics	60	0	0	9	75
Textile products	183	0	4	11	206
Knitting mill products	133	0	0	3	143
Clothing	549	0	0	9	576
Footwear	153	0	0	2	160
Leather and leather products	72	0	0	26	100
Sawmill products	0	0	0	37	34
Plywood, veneer and fabricated wood	0	0	0	10	9
Other wood products	12	0	2	2	17
Pulp, paper and paperboard	32	0	0	17	64
Paperboard containers; paper bags and sacks	2	0	0	5	20
Other paper products	106	0	0	3	116
Printing and services to printing	300	9	0	16	339
Publishing; recorded media and publishing	551	0	5	14	571
Petroleum and coal products	3100	0	0	227	3292
Fertilisers	17	0	0	1	26
Other basic chemicals	1	0	0	66	68

*continued*



**Table 5.2 (cont.): Final incidence of Australian indirect taxes, 1992-93, (\$m.)**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Paints	1	0	0	4	9
Medicinal and pharmaceutical products; pesticides	408	0	0	49	478
Soap and other detergents	250	0	0	6	262
Cosmetics and toiletry preparations	340	0	0	4	348
Other chemical products	88	0	0	15	105
Rubber products	336	0	0	10	354
Plastic products	197	0	0	21	238
Glass and glass products	30	0	0	6	37
Ceramic products	57	0	0	4	62
Cement and lime	0	0	0	2	-1
Concrete slurry	0	0	0	0	-1
Plaster and other concrete products	0	0	0	3	4
Other non-metallic mineral products	0	0	0	8	7
Iron and steel	0	0	0	129	124
Basic non-ferrous metal and products	10	0	0	782	780
Structural metal products	0	0	2	10	11
Sheet metal products	35	0	2	12	62
Fabricated metal products	210	0	2	26	253
Motor vehicles and parts; other transport equipment	1795	0	82	180	2009
Ships and boats	26	0	0	40	67
Railway equipment	0	0	0	2	5
Aircraft	2	0	0	13	15
Photographic and scientific equipment	345	0	25	51	421
Electronic equipment	631	0	123	86	858
Household appliances	216	0	0	15	243
Other electrical equipment	97	0	3	42	137
Agricultural machinery	22	0	0	5	27
Mining and construction machinery; lifting and material handling equipment	0	0	11	22	32
Other machinery and equipment	8	0	2	56	65
Prefabricated buildings	0	0	3	2	5
Furniture	345	0	29	7	403
Other manufacturing	576	0	0	48	628
Electricity supply	346	0	0	2	347
Gas supply	182	0	0	0	182
Water supply; sewerage and drainage services	0	17	0	1	18
Residential building construction	0	0	37	2	40
Other construction	0	163	675	4	841
Wholesale trade	31	0	3	16	51
Retail trade	68	0	0	0	68
Mechanical repairs	605	0	0	1	605
Other repairs	106	0	0	2	108
Accommodation, cafes and restaurants	1067	0	0	0	1067
Road transport	205	7	2	72	285
Rail, pipeline and other transport	73	0	0	76	150
Water transport	0	0	0	0	0
Air and space transport	0	0	0	0	0

*continued*

**Table 5.2 (cont.): Final incidence of Australian indirect taxes, 1992-93, (\$m.)**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Services to transport; storage	55	419	1	227	702
Communication services	393	1	0	67	461
Banking	584	0	0	9	593
Non-bank finance	185	3	0	25	213
Financial asset investors	0	0	0	0	0
Insurance	1250	46	0	44	1341
Services to finance, investment and insurance	74	0	0	19	93
Ownership of dwellings	6580	3	0	0	6583
Other property services	62	1	0	4	67
Scientific research, technical and computer services	12	70	0	68	150
Legal, accounting, marketing and business management services	143	24	0	53	221
Other business services	10	49	0	17	76
Government administration	36	1287	0	0	1323
Defence	0	654	0	10	663
Education	161	498	0	25	684
Health services	782	633	0	1	1416
Community services	231	168	0	0	399
Motion picture, radio and television services	48	83	0	0	131
Libraries, museums and the arts	47	64	0	3	113
Sport, gambling and recreational services	1993	199	0	6	2198
Personal services	515	12	0	1	527
Other services	91	301	0	0	392
<i>Total</i>	<i>38446</i>	<i>4769</i>	<i>1017</i>	<i>7146</i>	<i>51231</i>

Note: Total final demand includes increases (or decreases) in stocks thus it may be equivalent to the sum of the final demand components displayed in this table.

Table 5.3 provides the total effective tax rates on each final demand category by industry. For a more detailed breakdown of effective tax rates on final demand by type of tax see Appendix 2. The results in this table support previous comments made about the dollar value of final incidence: exports are particularly hard hit for traditional export industries, private consumers face high effective tax rates for alcohol and tobacco products; petroleum and coal products; motor vehicles and parts; sport, gambling and recreational services and accommodation, cafes and restaurants. Interestingly, consumers of tobacco products face a tax mark up of nearly 230 per cent. Also, private consumers face high effective tax rates for printing services and 'other chemicals'.

**Table 5.3: Effective tax rates on final demand for Australian indirect taxes, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	18.9	0.0	0.0	18.9	18.9
Grains	15.4	0.0	0.0	15.4	15.4
Beef cattle	14.8	0.0	0.0	14.8	14.8
Dairy cattle	11.9	0.0	0.0	0.0	11.9
Pigs	15.3	0.0	0.0	15.3	15.3
Poultry	11.6	0.0	0.0	11.6	11.6
Other agriculture	12.2	0.0	0.0	12.2	12.2
Services to agriculture; hunting and trapping	11.1	11.1	0.0	11.1	11.1
Forestry and logging	12.2	12.2	12.2	12.2	12.2
Commercial fishing	17.3	17.3	0.0	17.3	17.3
Coal; oil and gas	9.0	0.0	0.0	7.5	7.5
Iron ores	0.0	0.0	0.0	10.8	10.8
Non-ferrous metal ores	0.0	0.0	0.0	11.0	11.0
Other mining	11.2	0.0	0.0	11.2	11.2
Services to mining	0.0	11.0	0.0	11.0	11.0
Meat and meat products	13.0	0.0	0.0	13.0	13.0
Dairy products	16.5	0.0	0.0	14.4	16.1
Fruit and vegetable products	13.3	0.0	0.0	11.8	13.1
Oils and fats	8.6	0.0	0.0	8.6	8.6
Flour mill products and cereal foods	11.7	0.0	0.0	11.4	11.7
Bakery products	11.4	0.0	0.0	10.2	11.4
Confectionery	15.4	0.0	0.0	9.7	15.3
Other food products	12.1	0.0	0.0	10.3	11.5
Soft drinks, cordials and syrups	19.2	0.0	0.0	10.8	19.5
Beer and malt	41.8	0.0	0.0	19.6	41.9
Wine and spirits	43.1	0.0	0.0	30.8	42.2
Tobacco products	227.4	0.0	0.0	132.1	230.3
Wool scouring	0.0	0.0	0.0	15.3	15.3
Textile fibres, yarns and woven fabrics	7.8	0.0	0.0	6.3	7.5
Textile products	9.7	0.0	7.5	7.5	9.4
Knitting mill products	6.5	0.0	0.0	6.5	6.5
Clothing	7.6	0.0	0.0	7.5	7.5
Footwear	6.7	0.0	0.0	6.7	6.7
Leather and leather products	10.6	0.0	0.0	8.0	9.7
Sawmill products	9.1	0.0	0.0	9.1	9.1
Plywood, veneer and fabricated wood	9.9	0.0	0.0	9.9	9.9
Other wood products	13.8	0.0	9.1	9.1	12.0
Pulp, paper and paperboard	26.7	0.0	0.0	10.2	14.8
Paperboard containers; paper bags and sacks	21.8	0.0	0.0	12.2	12.7
Other paper products	21.6	0.0	0.0	12.3	20.3
Printing and services to printing	35.3	17.5	0.0	17.5	31.6
Publishing; recorded media and publishing	12.8	0.0	8.5	8.5	12.6
Petroleum and coal products	63.0	0.0	0.0	20.0	56.0
Fertilisers	10.0	0.0	0.0	9.1	9.7

*continued*

**Table 5.3 (cont.): Effective tax rates on final demand for Australian indirect taxes, 1992-93, (\$m.)**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Other basic chemicals	10.5	0.0	0.0	8.3	8.3
Paints	8.9	0.0	0.0	8.9	8.9
Medicinal and pharmaceutical products; pesticides	9.5	0.0	0.0	9.2	9.5
Soap and other detergents	17.1	0.0	0.0	8.6	16.3
Cosmetics and toiletry preparations	16.0	0.0	0.0	8.8	15.7
Other chemical products	51.0	0.0	0.0	9.0	29.2
Rubber products	25.4	0.0	0.0	10.7	23.7
Plastic products	14.3	0.0	0.0	9.7	13.2
Glass and glass products	13.4	0.0	0.0	10.1	12.6
Ceramic products	12.5	0.0	0.0	8.8	12.1
Cement and lime	0.0	0.0	0.0	12.5	12.5
Concrete slurry	0.0	0.0	0.0	0.0	14.4
Plaster and other concrete products	0.0	0.0	0.0	10.9	10.9
Other non-metallic mineral products	9.2	0.0	0.0	9.2	9.2
Iron and steel	9.8	0.0	0.0	9.8	9.8
Basic non-ferrous metal and products	10.9	0.0	0.0	10.9	10.9
Structural metal products	0.0	0.0	8.9	8.9	8.9
Sheet metal products	22.2	0.0	14.9	14.9	18.3
Fabricated metal products	30.7	0.0	8.8	8.8	21.6
Motor vehicles and parts; other transport equipment	30.1	0.0	14.8	14.8	27.1
Ships and boats	19.9	0.0	9.3	9.3	11.8
Railway equipment	0.0	0.0	12.0	12.0	12.0
Aircraft	3.5	0.0	3.5	3.5	3.5
Photographic and scientific equipment	26.1	0.0	9.5	9.5	19.8
Electronic equipment	20.3	0.0	7.5	7.5	14.0
Household appliances	14.0	0.0	8.8	8.8	13.1
Other electrical equipment	16.4	0.0	11.9	11.9	14.8
Agricultural machinery	10.8	0.0	6.7	6.7	9.7
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	7.3	7.3	7.3
Other machinery and equipment	16.4	0.0	7.9	7.9	8.4
Prefabricated buildings	0.0	0.0	9.8	9.8	9.8
Furniture	10.6	0.0	9.5	9.5	10.4
Other manufacturing	20.4	0.0	10.5	10.5	18.9
Electricity supply	8.1	0.0	0.0	8.1	8.1
Gas supply	21.0	0.0	0.0	0.0	21.0
Water supply; sewerage and drainage services	0.0	9.7	0.0	9.7	9.7
Residential building construction	0.0	0.0	16.9	16.9	16.9
Other construction	0.0	10.1	10.1	10.1	10.1
Wholesale trade	10.0	10.0	10.0	10.0	10.0
Retail trade	9.6	0.0	0.0	0.0	9.6
Mechanical repairs	10.0	0.0	0.0	10.0	10.0
Other repairs	8.6	0.0	0.0	8.6	8.6
Accommodation, cafes and restaurants	11.1	0.0	0.0	0.0	11.1
Road transport	15.2	15.2	15.2	15.2	15.2
Rail, pipeline and other transport	9.7	0.0	9.7	9.7	9.7

*continued*

34 **Table 5.3 (cont.): Effective tax rates on final demand for Australian indirect taxes, 1992-93, (\$m.)**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	13.5	13.5	13.5	13.5	13.5
Communication services	8.8	8.8	0.0	8.8	8.8
Banking	17.4	0.0	0.0	17.4	17.4
Non-bank finance	23.6	23.6	0.0	23.6	23.6
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	26.8	26.8	26.8	26.8	26.8
Services to finance, investment and insurance	17.9	0.0	0.0	17.9	17.9
Ownership of dwellings	14.2	14.2	0.0	0.0	14.2
Other property services	7.2	7.2	0.0	7.2	7.2
Scientific research, technical and computer services	8.5	8.5	8.5	8.5	8.5
Legal, accounting, marketing and business management services	8.2	8.2	0.0	8.2	8.2
Other business services	8.4	8.4	0.0	8.4	8.4
Government administration	6.0	6.0	0.0	0.0	6.0
Defence	0.0	7.4	0.0	7.4	7.4
Education	3.0	3.0	0.0	3.0	3.0
Health services	5.1	5.1	0.0	5.1	5.1
Community services	7.8	7.8	0.0	0.0	7.8
Motion picture, radio and television services	13.9	13.9	0.0	0.0	13.9
Libraries, museums and the arts	7.0	7.0	0.0	7.0	7.0
Sport, gambling and recreational services	33.6	33.6	0.0	33.6	33.6
Personal services	11.9	11.9	0.0	11.9	11.9
Other services	6.5	6.5	0.0	6.5	6.5
<i>Total</i>	<i>17.0</i>	<i>6.3</i>	<i>10.0</i>	<i>11.1</i>	<i>13.6</i>

*Note:* Effective tax rates are measured as total tax incidence forwarded onto industries divided by tax exclusive final demand.

While households ultimately bear the largest burden of indirect taxes in Australia, with an average tax rate of 17 per cent, exported goods and services in Australia are also subject to an average effective tax rate of around 11 per cent (See Table 5.4). If a broad based consumption tax system was in place the majority of the impact on exports would be avoided. Excises and franchise fees combined produce the highest average effective tax rate on private domestic consumers (5.4 per cent) mainly due to duties on petroleum and tobacco products.

**Table 5.4: Final incidence of Australian indirect taxes by type of indirect tax, 1992-93**

	Private final consumption expenditure		Government consumption expenditure		General Government gross fixed capital expenditure		Exports	
	\$m.	Average effective tax rate (%)	\$m.	Average effective tax rate (%)	\$m.	Average effective tax rate (%)	\$m.	Average effective tax rate (%)
Wholesale sales tax	8059	3.6	597	0.8	208	2.0	927	1.4
Excise and Franchise fees	12136	5.4	1059	1.4	149	1.4	1986	3.1
-petroleum products	6043	2.7	876	1.2	142	1.4	1858	2.9
-tobacco products	2978	1.3	0	0.0	0	0	5	0.0
-alcohol	1555	0.7	12	0.0	0	0	46	0.1
-other excises and franchise fees	1560	0.7	171	0.2	7	0	77	0.1
Stamp duties	3236	1.4	518	0.7	130	1.3	908	1.4
Payroll tax	3698	1.6	844	1.1	301	3.0	1152	1.8
FID	1216	0.5	127	0.2	30	0.3	179	0.3
Primary production taxes	306	0.1	7	0.0	1	0.0	335	0.5
Land tax	1253	0.6	442	0.6	60	0.6	291	0.5
Municipal rates	4106	1.8	221	0.3	36	0.4	411	0.6
Other indirect taxes	4436	2.0	953	1.3	846	1.2	956	1.5
<b>Total indirect taxes</b>	<b>38446</b>	<b>17.0</b>	<b>4769</b>	<b>6.3</b>	<b>1017</b>	<b>10.0</b>	<b>7146</b>	<b>11.1</b>

## 6. Concluding comment

A word of caution in interpreting the results presented in this paper. These results are based on the premise that all indirect taxes are fully passed forward. This may be an unrealistic assumption as some industries are not able to fully or even partially pass on the increased costs of production due to these taxes. Keeping this in mind some major findings of this research are presented.

Households ultimately bear the major burden of Australian indirect taxes in this analysis. Exports also face high increases in costs due to the Australian indirect tax system. Business inputs, investment and exports would not be taxed under a broad based consumption tax.

Necessity items such as food and clothing, health and education services are not spared from the ultimate burden of current indirect taxes. This is unknown to the majority of Australians as they do not realise that the taxes imposed on business inputs in the production of all goods and services are eventually passed onto households through higher prices.

Also apparent from the results of this study are the wide dispersions in the final incidence of indirect taxes on various goods and services. These variations create distortions in decision making which lead to losses in social welfare. A broad based consumption tax eliminates these distortions if a single tax rate covers all goods and services.

## Appendix 1: Summary of equations and matrix operations used to calculate final incidence of indirect taxes

Once the absorption matrix at basic values has been transformed to redistribute margin transactions onto non-margin transactions using margin services to add value to products the following equations may be used to calculate the final incidence of particular indirect taxes (or groups of indirect taxes). Equations A1 and A2 calculate the first round incidence on business inputs and final demand respectively, while equation A3 calculates the final incidence of taxes on business inputs on final demand (that is the subsequent rounds incidence on final demand). Total final incidence may be calculated using equation A4 while equations A5 to A8 give final incidence by final demand category. Effective tax rates on final demand are given by equations A9 to A13.

$$TI_i' = SI_i' \times OX_{ij} \quad (A1)$$

$$TA_i = SI_i \# (FDX_i / TSX_i) \quad (A2)$$

$$TB_i = [TI_i' \times (I_{ij} - O_{ij})^{-1}]' \# (FD_i / TS_i) \quad (A3)$$

$$TFI_i = TA_i + TB_i \quad (A4)$$

$$TPC_i = TB_i \# (PC_i / FD_i) + TA_i \# (PCX_i / FDX_i) \quad (A5)$$

$$TGC_i = TB_i \# (GC_i / FD_i) + TA_i \# (GCX_i / FDX_i) \quad (A6)$$

$$TGGI_i = TB_i \# (GGI_i / FD_i) + TA_i \# (GGIX_i / FDX_i) \quad (A7)$$

$$TX_i = TB_i \# (X_i / FD_i) + TA_i \# (XX_i / FDX_i) \quad (A8)$$

$$ETR_i = TFI_i / FD_i \quad (A9)$$

$$EPC_i = TPC_i / PC_i \quad (A10)$$

$$EGC_i = TGC_i / GC_i \quad (A11)$$

$$EGGI_i = TGGI_i / GGI \quad (A12)$$

$$EX_i = TX_i / X_i \quad (A13)$$

### Variable definitions

$SI_i$  = statutory incidence of tax by industry (\$);

$OX_{ij}$  = output coefficients with exemptions, industry by industry (per cent of total non-exempt output supplied to industries);

$TI_i$  = first round incidence of tax on business inputs by industry (\$);



$TA_i$  = first round incidence of tax on final demand by industry (\$);

$FDX_i$  = non-exempt final demand by industry (\$);

$TSX_i$  = total non-exempt supply by industry (\$);

$O_{ij}$  = output coefficients without exemptions, industry by industry (per cent of total output supplied to industries);

$FD_i$  = final demand by industry (\$);

$TS_i$  = total supply by industry (\$);

$I_{ij}$  = identity matrix, industry by industry;

$TB_i$  = final incidence of tax on business inputs on final demand by industry (\$);

$TFI_i$  = total final incidence of tax on final demand by industry (\$);

$TPC_i$  = total final incidence of tax on private final consumption expenditure by industry (\$);

$TGC_i$  = total final incidence of tax on government consumption expenditure by industry (\$);

$TGGI_i$  = total final incidence of tax on general government gross fixed capital expenditure by industry (\$);

$TX_i$  = total final incidence of tax on exports by industry (\$);

$ETR_i$  = effective tax rates of tax on final demand by industry (per cent);

$EPC_i$  = effective tax rates of tax on private final consumption expenditure by industry (per cent);

$EGC_i$  = effective tax rates of tax on government consumption expenditure by industry (per cent);

$EGGI_i$  = effective tax rates of tax on general government gross fixed capital expenditure by industry (per cent);

$EX_i$  = effective tax rates of tax on exports by industry (\$);

$PC_i$  = private final consumption expenditure by industry (\$);

$GC_i$  = government consumption expenditure by industry (\$);

$GGI_i$  = general government gross fixed capital expenditure by industry (\$);

$X_i$  = exports by industry (\$);

$i = j = 113$  for short run incidence; and  $i = j = 114$  for long run incidence.

## **Matrix operations used**

' = the transpose of a vector or matrix;

× = matrix multiplication;

/ = element by element division; and

# = element by element multiplication known as the Schur or Hadamard product.

## Appendix 2: 1992-93 Input output industry classification

Industry $i = j$	Description of industry
1	Sheep
2	Grains
3	Beef cattle
4	Dairy cattle
5	Pigs
6	Poultry
7	Other agriculture
8	Services to agriculture; hunting and trapping
9	Forestry and logging
10	Commercial fishing
11	Coal; oil and gas
12	Iron ores
13	Non-ferrous metal ores
14	Other mining
15	Services to mining
16	Meat and meat products
17	Dairy products
18	Fruit and vegetable products
19	Oils and fats
20	Flour mill products and cereal foods
21	Bakery products
22	Confectionery
23	Other food products
24	Soft drinks, cordials and syrups
25	Beer and malt
26	Wine and spirits
27	Tobacco products
28	Wool scouring
29	Textile fibres, yarns and woven fabrics
30	Textile products
31	Knitting mill products
32	Clothing
33	Footwear
34	Leather and leather products
35	Sawmill products
36	Plywood, veneer and fabricated wood
37	Other wood products
38	Pulp, paper and paperboard
39	Paperboard containers; paper bags and sacks
40	Other paper products
41	Printing and services to printing
42	Publishing; recorded media and publishing
43	Petroleum and coal products
44	Fertilisers
45	Other basic chemicals
46	Paints
47	Medicinal and pharmaceutical products; pesticides
48	Soap and other detergents
49	Cosmetics and toiletry preparations
50	Other chemical products

*continued*

Industry $i = j$	Description of industry
51	Rubber products
52	Plastic products
53	Glass and glass products
54	Ceramic products
55	Cement and lime
56	Concrete slurry
57	Plaster and other concrete products
58	Other non-metallic mineral products
59	Iron and steel
60	Basic non-ferrous metal and products
61	Structural metal products
62	Sheet metal products
63	Fabricated metal products
64	Motor vehicles and parts; other transport equipment
65	Ships and boats
66	Railway equipment
67	Aircraft
68	Photographic and scientific equipment
69	Electronic equipment
70	Household appliances
71	Other electrical equipment
72	Agricultural machinery
73	Mining and construction machinery; lifting and material handling equipment
74	Other machinery and equipment
75	Prefabricated buildings
76	Furniture
77	Other manufacturing
78	Electricity supply
79	Gas supply
80	Water supply; sewerage and drainage services
81	Residential building construction
82	Other construction
83	Wholesale trade
84	Retail trade
85	Mechanical repairs
86	Other repairs
87	Accommodation, cafes and restaurants
88	Road transport
89	Rail, pipeline and other transport
90	Water transport
91	Air and space transport
92	Services to transport; storage
93	Communication services
94	Banking
95	Non-bank finance
96	Financial asset investors
97	Insurance
98	Services to finance, investment and insurance
99	Ownership of dwellings
100	Other property services
101	Scientific research, technical and computer services
102	Legal, accounting, marketing and business management services
103	Other business services
104	Government administration
105	Defence

*continued*

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Industry <i>i = j</i>	Description of industry
106	Education
107	Health services
108	Community services
109	Motion picture, radio and television services
110	Libraries, museums and the arts
111	Sport, gambling and recreational services
112	Personal services
113	Other services
114	Capital (long run model)

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## Appendix 3: Calculating final incidence and effective tax rates of indirect taxes

### A3.1 Wholesale sales tax

Wholesale Sales Tax first-round incidence data are available direct from ABS (1996a, Table 36). Thus, we already have  $TI_i$  and  $TA_i$  outlined in Section 2 (first round incidence on business inputs and final demand respectively). The notes below refer to the long run model of 114 commodities by 114 industries. The short run model refers to 113 industries and thus matrices need to be adjusted before calculating incidence.

We use an identity matrix denoted by  $I_{ij}$  for  $i = j = 1, \dots, m$  where  $m = 114$ .

Flowing tax on Business Inputs through to final demand (steps to calculate TB vector):

$O_{ij}$  = each row of  $A_{ij}$  matrix divided by total supply of that row or industry

$$Z_i = FD_i / TS_i$$

$$TBWST_i = [TIWST_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIWST_i = TAWST_i + TBWST_i$$

$$TPCWST_i = TBWST_i \# (PC_i / FD_i) + TAWST_i$$

$$TGCWST_i = TBWST_i \# (GC_i / FD_i)$$

$$TXWST_i = TBWST_i \# (X_i / FD_i)$$

$$TGGIWST_i = TBWST_i \# (GGI_i / FD_i)$$

Effective Tax Rates for each final demand component:

$$ETRWST_i = TFIWST_i / FD_i$$

$$EPCWST_i = TPCWST_i / PC_i$$

$$EGCWST_i = TGCWST_i / GC_i$$

$$EXWST_i = TXWST_i / X_i$$

$$EGGIWST_i = TGGIWST_i / GGI_i$$

### A3.2 Financial institutions duty (FID)

For FID we need to work out first round incidence outlined in Chisholm's method. Thus, an exemptions matrix is needed. This matrix comprises the full industry by industry flow matrix but with flows between exempt industries set at zero. Where there is only a partial exemption for one item out of a range of items covered by a particular industry classification, only a partial adjustment is made. Summing across the rows of the exemptions matrix and adding in final demand gives a vector of total non-exempt supply for each (supplying) industry. In some instances final demand categories are exempt, for instance, government consumption and exports are exempt from excise. In this situation the affected final demand categories are also excluded when calculating total non-exempt supply. However, for taxes other than wholesale sales tax and excise duties no categories of final demand will be exempt in the first round.

Exemptions matrix:

$$\begin{aligned}
 EFID_{ij} &= A_{ij} && \text{if } i = 94 \text{ or } 95, \\
 &= 0 && \text{if } j = 104 \text{ or } 105, \\
 &= 0.5A_{ij} && \text{if } j = 106, \\
 &= (1 - 0.3496)A_{ij} && \text{if } j = 107, \\
 &= (1 - 0.016)A_{ij} && \text{if } j = 113, \text{ and} \\
 &= 0 && \text{otherwise.}
 \end{aligned}$$

Final non-exempt demand:

$$\begin{aligned}
 FDXFID_i &= FD_i && \text{if } i = 94 \text{ or } 95, \text{ and} \\
 &= 0 && \text{otherwise.}
 \end{aligned}$$

Total non-exempt supply:

$$TSXFID_i = \sum_{j=1}^{114} EFID_{ij} + FDXFID_i, \forall i$$

$OXFID_{ij}$  = divide each element of row in  $EFID_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:

$$SIFID_i$$

First round incidence on business inputs vector ( $TI_i$ ):

$$TIFID_i' = SIFID_i' \times OXFID_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TAFID_i = SIFID_i \# (FDXFID_i / TSXFID_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate TB vector):

$$TBFID_i = [TIFID_i' \times (I_{ij} - O_{ij})^{-1}] \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIFID_i = TAFID_i + TBFID_i$$

$$TPCFID_i = TAFID_i \# (PC_i / FD_i) + TAFID_i \# (PCX_i / FDX_i)$$

$$TGCFID_i = TAFID_i \# (GC_i / FD_i) + TAFID_i \# (GCX_i / FDX_i)$$

$$TXFID_i = TAFID_i \# (X_i / FD_i) + TAFID_i \# (XX_i / FDX_i)$$

$$TGGIFID_i = TAFID_i \# (GGI_i / FD_i) + TAFID_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETRFID_i = TFIFID_i / FD_i$$

$$EPCFID_i = TPCFID_i / PC_i$$

$$EGCFID_i = TGCFID_i / GC_i$$

$$EXFID_i = TXFID_i / X_i$$

$$EGGIFID_i = TGGIFID_i / GGI_i$$

### A3.3 Excise duties

Exemptions matrix:

$$EEXC_{ij} = A_{ij} \quad \text{if } i = 11, 25, 26, 27 \text{ or } 43, \quad \text{and} \\ = 0 \quad \text{otherwise.}$$

Final non-exempt demand:

$$FDXEXC_i = PC_i \quad \text{if } i = 11, 25, 26, 27 \text{ or } 43, \quad \text{and} \\ = 0 \quad \text{otherwise}$$

Total non-exempt supply:

$$TSXEXC_i = \sum_{j=1}^{114} EEXC_{ij} + FDXEXC_i, \forall i$$

$OXEXC_{ij}$  = divide each element of row in  $EEXC_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector (114x1):  $SIEXC_i$

First round incidence on business inputs vector ( $TI_i$ ):

$$TIEXC_i' = SIEXC_i' \times OXEXC_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TAEXC_i' = SIEXC_i \# (FDXEXC_i / TSXEXC_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate **TB** vector):

$$TBEXC_i = [TIEXC_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIEXC_i = TAEXC_i + TBEXC_i$$

$$TPCEXC_i = TBEXC_i \# (PC_i / FD_i) + TAEXC_i$$

$$TGCEXC_i = TBEXC_i \# (GC_i / FD_i)$$

$$TXEXC_i = TBEXC_i \# (X_i / FD_i)$$

$$TGGIEXC_i = TBEXC_i \# (GGI_i / FD_i)$$

Effective Tax Rates for each final demand component:

$$ETREXC_i = TFIEXC_i / FD_i$$

$$EPCEXC_i = TPCEXC_i / PC_i$$

$$EGCEXC_i = TGCEXC_i / GC_i$$

$$EXEXC_i = TXEXC_i / X_i$$

$$EGGIEXC_i = TGGIEXC_i / GGI_i$$



### A3.4 Business franchise fees

Exemptions matrix:

$$EFRAN_{ij} = A_{ij} \quad \text{if } i = 25, 26, 27, 43, 79, 87 \text{ or } 111, \quad \text{and} \\ = 0 \quad \text{otherwise.}$$

Final non-exempt demand:

$$FDXFRAN_i = FD_i \quad \text{if } i = 25, 26, 27, 43, 79, 87 \text{ or } 111, \quad \text{and} \\ = 0 \quad \text{otherwise}$$

Total non-exempt supply:

$$TSXFRAN_i = \sum_{j=1}^{114} EFRAN_{ij} + FDXFRAN_i, \quad \forall i$$

$OXFRAN_{ij}$  = divide each element of row in  $EFRAN_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SIFRAN_i$

First round incidence on business inputs vector ( $TI_i$ )

$$TIFRAN_i' = SIFRAN_i' \times OXFRAN_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TAFRAN_i = SIFRAN_i \# (FDXFRAN_i / TSXFRAN_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate TB vector):

$$TBFRAN_i = [TIFRAN_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIFRAN_i = TAFRAN_i + TBFRAN_i$$

$$TPCFRAN_i = TBFRAN_i \# (PC_i / FD_i) + TAFRAN_i \# (PCX_i / FDX_i)$$

$$TGCFRAN_i = TBFRAN_i \# (GC_i / FD_i) + TAFRAN_i \# (GCX_i / FDX_i)$$

$$TXFRAN_i = TBFRAN_i \# (X_i / FD_i) + TAFRAN_i \# (XX_i / FDX_i)$$

$$TGGIFRAN_i = TBFRAN_i \# (GGI_i / FD_i) + TAFRAN_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETFRAN_i = TFIFRAN_i / FD_i$$

$$EPCFRAN_i = TPCFRAN_i / PC_i$$

$$EGCFRAN_i = TGCFRAN_i / GC_i$$

$$EXFRAN_i = TXFRAN_i / X_i$$

$$EGGIFRAN_i = TGGIFRAN_i / GGI_i$$

### A3.5 Land tax

Exemptions matrix:

$$\begin{aligned} ELAN_{ij} &= 0 && \text{for } j = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, \text{ or } 105, \\ &= 0.2A_{ij} && \text{for } j = 106, \\ &= (1 - 0.3496)A_{ij} && \text{for } j = 107, \\ &= (1 - 0.016)A_{ij} && \text{for } j = 113, \text{ and} \\ &= A_{ij} && \text{otherwise.} \end{aligned}$$

Final non-exempt demand:

$$FDXLAN_i = FD_i$$

Total non-exempt supply:

$$TSXLAN_i = \sum_{j=1}^{114} ELAN_{ij} + FDXLAN_i, \forall i$$

$OXLAN_{ij}$  = divide each element of row in  $ELAN_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SILAN_i$

First round incidence on business inputs vector ( $TI_i$ ):

$$TILAN_i' = SILAN_i' \times OXLAN_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TALAN_i = SILAN_i \# (FDXLAN_i / TSXLAN_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate TB vector):

$$TBLAN_i = [TILAN_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFILAN_i = TALAN_i + TBLAN_i$$

$$TPCLAN_i = TBLAN_i \# (PC_i / FD_i) + TALAN_i \# (PCX_i / FDX_i)$$

$$TGCLAN_i = TBLAN_i \# (GC_i / FD_i) + TALAN_i \# (GCX_i / FDX_i)$$

$$TXLAN_i = TBLAN_i \# (X_i / FD_i) + TALAN_i \# (XX_i / FDX_i)$$

$$TGGILAN_i = TBLAN_i \# (GGI_i / FD_i) + TALAN_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETRLAN_i = TFILAN_i / FD_i$$

$$EPCLAN_i = TPCLAN_i / PC_i$$

$$EGCLAN_i = TGCLAN_i / GC_i$$

$$EXLAN_i = TXLAN_i / X_i$$

$$EGGILAN_i = TGGILAN_i / GGI_i$$

### 6.1.1 Payroll tax

Exemptions matrix:

$$\begin{aligned} EPAY_{ij} &= 0 && \text{if } j = 105, \text{ or } 114, \\ &= (1 - 0.169)A_{ij} && \text{if } j = 104, \\ &= 0.5A_{ij} && \text{if } j = 106, \\ &= (1 - 0.3496)A_{ij} && \text{if } j = 107, \\ &= (1 - 0.016)A_{ij} && \text{if } j = 113, \quad \text{and} \\ &= A_{ij} && \text{otherwise.} \end{aligned}$$

Final non-exempt demand:

$$FDXPAY_i = FD_i$$

Total non-exempt supply:

$$TSXPAY_i = \sum_{j=1}^{114} EPAY_{ij} + FDXPAY_i, \forall i$$

$OXPAY_{ij}$  = divide each element of row in  $EPAY_i$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SIPAY_i$

First round incidence on business inputs vector ( $TI_i$ )

$$TIPAY_i' = SIPAY_i' \times OXPAY_{ij}$$

First round incidence on final demand ( $TA_i$ )

$$TAPAY_i = SIPAY_i \# (FDXPAY_i / TSXPAY_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate **TB** vector):

$$TBPAY_i = [TIPAY_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIPAY_i = TBPAY_i + TAPAY_i$$

$$TPCPAY_i = TBPAY_i \# (PC_i / FD_i) + TAPAY_i \# (PCX_i / FDX_i)$$

$$TGCPAY_i = TBPAY_i \# (GC_i / FD_i) + TAPAY_i \# (GCX_i / FDX_i)$$

$$TXPAY_i = TBPAY_i \# (X_i / FD_i) + TAPAY_i \# (XX_i / FDX_i)$$

$$TGGIPAY_i = TBPAY_i \# (GGI_i / FD_i) + TAPAY_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETRPAY_i = TFIPAY_i / FD_i$$

$$EPCPAY_i = TPCPAY_i / PC_i$$

$$EGCPAY_i = TGCPAY_i / GC_i$$

$$EXPAY_i = TXPAY_i / X_i$$

$$EGGIPAY_i = TGGIPAY_i / GGI_i$$

### A3.6 Primary production taxes

Exemptions matrix:

$$\begin{aligned}
 EPRI_{ij} &= A_{ij} && \text{if } i = 1, 2, 3, 4, 5, 6, 7, 10, 16, \text{ or } 17, \\
 &= 0 && \text{if } j = 104 \text{ or } 105, \quad \text{and} \\
 &= 0 && \text{otherwise.}
 \end{aligned}$$

Final non-exempt demand:

$$FDXPRI_i = FD_i \quad \text{if } i = 1, 2, 3, 4, 5, 6, 7, 10, 16, \text{ or } 17, \quad \text{and} \\ = 0 \quad \text{otherwise.}$$

Total non-exempt supply:

$$TSXPRI_i = \sum_{j=1}^{114} EPRI_{ij} + FDXPRI_i, \quad \forall i$$

$OXPRI_{ij}$  = divide each element of row in  $EPRI_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SIPRI_i$

First round incidence on business inputs vector ( $TI_i$ ):

$$TIPRI_i' = SIPRI_i' \times OXPRI_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TAPRI_i = SIPRI_i' \# (FDXPRI_i / TSXPRI_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate **TB** vector):

$$TBPRI_i = [TIPRI_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIPRI_i = TBPRI_i + TAPRI_i$$

$$TPCPRI_i = TBPRI_i \# (PC_i / FD_i) + TAPRI_i \# (PCX_i / FDX_i)$$

$$TGCPRI_i = TBPRI_i \# (GC_i / FD_i) + TAPRI_i \# (GCX_i / FDX_i)$$

$$TXPRI_i = TBPRI_i \# (X_i / FD_i) + TAPRI_i \# (XX_i / FDX_i)$$

$$TGGIPRI_i = TBPRI_i \# (GGI_i / FD_i) + TAPRI_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETRPRI_i = TFIPRI_i / FD_i$$

$$EPCPRI_i = TPCPRI_i / PC_i$$

$$EGCPRI_i = TGCPRI_i / GC_i$$

$$EXPRI_i = TXPRI_i / X_i$$

$$EGGIPRI_i = TGGIPRI_i / GGI_i$$

### A3.7 Municipal rates

Exemptions matrix:

$$\begin{aligned} ERAT_{ij} &= 0 && \text{if } j = 104 \text{ or } 105, \text{ and} \\ &= A_{ij} && \text{otherwise.} \end{aligned}$$

Final non-exempt demand:

$$FDXRAT_i = FD_i$$

Total non-exempt supply:

$$TSXRAT_i = \sum_{j=1}^{114} ERAT_{ij} + FDXRAT_i, \forall i$$

$OXRAT_{ij}$  = divide each element of row in  $ERAT_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SIRAT_i$

First round incidence on business inputs vector ( $TI_i$ ):

$$TIRAT_i' = SIRAT_i' \times OXRAT_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TARAT_i = SIRAT_i \# (FDXRAT_i / TSXRAT_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate **TB** vector):

$$TBRAT_i = [TIRAT_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category

$$TFIRAT_i = TBRAT_i + TARAT_i$$

$$TPCRAT_i = TBRAT_i \# (PC_i / FD_i) + TARAT_i \# (PCX_i / FDX_i)$$

$$TGCRAT_i = TBRAT_i \# (GC_i / FD_i) + TARAT_i \# (GCX_i / FDX_i)$$

$$TXRAT_i = TBRAT_i \# (X_i / FD_i) + TARAT_i \# (XX_i / FDX_i)$$

$$TGGIRAT_i = TBRAT_i \# (GGI_i / FD_i) + TARAT_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETRRAT_i = TFIRAT_i / FD_i$$

$$EPCRAT_i = TPCRAT_i / PC_i$$

$$EGCRAT_i = TGCRAT_i / GC_i$$

$$EXRAT_i = TXRAT_i / X_i$$

$$EGGIRAT_i = TGGIRAT_i / GGI_i$$

### A3.8 Stamp duty

Exemptions matrix:

$$\begin{aligned} ESTP_{ij} &= 0 && \text{if } j = 104 \text{ or } 105, \\ &= 0.84A_{ij} && \text{if } j = 114, \\ &= 0.5A_{ij} && \text{if } j = 106, \\ &= (1 - 0.3496)A_{ij} && \text{if } j = 107, \\ &= (1 - 0.016)A_{ij} && \text{if } j = 113, \\ &= A_{ij} && \text{otherwise.} \end{aligned}$$

Final non-exempt demand

$$FDXSTP_i = FD_i$$

Total non-exempt supply:

$$TSXSTP_i = \sum_{j=1}^{114} ESTP_{ij} + FDXSTP_i, \forall i$$

$OXSTP_{ij}$  = divide each element of row in  $ESTP_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector :  $SISTP_i$

First round incidence on business inputs vector ( $TI_i$ ):

$$TISTP_i' = SISTP_i' \times OXSTP_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TASTP_i = SISTP_i \# (FDXSTP_i / TSXSTP_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate TB vector):

$$TBSTP_i = [TISTP_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFISTP_i = TBSTP_i + TASTP_i$$

$$TPCSTP_i = TBSTP_i \#(PC_i / FD_i) + TASTP_i \#(PCX_i / FDX_i)$$

$$TGCSTP_i = TBSTP_i \#(GC_i / FD_i) + TASTP_i \#(GCX_i / FDX_i)$$

$$TXSTP_i = TBSTP_i \#(X_i / FD_i) + TASTP_i \#(XX_i / FDX_i)$$

$$TGGISTP_i = TBSTP_i \#(GGI_i / FD_i) + TASTP_i \#(GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETRSTP_i = TFISTP_i / FD_i$$

$$EPCSTP_i = TPCSTP_i / PC_i$$

$$EGCSTP_i = TGCSTP_i / GC_i$$

$$EXSTP_i = TXSTP_i / X_i$$

$$EGGISTP_i = TGGISTP_i / GGI_i$$

### A3.9 Other commodity taxes

Exemptions matrix:

$$EOTHC_{ij} = A_{ij} \quad \text{if } i = 11, 13, 25, 26, 27, 43, 78, 79, 92, 97, \text{ or } 109, \quad \text{and} \\ = 0 \quad \text{otherwise.}$$

Final non-exempt demand:

$$FDXOTHC_i = FD_i \quad \text{if } i = 11, 13, 25, 26, 27, 43, 78, 79, 92, 97, \text{ or } 109, \quad \text{and} \\ = 0 \quad \text{otherwise}$$

Total non-exempt supply:

$$TSXOTHC_i = \sum_{j=1}^{114} EOTHC_{ij} + FDXOTHC_i, \quad \forall i$$

$OXOTHC_{ij}$  = divide each element of row in  $EOTHC_{ij}$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SIOTHC_i$



First round incidence on business inputs vector ( $TI_i$ ):

$$TIOTHC_i' = SIO THC_i' \times OXOTH C_{ij}$$

First round incidence on final demand ( $TA_i$ ):

$$TAOTH C_i = SIO THC_i \# ( FDXOTH C_i / TSXOTH C_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate **TB** vector)

$$TBO THC_i = [TIOTH C_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category

$$TFIO THC_i = TBO THC_i + TAOTH C_i$$

$$TPCO THC_i = TBO THC_i \# (PC_i / FD_i) + TAOTH C_i \# (PCX_i / FDX_i)$$

$$TGCOTH C_i = TBO THC_i \# (GC_i / FD_i) + TAOTH C_i \# (GCX_i / FDX_i)$$

$$TXOTH C_i = TBO THC_i \# (X_i / FD_i) + TAOTH C_i \# (XX_i / FDX_i)$$

$$TGGIO THC_i = TBO THC_i \# (GGI_i / FD_i) + TAOTH C_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component

$$EFO THC_i = TFIO THC_i / FD_i$$

$$EPCOTH C_i = TPCOTH C_i / PC_i$$

$$EGCO THC_i = TGCOTH C_i / GC_i$$

$$EXOTH C_i = TXOTH C_i / X_i$$

$$EGGIO THC_i = TGGIO THC_i / GGI_i$$

### A3.10 Other indirect taxes

Exemptions matrix:

$$EOTHI_{ij} = 0 \quad \text{if } j = 105, \quad \text{and} \\ = A_{ij} \quad \text{otherwise.}$$

Final non-exempt demand:

$$FDXOTH I_i = FD_i$$

Total non-exempt supply:

$$TSXOTHI_i = \sum_{j=1}^{114} EOTHI_{ij} + FDXOTHI_i, \forall i$$

$OXOTHI_{ij}$  = divide each element of row in  $EOTHI_i$  by total non-exempt supply for that row or supplying industry.

Also needed is the statutory incidence vector:  $SIOTHI_i$

First round incidence on business inputs vector ( $TI_i$ ):

$$TIOTHI_i' = SIOTHI_i' \times OXOTHI_i$$

First round incidence on final demand ( $TA_i$ ):

$$TAOTHI_i = SIOTHI_i \# (FDXOTHI_i / TSXOTHI_i)$$

Flowing tax on Business Inputs through to final demand (steps to calculate **TB** vector):

$$TBOTHI_i = [TIOTHI_i' \times (I_{ij} - O_{ij})^{-1}]' \# Z_i$$

Total final incidence of tax by final demand category:

$$TFIOTHI_i = TBOTHI_i + TAOTHI_i$$

$$TPCOTHI_i = TBOTHI_i \# (PC_i / FD_i) + TAOTHI_i \# (PCX_i / FDX_i)$$

$$TGCOTHI_i = TBOTHI_i \# (GC_i / FD_i) + TAOTHI_i \# (GCX_i / FDX_i)$$

$$TXOTHI_i = TBOTHI_i \# (X_i / FD_i) + TAOTHI_i \# (XX_i / FDX_i)$$

$$TGGIOTHI_i = TBOTHI_i \# (GGI_i / FD_i) + TAOTHI_i \# (GGIX_i / FDX_i)$$

Effective Tax Rates for each final demand component:

$$ETROTHI_i = TFIOTHI_i / FD_i$$

$$EPCOTHI_i = TPCOTHI_i / PC_i$$

$$EGCOTHI_i = TGCOTHI_i / GC_i$$

$$EXOTHI_i = TXOTHI_i / X_i$$

$$EGGIOTHI_i = TGGIOTHI_i / GGI_i$$

## Appendix 4: Effective tax rates on final demand broken down by type of tax

**Table A4.1: Effective tax rates on final demand of the Wholesale Sales tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	1.2	0.0	0.0	1.2	1.2
Grains	1.2	0.0	0.0	1.2	1.2
Beef cattle	1.2	0.0	0.0	1.2	1.2
Dairy cattle	1.2	0.0	0.0	0.0	1.2
Pigs	1.2	0.0	0.0	1.2	1.2
Poultry	1.2	0.0	0.0	1.2	1.2
Other agriculture	1.3	0.0	0.0	1.3	1.3
Services to agriculture; hunting and trapping	1.0	1.0	0.0	1.0	1.0
Forestry and logging	1.0	1.0	1.0	1.0	1.0
Commercial fishing	1.5	1.5	0.0	1.5	1.5
Coal; oil and gas	1.0	0.0	0.0	1.0	1.0
Iron ores	0.0	0.0	0.0	1.1	1.1
Non-ferrous metal ores	0.0	0.0	0.0	1.1	1.1
Other mining	1.3	0.0	0.0	1.3	1.3
Services to mining	0.0	0.6	0.0	0.6	0.6
Meat and meat products	1.2	0.0	0.0	1.2	1.2
Dairy products	3.4	0.0	0.0	1.3	3.0
Fruit and vegetable products	3.3	0.0	0.0	1.8	3.2
Oils and fats	1.1	0.0	0.0	1.1	1.1
Flour mill products and cereal foods	1.7	0.0	0.0	1.4	1.6
Bakery products	2.6	0.0	0.0	1.5	2.7
Confectionery	8.0	0.0	0.0	2.3	7.8
Other food products	3.1	0.0	0.0	1.3	2.5
Soft drinks, cordials and syrups	10.7	0.0	0.0	2.3	11.0
Beer and malt	8.9	0.0	0.0	1.6	8.9
Wine and spirits	9.6	0.0	0.0	2.2	9.1
Tobacco products	1.5	0.0	0.0	1.5	1.5
Wool scouring	0.0	0.0	0.0	1.1	1.1
Textile fibres, yarns and woven fabrics	2.3	0.0	0.0	0.8	2.0
Textile products	3.6	0.0	1.4	1.4	3.2
Knitting mill products	1.1	0.0	0.0	1.1	1.1
Clothing	1.3	0.0	0.0	1.2	1.3
Footwear	1.2	0.0	0.0	1.2	1.2
Leather and leather products	3.9	0.0	0.0	1.3	3.0
Sawmill products	0.9	0.0	0.0	0.9	0.9
Plywood, veneer and fabricated wood	1.1	0.0	0.0	1.1	1.1
Other wood products	6.1	0.0	1.4	1.4	4.4

*continued*

**Table A4.1 (cont.): Effective tax rates on final demand of the Wholesale Sales Tax, 1992-93, per cent** 57

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Pulp, paper and paperboard	22.0	0.0	0.0	5.5	10.0
Paperboard containers; paper bags and sacks	13.7	0.0	0.0	4.1	4.6
Other paper products	12.8	0.0	0.0	3.5	11.4
Printing and services to printing	28.7	10.9	0.0	10.9	25.0
Publishing; recorded media and publishing	5.9	0.0	1.6	1.6	5.7
Petroleum and coal products	1.1	0.0	0.0	1.1	1.1
Fertilisers	2.0	0.0	0.0	1.1	1.7
Other basic chemicals	3.8	0.0	0.0	1.6	1.7
Paints	1.2	0.0	0.0	1.2	1.2
Medicinal and pharmaceutical products; pesticides	2.7	0.0	0.0	2.4	2.7
Soap and other detergents	9.9	0.0	0.0	1.5	9.2
Cosmetics and toiletry preparations	8.7	0.0	0.0	1.5	8.4
Other chemical products	44.9	0.0	0.0	2.9	23.2
Rubber products	19.8	0.0	0.0	5.1	18.1
Plastic products	8.3	0.0	0.0	3.7	7.3
Glass and glass products	6.5	0.0	0.0	3.1	5.7
Ceramic products	5.0	0.0	0.0	1.4	4.6
Cement and lime	0.0	0.0	0.0	1.2	1.2
Concrete slurry	0.0	0.0	0.0	0.0	1.3
Plaster and other concrete products	0.0	0.0	0.0	1.2	1.2
Other non-metallic mineral products	1.1	0.0	0.0	1.1	1.1
Iron and steel	0.8	0.0	0.0	0.8	0.8
Basic non-ferrous metal and products	0.9	0.0	0.0	0.9	0.9
Structural metal products	0.0	0.0	1.1	1.1	1.1
Sheet metal products	13.5	0.0	6.2	6.2	9.6
Fabricated metal products	24.3	0.0	2.4	2.4	15.2
Motor vehicles and parts; other transport equipment	24.3	0.0	9.0	9.0	21.3
Ships and boats	12.1	0.0	1.6	1.6	4.0
Railway equipment	0.0	0.0	1.0	1.0	1.0
Aircraft	0.6	0.0	0.6	0.6	0.6
Photographic and scientific equipment	21.1	0.0	4.4	4.4	14.8
Electronic equipment	16.2	0.0	3.4	3.4	9.9
Household appliances	8.3	0.0	3.1	3.1	7.4
Other electrical equipment	10.0	0.0	5.5	5.5	8.4
Agricultural machinery	5.2	0.0	1.1	1.1	4.0
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.9	0.9	0.9
Other machinery and equipment	11.6	0.0	3.1	3.1	3.6
Prefabricated buildings	0.0	0.0	1.1	1.1	1.1
Furniture	2.5	0.0	1.5	1.5	2.3
Other manufacturing	14.0	0.0	4.0	4.0	12.5
Electricity supply	1.0	0.0	0.0	1.0	1.0
Gas supply	1.0	0.0	0.0	0.0	1.0

*continued*

58 **Table A4.1 (cont.): Effective tax rates on final demand of the Wholesale Sales Tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Water supply; sewerage and drainage services	0.0	0.9	0.0	0.9	0.9
Residential building construction	0.0	0.0	1.2	1.2	1.2
Other construction	0.0	1.1	1.1	1.1	1.1
Wholesale trade	0.9	0.9	0.9	0.9	0.9
Retail trade	1.1	0.0	0.0	0.0	1.1
Mechanical repairs	3.0	0.0	0.0	3.0	3.0
Other repairs	1.2	0.0	0.0	1.2	1.2
Accommodation, cafes and restaurants	0.9	0.0	0.0	0.0	0.9
Road transport	1.3	1.3	1.3	1.3	1.3
Rail, pipeline and other transport	0.5	0.0	0.5	0.5	0.5
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	0.9	0.9	0.9	0.9	0.9
Communication services	1.2	1.2	0.0	1.2	1.2
Banking	0.9	0.0	0.0	0.9	0.9
Non-bank finance	0.8	0.8	0.0	0.8	0.8
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.8	0.8	0.8	0.8	0.8
Services to finance, investment and insurance	0.9	0.0	0.0	0.9	0.9
Ownership of dwellings	1.1	1.1	0.0	0.0	1.1
Other property services	0.7	0.7	0.0	0.7	0.7
Scientific research, technical and computer services	0.9	0.9	0.9	0.9	0.9
Legal, accounting, marketing and business management services	0.8	0.8	0.0	0.8	0.8
Other business services	0.8	0.8	0.0	0.8	0.8
Government administration	1.1	1.1	0.0	0.0	1.1
Defence	0.0	1.3	0.0	1.3	1.3
Education	0.2	0.2	0.0	0.2	0.2
Health services	0.6	0.6	0.0	0.6	0.6
Community services	0.8	0.8	0.0	0.0	0.8
Motion picture, radio and television services	1.3	1.3	0.0	0.0	1.3
Libraries, museums and the arts	0.8	0.8	0.0	0.8	0.8
Sport, gambling and recreational services	1.1	1.1	0.0	1.1	1.1
Personal services	1.2	1.2	0.0	1.2	1.2
Other services	0.5	0.5	0.0	0.5	0.5
<i>Total</i>	<i>3.6</i>	<i>0.8</i>	<i>2.0</i>	<i>1.4</i>	<i>2.6</i>

**Table A4.2: Effective tax rates on final demand for Stamp Duties, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	2.0	0.0	0.0	2.0	2.0
Grains	1.8	0.0	0.0	1.8	1.8
Beef cattle	1.9	0.0	0.0	1.9	1.9
Dairy cattle	1.8	0.0	0.0	0.0	1.8
Pigs	2.0	0.0	0.0	2.0	2.0
Poultry	1.5	0.0	0.0	1.5	1.5
Other agriculture	1.6	0.0	0.0	1.6	1.6
Services to agriculture; hunting and trapping	1.3	1.3	0.0	1.3	1.3
Forestry and logging	1.5	1.5	1.5	1.5	1.5
Commercial fishing	1.4	1.4	0.0	1.4	1.4
Coal; oil and gas	1.4	0.0	0.0	1.4	1.4
Iron ores	0.0	0.0	0.0	1.8	1.8
Non-ferrous metal ores	0.0	0.0	0.0	1.3	1.3
Other mining	1.7	0.0	0.0	1.7	1.7
Services to mining	0.0	1.2	0.0	1.2	1.2
Meat and meat products	1.8	0.0	0.0	1.8	1.8
Dairy products	1.8	0.0	0.0	1.8	1.8
Fruit and vegetable products	1.3	0.0	0.0	1.3	1.3
Oils and fats	1.2	0.0	0.0	1.2	1.2
Flour mill products and cereal foods	1.6	0.0	0.0	1.6	1.6
Bakery products	1.3	0.0	0.0	1.3	1.3
Confectionery	1.3	0.0	0.0	1.3	1.3
Other food products	1.4	0.0	0.0	1.4	1.4
Soft drinks, cordials and syrups	1.2	0.0	0.0	1.2	1.2
Beer and malt	1.5	0.0	0.0	1.5	1.5
Wine and spirits	1.4	0.0	0.0	1.4	1.4
Tobacco products	1.5	0.0	0.0	1.5	1.5
Wool scouring	0.0	0.0	0.0	1.9	1.9
Textile fibres, yarns and woven fabrics	0.7	0.0	0.0	0.7	0.7
Textile products	1.0	0.0	1.0	1.0	1.0
Knitting mill products	0.9	0.0	0.0	0.9	0.9
Clothing	1.0	0.0	0.0	1.0	1.0
Footwear	0.9	0.0	0.0	0.9	0.9
Leather and leather products	1.1	0.0	0.0	1.1	1.1
Sawmill products	1.4	0.0	0.0	1.4	1.4
Plywood, veneer and fabricated wood	1.2	0.0	0.0	1.2	1.2
Other wood products	1.4	0.0	1.4	1.4	1.4
Pulp, paper and paperboard	0.8	0.0	0.0	0.8	0.8
Paperboard containers; paper bags and sacks	1.1	0.0	0.0	1.1	1.1
Other paper products	1.3	0.0	0.0	1.3	1.3
Printing and services to printing	1.1	1.1	0.0	1.1	1.1
Publishing; recorded media and publishing	1.1	0.0	1.1	1.1	1.1
Petroleum and coal products	1.3	0.0	0.0	1.3	1.3

*continued*

**Table A4.2 (cont.): Effective tax rates on final demand for stamp duties, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Fertilisers	1.2	0.0	0.0	1.2	1.2
Other basic chemicals	0.8	0.0	0.0	0.8	0.8
Paints	1.1	0.0	0.0	1.1	1.1
Medicinal and pharmaceutical products; pesticides	1.2	0.0	0.0	1.2	1.2
Soap and other detergents	1.2	0.0	0.0	1.2	1.2
Cosmetics and toiletry preparations	1.3	0.0	0.0	1.3	1.3
Other chemical products	0.8	0.0	0.0	0.8	0.8
Rubber products	0.9	0.0	0.0	0.9	0.9
Plastic products	0.9	0.0	0.0	0.9	0.9
Glass and glass products	1.1	0.0	0.0	1.1	1.1
Ceramic products	1.0	0.0	0.0	1.0	1.0
Cement and lime	0.0	0.0	0.0	1.5	1.5
Concrete slurry	0.0	0.0	0.0	0.0	3.0
Plaster and other concrete products	0.0	0.0	0.0	1.8	1.8
Other non-metallic mineral products	1.4	0.0	0.0	1.4	1.4
Iron and steel	1.2	0.0	0.0	1.2	1.2
Basic non-ferrous metal and products	1.2	0.0	0.0	1.2	1.2
Structural metal products	0.0	0.0	1.2	1.2	1.2
Sheet metal products	1.2	0.0	1.2	1.2	1.2
Fabricated metal products	0.9	0.0	0.9	0.9	0.9
Motor vehicles and parts; other transport equipment	0.8	0.0	0.8	0.8	0.8
Ships and boats	1.0	0.0	1.0	1.0	1.0
Railway equipment	0.0	0.0	1.0	1.0	1.0
Aircraft	0.3	0.0	0.3	0.3	0.3
Photographic and scientific equipment	0.8	0.0	0.8	0.8	0.8
Electronic equipment	0.7	0.0	0.7	0.7	0.7
Household appliances	0.8	0.0	0.8	0.8	0.8
Other electrical equipment	0.9	0.0	0.9	0.9	0.9
Agricultural machinery	0.8	0.0	0.8	0.8	0.8
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.9	0.9	0.9
Other machinery and equipment	0.7	0.0	0.7	0.7	0.7
Prefabricated buildings	0.0	0.0	1.3	1.3	1.3
Furniture	1.3	0.0	1.3	1.3	1.3
Other manufacturing	1.1	0.0	1.1	1.1	1.1
Electricity supply	1.6	0.0	0.0	1.6	1.6
Gas supply	1.5	0.0	0.0	0.0	1.5
Water supply; sewerage and drainage services	0.0	1.4	0.0	1.4	1.4
Residential building construction	0.0	0.0	2.0	2.0	2.0
Other construction	0.0	1.5	1.5	1.5	1.5
Wholesale trade	1.3	1.3	1.3	1.3	1.3
Retail trade	1.2	0.0	0.0	0.0	1.2
Mechanical repairs	1.1	0.0	0.0	1.1	1.1
Other repairs	1.0	0.0	0.0	1.0	1.0

*continued*

**Table A4.2 (cont.): Effective tax rates on final demand for stamp duties, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Accommodation, cafes and restaurants	1.1	0.0	0.0	0.0	1.1
Road transport	4.7	4.7	4.7	4.7	4.7
Rail, pipeline and other transport	0.9	0.0	0.9	0.9	0.9
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	1.5	1.5	1.5	1.5	1.5
Communication services	1.5	1.5	0.0	1.5	1.5
Banking	3.3	0.0	0.0	3.3	3.3
Non-bank finance	5.2	5.2	0.0	5.2	5.2
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	2.8	2.8	2.8	2.8	2.8
Services to finance, investment and insurance	11.6	0.0	0.0	11.6	11.6
Ownership of dwellings	1.9	1.9	0.0	0.0	1.9
Other property services	0.9	0.9	0.0	0.9	0.9
Scientific research, technical and computer services	1.0	1.0	1.0	1.0	1.0
Legal, accounting, marketing and business management services	1.0	1.0	0.0	1.0	1.0
Other business services	1.0	1.0	0.0	1.0	1.0
Government administration	0.7	0.7	0.0	0.0	0.7
Defence	0.0	0.6	0.0	0.6	0.6
Education	0.3	0.3	0.0	0.3	0.3
Health services	0.6	0.6	0.0	0.6	0.6
Community services	0.8	0.8	0.0	0.0	0.8
Motion picture, radio and television services	1.8	1.8	0.0	0.0	1.8
Libraries, museums and the arts	1.3	1.3	0.0	1.3	1.3
Sport, gambling and recreational services	1.8	1.8	0.0	1.8	1.8
Personal services	1.3	1.3	0.0	1.3	1.3
Other services	0.6	0.6	0.0	0.6	0.6
<i>Total</i>	<i>1.4</i>	<i>0.7</i>	<i>1.3</i>	<i>1.4</i>	<i>1.3</i>



**Table A4.3: Effective tax rates on final demand for excise duties, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	2.7	0.0	0.0	2.7	2.7
Grains	4.6	0.0	0.0	4.6	4.6
Beef cattle	3.6	0.0	0.0	3.6	3.6
Dairy cattle	2.5	0.0	0.0	0.0	2.5
Pigs	3.1	0.0	0.0	3.1	3.1
Poultry	1.8	0.0	0.0	1.8	1.8
Other agriculture	3.1	0.0	0.0	3.1	3.1
Services to agriculture; hunting and trapping	2.7	2.7	0.0	2.7	2.7
Forestry and logging	3.2	3.2	3.2	3.2	3.2
Commercial fishing	6.2	6.2	0.0	6.2	6.2
Coal; oil and gas	3.2	0.0	0.0	1.7	1.7
Iron ores	0.0	0.0	0.0	2.7	2.7
Non-ferrous metal ores	0.0	0.0	0.0	3.5	3.5
Other mining	3.9	0.0	0.0	3.9	3.9
Services to mining	0.0	1.9	0.0	1.9	1.9
Meat and meat products	2.6	0.0	0.0	2.6	2.6
Dairy products	2.2	0.0	0.0	2.2	2.2
Fruit and vegetable products	3.2	0.0	0.0	3.2	3.2
Oils and fats	1.8	0.0	0.0	1.8	1.8
Flour mill products and cereal foods	2.2	0.0	0.0	2.2	2.2
Bakery products	1.7	0.0	0.0	1.7	1.7
Confectionery	1.4	0.0	0.0	1.4	1.4
Other food products	2.2	0.0	0.0	2.2	2.2
Soft drinks, cordials and syrups	2.1	0.0	0.0	2.1	2.1
Beer and malt	17.7	0.0	0.0	2.8	17.7
Wine and spirits	6.7	0.0	0.0	1.9	6.3
Tobacco products	97.3	0.0	0.0	1.9	100.2
Wool scouring	0.0	0.0	0.0	2.2	2.2
Textile fibres, yarns and woven fabrics	1.1	0.0	0.0	1.1	1.1
Textile products	1.2	0.0	1.2	1.2	1.2
Knitting mill products	1.1	0.0	0.0	1.1	1.1
Clothing	1.3	0.0	0.0	1.3	1.3
Footwear	1.1	0.0	0.0	1.1	1.1
Leather and leather products	1.4	0.0	0.0	1.4	1.4
Sawmill products	2.3	0.0	0.0	2.3	2.3
Plywood, veneer and fabricated wood	1.9	0.0	0.0	1.9	1.9
Other wood products	1.5	0.0	1.5	1.5	1.5
Pulp, paper and paperboard	1.2	0.0	0.0	1.2	1.2
Paperboard containers; paper bags and sacks	1.6	0.0	0.0	1.6	1.6
Other paper products	1.5	0.0	0.0	1.5	1.5
Printing and services to printing	1.3	1.3	0.0	1.3	1.3
Publishing; recorded media and publishing	1.2	0.0	1.2	1.2	1.2
Petroleum and coal products	49.0	0.0	0.0	6.1	42.0

*continued*

**Table A4.3 (cont.): Effective tax rates on final demand for excise duties, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Fertilisers	2.3	0.0	0.0	2.3	2.3
Other basic chemicals	2.6	0.0	0.0	2.6	2.6
Paints	2.4	0.0	0.0	2.4	2.4
Medicinal and pharmaceutical products; pesticides	1.3	0.0	0.0	1.3	1.3
Soap and other detergents	1.6	0.0	0.0	1.6	1.6
Cosmetics and toiletry preparations	1.6	0.0	0.0	1.6	1.6
Other chemical products	1.6	0.0	0.0	1.6	1.6
Rubber products	1.2	0.0	0.0	1.2	1.2
Plastic products	1.3	0.0	0.0	1.3	1.3
Glass and glass products	1.5	0.0	0.0	1.5	1.5
Ceramic products	1.9	0.0	0.0	1.9	1.9
Cement and lime	0.0	0.0	0.0	4.0	4.0
Concrete slurry	0.0	0.0	0.0	0.0	4.0
Plaster and other concrete products	0.0	0.0	0.0	2.3	2.3
Other non-metallic mineral products	1.9	0.0	0.0	1.9	1.9
Iron and steel	2.4	0.0	0.0	2.4	2.4
Basic non-ferrous metal and products	3.7	0.0	0.0	3.7	3.7
Structural metal products	0.0	0.0	1.5	1.5	1.5
Sheet metal products	1.7	0.0	1.7	1.7	1.7
Fabricated metal products	1.3	0.0	1.3	1.3	1.3
Motor vehicles and parts; other transport equipment	1.1	0.0	1.1	1.1	1.1
Ships and boats	1.4	0.0	1.4	1.4	1.4
Railway equipment	0.0	0.0	1.1	1.1	1.1
Aircraft	0.6	0.0	0.6	0.6	0.6
Photographic and scientific equipment	1.0	0.0	1.0	1.0	1.0
Electronic equipment	0.9	0.0	0.9	0.9	0.9
Household appliances	1.1	0.0	1.1	1.1	1.1
Other electrical equipment	1.3	0.0	1.3	1.3	1.3
Agricultural machinery	1.1	0.0	1.1	1.1	1.1
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	1.3	1.3	1.3
Other machinery and equipment	0.8	0.0	0.8	0.8	0.8
Prefabricated buildings	0.0	0.0	1.6	1.6	1.6
Furniture	1.6	0.0	1.6	1.6	1.6
Other manufacturing	1.4	0.0	1.4	1.4	1.4
Electricity supply	1.5	0.0	0.0	1.5	1.5
Gas supply	2.1	0.0	0.0	0.0	2.1
Water supply; sewerage and drainage services	0.0	2.4	0.0	2.4	2.4
Residential building construction	0.0	0.0	1.6	1.6	1.6
Other construction	0.0	1.3	1.3	1.3	1.3
Wholesale trade	1.2	1.2	1.2	1.2	1.2
Retail trade	1.1	0.0	0.0	0.0	1.1
Mechanical repairs	0.8	0.0	0.0	0.8	0.8
Other repairs	1.7	0.0	0.0	1.7	1.7

*continued*

**Table A4.3 (cont.): Effective tax rates on final demand for excise duties, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Accommodation, cafes and restaurants	1.2	0.0	0.0	0.0	1.2
Road transport	4.1	4.1	4.1	4.1	4.1
Rail, pipeline and other transport	1.7	0.0	1.7	1.7	1.7
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	2.1	2.1	2.1	2.1	2.1
Communication services	1.4	1.4	0.0	1.4	1.4
Banking	0.8	0.0	0.0	0.8	0.8
Non-bank finance	0.6	0.6	0.0	0.6	0.6
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.7	0.7	0.7	0.7	0.7
Services to finance, investment and insurance	0.6	0.0	0.0	0.6	0.6
Ownership of dwellings	0.8	0.8	0.0	0.0	0.8
Other property services	1.0	1.0	0.0	1.0	1.0
Scientific research, technical and computer services	1.3	1.3	1.3	1.3	1.3
Legal, accounting, marketing and business management services	1.2	1.2	0.0	1.2	1.2
Other business services	1.3	1.3	0.0	1.3	1.3
Government administration	1.2	1.2	0.0	0.0	1.2
Defence	0.0	1.7	0.0	1.7	1.7
Education	0.2	0.2	0.0	0.2	0.2
Health services	0.6	0.6	0.0	0.6	0.6
Community services	2.0	2.0	0.0	0.0	2.0
Motion picture, radio and television services	1.4	1.4	0.0	0.0	1.4
Libraries, museums and the arts	0.7	0.7	0.0	0.7	0.7
Sport, gambling and recreational services	1.2	1.2	0.0	1.2	1.2
Personal services	3.1	3.1	0.0	3.1	3.1
Other services	1.3	1.3	0.0	1.3	1.3
<i>Total</i>	<i>3.4</i>	<i>1.0</i>	<i>1.2</i>	<i>2.5</i>	<i>2.7</i>

**Table A4.4: Effective tax rates on final demand for business franchise fees, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	0.5	0.0	0.0	0.5	0.5
Grains	0.8	0.0	0.0	0.8	0.8
Beef cattle	0.6	0.0	0.0	0.6	0.6
Dairy cattle	0.4	0.0	0.0	0.0	0.4
Pigs	0.6	0.0	0.0	0.6	0.6
Poultry	0.3	0.0	0.0	0.3	0.3
Other agriculture	0.5	0.0	0.0	0.5	0.5
Services to agriculture; hunting and trapping	0.5	0.5	0.0	0.5	0.5
Forestry and logging	0.5	0.5	0.5	0.5	0.5
Commercial fishing	1.0	1.0	0.0	1.0	1.0
Coal; oil and gas	0.3	0.0	0.0	0.3	0.3
Iron ores	0.0	0.0	0.0	0.5	0.5
Non-ferrous metal ores	0.0	0.0	0.0	0.6	0.6
Other mining	0.6	0.0	0.0	0.6	0.6
Services to mining	0.0	0.4	0.0	0.4	0.4
Meat and meat products	0.5	0.0	0.0	0.5	0.5
Dairy products	0.4	0.0	0.0	0.4	0.4
Fruit and vegetable products	0.5	0.0	0.0	0.5	0.5
Oils and fats	0.3	0.0	0.0	0.3	0.3
Flour mill products and cereal foods	0.4	0.0	0.0	0.4	0.4
Bakery products	0.3	0.0	0.0	0.3	0.3
Confectionery	0.3	0.0	0.0	0.3	0.3
Other food products	0.4	0.0	0.0	0.4	0.4
Soft drinks, cordials and syrups	0.4	0.0	0.0	0.4	0.4
Beer and malt	8.5	0.0	0.0	8.5	8.5
Wine and spirits	6.5	0.0	0.0	6.5	6.5
Tobacco products	115.1	0.0	0.0	115.1	115.1
Wool scouring	0.0	0.0	0.0	0.4	0.4
Textile fibres, yarns and woven fabrics	0.2	0.0	0.0	0.2	0.2
Textile products	0.2	0.0	0.2	0.2	0.2
Knitting mill products	0.2	0.0	0.0	0.2	0.2
Clothing	0.3	0.0	0.0	0.3	0.3
Footwear	0.2	0.0	0.0	0.2	0.2
Leather and leather products	0.3	0.0	0.0	0.3	0.3
Sawmill products	0.4	0.0	0.0	0.4	0.4
Plywood, veneer and fabricated wood	0.4	0.0	0.0	0.4	0.4
Other wood products	0.3	0.0	0.3	0.3	0.3
Pulp, paper and paperboard	0.2	0.0	0.0	0.2	0.2
Paperboard containers; paper bags and sacks	0.3	0.0	0.0	0.3	0.3
Other paper products	0.3	0.0	0.0	0.3	0.3
Printing and services to printing	0.2	0.2	0.0	0.2	0.2
Publishing; recorded media and publishing	0.3	0.0	0.3	0.3	0.3
Petroleum and coal products	7.5	0.0	0.0	7.5	7.5

*continued*

66 **Table A4.4 (cont.): Effective tax rates on final demand for business franchise fees, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Fertilisers	0.4	0.0	0.0	0.4	0.4
Other basic chemicals	0.4	0.0	0.0	0.4	0.4
Paints	0.4	0.0	0.0	0.4	0.4
Medicinal and pharmaceutical products; pesticides	0.3	0.0	0.0	0.3	0.3
Soap and other detergents	0.3	0.0	0.0	0.3	0.3
Cosmetics and toiletry preparations	0.3	0.0	0.0	0.3	0.3
Other chemical products	0.3	0.0	0.0	0.3	0.3
Rubber products	0.3	0.0	0.0	0.3	0.3
Plastic products	0.2	0.0	0.0	0.2	0.2
Glass and glass products	0.3	0.0	0.0	0.3	0.3
Ceramic products	0.4	0.0	0.0	0.4	0.4
Cement and lime	0.0	0.0	0.0	0.7	0.7
Concrete slurry	0.0	0.0	0.0	0.0	0.7
Plaster and other concrete products	0.0	0.0	0.0	0.4	0.4
Other non-metallic mineral products	0.3	0.0	0.0	0.3	0.3
Iron and steel	0.4	0.0	0.0	0.4	0.4
Basic non-ferrous metal and products	0.6	0.0	0.0	0.6	0.6
Structural metal products	0.0	0.0	0.3	0.3	0.3
Sheet metal products	0.3	0.0	0.3	0.3	0.3
Fabricated metal products	0.2	0.0	0.2	0.2	0.2
Motor vehicles and parts; other transport equipment	0.2	0.0	0.2	0.2	0.2
Ships and boats	0.3	0.0	0.3	0.3	0.3
Railway equipment	0.0	0.0	0.2	0.2	0.2
Aircraft	0.1	0.0	0.1	0.1	0.1
Photographic and scientific equipment	0.2	0.0	0.2	0.2	0.2
Electronic equipment	0.2	0.0	0.2	0.2	0.2
Household appliances	0.2	0.0	0.2	0.2	0.2
Other electrical equipment	0.2	0.0	0.2	0.2	0.2
Agricultural machinery	0.2	0.0	0.2	0.2	0.2
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.2	0.2	0.2
Other machinery and equipment	0.2	0.0	0.2	0.2	0.2
Prefabricated buildings	0.0	0.0	0.3	0.3	0.3
Furniture	0.3	0.0	0.3	0.3	0.3
Other manufacturing	0.3	0.0	0.3	0.3	0.3
Electricity supply	0.2	0.0	0.0	0.2	0.2
Gas supply	0.8	0.0	0.0	0.0	0.8
Water supply; sewerage and drainage services	0.0	0.4	0.0	0.4	0.4
Residential building construction	0.0	0.0	0.3	0.3	0.3
Other construction	0.0	0.2	0.2	0.2	0.2
Wholesale trade	0.2	0.2	0.2	0.2	0.2
Retail trade	0.2	0.0	0.0	0.0	0.2
Mechanical repairs	0.1	0.0	0.0	0.1	0.1
Other repairs	0.3	0.0	0.0	0.3	0.3
Accommodation, cafes and restaurants	3.2	0.0	0.0	0.0	3.2

*continued*

**Table A4.4 (cont.): Effective tax rates on final demand for business franchise fees,  
1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Road transport	0.7	0.7	0.7	0.7	0.7
Rail, pipeline and other transport	0.3	0.0	0.3	0.3	0.3
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	0.4	0.4	0.4	0.4	0.4
Communication services	0.2	0.2	0.0	0.2	0.2
Banking	0.2	0.0	0.0	0.2	0.2
Non-bank finance	0.2	0.2	0.0	0.2	0.2
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.2	0.2	0.2	0.2	0.2
Services to finance, investment and insurance	0.1	0.0	0.0	0.1	0.1
Ownership of dwellings	0.1	0.1	0.0	0.0	0.1
Other property services	0.2	0.2	0.0	0.2	0.2
Scientific research, technical and computer services	0.3	0.3	0.3	0.3	0.3
Legal, accounting, marketing and business management services	0.2	0.2	0.0	0.2	0.2
Other business services	0.3	0.3	0.0	0.3	0.3
Government administration	0.3	0.3	0.0	0.0	0.3
Defence	0.0	0.3	0.0	0.3	0.3
Education	0.0	0.0	0.0	0.0	0.0
Health services	0.1	0.1	0.0	0.1	0.1
Community services	0.5	0.5	0.0	0.0	0.5
Motion picture, radio and television services	1.7	1.7	0.0	0.0	1.7
Libraries, museums and the arts	0.6	0.6	0.0	0.6	0.6
Sport, gambling and recreational services	17.6	17.6	0.0	17.6	17.6
Personal services	0.5	0.5	0.0	0.5	0.5
Other services	0.3	0.3	0.0	0.3	0.3
<i>Total</i>	<i>2.0</i>	<i>0.4</i>	<i>0.2</i>	<i>0.6</i>	<i>1.4</i>

**Table A4.5: Effective tax rates on final demand for financial institutions duty, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	0.4	0.0	0.0	0.4	0.4
Grains	0.3	0.0	0.0	0.3	0.3
Beef cattle	0.3	0.0	0.0	0.3	0.3
Dairy cattle	0.3	0.0	0.0	0.0	0.3
Pigs	0.3	0.0	0.0	0.3	0.3
Poultry	0.3	0.0	0.0	0.3	0.3
Other agriculture	0.3	0.0	0.0	0.3	0.3
Services to agriculture; hunting and trapping	0.3	0.3	0.0	0.3	0.3
Forestry and logging	0.2	0.2	0.2	0.2	0.2
Commercial fishing	0.3	0.3	0.0	0.3	0.3
Coal; oil and gas	0.2	0.0	0.0	0.2	0.2
Iron ores	0.0	0.0	0.0	0.3	0.3
Non-ferrous metal ores	0.0	0.0	0.0	0.3	0.3
Other mining	0.3	0.0	0.0	0.3	0.3
Services to mining	0.0	0.2	0.0	0.2	0.2
Meat and meat products	0.4	0.0	0.0	0.4	0.4
Dairy products	0.3	0.0	0.0	0.3	0.3
Fruit and vegetable products	0.3	0.0	0.0	0.3	0.3
Oils and fats	0.3	0.0	0.0	0.3	0.3
Flour mill products and cereal foods	0.3	0.0	0.0	0.3	0.3
Bakery products	0.3	0.0	0.0	0.3	0.3
Confectionery	0.3	0.0	0.0	0.3	0.3
Other food products	0.3	0.0	0.0	0.3	0.3
Soft drinks, cordials and syrups	0.3	0.0	0.0	0.3	0.3
Beer and malt	0.3	0.0	0.0	0.3	0.3
Wine and spirits	0.3	0.0	0.0	0.3	0.3
Tobacco products	0.6	0.0	0.0	0.6	0.6
Wool scouring	0.0	0.0	0.0	0.4	0.4
Textile fibres, yarns and woven fabrics	0.2	0.0	0.0	0.2	0.2
Textile products	0.3	0.0	0.3	0.3	0.3
Knitting mill products	0.3	0.0	0.0	0.3	0.3
Clothing	0.3	0.0	0.0	0.3	0.3
Footwear	0.3	0.0	0.0	0.3	0.3
Leather and leather products	0.3	0.0	0.0	0.3	0.3
Sawmill products	0.2	0.0	0.0	0.2	0.2
Plywood, veneer and fabricated wood	0.3	0.0	0.0	0.3	0.3
Other wood products	0.3	0.0	0.3	0.3	0.3
Pulp, paper and paperboard	0.2	0.0	0.0	0.2	0.2
Paperboard containers; paper bags and sacks	0.3	0.0	0.0	0.3	0.3
Other paper products	0.3	0.0	0.0	0.3	0.3
Printing and services to printing	0.3	0.3	0.0	0.3	0.3
Publishing; recorded media and publishing	0.3	0.0	0.3	0.3	0.3
Petroleum and coal products	0.3	0.0	0.0	0.3	0.3
Fertilisers	0.2	0.0	0.0	0.2	0.2

*continued*

**Table A4.5 (cont.): Effective tax rates on final demand for financial institutions duty,** <sup>69</sup>  
**1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Other basic chemicals	0.2	0.0	0.0	0.2	0.2
Paints	0.3	0.0	0.0	0.3	0.3
Medicinal and pharmaceutical products; pesticides	0.3	0.0	0.0	0.3	0.3
Soap and other detergents	0.3	0.0	0.0	0.3	0.3
Cosmetics and toiletry preparations	0.3	0.0	0.0	0.3	0.3
Other chemical products	0.2	0.0	0.0	0.2	0.2
Rubber products	0.3	0.0	0.0	0.3	0.3
Plastic products	0.2	0.0	0.0	0.2	0.2
Glass and glass products	0.2	0.0	0.0	0.2	0.2
Ceramic products	0.2	0.0	0.0	0.2	0.2
Cement and lime	0.0	0.0	0.0	0.3	0.3
Concrete slurry	0.0	0.0	0.0	0.0	0.3
Plaster and other concrete products	0.0	0.0	0.0	0.3	0.3
Other non-metallic mineral products	0.2	0.0	0.0	0.2	0.2
Iron and steel	0.3	0.0	0.0	0.3	0.3
Basic non-ferrous metal and products	0.3	0.0	0.0	0.3	0.3
Structural metal products	0.0	0.0	0.3	0.3	0.3
Sheet metal products	0.3	0.0	0.3	0.3	0.3
Fabricated metal products	0.2	0.0	0.2	0.2	0.2
Motor vehicles and parts; other transport equipment	0.2	0.0	0.2	0.2	0.2
Ships and boats	0.3	0.0	0.3	0.3	0.3
Railway equipment	0.0	0.0	0.3	0.3	0.3
Aircraft	0.1	0.0	0.1	0.1	0.1
Photographic and scientific equipment	0.2	0.0	0.2	0.2	0.2
Electronic equipment	0.2	0.0	0.2	0.2	0.2
Household appliances	0.2	0.0	0.2	0.2	0.2
Other electrical equipment	0.2	0.0	0.2	0.2	0.2
Agricultural machinery	0.2	0.0	0.2	0.2	0.2
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.2	0.2	0.2
Other machinery and equipment	0.2	0.0	0.2	0.2	0.2
Prefabricated buildings	0.0	0.0	0.4	0.4	0.4
Furniture	0.3	0.0	0.3	0.3	0.3
Other manufacturing	0.3	0.0	0.3	0.3	0.3
Electricity supply	0.2	0.0	0.0	0.2	0.2
Gas supply	0.3	0.0	0.0	0.0	0.3
Water supply; sewerage and drainage services	0.0	0.4	0.0	0.4	0.4
Residential building construction	0.0	0.0	0.3	0.3	0.3
Other construction	0.0	0.3	0.3	0.3	0.3
Wholesale trade	0.2	0.2	0.2	0.2	0.2
Retail trade	0.3	0.0	0.0	0.0	0.3
Mechanical repairs	0.2	0.0	0.0	0.2	0.2
Other repairs	0.2	0.0	0.0	0.2	0.2
Accommodation, cafes and restaurants	0.2	0.0	0.0	0.0	0.2
Road transport	0.2	0.2	0.2	0.2	0.2

*continued*



70 **Table A4.5 (cont.): Effective tax rates on final demand for financial institutions duty, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Rail, pipeline and other transport	0.2	0.0	0.2	0.2	0.2
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	0.2	0.2	0.2	0.2	0.2
Communication services	0.2	0.2	0.0	0.2	0.2
Banking	6.9	0.0	0.0	6.9	6.9
Non-bank finance	10.3	10.3	0.0	10.3	10.3
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.3	0.3	0.3	0.3	0.3
Services to finance, investment and insurance	0.2	0.0	0.0	0.2	0.2
Ownership of dwellings	0.9	0.9	0.0	0.0	0.9
Other property services	0.2	0.2	0.0	0.2	0.2
Scientific research, technical and computer services	0.2	0.2	0.2	0.2	0.2
Legal, accounting, marketing and business management services	0.3	0.3	0.0	0.3	0.3
Other business services	0.2	0.2	0.0	0.2	0.2
Government administration	0.1	0.1	0.0	0.0	0.1
Defence	0.0	0.1	0.0	0.1	0.1
Education	0.1	0.1	0.0	0.1	0.1
Health services	0.3	0.3	0.0	0.3	0.3
Community services	0.2	0.2	0.0	0.0	0.2
Motion picture, radio and television services	0.3	0.3	0.0	0.0	0.3
Libraries, museums and the arts	0.2	0.2	0.0	0.2	0.2
Sport, gambling and recreational services	0.3	0.3	0.0	0.3	0.3
Personal services	0.2	0.2	0.0	0.2	0.2
Other services	0.2	0.2	0.0	0.2	0.2
<i>Total</i>	<i>0.5</i>	<i>0.2</i>	<i>0.3</i>	<i>0.3</i>	<i>0.4</i>

**Table A4.6: Effective tax rates on final demand for payroll tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	1.4	0.0	0.0	1.4	1.4
Grains	1.4	0.0	0.0	1.4	1.4
Beef cattle	1.4	0.0	0.0	1.4	1.4
Dairy cattle	1.4	0.0	0.0	0.0	1.4
Pigs	1.7	0.0	0.0	1.7	1.7
Poultry	1.7	0.0	0.0	1.7	1.7
Other agriculture	1.4	0.0	0.0	1.4	1.4
Services to agriculture; hunting and trapping	1.4	1.4	0.0	1.4	1.4
Forestry and logging	1.7	1.7	1.7	1.7	1.7
Commercial fishing	1.7	1.7	0.0	1.7	1.7
Coal; oil and gas	1.3	0.0	0.0	1.3	1.3
Iron ores	0.0	0.0	0.0	1.7	1.7
Non-ferrous metal ores	0.0	0.0	0.0	2.1	2.1
Other mining	1.5	0.0	0.0	1.5	1.5
Services to mining	0.0	3.4	0.0	3.4	3.4
Meat and meat products	2.0	0.0	0.0	2.0	2.0
Dairy products	1.9	0.0	0.0	1.9	1.9
Fruit and vegetable products	2.0	0.0	0.0	2.0	2.0
Oils and fats	1.6	0.0	0.0	1.6	1.6
Flour mill products and cereal foods	2.1	0.0	0.0	2.1	2.1
Bakery products	2.4	0.0	0.0	2.4	2.4
Confectionery	1.9	0.0	0.0	1.9	1.9
Other food products	1.9	0.0	0.0	1.9	1.9
Soft drinks, cordials and syrups	2.1	0.0	0.0	2.1	2.1
Beer and malt	1.9	0.0	0.0	1.9	1.9
Wine and spirits	1.7	0.0	0.0	1.7	1.7
Tobacco products	2.0	0.0	0.0	2.0	2.0
Wool scouring	0.0	0.0	0.0	1.9	1.9
Textile fibres, yarns and woven fabrics	1.3	0.0	0.0	1.3	1.3
Textile products	1.6	0.0	1.6	1.6	1.6
Knitting mill products	1.4	0.0	0.0	1.4	1.4
Clothing	1.6	0.0	0.0	1.6	1.6
Footwear	1.4	0.0	0.0	1.4	1.4
Leather and leather products	1.5	0.0	0.0	1.5	1.5
Sawmill products	1.7	0.0	0.0	1.7	1.7
Plywood, veneer and fabricated wood	2.2	0.0	0.0	2.2	2.2
Other wood products	2.0	0.0	2.0	2.0	2.0
Pulp, paper and paperboard	1.1	0.0	0.0	1.1	1.1
Paperboard containers; paper bags and sacks	2.4	0.0	0.0	2.4	2.4
Other paper products	2.7	0.0	0.0	2.7	2.7
Printing and services to printing	1.8	1.8	0.0	1.8	1.8
Publishing; recorded media and publishing	1.9	0.0	1.9	1.9	1.9
Petroleum and coal products	1.5	0.0	0.0	1.5	1.5
Fertilisers	1.4	0.0	0.0	1.4	1.4

*continued*

**Table A4.6 (cont.): Effective tax rates on final demand for payroll tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Other basic chemicals	1.3	0.0	0.0	1.3	1.3
Paints	1.4	0.0	0.0	1.4	1.4
Medicinal and pharmaceutical products; pesticides	1.8	0.0	0.0	1.8	1.8
Soap and other detergents	1.5	0.0	0.0	1.5	1.5
Cosmetics and toiletry preparations	1.7	0.0	0.0	1.7	1.7
Other chemical products	1.6	0.0	0.0	1.6	1.6
Rubber products	1.5	0.0	0.0	1.5	1.5
Plastic products	1.6	0.0	0.0	1.6	1.6
Glass and glass products	1.8	0.0	0.0	1.8	1.8
Ceramic products	1.7	0.0	0.0	1.7	1.7
Cement and lime	0.0	0.0	0.0	1.8	1.8
Concrete slurry	0.0	0.0	0.0	0.0	2.3
Plaster and other concrete products	0.0	0.0	0.0	2.4	2.4
Other non-metallic mineral products	1.8	0.0	0.0	1.8	1.8
Iron and steel	2.5	0.0	0.0	2.5	2.5
Basic non-ferrous metal and products	2.0	0.0	0.0	2.0	2.0
Structural metal products	0.0	0.0	2.3	2.3	2.3
Sheet metal products	2.8	0.0	2.8	2.8	2.8
Fabricated metal products	1.9	0.0	1.9	1.9	1.9
Motor vehicles and parts; other transport equipment	1.8	0.0	1.8	1.8	1.8
Ships and boats	2.6	0.0	2.6	2.6	2.6
Railway equipment	0.0	0.0	6.5	6.5	6.5
Aircraft	0.7	0.0	0.7	0.7	0.7
Photographic and scientific equipment	1.4	0.0	1.4	1.4	1.4
Electronic equipment	1.1	0.0	1.1	1.1	1.1
Household appliances	1.9	0.0	1.9	1.9	1.9
Other electrical equipment	2.0	0.0	2.0	2.0	2.0
Agricultural machinery	1.9	0.0	1.9	1.9	1.9
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	2.3	2.3	2.3
Other machinery and equipment	1.8	0.0	1.8	1.8	1.8
Prefabricated buildings	0.0	0.0	3.2	3.2	3.2
Furniture	2.3	0.0	2.3	2.3	2.3
Other manufacturing	1.5	0.0	1.5	1.5	1.5
Electricity supply	1.2	0.0	0.0	1.2	1.2
Gas supply	2.3	0.0	0.0	0.0	2.3
Water supply; sewerage and drainage services	0.0	2.3	0.0	2.3	2.3
Residential building construction	0.0	0.0	8.9	8.9	8.9
Other construction	0.0	3.5	3.5	3.5	3.5
Wholesale trade	2.8	2.8	2.8	2.8	2.8
Retail trade	2.6	0.0	0.0	0.0	2.6
Mechanical repairs	2.0	0.0	0.0	2.0	2.0
Other repairs	1.8	0.0	0.0	1.8	1.8
Accommodation, cafes and restaurants	1.7	0.0	0.0	0.0	1.7
Road transport	2.2	2.2	2.2	2.2	2.2
Rail, pipeline and other transport	4.1	0.0	4.1	4.1	4.1

*continued*

**Table A4.6 (cont.): Effective tax rates on final demand for payroll tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	2.3	2.3	2.3	2.3	2.3
Communication services	2.5	2.5	0.0	2.5	2.5
Banking	2.6	0.0	0.0	2.6	2.6
Non-bank finance	3.2	3.2	0.0	3.2	3.2
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	2.9	2.9	2.9	2.9	2.9
Services to finance, investment and insurance	2.3	0.0	0.0	2.3	2.3
Ownership of dwellings	1.3	1.3	0.0	0.0	1.3
Other property services	2.1	2.1	0.0	2.1	2.1
Scientific research, technical and computer services	2.4	2.4	2.4	2.4	2.4
Legal, accounting, marketing and business management services	2.3	2.3	0.0	2.3	2.3
Other business services	2.4	2.4	0.0	2.4	2.4
Government administration	1.1	1.1	0.0	0.0	1.1
Defence	0.0	0.7	0.0	0.7	0.7
Education	0.6	0.6	0.0	0.6	0.6
Health services	0.9	0.9	0.0	0.9	0.9
Community services	1.2	1.2	0.0	0.0	1.2
Motion picture, radio and television services	1.7	1.7	0.0	0.0	1.7
Libraries, museums and the arts	1.5	1.5	0.0	1.5	1.5
Sport, gambling and recreational services	1.6	1.6	0.0	1.6	1.6
Personal services	2.3	2.3	0.0	2.3	2.3
Other services	1.7	1.7	0.0	1.7	1.7
<i>Total</i>	<i>1.6</i>	<i>1.1</i>	<i>3.0</i>	<i>1.8</i>	<i>1.6</i>

**Table A4.7: Effective tax rates on final demand for primary production taxes, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	6.8	0.0	0.0	6.8	6.8
Grains	1.3	0.0	0.0	1.3	1.3
Beef cattle	1.5	0.0	0.0	1.5	1.5
Dairy cattle	0.1	0.0	0.0	0.0	0.1
Pigs	1.7	0.0	0.0	1.7	1.7
Poultry	0.3	0.0	0.0	0.3	0.3
Other agriculture	0.4	0.0	0.0	0.4	0.4
Services to agriculture; hunting and trapping	0.0	0.0	0.0	0.0	0.0
Forestry and logging	0.0	0.0	0.0	0.0	0.0
Commercial fishing	0.6	0.6	0.0	0.6	0.6
Coal; oil and gas	0.0	0.0	0.0	0.0	0.0
Iron ores	0.0	0.0	0.0	0.0	0.0
Non-ferrous metal ores	0.0	0.0	0.0	0.0	0.0
Other mining	0.0	0.0	0.0	0.0	0.0
Services to mining	0.0	0.0	0.0	0.0	0.0
Meat and meat products	1.2	0.0	0.0	1.2	1.2
Dairy products	3.1	0.0	0.0	3.1	3.1
Fruit and vegetable products	0.1	0.0	0.0	0.1	0.1
Oils and fats	0.3	0.0	0.0	0.3	0.3
Flour mill products and cereal foods	0.3	0.0	0.0	0.3	0.3
Bakery products	0.1	0.0	0.0	0.1	0.1
Confectionery	0.1	0.0	0.0	0.1	0.1
Other food products	0.2	0.0	0.0	0.2	0.2
Soft drinks, cordials and syrups	0.0	0.0	0.0	0.0	0.0
Beer and malt	0.2	0.0	0.0	0.2	0.2
Wine and spirits	0.1	0.0	0.0	0.1	0.1
Tobacco products	0.1	0.0	0.0	0.1	0.1
Wool scouring	0.0	0.0	0.0	3.9	3.9
Textile fibres, yarns and woven fabrics	0.4	0.0	0.0	0.4	0.4
Textile products	0.2	0.0	0.2	0.2	0.2
Knitting mill products	0.0	0.0	0.0	0.0	0.0
Clothing	0.1	0.0	0.0	0.1	0.1
Footwear	0.0	0.0	0.0	0.0	0.0
Leather and leather products	0.4	0.0	0.0	0.4	0.4
Sawmill products	0.0	0.0	0.0	0.0	0.0
Plywood, veneer and fabricated wood	0.0	0.0	0.0	0.0	0.0
Other wood products	0.0	0.0	0.0	0.0	0.0
Pulp, paper and paperboard	0.0	0.0	0.0	0.0	0.0
Paperboard containers; paper bags and sacks	0.0	0.0	0.0	0.0	0.0
Other paper products	0.0	0.0	0.0	0.0	0.0
Printing and services to printing	0.0	0.0	0.0	0.0	0.0
Publishing; recorded media and publishing	0.0	0.0	0.0	0.0	0.0
Petroleum and coal products	0.0	0.0	0.0	0.0	0.0
Fertilisers	0.1	0.0	0.0	0.1	0.1

*continued*

**Table A4.7 (cont.): Effective tax rates on final demand for primary production taxes, 1992-93, per cent** 75

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Other basic chemicals	0.0	0.0	0.0	0.0	0.0
Paints	0.0	0.0	0.0	0.0	0.0
Medicinal and pharmaceutical products; pesticides	0.0	0.0	0.0	0.0	0.0
Soap and other detergents	0.1	0.0	0.0	0.1	0.1
Cosmetics and toiletry preparations	0.0	0.0	0.0	0.0	0.0
Other chemical products	0.0	0.0	0.0	0.0	0.0
Rubber products	0.0	0.0	0.0	0.0	0.0
Plastic products	0.0	0.0	0.0	0.0	0.0
Glass and glass products	0.0	0.0	0.0	0.0	0.0
Ceramic products	0.0	0.0	0.0	0.0	0.0
Cement and lime	0.0	0.0	0.0	0.0	0.0
Concrete slurry	0.0	0.0	0.0	0.0	0.0
Plaster and other concrete products	0.0	0.0	0.0	0.0	0.0
Other non-metallic mineral products	0.0	0.0	0.0	0.0	0.0
Iron and steel	0.0	0.0	0.0	0.0	0.0
Basic non-ferrous metal and products	0.0	0.0	0.0	0.0	0.0
Structural metal products	0.0	0.0	0.0	0.0	0.0
Sheet metal products	0.0	0.0	0.0	0.0	0.0
Fabricated metal products	0.0	0.0	0.0	0.0	0.0
Motor vehicles and parts; other transport equipment	0.0	0.0	0.0	0.0	0.0
Ships and boats	0.0	0.0	0.0	0.0	0.0
Railway equipment	0.0	0.0	0.0	0.0	0.0
Aircraft	0.0	0.0	0.0	0.0	0.0
Photographic and scientific equipment	0.0	0.0	0.0	0.0	0.0
Electronic equipment	0.0	0.0	0.0	0.0	0.0
Household appliances	0.0	0.0	0.0	0.0	0.0
Other electrical equipment	0.0	0.0	0.0	0.0	0.0
Agricultural machinery	0.0	0.0	0.0	0.0	0.0
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.0	0.0	0.0
Other machinery and equipment	0.0	0.0	0.0	0.0	0.0
Prefabricated buildings	0.0	0.0	0.0	0.0	0.0
Furniture	0.0	0.0	0.0	0.0	0.0
Other manufacturing	0.0	0.0	0.0	0.0	0.0
Electricity supply	0.0	0.0	0.0	0.0	0.0
Gas supply	0.0	0.0	0.0	0.0	0.0
Water supply; sewerage and drainage services	0.0	0.0	0.0	0.0	0.0
Residential building construction	0.0	0.0	0.0	0.0	0.0
Other construction	0.0	0.0	0.0	0.0	0.0
Wholesale trade	0.0	0.0	0.0	0.0	0.0
Retail trade	0.0	0.0	0.0	0.0	0.0
Mechanical repairs	0.0	0.0	0.0	0.0	0.0
Other repairs	0.0	0.0	0.0	0.0	0.0
Accommodation, cafes and restaurants	0.2	0.0	0.0	0.0	0.2
Road transport	0.0	0.0	0.0	0.0	0.0
Rail, pipeline and other transport	0.0	0.0	0.0	0.0	0.0

*continued*

76 **Table A4.7 (cont.): Effective tax rates on final demand for primary production taxes, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	0.0	0.0	0.0	0.0	0.0
Communication services	0.0	0.0	0.0	0.0	0.0
Banking	0.0	0.0	0.0	0.0	0.0
Non-bank finance	0.0	0.0	0.0	0.0	0.0
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.0	0.0	0.0	0.0	0.0
Services to finance, investment and insurance	0.0	0.0	0.0	0.0	0.0
Ownership of dwellings	0.0	0.0	0.0	0.0	0.0
Other property services	0.0	0.0	0.0	0.0	0.0
Scientific research, technical and computer services	0.0	0.0	0.0	0.0	0.0
Legal, accounting, marketing and business management services	0.0	0.0	0.0	0.0	0.0
Other business services	0.0	0.0	0.0	0.0	0.0
Government administration	0.0	0.0	0.0	0.0	0.0
Defence	0.0	0.0	0.0	0.0	0.0
Education	0.0	0.0	0.0	0.0	0.0
Health services	0.0	0.0	0.0	0.0	0.0
Community services	0.0	0.0	0.0	0.0	0.0
Motion picture, radio and television services	0.0	0.0	0.0	0.0	0.0
Libraries, museums and the arts	0.0	0.0	0.0	0.0	0.0
Sport, gambling and recreational services	0.0	0.0	0.0	0.0	0.0
Personal services	0.0	0.0	0.0	0.0	0.0
Other services	0.0	0.0	0.0	0.0	0.0
<i>Total</i>	<i>0.1</i>	<i>0.0</i>	<i>0.0</i>	<i>0.5</i>	<i>0.2</i>

**Table A4.8: Effective tax rates on final demand for land tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	0.3	0.0	0.0	0.3	0.3
Grains	0.3	0.0	0.0	0.3	0.3
Beef cattle	0.3	0.0	0.0	0.3	0.3
Dairy cattle	0.3	0.0	0.0	0.0	0.3
Pigs	0.3	0.0	0.0	0.3	0.3
Poultry	0.3	0.0	0.0	0.3	0.3
Other agriculture	0.3	0.0	0.0	0.3	0.3
Services to agriculture; hunting and trapping	0.3	0.3	0.0	0.3	0.3
Forestry and logging	0.3	0.3	0.3	0.3	0.3
Commercial fishing	0.4	0.4	0.0	0.4	0.4
Coal; oil and gas	0.4	0.0	0.0	0.4	0.4
Iron ores	0.0	0.0	0.0	0.5	0.5
Non-ferrous metal ores	0.0	0.0	0.0	0.5	0.5
Other mining	0.5	0.0	0.0	0.5	0.5
Services to mining	0.0	0.8	0.0	0.8	0.8
Meat and meat products	0.5	0.0	0.0	0.5	0.5
Dairy products	0.5	0.0	0.0	0.5	0.5
Fruit and vegetable products	0.5	0.0	0.0	0.5	0.5
Oils and fats	0.4	0.0	0.0	0.4	0.4
Flour mill products and cereal foods	0.6	0.0	0.0	0.6	0.6
Bakery products	0.6	0.0	0.0	0.6	0.6
Confectionery	0.6	0.0	0.0	0.6	0.6
Other food products	0.5	0.0	0.0	0.5	0.5
Soft drinks, cordials and syrups	0.5	0.0	0.0	0.5	0.5
Beer and malt	0.6	0.0	0.0	0.6	0.6
Wine and spirits	0.5	0.0	0.0	0.5	0.5
Tobacco products	0.5	0.0	0.0	0.5	0.5
Wool scouring	0.0	0.0	0.0	0.5	0.5
Textile fibres, yarns and woven fabrics	0.3	0.0	0.0	0.3	0.3
Textile products	0.4	0.0	0.4	0.4	0.4
Knitting mill products	0.4	0.0	0.0	0.4	0.4
Clothing	0.4	0.0	0.0	0.4	0.4
Footwear	0.4	0.0	0.0	0.4	0.4
Leather and leather products	0.4	0.0	0.0	0.4	0.4
Sawmill products	0.5	0.0	0.0	0.5	0.5
Plywood, veneer and fabricated wood	0.7	0.0	0.0	0.7	0.7
Other wood products	0.6	0.0	0.6	0.6	0.6
Pulp, paper and paperboard	0.2	0.0	0.0	0.2	0.2
Paperboard containers; paper bags and sacks	0.6	0.0	0.0	0.6	0.6
Other paper products	1.0	0.0	0.0	1.0	1.0
Printing and services to printing	0.4	0.4	0.0	0.4	0.4
Publishing; recorded media and publishing	0.5	0.0	0.5	0.5	0.5
Petroleum and coal products	0.5	0.0	0.0	0.5	0.5
Fertilisers	0.7	0.0	0.0	0.7	0.7
Other basic chemicals	0.4	0.0	0.0	0.4	0.4

*continued*



**Table A4.8 (cont.): Effective tax rates on final demand for land tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Paints	0.5	0.0	0.0	0.5	0.5
Medicinal and pharmaceutical products; pesticides	0.5	0.0	0.0	0.5	0.5
Soap and other detergents	0.5	0.0	0.0	0.5	0.5
Cosmetics and toiletry preparations	0.5	0.0	0.0	0.5	0.5
Other chemical products	0.4	0.0	0.0	0.4	0.4
Rubber products	0.4	0.0	0.0	0.4	0.4
Plastic products	0.4	0.0	0.0	0.4	0.4
Glass and glass products	0.4	0.0	0.0	0.4	0.4
Ceramic products	0.4	0.0	0.0	0.4	0.4
Cement and lime	0.0	0.0	0.0	0.6	0.6
Concrete slurry	0.0	0.0	0.0	0.0	0.6
Plaster and other concrete products	0.0	0.0	0.0	0.6	0.6
Other non-metallic mineral products	0.6	0.0	0.0	0.6	0.6
Iron and steel	0.5	0.0	0.0	0.5	0.5
Basic non-ferrous metal and products	0.4	0.0	0.0	0.4	0.4
Structural metal products	0.0	0.0	0.5	0.5	0.5
Sheet metal products	0.6	0.0	0.6	0.6	0.6
Fabricated metal products	0.5	0.0	0.5	0.5	0.5
Motor vehicles and parts; other transport equipment	0.4	0.0	0.4	0.4	0.4
Ships and boats	0.6	0.0	0.6	0.6	0.6
Railway equipment	0.0	0.0	0.4	0.4	0.4
Aircraft	0.3	0.0	0.3	0.3	0.3
Photographic and scientific equipment	0.4	0.0	0.4	0.4	0.4
Electronic equipment	0.3	0.0	0.3	0.3	0.3
Household appliances	0.4	0.0	0.4	0.4	0.4
Other electrical equipment	0.4	0.0	0.4	0.4	0.4
Agricultural machinery	0.4	0.0	0.4	0.4	0.4
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.4	0.4	0.4
Other machinery and equipment	0.3	0.0	0.3	0.3	0.3
Prefabricated buildings	0.0	0.0	0.5	0.5	0.5
Furniture	0.6	0.0	0.6	0.6	0.6
Other manufacturing	0.5	0.0	0.5	0.5	0.5
Electricity supply	0.4	0.0	0.0	0.4	0.4
Gas supply	0.4	0.0	0.0	0.0	0.4
Water supply; sewerage and drainage services	0.0	0.9	0.0	0.9	0.9
Residential building construction	0.0	0.0	0.9	0.9	0.9
Other construction	0.0	0.7	0.7	0.7	0.7
Wholesale trade	1.4	1.4	1.4	1.4	1.4
Retail trade	1.3	0.0	0.0	0.0	1.3
Mechanical repairs	1.3	0.0	0.0	1.3	1.3
Other repairs	1.1	0.0	0.0	1.1	1.1
Accommodation, cafes and restaurants	0.7	0.0	0.0	0.0	0.7
Road transport	0.6	0.6	0.6	0.6	0.6
Rail, pipeline and other transport	0.5	0.0	0.5	0.5	0.5

*continued*

**Table A4.8 (cont.): Effective tax rates on final demand for land tax, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	0.5	0.5	0.5	0.5	0.5
Communication services	0.6	0.6	0.0	0.6	0.6
Banking	0.9	0.0	0.0	0.9	0.9
Non-bank finance	1.2	1.2	0.0	1.2	1.2
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.8	0.8	0.8	0.8	0.8
Services to finance, investment and insurance	0.7	0.0	0.0	0.7	0.7
Ownership of dwellings	0.3	0.3	0.0	0.0	0.3
Other property services	0.6	0.6	0.0	0.6	0.6
Scientific research, technical and computer services	0.7	0.7	0.7	0.7	0.7
Legal, accounting, marketing and business management services	0.7	0.7	0.0	0.7	0.7
Other business services	0.7	0.7	0.0	0.7	0.7
Government administration	0.4	0.4	0.0	0.0	0.4
Defence	0.0	0.2	0.0	0.2	0.2
Education	0.8	0.8	0.0	0.8	0.8
Health services	0.8	0.8	0.0	0.8	0.8
Community services	0.9	0.9	0.0	0.0	0.9
Motion picture, radio and television services	0.7	0.7	0.0	0.0	0.7
Libraries, museums and the arts	0.5	0.5	0.0	0.5	0.5
Sport, gambling and recreational services	0.7	0.7	0.0	0.7	0.7
Personal services	1.3	1.3	0.0	1.3	1.3
Other services	0.7	0.7	0.0	0.7	0.7
<i>Total</i>	<i>0.6</i>	<i>0.6</i>	<i>0.6</i>	<i>0.5</i>	<i>0.5</i>

**Table A4.9: Effective tax rates on final demand for municipal rates, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	2.1	0.0	0.0	2.1	2.1
Grains	2.0	0.0	0.0	2.0	2.0
Beef cattle	2.3	0.0	0.0	2.3	2.3
Dairy cattle	2.3	0.0	0.0	0.0	2.3
Pigs	2.6	0.0	0.0	2.6	2.6
Poultry	2.5	0.0	0.0	2.5	2.5
Other agriculture	1.8	0.0	0.0	1.8	1.8
Services to agriculture; hunting and trapping	2.1	2.1	0.0	2.1	2.1
Forestry and logging	2.3	2.3	2.3	2.3	2.3
Commercial fishing	2.0	2.0	0.0	2.0	2.0
Coal; oil and gas	0.3	0.0	0.0	0.3	0.3
Iron ores	0.0	0.0	0.0	0.3	0.3
Non-ferrous metal ores	0.0	0.0	0.0	0.4	0.4
Other mining	0.3	0.0	0.0	0.3	0.3
Services to mining	0.0	0.4	0.0	0.4	0.4
Meat and meat products	1.4	0.0	0.0	1.4	1.4
Dairy products	1.5	0.0	0.0	1.5	1.5
Fruit and vegetable products	0.8	0.0	0.0	0.8	0.8
Oils and fats	0.6	0.0	0.0	0.6	0.6
Flour mill products and cereal foods	1.0	0.0	0.0	1.0	1.0
Bakery products	0.7	0.0	0.0	0.7	0.7
Confectionery	0.4	0.0	0.0	0.4	0.4
Other food products	0.7	0.0	0.0	0.7	0.7
Soft drinks, cordials and syrups	0.5	0.0	0.0	0.5	0.5
Beer and malt	0.6	0.0	0.0	0.6	0.6
Wine and spirits	0.6	0.0	0.0	0.6	0.6
Tobacco products	0.6	0.0	0.0	0.6	0.6
Wool scouring	0.0	0.0	0.0	1.4	1.4
Textile fibres, yarns and woven fabrics	0.6	0.0	0.0	0.6	0.6
Textile products	0.4	0.0	0.4	0.4	0.4
Knitting mill products	0.3	0.0	0.0	0.3	0.3
Clothing	0.4	0.0	0.0	0.4	0.4
Footwear	0.3	0.0	0.0	0.3	0.3
Leather and leather products	0.5	0.0	0.0	0.5	0.5
Sawmill products	0.6	0.0	0.0	0.6	0.6
Plywood, veneer and fabricated wood	0.8	0.0	0.0	0.8	0.8
Other wood products	0.6	0.0	0.6	0.6	0.6
Pulp, paper and paperboard	0.3	0.0	0.0	0.3	0.3
Paperboard containers; paper bags and sacks	0.6	0.0	0.0	0.6	0.6
Other paper products	0.6	0.0	0.0	0.6	0.6
Printing and services to printing	0.4	0.4	0.0	0.4	0.4
Publishing; recorded media and publishing	0.3	0.0	0.3	0.3	0.3
Petroleum and coal products	0.4	0.0	0.0	0.4	0.4
Fertilisers	0.5	0.0	0.0	0.5	0.5

*continued*

**Table A4.9 (cont.): Effective tax rates on final demand for municipal rates, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Other basic chemicals	0.3	0.0	0.0	0.3	0.3
Paints	0.5	0.0	0.0	0.5	0.5
Medicinal and pharmaceutical products; pesticides	0.3	0.0	0.0	0.3	0.3
Soap and other detergents	0.5	0.0	0.0	0.5	0.5
Cosmetics and toiletry preparations	0.3	0.0	0.0	0.3	0.3
Other chemical products	0.3	0.0	0.0	0.3	0.3
Rubber products	0.3	0.0	0.0	0.3	0.3
Plastic products	0.4	0.0	0.0	0.4	0.4
Glass and glass products	0.3	0.0	0.0	0.3	0.3
Ceramic products	0.5	0.0	0.0	0.5	0.5
Cement and lime	0.0	0.0	0.0	0.6	0.6
Concrete slurry	0.0	0.0	0.0	0.0	0.5
Plaster and other concrete products	0.0	0.0	0.0	0.6	0.6
Other non-metallic mineral products	0.7	0.0	0.0	0.7	0.7
Iron and steel	0.4	0.0	0.0	0.4	0.4
Basic non-ferrous metal and products	0.4	0.0	0.0	0.4	0.4
Structural metal products	0.0	0.0	0.5	0.5	0.5
Sheet metal products	0.6	0.0	0.6	0.6	0.6
Fabricated metal products	0.4	0.0	0.4	0.4	0.4
Motor vehicles and parts; other transport equipment	0.3	0.0	0.3	0.3	0.3
Ships and boats	0.5	0.0	0.5	0.5	0.5
Railway equipment	0.0	0.0	0.4	0.4	0.4
Aircraft	0.3	0.0	0.3	0.3	0.3
Photographic and scientific equipment	0.2	0.0	0.2	0.2	0.2
Electronic equipment	0.2	0.0	0.2	0.2	0.2
Household appliances	0.3	0.0	0.3	0.3	0.3
Other electrical equipment	0.4	0.0	0.4	0.4	0.4
Agricultural machinery	0.3	0.0	0.3	0.3	0.3
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.3	0.3	0.3
Other machinery and equipment	0.2	0.0	0.2	0.2	0.2
Prefabricated buildings	0.0	0.0	0.5	0.5	0.5
Furniture	0.6	0.0	0.6	0.6	0.6
Other manufacturing	0.4	0.0	0.4	0.4	0.4
Electricity supply	0.4	0.0	0.0	0.4	0.4
Gas supply	0.4	0.0	0.0	0.0	0.4
Water supply; sewerage and drainage services	0.0	0.3	0.0	0.3	0.3
Residential building construction	0.0	0.0	0.5	0.5	0.5
Other construction	0.0	0.4	0.4	0.4	0.4
Wholesale trade	0.7	0.7	0.7	0.7	0.7
Retail trade	0.6	0.0	0.0	0.0	0.6
Mechanical repairs	0.6	0.0	0.0	0.6	0.6
Other repairs	0.5	0.0	0.0	0.5	0.5
Accommodation, cafes and restaurants	0.6	0.0	0.0	0.0	0.6
Road transport	0.3	0.3	0.3	0.3	0.3
Rail, pipeline and other transport	0.3	0.0	0.3	0.3	0.3
Water transport	0.0	0.0	0.0	0.0	0.0

*continued*

**Table A4.9 (cont.): Effective tax rates on final demand for municipal rates, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	0.3	0.3	0.3	0.3	0.3
Communication services	0.3	0.3	0.0	0.3	0.3
Banking	0.4	0.0	0.0	0.4	0.4
Non-bank finance	0.5	0.5	0.0	0.5	0.5
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	0.4	0.4	0.4	0.4	0.4
Services to finance, investment and insurance	0.4	0.0	0.0	0.4	0.4
Ownership of dwellings	6.8	6.8	0.0	0.0	6.8
Other property services	0.3	0.3	0.0	0.3	0.3
Scientific research, technical and computer services	0.4	0.4	0.4	0.4	0.4
Legal, accounting, marketing and business management services	0.3	0.3	0.0	0.3	0.3
Other business services	0.3	0.3	0.0	0.3	0.3
Government administration	0.1	0.1	0.0	0.0	0.1
Defence	0.0	0.2	0.0	0.2	0.2
Education	0.4	0.4	0.0	0.4	0.4
Health services	0.4	0.4	0.0	0.4	0.4
Community services	0.5	0.5	0.0	0.0	0.5
Motion picture, radio and television services	0.4	0.4	0.0	0.0	0.4
Libraries, museums and the arts	0.3	0.3	0.0	0.3	0.3
Sport, gambling and recreational services	0.4	0.4	0.0	0.4	0.4
Personal services	0.7	0.7	0.0	0.7	0.7
Other services	0.4	0.4	0.0	0.4	0.4
<i>Total</i>	<i>1.8</i>	<i>0.3</i>	<i>0.4</i>	<i>0.6</i>	<i>1.3</i>

**Table A4.10: Effective tax rates on final demand for other indirect taxes, 1992-93, per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Sheep	1.5	0.0	0.0	1.5	1.5
Grains	1.6	0.0	0.0	1.6	1.6
Beef cattle	1.6	0.0	0.0	1.6	1.6
Dairy cattle	1.6	0.0	0.0	0.0	1.6
Pigs	1.8	0.0	0.0	1.8	1.8
Poultry	1.7	0.0	0.0	1.7	1.7
Other agriculture	1.6	0.0	0.0	1.6	1.6
Services to agriculture; hunting and trapping	1.3	1.3	0.0	1.3	1.3
Forestry and logging	1.5	1.5	1.5	1.5	1.5
Commercial fishing	2.1	2.1	0.0	2.1	2.1
Coal; oil and gas	1.0	0.0	0.0	1.0	1.0
Iron ores	0.0	0.0	0.0	2.0	2.0
Non-ferrous metal ores	0.0	0.0	0.0	1.3	1.3
Other mining	1.1	0.0	0.0	1.1	1.1
Services to mining	0.0	2.1	0.0	2.1	2.1
Meat and meat products	1.5	0.0	0.0	1.5	1.5
Dairy products	1.4	0.0	0.0	1.4	1.4
Fruit and vegetable products	1.2	0.0	0.0	1.2	1.2
Oils and fats	1.1	0.0	0.0	1.1	1.1
Flour mill products and cereal foods	1.5	0.0	0.0	1.5	1.5
Bakery products	1.3	0.0	0.0	1.3	1.3
Confectionery	1.2	0.0	0.0	1.2	1.2
Other food products	1.4	0.0	0.0	1.4	1.4
Soft drinks, cordials and syrups	1.4	0.0	0.0	1.4	1.4
Beer and malt	1.5	0.0	0.0	1.5	1.5
Wine and spirits	15.7	0.0	0.0	15.7	15.7
Tobacco products	8.3	0.0	0.0	8.3	8.3
Wool scouring	0.0	0.0	0.0	1.5	1.5
Textile fibres, yarns and woven fabrics	0.7	0.0	0.0	0.7	0.7
Textile products	0.9	0.0	0.9	0.9	0.9
Knitting mill products	0.8	0.0	0.0	0.8	0.8
Clothing	1.0	0.0	0.0	1.0	1.0
Footwear	0.8	0.0	0.0	0.8	0.8
Leather and leather products	1.0	0.0	0.0	1.0	1.0
Sawmill products	1.0	0.0	0.0	1.0	1.0
Plywood, veneer and fabricated wood	1.2	0.0	0.0	1.2	1.2
Other wood products	1.1	0.0	1.1	1.1	1.1
Pulp, paper and paperboard	0.7	0.0	0.0	0.7	0.7
Paperboard containers; paper bags and sacks	1.2	0.0	0.0	1.2	1.2
Other paper products	1.3	0.0	0.0	1.3	1.3
Printing and services to printing	1.0	1.0	0.0	1.0	1.0
Publishing; recorded media and publishing	1.2	0.0	1.2	1.2	1.2
Petroleum and coal products	1.3	0.0	0.0	1.3	1.3
Fertilisers	1.2	0.0	0.0	1.2	1.2

*continued*

84 **Table A4.10 (cont.): Effective tax rates on final demand for other indirect taxes, 1992-93,**  
**per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Other basic chemicals	0.8	0.0	0.0	0.8	0.8
Paints	1.1	0.0	0.0	1.1	1.1
Medicinal and pharmaceutical products; pesticides	1.1	0.0	0.0	1.1	1.1
Soap and other detergents	1.1	0.0	0.0	1.1	1.1
Cosmetics and toiletry preparations	1.2	0.0	0.0	1.2	1.2
Other chemical products	0.9	0.0	0.0	0.9	0.9
Rubber products	0.8	0.0	0.0	0.8	0.8
Plastic products	0.9	0.0	0.0	0.9	0.9
Glass and glass products	1.4	0.0	0.0	1.4	1.4
Ceramic products	1.3	0.0	0.0	1.3	1.3
Cement and lime	0.0	0.0	0.0	1.8	1.8
Concrete slurry	0.0	0.0	0.0	0.0	1.5
Plaster and other concrete products	0.0	0.0	0.0	1.3	1.3
Other non-metallic mineral products	1.2	0.0	0.0	1.2	1.2
Iron and steel	1.3	0.0	0.0	1.3	1.3
Basic non-ferrous metal and products	1.4	0.0	0.0	1.4	1.4
Structural metal products	0.0	0.0	1.2	1.2	1.2
Sheet metal products	1.2	0.0	1.2	1.2	1.2
Fabricated metal products	0.9	0.0	0.9	0.9	0.9
Motor vehicles and parts; other transport equipment	0.9	0.0	0.9	0.9	0.9
Ships and boats	1.1	0.0	1.1	1.1	1.1
Railway equipment	0.0	0.0	1.1	1.1	1.1
Aircraft	0.5	0.0	0.5	0.5	0.5
Photographic and scientific equipment	0.7	0.0	0.7	0.7	0.7
Electronic equipment	0.6	0.0	0.6	0.6	0.6
Household appliances	0.8	0.0	0.8	0.8	0.8
Other electrical equipment	0.9	0.0	0.9	0.9	0.9
Agricultural machinery	0.8	0.0	0.8	0.8	0.8
Mining and construction machinery; lifting and material handling equipment	0.0	0.0	0.8	0.8	0.8
Other machinery and equipment	0.6	0.0	0.6	0.6	0.6
Prefabricated buildings	0.0	0.0	1.2	1.2	1.2
Furniture	1.1	0.0	1.1	1.1	1.1
Other manufacturing	1.0	0.0	1.0	1.0	1.0
Electricity supply	1.6	0.0	0.0	1.6	1.6
Gas supply	12.2	0.0	0.0	0.0	12.2
Water supply; sewerage and drainage services	0.0	0.8	0.0	0.8	0.8
Residential building construction	0.0	0.0	1.3	1.3	1.3
Other construction	0.0	1.1	1.1	1.1	1.1
Wholesale trade	1.3	1.3	1.3	1.3	1.3
Retail trade	1.2	0.0	0.0	0.0	1.2
Mechanical repairs	0.9	0.0	0.0	0.9	0.9
Other repairs	0.9	0.0	0.0	0.9	0.9
Accommodation, cafes and restaurants	1.3	0.0	0.0	0.0	1.3
Road transport	1.0	1.0	1.0	1.0	1.0
Rail, pipeline and other transport	1.3	0.0	1.3	1.3	1.3

continued

**Table A4.10 (cont.): Effective tax rates on final demand for other indirect taxes, 1992-93,** <sup>85</sup>

**per cent**

	<i>Private final consumption expenditure</i>	<i>General government consumption expenditure</i>	<i>General government gross fixed capital expenditure</i>	<i>Exports</i>	<i>Total final demand</i>
Water transport	0.0	0.0	0.0	0.0	0.0
Air and space transport	0.0	0.0	0.0	0.0	0.0
Services to transport; storage	5.3	5.3	5.3	5.3	5.3
Communication services	1.1	1.1	0.0	1.1	1.1
Banking	1.4	0.0	0.0	1.4	1.4
Non-bank finance	1.6	1.6	0.0	1.6	1.6
Financial asset investors	0.0	0.0	0.0	0.0	0.0
Insurance	18.0	18.0	18.0	18.0	18.0
Services to finance, investment and insurance	1.1	0.0	0.0	1.1	1.1
Ownership of dwellings	1.0	1.0	0.0	0.0	1.0
Other property services	1.2	1.2	0.0	1.2	1.2
Scientific research, technical and computer services	1.4	1.4	1.4	1.4	1.4
Legal, accounting, marketing and business management services	1.4	1.4	0.0	1.4	1.4
Other business services	1.4	1.4	0.0	1.4	1.4
Government administration	0.9	0.9	0.0	0.0	0.9
Defence	0.0	2.2	0.0	2.2	2.2
Education	0.4	0.4	0.0	0.4	0.4
Health services	0.8	0.8	0.0	0.8	0.8
Community services	1.0	1.0	0.0	0.0	1.0
Motion picture, radio and television services	4.4	4.4	0.0	0.0	4.4
Libraries, museums and the arts	1.2	1.2	0.0	1.2	1.2
Sport, gambling and recreational services	8.9	8.9	0.0	8.9	8.9
Personal services	1.3	1.3	0.0	1.3	1.3
Other services	0.9	0.9	0.0	0.9	0.9
<i>Total</i>	<i>2.0</i>	<i>1.3</i>	<i>1.2</i>	<i>1.5</i>	<i>1.7</i>



## References

- Australian Bureau of Statistics, *The Effects of Government Benefits and Taxes on Household Income*, Catalogue No. 6537.0, Canberra.
- Australian Bureau of Statistics (1996a), *Australian National Accounts: Input Output Tables, 1992-93*, Catalogue No. 5209.0, Canberra.
- Australian Bureau of Statistics (1996b), "The effects of Government benefits and taxes on household income: methods and assumptions", HIES working paper 1/96, Canberra.
- Australian Bureau of Statistics (1996c), *Australian National Accounts: Input Output Tables - Commodity Details, 1992-93*, Catalogue No. 5215.0, Canberra.
- Chisholm, A. (1993), "Indirect taxation and consumption efficiency", in J. Head (ed.), *Fightback: An Economic Assessment*, 309-350, Sydney: Australian Tax Research Foundation.
- Creedy, J. (1997), "Measuring the welfare effects of price changes: A convenient parametric method", Melbourne Institute Working Paper No. 1/97, University of Melbourne.
- Creedy, J. and C. Martin (1997), "Estimating the linear expenditure system using the Household Expenditure Survey", Melbourne Institute Working Paper No. 12/97, University of Melbourne.
- Warren, N. (1979), "Australian Tax Incidence in 1975-76: Some Preliminary Results", *Australian Economic Review*, 3rd Quarter, 19-30.
- Warren, N. (1989), Changes in Australian tax incidence 1975-76 to 1984-85, in J. Head (ed.), *Australian Tax Reform in Retrospect and Prospect*, 445-478, Sydney, Australian Tax Research Foundation.
- Warren, N. (1991), "The Changing Incidence of Federal Indirect Taxes 1975-76 to 1988-89", EPAC Background Paper No. 13, AGPS, Canberra.