APPENDIX A: MODELLING TAX EXPENDITURES

This appendix provides an overview of the various modelling techniques used in the *Tax Expenditures Statement* to estimate the value of tax expenditures.

The methods used to calculate the estimates of individual tax expenditures in this statement vary. The appropriate approach is determined by the nature of the tax benchmark, the particular tax concession examined and the availability of data. Data availability is a major factor influencing the reliability of the estimates, and in many cases estimates are not provided owing to data limitations.

The approaches used to estimate tax expenditures include aggregate modelling, distributional modelling and microsimulation. The approach most commonly used is distributional modelling, utilising data derived from microsimulation analysis.

A.1   AGGREGATE MODELLING

This approach involves using information on the aggregate volume of transactions to calculate the value of a particular tax concession. Aggregate modelling is an appropriate approach for measuring tax exemptions or concessions where the impact can be represented as a simple proportion of the total transactions concerned. Data sources suitable for aggregate modelling include national accounts data, trade and production statistics, and aggregates derived from administrative databases (such as taxation records).

Aggregate modelling is used to estimate tax expenditures for fuel excise. Tax expenditures for exemptions or reduced excise rates can be estimated from statistics on the aggregate volume of fuels produced.

A.2   DISTRIBUTIONAL MODELLING

This approach involves using discrete aggregate data to calculate the impact of tax concessions on particular segments of the economy. Distributional modelling is an appropriate approach for measuring concessions that vary according to the characteristics of the taxpayer. Data sources suitable for distributional modelling include survey data and data derived from administrative databases.

Distributional modelling is used to estimate tax expenditures for personal income tax concessions when the cost is related to a taxpayer's taxable income. For these concessions, data on income distribution and tax concessions by grade of taxable income can be used to estimate the cost of tax expenditures for those concessions.

A.3   MICROSIMULATION

This approach involves examining detailed datasets, such as taxpayer records, to determine the value of taxable transactions for each taxpayer. The value of the tax expenditure is the difference between the tax paid on those transactions under the concession and the tax that would have been collected under the benchmark. Microsimulation modelling requires either a comprehensive database of all taxpayers or a detailed sample that can represent the population. The data must provide sufficient detail on the value of transactions affecting the calculation of tax liabilities to allow the required calculations.

Microsimulation modelling is used to estimate tax expenditures that closely target particular taxpayer groups (for instance, benefits subject to detailed eligibility tests) and concessions where the payment rate varies considerably according to taxpayer behaviour or circumstance.

Microsimulation modelling can also be used to derive key information, such as average effective tax rates, which can be used in other models that employ aggregate or distributional modelling. This is appropriate for situations where detailed datasets are not available for all items.