

Regional models

Understanding the complex relationships of changes that impact on regional economies requires the use of a sophisticated framework. The key economic models that TheCIE regularly uses to examine the impacts of policy changes on state and territory budgets and regional economies are described below.

The Monash Multi Regional Forecasting (MMRF)

A key economic model regularly used by TheCIE to analyse the impacts, such as the effects of climate change abatement policies, on state and territory economies and budgets is the MMRF model. Some of the key aspects that make the MMRF especially suited for this task are that it:

- accounts for Australia's six states and two territories as distinct regions including specific details about the budgetary revenues and expenditures of each of the eight state and territory governments and the Australian Government (the government finances in MMRF align as closely as practicable to the ABS government finance data);
- includes a detailed treatment of the fiscal effects of the Goods and Services Tax (GST);
- accounts for differing economic fundamentals in the states (for instance, the mining boom in WA and Qld);
- specifically accounts for major taxes including land taxes, payroll taxes, stamp duties and others at the state level, as well as income taxes, tariffs, excise, the GST and other taxes at the federal level;
- traces out the impact of transfers between governments;
- includes facilities to account for:
 - inter-fuel substitution in the generation of electricity;
 - explicit modelling of the national electricity market; and
 - inter-modal substitution in road and rail transport.
- provides a detailed account of industry activity, investment, imports, exports, changes in prices, employment, household spending and savings and many other factors;
- can produce results on employment and value added at a regional level; and
- is a dynamic model – that is, it allows analysis to trace impacts over time as the economy adjusts, being particularly useful over the medium to longer terms.

The MMRF is a publicly available model – although, due to its complex nature, in the past the use of the model has been largely limited to its developers, the Centre of Policy Studies (CoPS).

Over the last few years TheCIE has enhanced its in-house modelling capabilities to become one of the leading users

of the MMRF model. TheCIE has used the model to analyse the regional impacts of a range of policies changes. In November 2008 TheCIE updated the model to better reflect state and territory revenues and expenditures. This updated model formed the basis for analysing the impact of different composition of Commonwealth and state taxes on the economy and state finances.

The Enormous Regional Model (TERM)

TERM is a regional computable general equilibrium (CGE) model that provides a highly disaggregated representation of the Australian economy. It uses a 'bottom up' approach that explicitly represents the economy of each region. However, it has the advantage over other regional models of being specifically created to allow regional CGE analysis without being overly burdensome computationally.

Using TERM, an analyst is able to assess a large number of regions or sectors. TERM's database has 57 regions (statistical division) and 144 sectors, and can be aggregated depending upon the focus of the analysis. In other words, each region can be defined either as an individual statistical division or a summation of statistical divisions.

TERM's extensive disaggregation of the Australian economy allows each region to be independently modelled via the regional input-output tables. The linkages between regions are established through trade and primary factor flows. Each region trades commodities with other regions and with the world market. Importantly, TERM captures the demand for and supply of commodities, as well as their movement from producer to purchaser via various transport modes and wholesale and retail trade.

TERM is capable of modelling a region-specific, demand- or supply-side shocks (that is, change in the status quo) and its effect on region-specific prices and quantities. TERM's responsiveness to exogenous shocks is dependent upon the three key elements:

- the database (input-output tables for each region);
- choice of behavioural parameters (how demanders of commodities minimise costs); and
- choice of closure (combination of exogenous and endogenous variables in the model).

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