

# The Treasury Industry Model – a dynamic general equilibrium model of the Australian Economy

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The Australian economy is constantly undergoing structural change as businesses and workers take advantage of emerging opportunities and adapt to new challenges. To effectively provide advice related to such changes, or to evaluate competing policy options, policymakers need to understand the costs and benefits that may accrue to different parts of the economy.

This paper introduces the Treasury Industry Model (TIM), a dynamic general equilibrium model of the Australian economy, which has been developed to strengthen Treasury's capabilities in this space. Through its rich detail on the production side, TIM captures the interactions between firms, households, government, and the rest of the world in a cohesive general equilibrium framework. It is well-suited for analysing questions related to industry, trade, and structural change, and is intended primarily for modelling scenarios in which the Australian economy's production complexity, industry detail, and second- and third-round policy effects are considered pivotal to likely medium- to long-run outcomes. This can include scenarios such as the introduction of new technologies, changes in demand for goods by consumers, changes in foreign demand for particular exports or changes in the costs of imports used in production. TIM is particularly suited to understanding longer-term structural adjustments.

Part of TIM's strength lies in its highly detailed representation of production, which includes the 114 industries defined by the Australian Bureau of Statistics (ABS) Input-Output (I-O) tables. In addition, and in contrast to existing models with similar industry detail, the household and firms in TIM are forward-looking, making decisions to maximise their respective lifetime wellbeing or discounted sum of future profits. This allows the model to capture realistic responses to anticipated shocks or policy changes, an important consideration for a range of policy issues. TIM's approach to representing agent behaviour also provides a well-defined measure of welfare change for evaluating policy effects. Finally, TIM includes significantly more production detail than models with similar macroeconomic foundations. This includes significant detail on production and product taxes, investment, and delivery margins, allowing for more realistic adjustments and flexible policy simulations.

TIM is calibrated to match the structure of the economy as presented in the ABS I-O tables. Many of the model's parameters are heterogeneous across industries, such as the factor input shares for production, import shares, and production tax rates. Response parameters, such as elasticities, reflect consensus estimates in the macroeconomic literature. The resulting calibration allows for a baseline which reflects the underlying structure of the Australian economy and is suitable for comparison with policy scenarios and shocks.

## **Presenter Biographies**

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Jack is a macroeconomist at the Australian Treasury, primarily working on extensions to the Treasury Industry Model. He also provides ongoing contribution to analysis on industry and trade related issues. Jack studied at the University of Adelaide where he completed a Bachelor of Economics (Advanced) and an Honours Degree of Bachelor of Economics (First Class Hons).

## **Key Words**

CGE model, multi-sector modelling, industry policy, macroeconomics, Australian economy, general equilibrium