

Structural change and calibration of economic baselines with GTAP-RD

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This paper uses the GTAP-RD model (Aguiar et. al., 2018; 2019) to facilitate tracking of structural change and calibration of economic baselines for long-term trade policy simulations. We track both the supply-side drivers of structural change (i.e., changes in primary factor mix and efficiencies, input output structures, and intensification of services) and the demand-side drivers of trade using observed data to update our initial GTAP 10 Data (Aguiar et al., 2019) base from 2014 to 2017. We then use these observed changes to calibrate our baseline up to the year 2030. The main aim of this paper is to craft an economic baseline informed by historical sources of structural change. This is possible as GTAP-RD's dynamic module allows for changes in endowments, technology and preferences over time. In terms of endowments, labor force is imposed exogenously using external projections while supplies of land and natural resources are modeled via an upward-sloping supply curve. Capital stock changes are modeled using the standard capital motion equation wherein capital stock at the beginning of period t is equal to beginning of period capital stock at $t-1$ plus net investment (i.e., gross investment less depreciation) at $t-1$. In addition, technological changes are used to target externally imposed GDP per capita growth rates and to model differences in labor productivity growth across sectors. GTAP-RD also allows for preference changes (e.g., domestic versus imported goods, imported goods across trading partners, or labor versus capital use in value added mix) in a cost-neutral way by employing the twist approach developed by Dixon and Rimmer (2002).

References

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