Economic effects of a trade agreement between China and the Latin American Integration Association (LAIA): analysis using a multi-sector and multi-country dynamic general equilibrium model

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This study introduces a comprehensive Dynamic Stochastic General Equilibrium (DSGE) model designed to assess the potential impacts of a prospective trade agreement between China and the 11 member nations of the Latin American Integration Association (LAIA) (ALADI for its acronym in Spanish) over ten years. Integrating principles from both Computable General Equilibrium (CGE) literature and pioneering works such as those by Bouakez et al. (2014) and Pasten et al. (2020), the model extends existing methodologies by incorporating a detailed framework encompassing imports, exports, and various economic factors.

Drawing from Rotemberg's (1982) work on price rigidities and Christiano, Eichenbaum, and Evans' (2005) and Smets and Wouters' (2007) contributions to macroeconomic modeling, the model incorporates complex elements including consumption habits, investment adjustment costs, variable capital utilization, and endogenous capital depreciation. These improvements help us better understand the many different aspects of trade agreements.

The calibration process of the model relies on the Input-Output Matrix jointly compiled by the Asian Development Bank and the Economic Commission for Latin America and the Caribbean (ECLAC) for the year 2017. This dataset serves as a reliable foundation, accurately reflecting the trade and production landscapes of that period. Each of the 11 ALADI member countries is represented as a distinct regions within the model, with 14 sectors allocated to each, while China and the rest of the world are treated as single entities with 14 sectors each.

To simulate the effects of a potential trade agreement, we define two counterfactual scenarios. The first scenario assumes a complete elimination of bilateral tariffs between ALADI countries and China, while the second scenario considers reductions in tariffs based on existing trade agreements between China and select ALADI countries (Chile and Peru). Additionally, we explore the implications of potential reductions in non-tariff barriers in China and their impact on bilateral trade dynamics at both aggregate and sectoral levels.

The simulation results offer valuable insights into the potential economic consequences of different trade agreement scenarios. We find that under the scenario of complete tariff elimination, the projected impact on GDP ranges between 0.06% and 0.13% for the period 2021-2030, depending on the degree of market opening. However, this impact could be amplified to 0.17% if non-tariff barriers in China were also reduced.

Furthermore, if the opening aligns with the average tariff reductions observed in Chile and Peru, the overall impact on output for the entire LAIA region is estimated to be around 0.16%.

The novelty of the work presented is twofold: Firstly, it provides a detailed analysis of the potential economic effects of trade agreements, especially within the context of the LAIA region. We observe substantial increases in both exports and imports within LAIA, suggesting potential gains from enhanced trade integration. However, we also note a significant decline in bilateral trade balances with China, underscoring the importance of considering the broader impacts of trade agreements.

Secondly, our study represents a significant advancement in economic modeling by bridging the gap between DSGE and CGE methodologies. By integrating the robust structure of DSGE models with the detailed sectoral and regional analysis enabled by CGE models, we offer a comprehensive understanding of the potential economic ramifications of trade agreements.

In conclusion, our research highlights the complexity of assessing the economic impacts of trade agreements and stresses the need for careful consideration of various factors. By using a sophisticated framework and exploring multiple scenarios, our study offers valuable insights for

policymakers and people involved in international trade.