Appendix A:
For "Better In than Out? Canada and the Trans-Pacific Partnership"

By Dan Ciuriak, Ali Dadkhah, and Jingliang Xiao

Methodology: An Overview

The standard tool to analyze trade agreements is a computable general equilibrium (CGE) model. We employ a dynamic version of the widely used Global Trade Analysis Project (GTAP) model modified to directly represent foreign-owned firms in each services sector of the economy to capture the impact on services trade conducted through foreign affiliates.

The model incorporates measures of effective tariff protection and allows the impact of non-tariff barriers (NTBs) to be taken into account as cost reductions for doing business across borders. The trade impacts from these simulations capture the linkages across sectors through national input-output tables (for example, an increase in demand for automobiles drives fixed production requirements of steel, which in turn are met by a combination of domestic and imported steel).

To simulate the TPP, we establish a baseline projection to 2035 drawing on available long-term projections for guidance. The main research task is then to formulate the "shock" scenario – i.e., the assumptions concerning tariff cuts and their phase-in schedules, as well as the impact of measures addressing NTBs. For policy shocks, the model is simulated forward in a dynamic process whereby changes in the rate of return on capital induce investment, and changes in wage rates induce increased labour force participation. The results reported are changes relative to the baseline at 2018, 2025, and 2035. The reported gains in 2035 may be interpreted as the permanent change in the level of economic output, once full equilibrium has been restored following the policy shocks, including the reallocation of capital and labour across sectors in response to the changed opportunities in the liberalized economy.

Coding the TPP

Tariff reduction/elimination is based on the published schedules and technical summaries released by the negotiating parties following the conclusion of negotiations. We incorporate significant improvements over already-liberalized bilateral relationships that have been flagged by governments in their technical summaries – for example, the TPP improves upon the market access commitments made by Japan on beef to countries with which it has existing FTAs that provided lesser market access (Australia, Mexico, and Peru). The United States improves the market access for Australian dairy by reframing the quotas to make them commercially useful.

Otherwise, we do not attempt to identify marginal additional improvements under the TPP compared to existing agreements; this should not materially impact the assessment, however. We also do not take into account the trailing bits of liberalization that extend beyond 2035. Changing economic conditions make impact estimates that far into the future highly uncertain. As regards the value of the managed trade concessions in the agricultural sector, we assume full quota utilization. Given uncertainties about quota utilization in practice, and the fluctuations in unit prices from year to year and across countries, these impact estimates are subject to more than usual uncertainty.

In online Appendix C, we review the TPP's elements that potentially impact NTBs to goods trade, including: the various border facilitation measures (customs cooperation, TBT/SPS); the measures providing for mutual recognition agreements (MRAs) for specific product groups (wine and distilled spirits, ICT products, pharmaceuticals, cosmetics, among others); the chapter on business facilitation; and the chapter on regulatory coherence. We identify some areas where the TPP will likely reduce costs for companies, but these tend to be highly specific and the measures are not readily quantifiable. As discussed below, the overall assessment of the TPP's impact on NTBs in goods trade is that it is below the level that is meaningful for a macroeconomic analysis, such as is conducted in this study.

Services Sector Barriers

We develop the liberalization shock for services barriers by coding the TPP against the cross-border services trade components of the OECD's STRI (Gelosso Grosso et al., 2015) for TPP member countries (which we refer to as the cross-border services restrictiveness index, or CBS-RI). We also take into account the extent of squeezing "water" out of the GATS bindings by compare TPP bindings to the parties' scores in the corresponding GATS Trade Restrictiveness Index (GTRI), developed by Miroudot and Pertel (2015), and/or in existing bilateral FTAs. This allows us to evaluate the extent to which the TPP binds services restrictions at current levels that are below corresponding GATS bindings, i.e., evaluate the extent to which the TPP "squeezes water" out of the GATS bindings. (For more detail see online Appendix B.)

We create a template based on the TPP's commitments. In developing the template, we map each article of the TPP to an STRI measure. To calculate the policy shock for a specific economy, we apply the template in light of the annex for that economy stating its reservations from the agreement. If the template changes the answer to "not restrictive," we remove the contribution of that measure to the restrictiveness of the regime, which is based on its index weight.

This methodology covers both horizontal and sector-specific commitments. The horizontal commitments stipulate conditions and restrictions that apply to all sectors of the economy. These measures include investment screening, limitations on board members and managers of firms, impediments on acquiring land and real estate, competition-related disciplines on state-owned enterprises, and so forth.

The specific commitments apply to a particular sector as indicated in the schedule. For instance, interest rate regulations pertain only to financial services, while restrictions on private competition with public broadcasters pertain only to the broadcasting sector. Some restrictions tend to impact some sectors more than others; for example, restrictions in public procurement have a particularly large impact on the construction sector in light of the importance of government demand for these services.

Barriers to FDI

For FDI, we build in a liberalization shock based on cross-referencing the TPP's measures to the OECD's FDIR index for the TPP parties. We did not incorporate a binding shock for this exercise. Given the plethora of bilateral investment agreements within the region, this is not likely to be of major significance.

Other Issues

Intellectual Property: We do not explicitly model the impact of IP measures, which work very differently than trade liberalization. Where trade liberalization increases competition and reduces prices, increased IP protection does the opposite. Increased IP rights (IPR) lead to more research and development (R&D) activity and

increased innovation, which are manifest in additional product varieties (e.g., new drugs or more films). From an economic activity perspective, the direct benefits of increased IPR in the TPP would be heavily skewed to the United States and, to a lesser extent, Japan, the countries with the largest stocks of IP to protect.

The point can be made more strongly: the conventional modelling of major trade agreements does not distinguish products by their IP content – all pharmaceuticals (generics and patented drugs) are buried within a large aggregate of chemicals, rubber, and plastic (CRP). Software, movies, and IP-intensive electronics are not separately represented. R&D expenditures are not separately included as a cost of production, nor are stocks of knowledge or payments (royalties and license fees) for use of such knowledge. The TPP has been labelled a "21st Century trade agreement"; unfortunately, this study, along with all other existing assessments, unavoidably uses a data and modelling framework better adapted to the mid-20th Century.

The impact on any individual economy of increased IPR is an open empirical question. Innovation could be inhibited in some jurisdictions depending on whether disincentives outweigh incentives (Ciuriak and Curtis, 2015).

Government Procurement is also not modelled. Most procurement is done through commercial presence ("Modality 2" in government procurement; see Cernat and Kutlina-Dimitrova, 2015), rather than on a cross-border basis ("Modality 1"). Since Modality 2 already benefits from national treatment rules under WTO commitments, the TPP's impact here is likely to be small. Accordingly, the failure to explicitly model procurement will not materially affect the overall sense of the TPP impacts.

Finally, since currently coded STRI/GTRI measures cannot capture the open-ended nature of a negative list, our simulations do not include this liberalization element.