THE SUMMARY OF DOCTORAL THESIS

The Impacts of FTAs on Latin America's Agricultural Exports to East Asia:
A Gravity Model and Computable General Equilibrium Model Analysis

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Latin American countries rely greatly on agricultural exports whereby single commodities represent an important income of international earnings. Agriculture is one of the most dynamic and promising sectors of trade relations between Latin America (LA) and East Asian (EA), despite being the most protected in EA. With the creation of the Pacific Alliance (PA) in 2011, Chile, Colombia, Mexico and Peru, aimed to develop a platform that allows the promotion of LA into the Asia Pacific region. The PA agricultural exports main destinations in EA are Japan, China and Korea. Currently, Chile and Peru, both have Free Trade Agreements (FTAs) with Korea, China and Japan, Mexico has an FTA with Japan, and Colombia recently enacted an FTA with Korea and is under negotiations with Japan.

The objective of this dissertation is to study the impacts of FTAs on LA's agricultural exports to EA. The thesis consists of five chapters. Chapter one is the introduction, chapter two examines the patterns of agricultural trade between LA and EA regions by using various indicators, to set the stage for detailed analysis in the following chapters. Chapter three presents a quantitative study of the impacts on LA's agricultural exports to EA of the seven existing FTAs (Chile-Korea, Chile-China, Chile-Japan, Mexico-Japan, Peru-China, Peru-Korea and Peru-Japan) by undertaking a Gravity Model (GM) analysis. Chapter four uses a Computable General Equilibrium (CGE) Model to evaluate the effects the removal of tariff and non-tariff barriers (NTBs) would have on Colombian agricultural exports, under possible FTAs with Japan and China. Chapter five presents the conclusions.

Although GM and CGE models are common quantitative analytical methods in the area of trade, using to measure the impacts of FTAs, they have not been used to analyze the impact of the FTAs between EA and LA specifically on LA agricultural exports to EA. Furthermore, an important contribution of this analysis is while the GM measures the impact of seven FTAs in 2003-2015 period with disaggregated data including tariff information and FTA specific dummies in the explanatory variables, the CGE model analysis the impact of possible FTAs explicitly for the Colombian agricultural exports with the removal of tariff and NTBs through five different scenarios, specifically considering the tariff reduction reached by other PA members from Japan and China in their FTAs.

The GM is used in this thesis to examine whether LA countries' agricultural exports have expanded as a result of the FTAs with EA. The analysis is conducted using aggregated/sectorial and disaggregated product level at HS (6-digit) trade data and tariff reduction from each FTAs annex in 2003-2015 period.

The following equation (1) is estimated using PPML+FE, PPML+RE and OLS for the aggregated, sectoral and product levels:

$$\ln(Exports_{i,j,t}) = \beta_0 + \beta_1 \ln(Dist_{i,j}) + \beta_2 \ln(GDP_{j,t}) + \beta_3 \ln(GDP_{i,t}) + \beta_4 \ln(AgriL_{j,t}) + \beta_5 FTADummy_{i,j,t} + \beta_6(FTADummy_{i,j,t} * FTADummy_{i,japan} + \beta_7(FTADummy_{i,j,t} * FTADummy_{i,Korea}) + \beta_8(FTADummy_{i,j,t} * FTADummy_{i,China}) + \varepsilon_t + C_j$$

Where $Exports_{i,j,t}$ is country i's agricultural exports to country j in year t, $Dist_{ij}$ distance between countries i and country j, GDP_{jt}(GDP_{it}) real GDP of country j (i) in year t, $AgriL_{jt}$ is the agricultural land available in countries j, $FTAijt$ FTA dummy between countries i and j in year t.

$FTADummy_{i,j,t} * FTADummy_{i,Japan}$, $FTADummy_{i,j,t} * FTADummy_{i,Korea}$ and $FTADummy_{i,j,t} * FTADummy_{i,China}$ Are interactions dummies for country i with Japan, Korea, and China in year t. Countries i represents Chile, Mexico, and Peru, while country j represents the major agricultural export partners of each LA coutries.

For a product level analysis, equation (2) was also estimated:

$$In\left(Export_{i,j,t}\right) = \beta_0 + \beta_1 \ln(Dist_{i,j}) + \beta_2 \ln(GDP_{j,t}) + \beta_3 \ln(GDP_{i,t}) + \beta_4 \ln(AgriL_{j,t}) + \beta_5 FPM_{j,i,t} + \beta_6(FPM_{j,i,t} * FTADummy_{i,japan}) + \beta_7 (FPM_{j,i,t} * FTADummy_{i,korea}) + \beta_8(FPM_{j,i,t} * FTADummy_{i,China}) + \varepsilon_t + C_j$$

Where $FPM_{j,i,t}$ is FTA Preferential Margin (FPM) (FPM=MFN-FTA tariff applied by country j to country i in year t), they are interaction variables which isolates the effect of trade agreements between country i and Japan, Korea and China. This equation is conducted to examine the tariff reduction impact on Chile, Mexico and Peru. Both above equations are also estimated for Japan, Korea and China's agricultural imports as country i, specifically considering the effect of FTAs between countries i and Chile, Mexico and Peru.

The model outcomes indicate at an aggregated level that LA countries have mixed results from the FTAs with EA, with four out of seven FTAs showing positive results for LA agricultural exports to EA. At a sectoral level, results indicate that 15 out of 28 agricultural subsectors, of the seven FTAs, have had positive effects. In contrast, The GM also shows that five out of seven FTAs show negative results for EA agricultural imports from LA, and 15 out of 28 agricultural subsectors indicate negative results. At product level, some positive and negative effects are found for some of the most exported products from LA to the world.

The CGE model implements five commercial policy simulation scenarios to examine the impacts of possible FTAs between Colombia - China and Colombia-Japan for Colombian agricultural exports. The CGE model used differs from others because it disaggregates the Colombian agricultural sector in 16 subsectors and considers the removal of tariff and NTBs for Colombian agricultural exports to those markets. Moreover, the model is calibrated for year 2014 and contemplates five types of productive factors (land, capital, unskilled waged labor, unskilled non-waged labor and skilled labor).

The study finds an important impact of the five simulation scenarios for Colombian agricultural exports. Among them, the scenario C (which considers the total effect for Colombian agricultural exports to China and Japan reaching the maximum tariff reductions by other Pacific Alliance members in their negotiations with China and Japan. As well as, 50% NTBs reduction of Colombian agricultural exports to China and Japan) is the most realistic, and it will be more beneficial for Colombian economy, obtaining a larger benefit from Japan (48%). In addition, the scenario E reveals that 100% of tariff and NTBs reduction of Colombian agricultural exports to China and Japan will bring the major benefit for Colombian agricultural export to Japan increasing 133% and 71% those to China. Thus, Colombian government negotiators should stress the importance of including in the negotiation with Japan and China the removal of NTBs such as SPS and TBT.

In the final concluding chapter, I intend to summarize the findings, discuss policy implications as well as limitations of the study, and present future research agenda.

References

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