Title: FTA Effects on Agricultural Trade with Matching Approaches

Discussion Paper No. 2015-25

Thank you for detailed comments. We can accordingly improve and clarify the draft. The followings are our replies and ways to reflect your comments.

1. P2. The second paragraph about Korea's FTA is awkward and confusing.

Reply: To avoid confusion, the term "singed" is changed to "completed."

"The country also <u>completed </u>five FTAs negotiations with Colombia, Canada, China, New Zealand and Vietnam."

2. P3. There should be a comment on the large drop in Korean imports from non-FTA countries.

Reply: In the first paragraph, we can add the following comment:

"A significant increase in imports from the FTA countries explains the large drop in imports from the non-FTA countries in the 2011-12 periods."

3. P3. Clarification of column titles in Table 1

Reply: The headings of columns are replaced by:

1st by *"After one year", 2nd by "After two years"… and 8th by "After eight years."*

4. P3. Explain "the unexpected issue of selection bias."

Reply: This phrase refers to the previous sentence containing "exchange rate fluctuations, tariffs, non-tariff measures and natural disasters." Without loss of its meaning, the expression of "the unexpected issue of" can be dropped.

5. P4. PSM is an empirical analysis because it causes data.

Reply: Yes, indeed. It should have been written as a non-parametric approach. The revised text is:

"To this end, this study uses propensity matching (PSM) to mitigate selection bias while focusing on a country's observable heterogeneity."

6. P4. Partial equilibrium models do not necessarily classify all goods as homogeneous.

Reply: A revised sentence is:

"The partial equilibrium model <u>often </u>considers agricultural products produced and imported as homogeneous goods."

7. P5. Reply: As suggested, the phase, "in advance of" is changed into "in advance of their conclusion."

8. P5. The paragraph needs work.

Reply: To clarify the PSM approach, the paragraph is rephrased as:

"To this end, PSM is used. The PSM begins with the estimation of a conditional probability of FTA participation. The binary level of FTA participation is regressed with characteristics variables that are deemed to affect trade. Then pair matching between observed values of treated and comparison groups is made based on the nearest propensity score. More specifically, the estimation process of the PSM modeling comprises the following two steps."

9. P7. More explanation would help regarding unexpected factors for selection bias.

Reply: We simply attempted to point out other potential factors that are speculated to be causing selection bias. Besides, we intended to show that conventional regression analysis may not be sufficient for dealing with selection bias. Accordingly, we will rephrase and clarify the text.

10. P7. Do not understand "With equation (3)…"

Reply: This part explains the fact that unless selection bias is not taken care of, To clarify, texts and equation (3) are rewritten and linked to the previous equation as follow:

ATT=ATE+S_i

Equation (3) highlights that if the heterogeneity of each country following the conclusion of the FTA is controlled, the effect solely of the FTA can be estimated

11. P9. CIA condition would not hold for FTA membership.

Reply: As being said, CIA is a crucial assumption in matching methods to the extent that unobservable covariates do not affect the potential FTA outcomes. So, we gave our best efforts to control country differences that are relevant.

12. P9. What is a strongly ignorable treatment assumption?

Reply: The assumption refers to Equations (5) and (6) ensuring that treatment assignment is as if random assignment for countries with equivalent covariates. As the above CIA, this ignorability is an assumption rather than a characteristics of the experiment.

13. P9. Explain "The aforementioned matching approaches…"

Reply: It simply describes different matching methods that bear their own pros and cons. For a robust result or by design, one may choose an appropriate matching method.

14. P12. GDP measures a country size, not competitiveness.

Reply: Exporter and importer's GDP captures supply capability and import demand, respectively. In this sense, we used GDP as an equivalent of competitiveness that generates intensive and extensive trade margin. Nevertheless, it would be better to revise the expression as follows:

This implies that supply and demand factors of trading countries are relevant in signing an FTA.

15. P12. More explanation is needed in Table 6 and Figure 2.

Reply: Common area in Table 6 corresponds with the explanation of Equation (6). Figure 2 shows common areas in graph, which is automatically generated by Stata software. The upper bars indicate FTA blocs and lower bars are non-FTA partner countries. Without any loss of generality, we may delete Figure 2.

16. P13. A typo.

Reply: The typo is corrected as "-37%".

17. P.14. Units for ATT and standard errors in Table 8.

Reply: The unit for ATT in million USD and standard errors in parentheses are inserted.

18. P.17. The use of "net trade"

Reply: The term "net trade" appears two times throughout the manuscript. It was meant to deliver a change in trade taking into account the selection bias. Since import and export figures are presented in previous paragraph, we may change it into just "trade."