

## Responses to Referee Report 2 on “(In)Determinacy, Bargaining, and R&D Policies in an Economy with Endogenous Technological Change”

Thank you for your insightful comments and suggestions. Based on them, we have revised the paper as follows.

1. Thank you for your reminding. Please see Introduction on pages 2-5.
2. We have clarified the interaction between final goods producers and intermediate goods producers among the vertically integrated market in Introduction (the last paragraph on pages 3-4).
3. Thank you for your reminding. Basically we tried to focus on the behavior of the vertically integrated firms in close economy. Outsourcing is quite an interesting subject, no doubt it brings our attention in our future studies.
4. The franchise fee represents the producer  $j$  of final goods has to pay to the intermediate goods firms so that he or she can obtain the right and know-how to produce through the input of the intermediated goods. Please see the second paragraph in lines 4-6 on page 7. Thank you for your advice.
5. Thank you for your advice. We have clarified the main contributions, please see the last paragraph on pages 15-16.
6. Thank you for your valuable advices. According to Proposition 1 and its proof on page 14-15 we can clearly find that bargaining mechanism and the structure of government interventions are the key factors that generate indeterminacy result. There are a lot of literature try to find out the necessary and sufficient conditions about indeterminacy and explain the different growth paths among countries. But seldom of them discuss the possibility of bargaining or the structure of government interventions can play a role in the R&D-driven growth model.

According your suggestion, we have shown a specific result without bargaining mechanism as Figure 1 on page 16, and also expressed by Appendix A. On the other hand, the general result which includes bargaining associated with government R&D policy was provided as Figure 2 on page 17. Comparing these two results it is clearly to find out that the key factor that causes the indeterminacy is bargaining structure when the government levies on the specific tax. The main

inside of implication is while government levies the specific tax, it follows  $\dot{L}_x$  expressed by a convex function. And then we could derive the necessary and sufficient conditions for indeterminacy as shown by Eqs. (45) and (46).

7. Thank you for your advice. We rewrite the explanation of the R&D sector, and please check Section 3.4 on page 12. It is helpful to express how intermediate goods producer obtain the ownership/right of the blueprints.

#### Minor comments

1. Thank you very much for your valuable advices. Our paper has been edited again by a native speaker to improve the grammar.
2. Thank you for your valuable reminding. Footnote 8 on p.16 in early version has been corrected, and the footnote is now changed into Footnote 9 on page 18 in revised version.
3. Thank you for your valuable suggestions. The literature such as Antras and Helpman (2007) relative to contractual frictions and relationship-specific investment among vertically connected firms has been considered. Please review Introduction, in lines 16-19 on page 4, and Section 3.3 in lines 10-12 on page 10. And Acemonglu et. al. (2010) which is regarding to the role of R&D and technological change for vertical integration is also included. Please see Introduction, the first paragraph in lines 2-5 on page 4.
4. Thank you very much for your advices. We rewrite the sentence about the reference of Villas-Boas, the last paragraph in lines 3-5 on page 3.
5. Thank you very much for your reminding. We modified the terminology of “dual economy” into “multiple equilibria for the economy” according your suggestion. Please see Proposition 2 on page 18, line 7 on page 16 and lines 3-4 on page 22.
6. Thank you for your reminding. The wrong word “sing” has been changed into “sign” in Eqs. (55)-(60) on page 19.
7. Thank you for your valuable suggestion. We have modified “low equilibrium

(“high equilibrium”)” to “low share of labor hired in intermediate goods production” and “high share of labor hired in intermediate goods production”. Please see Proposition 1 on page 14, the last paragraph in lines 13-14 on page 15, the first paragraph in lines 2 and 5 on page 16, the second paragraph in lines 5-6 on page 16, the last sentence on page 18, lines 3-4 on page 19, Section 6.1 in lines 1-2 on page 19 and Section 6.2 in lines 1-2 on page 20.