”Endogenous technology sharing in R&D intensive industries” (Clark & Sand): Response to referee #2

We would like to thank the referee for the comments and suggestions that we have attempted to deal with, and we hope that our answers to the referee’s comments are satisfactorily addressed in our comments and in the new version of the paper.

The first comment made by referee #2 regarding the asymmetry in costs between the firms, is addressed in the comment to referee #1. We do agree that it would be beneficial to capture the relative asymmetry between firms. However, as it turns out it is difficult to solve for the equilibrium coalition structure with a more general approach than the chosen cost structure. We acknowledge that this somewhat reduces the generality of the results. The comment made to referee #1 is also included here for completeness:

Comment 1:
In a previous version we have worked with a more asymmetric situation. In particular, the *ex post* marginal cost has been formulated as follows: $\hat{c}_a = \theta_a c - x_a$ for the post R&D marginal cost without a coalition, and $\hat{c}_i^{ij} = \theta_i c - x_i - x_j$ is the post R&D cost for firm *i* when in a coalition between firms *i* and *j*, and $\hat{c}_k^{ij} = \theta_k c - x_k$ is the post R&D cost for the outsider. Although this is a more general approach, the results with respect to the various technology sharing arrangements do not change qualitatively. In addition, we are not able to solve for the equilibrium coalition. In all of the coalition case considered, the simple relationship between quantities, R&D expenditure and profits is still present with the more asymmetric cost functions. This implies that a given firm’s profit is determined by the R&D expenditure by that particular firm. The analysis of the equilibrium R&D effort for, e.g., the coalition between the two most efficient firms reveals the following: An increase in the outsider’s efficiency parameter, θ_k, causes a negative shift in *k*'s R&D reaction function, and a positive shift in that of the insiders. Hence the insiders' R&D increases whilst that of the outsider falls. Similarly, the outside firm devotes more resources to R&D when its rivals are less efficient initially ($\frac{\partial x_k^{ij}}{\partial \theta_i} = \frac{\partial x_k^{ij}}{\partial \theta_j} > 0$). Furthermore, the firm that is most efficient initially will undertake more R&D than the less efficient partner, but since all technology advancements are shared among the coalition partners the gap in the R&D levels of the two inside firms is smaller than in the no-coalition case. The difference in R&D effort for the firms will, of course, depend on the specific relationship between the θ’s, but this is not qualitatively different from the results we obtain with the parameterization in the present version, and we judged the loss of generality as a result of our simplification to be minor in this respect. We hope that this answers the referee’s comment. See footnote 11.

Comment 2:
We do agree that the reference made to Kabiraj & Mukherjee (2000) certainly is relevant. We discuss Kabiraj & Mukherjee (2000) in the section on Related Literature.

Comment 3:
We have included a reference to Salant, Switzer & Reynolds (1983) in the section on Equilibrium Technology Sharing Agreement.

Comment 4:
We do agree that the introduction is lengthy, and have in the revised version included a sub-section on Related Literature. This hopefully improves the organisation of the paper.