Referee report on
R&D Cooperation and Industry Cartelization
by Jacek Prokop and Adam Karbowski

General Comments:
Globally, the paper is well written and the main messages are correctly conveyed to the reader. As far as I could check the calculations are correct. However, there are a number of problems with this paper which I detailed below. My opinion is that the current version of the paper fails short of the standard needed to be published in the *"e-journal Economics"*. I would thus recommend against publication of the article as it stands.

My main criticisms are the following:
1) The authors want to compare the incentives that firms have to cartelize the market when they previously have the chance to invest in cost reducing R&D activities that can be determined either cooperatively or non-cooperatively. I found this topic interesting but I do not understand why the authors assume that when firms do not cartelize the market we have a leader and a follower and, on the contrary, when the decision regarding final output is collusive, firms set quantities simultaneously. The authors claim that they do it unlike the previous literature but this is not an acceptable justification for this assumption. Consequently, when comparing firms' profits in both scenarios the results could be driven not only because of the different collusion incentives but also because of the leadership which is not the scope of the paper. For instance, if $\beta<0.5$ the leader does not want to cartelize the market maybe because it loses the leadership and cannot completely internalize the externality. Do the results still hold if in absence of any collusion on quantities firms simultaneously set quantities?

2) The game solved in Table 1 assumes that firms non-cooperatively undertake R&D activities but the authors consider that if the externality is complete ($\beta=1$), this is equivalent to say that we have a RJV. In my opinion there is a logical failure behind this reasoning. The point is that, if firms jointly decide the R&D, the externality could be high but the reverse is not necessarily true: a high externality does not imply "per se" that joint decision on R&D has been made. The model could be easily solved cooperatively in the first stage of the game and non-cooperatively in the second regardless of the value of β. For instance, firms could decide x_1 and x_2 that maximize joint profits (adding equations (10) and (11)). Hence, this would be a cooperative allocation instead of a Nash equilibrium.

3) In addition to the point 1) raised in the present report regarding the leadership assumption, the baseline model presented here permits the following four different scenarios:

a) Cartel on quantities + Independent R&D	b) Cartel on quantities + RJV
c) Cournot + RJV	d) Cournot + Independent R&D

The authors basically compare model b) with model d). In my opinion, if the authors want to analyze whether a RJV provides further incentives to collude in a static model, an alternative and (perhaps) more accurate option would be the comparison of (a-d) vs. (b-c). Consequently, it would be considered what the additional profits that firms obtain by cartelization are when firms cooperate on R&D or when they do not.