

## ***Interactive comment on “Policy support, economic incentives and the adoption of irrigation technology in China” by R. Cremades et al.***

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Received and published: 5 March 2015

General comments: This paper uses a data set collected at household and village levels in 7 provinces of China (1269 households in 123 villages) to answer questions of the role of policy instruments (subsidy policy, water pricing) and extension service availability on the adoption of what they name “irrigation technology”. This question is important as annual water availability for agriculture in China is on the decline, due to the increasing demands from industry and households. Irrigation technology is classified into two types, household-based and community-based. The former consists of simpler and easier-to-adopt measures, while the latter requires higher investments and more community organization (pages 1549–1550 gives examples). The authors of the paper analyze their data using traditional descriptive statistics as well as a logit and a

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Tobit model. Adoption is measured both as extent and intensity. Extent measures the number of villages or households having adopted the technology, and intensity looks at the crop area where the technology can be found. / The authors find that policy support via subsidies and extension service provision has made a difference in the adoption rates. Water pricing plays a role in incentivizing water saving technologies only for those farmers that use the (costlier) groundwater. Surface water users often get water for free and consequently have a lower incentive to adopt water saving technologies. / The paper is in general very well elaborated and data, results and conclusions are carefully presented. There are a few points, though, that would help make it a better paper. / First, what I find a bit misleading is the use of the term “irrigation technology”. It could be interpreted as the introduction of irrigation technology where there was none before. But obviously this paper is dealing with areas where irrigation is already a fact, so logically there must be some kind and level of irrigation technology, even if simple. What they are therefore discussing is the introduction of “more advanced irrigation technology”, and this comes in two groups, household- and community-based. The authors should consider making this distinction more clearly in their wording. In fact, in section 3, they clarify the issue by referring to Blake’s classification, which has a third class, traditional technology. But the reader might find it more accessible to read this paper if this kind of clarification would already be made in the abstract, and not only in the third section of the paper, after 5 pages of text. / The conclusions seem sound. But what is completely missing is a joint discussion of the findings of the descriptive statistics (section 4) and the logit and Tobit models (section 6). It would be good if the authors could insert a section before the current conclusions section (7) where they look at the results of these three parallel approaches side by side and interpret and discuss them in light of each other. Currently this is not available, so the underlying assumptions seem to be that the results of the models are somewhat superior to those of the descriptive stats. But even the results from the two models are not compared to each other. Thus they have three different analytical approaches they are not exploring fully. The authors forego an opportunity to validate their different approaches against

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each other, which would improve and give more weight to the conclusions consolidated from both approaches. This analysis furthermore could add another layer of information, i.e. on the methodologies. It could well be that running just one of the models would be enough, or even that no sophisticated model is needed if the underlying stats are as clear as they are in this case. / I am also missing a broader discussion at the end of the conclusions, digging deeper in view of real life problems. This kind of modeling study remains rather theoretical and flat as long as no attempt is made to link the results to the underlying real-world activities and problems. E.g. the paper only considers subsidy and water pricing as yes/no questions but it does not venture into a discussion on whether these financial incentives/disincentives are well chosen with regard to the level of the farmer's financial means (or different levels of different farmer groups, wealthy and poor, large- or small-scale). Small changes introduced in the level of these subsidies could go far in creating further favorable or unfavorable conditions. I understand that this was not the subject of the study, but the authors should at least demonstrate that they are aware of this subject and point to the need for further studies in this regard before ill-fated policy recommendations can be given based on the results of this paper alone. / Furthermore, basing the conclusions on the results of the modeling approach comparing only those two classes of household vs. community based technologies alone seems a bit dangerous, particularly because the different classes of technology represent baskets which each contains a varied group of highly different technologies, and looking at each of these in detail might provide additional insights. E.g. there may be underlying technical and financial differences between introducing sprinkler, drip irrigation, underground piping or lining of canals at the community level, which may make some of them more affordable or desirable than others for specific situations. Again, this is not the subject of the paper and does not diminish its merits, but it should at least be discussed. //

Specific comments: On page 1553, lines 22-26, a procedure is described that splits the cases into four groups when IFCI (irrigation fee) is larger than 0. But it remains unclear what has been done with these groups, how this was used to improve the analysis, and

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what the results are.//

Typos and text corrections: 1554 lines 2-7: you are repeating "in China" in each of the first 4 sentences. Consider removing it in 2-3 instances! - Page 1551 Line 4: "higher than that of": remove "that" - P 1551/ L5: "technology both": remove "both" - 1551/27: "when the subsidy policy is available for farmers" – the policy is not available to farmers, but the subsidy is. When you talk about the policy itself in the paper, this wording is correct, but where availability to farmers is concerned, you should correct the wording. The correct expression also is "available to". This passage therefore should be "when subsidies are available to farmers". - 1554/21: "equals one" should be written as "equals 1" because this is about the number 1556/29: add space between "technology significantly" - 1557/20: "is negative and also significantly" – meaning not clear - 1558/2: "supports and" replace by: "support measures and" - 1558/19: "extended" replace by: "expanded" - 1559/2: "with present" replace by: "with the present" - 1559/4: "effect on encouraging" replace by: "effect into encouraging" - //

I have not attached any text file to this review

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Interactive comment on Earth Syst. Dynam. Discuss., 5, 1543, 2014.