

Arjoon et al. "Sharing water and benefits in transboundary river basins"

Summary

This paper describes an approach to equitable sharing of benefits among multiple stakeholders in transboundary river basin systems. The basic idea is to maximize efficiency by allocating water where its value is highest, and then to collect payments from users using an axiomatic rule based on the marginal value of water at each site.

General comments

I like the paper and think it proposes an interesting approach. I see four main shortcomings that are not at all discussed, however. Ignoring them diminishes the credibility of the work.

1. The first problem is that the issue of property rights is never discussed. Given how water rights are usually assigned in real world systems (and given their existence in the authors' application of interest, the Nile), this is a major problem.
2. The second concern I have is about transaction costs. The need for a river basin authority to implement the allocation and sharing rule is taken for granted, and the cost of setting it up is totally ignored.
3. The third concern is about perfect information (for the RBA). In a way, the authors fall directly into this trap with their rather simple assumptions about irrigation and hydropower values, by assuming that these are uniform across space and time in the Nile. It is almost certainly true that costs and productivity varies across sites, however. In general, this will greatly complicate the ability to establish an effective RBA for achieving the efficient and equitable allocation. Private information will also pose a problem, given that users at different locations in the basin have differing incentives to reveal their true valuations. The authors spend some time discussing preference revelation, but do not fully acknowledge the challenge.
4. Finally, the approach depends on allowing all stakeholders a place at the table, but this seems unlikely. In the specific application, urban and environmental uses are imposed as constraints, which is one example of asymmetric bargaining position. There are likely other users that would be ignored as well.

Specific comments

Besides these three main comments, I have a few specific comments.

1. The abstract makes it seem like there is no efficiency-equity tradeoff, but in general there is, except when a fully efficient compensation mechanism exists. The main paper acknowledges this more clearly.
2. Introduction: Unidirectional flow is not what imposes externalities. Rephrase.
3. Introduction: Is there really consensus that cooperative management increases benefits? Can you provide more than one citation to back this up? What about transaction costs?
4. Can you discuss the implications of assuming constant marginal product of water in irrigation?