

Title: Federalism versus Regional Control: Implications for Groundwater Resource in India

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Policy Motivation for Research: Federal versus regional control over provision of resources can have different implications for long run sustainability of natural resources. Regional legislators have a stronger incentive to promote regional growth, which can lead to a rapid decline of resource stocks. On the other hand, regional parties are limited to contesting elections from the region, and hence have stronger incentives to conserve resources for future periods. Theoretically, either of these effects can dominate. This paper empirically examines the trade-off between short term growth and long term conservation incentives of elected legislators from regional and national political parties for groundwater provision in India. Groundwater has become a crucial input in food grain production in many countries including India. Around 38 percent of the world's irrigated area is irrigated with groundwater, and groundwater reliance is much higher in India, where groundwater sustains 60 percent of agriculture (World Bank, 2010). On the other hand, groundwater irrigation in many countries including Mexico, United States, Yemen, Pakistan, China, and in particular in India, is leading to a substantial decline in groundwater levels. This can impose huge costs in terms of unmet drinking water needs and long term declines in productivity. This can also have gender implications as women walk significant distances to collect groundwater for meeting drinking water needs. In spite of these costs and benefits of increasing reliance of agriculture on groundwater, there is no systematic empirical evidence on the impact of federal versus regional control over provision of groundwater. The objective of this paper is to fill this gap by providing this evidence. This paper proposes and tests the hypothesis that under high cost of provision to the legislators, regional regimes can lead to conservation because they internalize inter-temporal externalities that would arise from the depletion of the resource. Using nationally representative data on groundwater from constituencies in India, and an increase in the cost of groundwater provision for the legislators induced by the reforms in the electricity sector, the paper shows that private competition induced in electricity sector leads to groundwater conservation under regional regimes.

Policy Impact:

The empirical results show that an increase in the cost of groundwater provision for legislators by way of increased cost of fuel subsidization to farmers, leads to groundwater conservation of around 0.96 m/yr (or 0.13 standard deviations) under regional legislators relative to national counterparts.

Audience: Ministry of Water Resources, Planning Commission

Policy Implications:

The results in the paper suggest that in the short run, when the spatial externalities are not very prominent, decentralized decision making over the provision of groundwater can help in conserving groundwater only when provision is costly. In the presence of unchecked monopolized public control over provision of inputs like fuels that help in extracting groundwater, decentralized decision making may not result in conservation despite the incentives to internalize the inter-temporal externalities arising from groundwater depletion.

Implementation:

Policies designed to increase the cost of groundwater provision for legislators, such as introduction of private competition in the electricity sector, can reduce the extraction of groundwater resources under regional regimes. Decentralized decision making can be more effective for groundwater management if the cost of provision for legislators is increased. Free provision of electricity to farmers results in their facing zero marginal cost of groundwater extraction, and thus ignores the social cost of groundwater depletion. Streamlining privatization of the electricity sector can aid in groundwater management more efficiently. These initiatives to reform the electricity sector are likely to face less resistance than other alternatives like taxation or direct water pricing.

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Further Readings:

Amarasinghe, U. Tushaar, S., and B. Anand (2008), "India's Water Supply and Demand from 2025-2050: Business-as-usual Scenario and Issues" International Water Management Institute

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Johl, S. (2002), "Agricultural Production and Pattern adjustment Programme in Punjab for Productivity and Growth", Report, Punjab Chief Minister's Advisory Committee on Agricultural policy and Restructuring

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