

Determination of the potential benefits of water market in the Karaj dam downstream

Abstract:

More than 82% of Iranian territory is arid and semi-arid, with a rainfall average about 250 mm (one third of the world's average precipitation). So, finding an efficient way to allocate this scarce resource becomes vital for many economic activities. This study investigates potential gains of forming a free water market between farmers within the agricultural sector, as well as between farmers and urban sector in another step. To do so, primary and secondary data has been collected for 2005-2010. This data has then introduced in a Chance Constrained Programming model to obtain corresponding shadow prices to different level of water availability. Our results show that the shadow prices of water are mainly to water availability and farm size. By this, the shadow price may differ from 1060 for 5-10 hectares farms to 7784 Rials for 10-20 hectares farms. The computed shadow prices are then used in a Linear Programming model to determine possible gains of farmers under each shadow price. Surprisingly, total gains of farmers remain unchanged when the shadow prices are applied to exchange within the agriculture sector. However, the model finds significant gains for farmers if exchanges between the agricultural and urban sectors take place with the new prices.

Key words: shadow price of water, Chance Constrained Programming, water market, water right, Linear Programming



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