Long Term Contracts and Farm Inflexibility Premium in the Production of Cellulosic Ethanol

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Abstract

Farmers will supply much of the raw ingredients for the emerging bio-fuel processing sector. The ongoing relationship between a farmer and a processing firm is expected to be contractual. A processing firm has an incentive to sign long-term contracts to ensure a cost-efficient level of raw ingredient supply. However, farmers generally prefer to operate with either no contract or a short term contract in order to maintain options for adjustments in future acreage allocations due to changes in relative prices. Of interest in this research is the size of the "inflexibility premium", which a processing firm must provide to a farmer when a long term contract is signed. A stochastic dynamic programming model is solved to illustrate that the marginal inflexibility premium is increasing with contract length. The implications of this result are two fold: (1) the optimal length of the contract will depend on the parameters which define price uncertainty and the elasticities of crop substitution; and (2) the inflexibility premium should be explicitly considered when estimating the cost of creating biofuels.