MONOPSONISTIC FOOD PROCESSING AND FARM PRICES: COMMENT

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In the December 1986 edition of the Southern Journal of Agricultural Economics, Kinnucan and Sullivan (KS) presented a monopsonistic pricing model. They applied this model to analyze potential farm impacts of monopsonistic food processing of the West Alabama catfish industry. This comment identifies a critical theoretical error in KS's derivation and illustrates how this theoretical error invalidates their analysis.

THEORETICAL ERROR

KS relied on the familiar profit maximization problem under monopsonistic competition. KS derived the following equation (1), listed as equation (11) in their article, from the necessary conditions of the monopsonist's profit maximization.

\[ P_a = \frac{VMP_a}{1 + 1/\epsilon} \]

where \( P_a \) is the farm price of catfish under monopsonistic competition, \( \epsilon \) is the price elasticity of catfish supply, and \( VMP_a \) represents the marginal value product of catfish.

By denoting \( VMP_a = P^c_a \) where \( P^c_a \) is the price catfish farmers would receive when processing is a purely competitive industry, KS represented the following equation (2), listed as equation (12') in their article:

\[ P_a = \frac{P^c_a}{1 + 1/\epsilon} \]

The critical theoretical error in KS's derivation of the model occurred at the step where the authors erroneously consider that the VMP\(_a\) in equation (1) represents the price \( P^*_a \) in Figure 1 and \( P_a^c \) in equation (2). However, previous studies have shown that the correct price associated with the VMP\(_a\) in equation (1) is \( P_a^* \) in Figure 1 (Chern and Just; Kim et al.). In order to show this, consider the inverse supply function for catfish, (using KS's notation):

\[ P_a = g(a,z), \]

where the variable (a) represents the quantity of farm produced catfish, and the variable (z) represents exogenous supply shifters. The marginal factor cost of catfish to the monopsonist is then represented by:

\[ MFC_a = \frac{\partial[g(a,z)]}{\partial a} = P_a + a \cdot g_a, \]

where \( g_a \) is the partial derivative of \( P_a \) with respect to (a). Denoting the supply price elasticity as:

\[ \epsilon = \frac{P_a}{a} \cdot \frac{\partial a}{\partial P_a} = P_a \cdot \frac{1}{a} \cdot \frac{\partial a}{g_a} \]

and rearranging, one arrives at:

\[ g_a = \frac{P_a}{\epsilon} \cdot \frac{1}{a} \]

Now, substituting \( g_a \) in (5) into equation (4) yields:

\[ P_a = \frac{MFC_a}{1 + 1/\epsilon} \]
By comparing equations (1) and (6), it is now clear that the VMP<sub>a</sub> in equation (1) represents the price P<sub>a</sub> in Figure 1, where VMP<sub>a</sub> = MFC<sub>a</sub>.

For the given farm supply and price received by catfish producers in 1983 (i.e., a* and P<sub>a</sub>, respectively in Figure 1), KS estimated P<sub>a</sub> with equation (2). Consequently, their estimated farm price of catfish under monopsonistic competition is lower than what it would be if it had been correctly measured, and, therefore, their estimates of farmers' welfare losses are inflated. The bias increases in size as the marginal value product curve becomes inelastic.

Figure 1. Price Determination Under Monopsony.

REFERENCES

