# DEFLATING PRICE SERIES IN REGRESSION MODELS

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Inherent in the nature of the scientific method is that today's sophisticated and obscure technology becomes commonplace tomorrow. This maxim also holds true in the agricultural economics literature. Sophisticated techniques are developed and experimented with by econometricians. There is then, however, a large group of applied economists, who use a particular method after it becomes entrenched in the literature. The applied economist must interpret the technique for practical applications and this sometimes results in problems.

One such problem has come to the attention of this applied economist from two different avenues. The first was through reviews of unpublished and published manuscripts which utilize regression forecasting techniques; and the second was through review criticisms of a manuscript written by this author . . . unfounded criticisms since they were based on a relatively widespread misconception.

The misconception involved the deflating of price series variables by price indexes. The criticism was for using the Consumer Price Index (CPI) to deflate historical beef prices rather than the more "pertinent" meat price index.

Although the reasons for using CPI in such a situation are well documented in Tomek and Robinson and in Foote, a restatement of their arguments appears warranted.

First, the question of which deflator to use must be answered. "The objective of deflating a price or income series is to purge that series of the effects of changes in the general price level without introducing distortions in the relationship which is to be estimated" (Tomek and Robinson, pp. 330-331).

If the index used for deflating actually contains the price series being deflated, bias is likely to occur. This is especially true if the price variable accounts for a large proportion of the index being used. Since the index changes because of the changes in the commodity's price, deflating masks or "cancels" the influence of the price change on the dependent variable . . . biasing the regression coefficient (Tomek and Robinson, pp. 330-331).

An inappropriate index could make it difficult or even impossible to measure a true relationship. For example, if a volatile price index is used to deflate a relatively stable price series, the true relationship will not be isolated in a regression analysis (Tomek and Robinson, pp. 330-331).

According to Foote, the CPI is usually a good deflator for retail prices and for farm level demand, as long as the equation also contains a measure of the marketing margin.

There is obviously more on this subject than can be discussed in this short note, however, the theory is adequately explained in sources readily available. The purpose of this note was to bring this issue to the attention of those in the profession who use regression analysis, but are not aware of all of its peculiarities.

## REFERENCES

Foote, R. J., *Analytical Tools for Studying Demand and Price Structure,* E.R.S., U.S.D.A., Ag. Handbook 146, 1958.

Tomek, W. G. and K. L. Robinson, *Agricultural Product Prices,* Cornell University Press, Ithaca, N.Y. 1972.