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DEVELOPING REGIONAL INPUT-OUTPUT MODELS FROM THE U.N. FORMAT ADOPTED BY THE U.S. IN THE NEW 1972 INPUT-OUTPUT MODEL: COMMENT

Mark Henry

In a recent article in this journal, DiPietre, Walker, and Martella presented the derivation of the Total Requirements Tables for the 1972 U.S. input-output study. As this same derivation is available from the Bureau of Economic Analysis, it is unfortunate that the article contains a minor algebraic error.

The error is made in the derivation of equation 7 in the article and is carried through equations 8 and 9. The authors state (p. 146) that "substituting equation 3 into equation 2 gives:

$$(7) \quad G - H = D\hat{Q}."$$

G is defined to be a $(n \times 1)$ vector of total industry output

H is defined to be a $(n \times 1)$ vector of scrap production

D is defined to be a $(n \times m)$ market share table in decimal percentages

\hat{Q} is defined to be a $(m \times m)$ matrix of zeros except for the main diagonal which contains the vector Q (a $(m \times 1)$ vector of total commodity outputs plus scrap and non-comparable imports).

Clearly, equation 7 is wrong because the matrix dimension resulting from the $D\hat{Q}$ opera-

tion is a $(n \times m)$ matrix whereas the $G - H$ operation results in a $(n \times 1)$ vector.

The proper derivation of equation 7 is from substituting equation 3 into equation 2 as follows.

$$(2) \quad G = Vi + H$$

where i is $(m \times 1)$ summation vector of 1's, and

$$(3) \quad V = D\hat{Q}$$

where $V = (n \times m)$ Make Table. Then,

$$G = D\hat{Q}i + H$$

or

$$(7) \quad G - H = DQ.$$

The correct equations 8 and 9 will then be

$$(8') \quad G = (I - \hat{P})^{-1} DQ$$

and

$$(9') \quad G = WQ.$$

Starting with equation 10, the proper definition of G is used in the article. The minor error detracts little from an otherwise lucid presentation of the derivation of the 1972 U.S. Total Requirements Tables.¹

REFERENCES

- Bureau of Economic Analysis. "Mathematical Derivation of the Total Requirements Tables for the 1972 Input-Output Study." Misc. Pap. No. 40, Bureau of Economic Analysis, U.S. Department of Commerce, Feb. 1979.
- DiPietre, Dennis D., R. L. Walker, and D. R. Martella. "Developing Regional Input-Output Models From the U.N. Format Adopted by the U.S. in the New 1972 Input-Output Model." *S. J. Agr. Econ.* 12(1980):143-54.

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