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# COMMENTS AND REPLIES

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## RESPONSE—EXTERNAL FINANCE: A NECESSARY COMPONENT IN GROWTH PROJECTIONS FOR SOUTHERN AGRICULTURE

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The discussion of my paper by Emanuel Melichar presented elsewhere in this issue of the *Journal* initially focuses on use of mathematical notation when discussing concepts and theory in the absence of corresponding empirical estimates. Apparently attempting to demonstrate how a relatively simple task—illustrating the areas in which financing considerations should be included in sector projections models—was made difficult by using “hieroglyphics,” Melichar summarizes the equations in my paper with brief, one sentence descriptive statements. Unfortunately, he chooses to ignore the fact that economic relationships inherent in each equation were discussed so that “decoding by faithful readers” is not required by those uninterested in issues related to specification of variables or aggregate model design. Furthermore, Melichar’s descriptive statements gloss over some of the more interesting debates being waged in the literature regarding specification of the implicit rental price of capital [2, 3, 5, 9, 12] and the incorporation of uncertainty [1, 8, 10] in aggregate input demand models.

I chose also to express these economic relationships in equational form to prevent a lack of communication on their obvious and subtle features.

As an example of the confusion that could have arisen by following Melichar’s recommendation to merely review these relationships as he did at the beginning of the paper, consider his description of equation (5) as indicating “that as . . . the cost of capital increases, less capital stock is desired.” A review of past investment behavior studies for farm machinery, for example, reveals that while some have included both purchase price and cost of debt capital [6], others such as Melichar have limited their specification of the cost of capital to its purchase price [4, 7, 11]. Thus, not only is there a substantial difference between traditional specifications of the cost of capital found in agricultural economics literature and the implicit rental price of capital presented in my paper; but Melichar’s descriptive statement would leave the reader to wonder just how he would specify this important financial relationship. Does he now recommend, for example, including effects of the cost of debt and equity capital, income tax and investment tax credit rates, capacity depreciation and real capital gains or losses in his specification of the cost of capital and, if so, how? Furthermore, his statement that these equations represent “fundamental economic observations and

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relationships in the finance area" also raises the question of why they were not, then, included in his sector projections model as indicated in my paper. If we are serious about wanting to develop more accurate sector projections models, further dialogue regarding needed respecification and design is required and, hopefully, within the context of my paper, possible without also requiring estimation of an entire projections model.

Melichar also lends a rather narrow interpretation to my desire "to illustrate the channels..." which, while perhaps serving his purpose, differs from its intended meaning which was to promote, by illustration and discussion of their theoretical relevance, the inclusion of these financial relationships in existing sector projections models. While still addressing issues related to semantics, Melichar suggests that the term "reflect" rather than "suggest" is used when discussing these relationships since they "were obviously used in formulating the equations." If this is so obvious, what purpose was to be served by equations (1) through (5), for example, if not that of deducing those relationships affecting desired stock of fixed capital suggested by profit minimizing behavior on the part of farm producers under conditions of perfect knowledge. Furthermore, if these equations represent "fundamental observations and relationships in the finance area" as Melichar confirms, then the need for this distinction is not apparent.

In admittedly going beyond the role played by the model in my paper, Melichar raises several questions related to limitations of the model and how its design differs from the approach taken in my doctoral thesis. Yet, both of these areas were addressed in my paper by clearly labeling the assumption that the sector is "one giant collection of continuing, homogeneous proprietorships" as "an over-simplification" and that "At minimum, the model should be expanded along the lines suggested by Penson [13] to reflect the fact that capital purchased from discontinuing sector participants by producers required financing even though the aggregate capital stock will have remained unchanged in this instance." His insight to the fact that my model represents the summation of firm level responses, however, was desirable since it should illustrate that those who include these economic relations in their firm growth models must also necessarily see the need to include them in a macro model. Finally, the "difficult data problems" alluded to pertained primarily to attempts to estimate this model at the regional or industry level.

Melichar used national data on market shares for institutional *and* non-institutional lenders in the non-real estate farm debt capital market to illustrate his point that my analysis of regional market shares is somewhat misleading since it excluded non-institutional lenders. Assuming that national data on non-institutional non-real estate farm debt outstanding reported in [14], which were revised downward in 1975 from \$16 billion to \$6 billion outstanding, are representative of actual totals, Melichar is correct in stating that both commercial banks and PCAs nationally picked up market shares from non-institutional lenders. The extent to which this occurred in the South, however, cannot be determined due to the data gap Melichar acknowledges.

Melichar's reasons for why the supply of projections provided by his and other sector projections models in recent years has "dried up" seems of questionable merit. Since range projections with the analyst's subjective probabilities assigned to each rather than a single point projection are desired anyway, receipt of the benefits of Melichar's keen insight to a range of possible outcomes dependent upon specific events taking place would be preferable to receiving nothing at all.

Melichar performs a service to the reader by placing more recent events in market shares and Harding's projections of debt outstanding to 1985 in historical perspective. His definition of "net investment" as being equal to "net capital formation less the increase in debt" is at odds, however, with the more traditional definition of gross investment less replacement investment. Obviously he is referring instead to net additions to equity invested in these assets.

Finally, Melichar either views the terms "formation" and "accumulation" as being synonymous, or is critical because I did not say "accumulation by continuing proprietors", when suggesting that the reader was misled by my statement "we have seen a significant increase in the amount of debt capital used to finance farm capital accumulation." He makes the point, and correctly so, that only "one-half to two-thirds of the total increase in farm debt incurred so far in this decade was not needed to finance net capital formation." Much of this increase in total farm debt has instead gone to finance purchases of farm real estate from discontinuing proprietors, which is captured in measures of farm capital accumulation in a capital finance account for continuing farm operator families (see [13]).

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