

## Economic Versus Accounting Income: The Impact of Education on Students' Concepts

In economics, value and income concepts are thought of in terms of theoretical constructs. In contrast, the concept of income for accounting purposes has been traditionally based on a set of rules and regulations utilizing an historical cost approach. That is, instead of presenting the current value of a firm's assets and liabilities, the statements generally reflect the original (historical) cost or some adjusted cost figure. This has resulted in accountants' viewing income as aggregated differences in historical cost figures, instead of what many feel is a theoretically preferred (economic) method, reflecting changing current values.

The historical cost convention presently used by accountants, which measures values at the point of exchange, is less than ideal with the passage of time. Relationships which existed at time  $t$  may no longer hold at time  $t + 1$ , resulting in historical cost records that may not be indicative of current status. As a consequence, efforts recently have been made by the accounting profession to report numbers which are more closely related to some value basis, such as replacement cost at the time they are reported. To the extent that these efforts are successful, reports approximate current relationships. Notable attempts to reflect these current relations include the SEC's Accounting Series Release No. 190, and the Financial Accounting Standards Board's Statement of Financial Accounting Standards No. 33, which required supplementary disclosure of certain replacement cost data.

Not surprisingly, these attempts have been met with resistance. Some indicate a preference for historical cost data. One possible reason for this resistance to change may be that accountants (and others) are conditioned to using historical cost data. Is it possible that during their education accountants so assimilate generally accepted accounting principles (GAAP) that their thinking processes become centered around the historical cost convention? If the education process produces this result, then one would expect underlying perceptions of value, and value-based determinants of income to be more closely related to historical cost conventions, rather than economic concepts for students who have had accounting training.

*Thomas E. Kida and Donald W. Hicks are assistant professors at Virginia Polytechnic Institute and State University. The authors would like to thank Tom Anderson and Ron Manino for their assistance in gathering the necessary data.*

0022-0485/82/1302-0040/\$1.00

The purpose of this study is to test for differences in income and value concepts between those students trained in accounting and those not trained. It is hypothesized that the perceptions of income and value for those students without prior accounting training more closely approximate an economic or value-based accounting system, where income is viewed as a change in overall worth or well being (Edwards and Bell), while those students with accounting training would view the concepts of income and value from an accounting procedural approach, closely related to the historical cost convention.

If this is the case, the implications for the economic education of accountants are apparent. To counteract the possible effect that learning accounting rules and regulations actually change underlying income constructs, increased emphasis on comparing the present accounting system and economic theory may be beneficial in both economics and accounting courses for those students continuing on in accounting. Since accounting students are normally required to take only principles of economics, this small economic exposure may not be sufficient to offset the greater number of accounting courses. To achieve a more balanced approach, an advanced economics course for accounting majors may be desirable to reemphasize the theoretical value based concepts.

## **Methodology**

A ten question test was constructed and administered to students at Virginia Polytechnic Institute and State University, the University of Massachusetts, and Virginia Commonwealth University. Two groups were of interest: students without prior accounting training and students who have had formal courses in accounting. To obtain responses for the "no accounting training" group, students in introductory accounting classes completed the questionnaire during the first class session. As a further control, the students were asked if they had any prior accounting or bookkeeping courses in college or high school. If prior courses were indicated, the questionnaire was eliminated. Responses from students who have taken accounting courses were obtained during class time in intermediate, auditing, tax, and advanced accounting courses. A total of 438 usable questionnaires were obtained, 232 representing no accounting training and 206 from junior and senior accounting students.

Responses to each of the ten questions were made in a multiple choice format where the student selected one of two answers listed.

To determine if the student's conception of income was shaped by accounting practice, one of the answers related to the application of generally accepted accounting principles. The other answer would be obtained if the income concept was based on an economic or capital maintenance approach, where income arises from changes in value, in this case, replacement cost.

**Sample of Questionnaire Items**

**\*Indicates an Economic or Value Based Response**

1. In October, 1979, Emerson Co. bought 500 shares of stock in Wiley Co. for \$15,000, and is planning on holding on to the stock for about a year. Within a couple of months the stock increased in price so that Emerson could sell it for \$18,000 if it wanted to. How much income, if any, did Emerson Co. make in 1979 on its stock transactions?

\*A. \$3,000

B. None

2. Ace Appliance Co. bought 5 television sets for its stock of inventory on November 1, 1979 for \$300 each (total \$1,500). On December 30, all 5 sets were sold for \$400 each (total \$2,000). Ace Co. therefore went out on 12/31/79 and bought 5 more sets to replace the ones sold. Due to price increases, they had to pay \$350 for each set (total \$1,750). How much income did Ace Co. make in 1979 on these transactions?

A. \$500

\*B. \$250

3. Deemer Co. bought a machine to be used in producing its product on 1/1/79 for \$5,000. The machine had to be replaced at the end of the year. Due to price increases, Deemer Co. had to pay \$7,000 to replace the machine. Assuming that Deemer had an income of \$20,000 before accounting for the expense of using the machine, how much income did Deemer make in 1979 after taking the expense into account?

A. \$15,000

\*B. \$13,000

4. On November 15, 1979 Hoffman Co. purchased 500 shares of Racket Co. stock for \$10,000. By the end of December, the stock increased in price to \$12,000. On 12/31/79, Hoffman Co. decided to sell one-half of its shares for \$6,000 and hold on to the remaining half (which can also be sold for \$6,000). How much income did Hoffman Co. make in 1979?

\*A. \$2,000

B. \$1,000

5. Bronson Co. started a new car dealership in November 1979 and began building its inventory of cars. It purchased 10 cars at \$5,000 each (\$50,000 total) in November, and 20 cars at \$6,000 each (\$120,000 total) in December. By the end of December, the price that Bronson Co. would have to pay to replace each car increased to \$7,000 per car (\$210,000 total). Assuming no car sales were made during the year, what is the value of Bronson Co.'s inventory of cars?

A. \$170,000

\*B. \$210,000

The questions assessed either the income arising from the stated transaction, or the value of certain items resulting from the stated events.

Directions on the first page of the questionnaire explicitly stated that "the questions are designed to gauge *your* (the student's) conception of the terms income and value. That is, what do you believe these concepts represent." They were told *not* to apply generally accepted accounting principles to arrive at an income or value amount, but rather, to respond so as to indicate what these concepts meant to them. For example, given a certain situation, what would they consider a business's income to be.

Given these directions, and the fact that the questionnaires were completed anonymously so that the students were assured that they were not graded for their application of accounting principles, historical cost accounting-based responses imply that the students' underlying concepts of what income represents follows an historical cost approach.

Consider, for example, the following case from the questionnaire:

In October, 1979, Emerson Co. bought 500 shares of stock in Wiley Co. for \$15,000, and is planning on holding on to the stock for about a year. Within a couple of months the stock increased in price so that Emerson could sell it for \$18,000 if it wanted to. How much income, if any, did Emerson Co. make in 1979 on its stock transactions?

A . \$3,000

B. None

A response of \$3,000 indicates that the student views income from an economic approach as a change in value, while a response of "none" indicates that the student believes income does not arise until an exchange occurs and the amount is "realized." A number of different questions were included in the test which essentially measured the same concept so as to increase the reliability of the overall instrument.

## Results

The reliability of the test was assessed using the Kuder-Richardson formula 20 (KR-20). The KR-20 is a widely used alternative to coefficient alpha when the data is in a dichotomous format. Based upon the internal consistency of the response items, this reliability coefficient concerns the extent to which the measurements are repeatable, or put another way, it "is the estimated average correlation of that test with all possible tests with the same number of items which are obtainable from sampling a domain" (Nunnally, p. 197). The KR-20 for the present test was .78, which compares favorably with a .50 or .60 level cited by Nunnally (p. 226) as being sufficient for the early stages of test design.

Table 1 summarizes the responses of those students without accounting training (principles classes), all the students with training, and each individual accounting class. The percent of time the economic or value ap-

**TABLE 1**  
**Summary of Test Results**

	No Accounting Training		Accounting Training			
	Principles	All Subjects	Inter-mediate	Advanced	Tax	Auditing
Percent of time economic or value approach taken	62	23	22	25	24	22
Percent of time accounting or cost approach taken	38	77	78	75	76	78
Standard deviation of value responses	1.86	1.99	1.83	2.02	2.18	2.02
Number of students	232	206	71	36	48	51

approach was taken refers to the proportion of responses within each group representing an income or value concept which more closely approximates the value-based approach. The accounting or cost responses reflect an income or value concept which adheres to historical cost accounting procedures. The standard deviation of value responses represents the deviation of the number of value responses given for each ten item test within each group. Chi-square tests were used to test for differences between group scores of value responses and between value and cost responses within each group.

On the average, those students without any prior accounting training applied an economic concept of income and value 62% of the time, as compared to only 23% for those with training. This significantly higher percent ( $p < .001$ ) suggests that after exposure to accounting training, students tend to change their underlying concept of income and value from an economic base to an accounting procedural approach. The individual junior and senior level accounting classes are quite homogeneous in their responses (22% to 25% economic responses given). No significant differences were found between these groups. For the principles classes, the proportion of value responses (62%) was significantly higher than the cost responses (38%) ( $p < .01$ ), while for students with accounting training the percent of cost responses (77%) was significantly higher than value responses (23%) ( $p < .01$ ).

While this data supports the hypothesis that students differ concerning these basic constructs, it should be noted that there was not 100% agreement in every case. That is, while those without accounting training had a stronger propensity to view income as a change in value, some of their

responses reflected a cost approach. Whether this was due to the wording of certain questions or the uncertainty of their responses is not known.

## Summary and Conclusion

This study investigated perceptions of income and value for students who have had formal accounting education and for those who have not, to ascertain if their underlying concepts are different. It was hypothesized that those students without prior training would be more apt to view income as a change in value or well being, while those with accounting training would view income determination from an accounting procedural approach. It was believed that the accounting training not only conveys the present rules and regulations for calculating income, but by learning the rules, the students actually change their underlying concept of income.

The data revealed that those students without accounting training, when asked to determine what *they* thought income should be, did select economic answers with significantly greater frequency than those students with accounting training, thus lending support for the hypothesis. It would appear, therefore, that after taking a number of courses in which historical cost accounting procedures are emphasized, the students not only learn the system, but they also exhibit differences in the meaning they attribute to certain constructs to agree with the system.

It is interesting to note that these differences continue to exist even after exposure to the value-based alternatives taught later in the students' accounting courses as well as the value concepts presented in the required principles of economics classes. It appears that the students often become so adept at learning specific rules and regulations of accounting procedure that they overlook the more global issue of just what it is they are measuring. In effect, they can't see the forest because of the trees. Subsequent education in accounting courses and the little economic exposure received from required principles of economics classes is not enough to offset this effect.

If there is to be a shift from historical cost financial statements to figures reflecting current relationships (economic), increased discussion of the advantages and drawbacks of the present accounting system as well as the economic alternatives may be beneficial early in the students' education. This may be achieved by initially contrasting the theoretical foundations of economic income concepts with the accounting procedural approach in both economics and accounting courses. In addition, it may be desirable to require an advanced economics course for accounting majors which reemphasizes the theoretical value based concepts.

## REFERENCES

Edwards, E., and Bell, P. *The Theory and Measurement of Business Income*. Berkeley, California: University of California Press, 1961.

Financial Accounting Standards Board. *Financial Reporting and Changing Prices*, FASB Statement #33, 1979.

Nunnally, J. *Psychometric Theory*. New York: McGraw-Hill, 1967.

Securities and Exchange Commission. *Notice of Adoption of Amendments to Regulation S-X Requiring Disclosures of Certain Replacement Cost Data*, Accounting Series Release #190, 1976.

الإدارة للاستشارات

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.