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Financial Wellbeing and Some Problems in Assessing Its Link to Financial Education

John A. Tatom
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Abstract:

In 2009, the National Endowment for Financial Education initiated a project to study the “Implications of a Quarter Century Research in Personal Finance.” As part of that effort, one of the major themes chosen was to study the measurement and evaluation of participant outcomes. This paper is part of the investigation of measurement and evaluation. It focuses more on what the macro-measures of financial wellbeing are that financial education is aimed at improving and the extent to which these larger scale measures can be improved by financial education, as well as obstacles to good evaluations and limitations of correlation outcomes. The case for improving financial education rests upon (1) the hypothesis that financial education can improve financial wellbeing, (2) the documented low state of financial literacy and individual satisfaction with their financial knowledge, behavior and financial outcomes of consumer decision making, and finally (3) the stress that recent financial shocks have put on household wellbeing. This article also reviews some of those recent changes and the initial recovery from the most recent shock to wellbeing. Section I reviews macro measures of wellbeing and the principal measures and approaches of most studies of the effects of financial education programs. Section II reviews the extent of two major shocks to household net worth in the past decade, some of the potential stress for households this created and the implications for the importance of financial education. Section III reviews some of the principal obstacles to effective assessment and the difficulties with reliance on simple correlations of financial programs and outcomes for such assessments.

I. Macro Measures of Financial Wellbeing

Financial education aims to improve financial knowledge and affect financial behavior so as to improve financial wellbeing or financial outcomes of life choices. Financial wellbeing is a subset of wellbeing generally, and it is really the latter that is the object of educational efforts, but most studies of financial education focus on financial goals, ignoring trade-offs between financial objectives and other dimensions of wellbeing. To identify the end results to which educators might aim, perhaps the first task is to identify the broad measures of financial performance that have been and are of concern.

Table 1 lists most of the measures that are identified in the literature as key measures of concern at both an aggregate (usually national) level and also the broad measures of importance at an individual or family level.¹ These include data on assets, debt and net worth, or some of their major components, at a point in time, or measures of current income and saving and debt burden and servicing cost that assess the current budget performance and ability to improve the balance sheet data over time. One of the key macro factors that influence the ability to debt-finance asset acquisitions, such as housing, cars, other consumer durable goods, or debt-finance consumer goods, such as insurance or rental housing services, is the credit score. Increasingly, more and more attention is paid to the credit score as an indicator of financial wellbeing, an indicator of the ability to undertake entrepreneurial activity or more broadly, as an indicator of credit worthiness. For assessing the impact of financial education, sometimes it is the change or growth rate of these measures rather than the levels that matter because the issue is improving wellbeing, and most of these measures have trends that are largely determined by other factors than financial education.

Table 1
Key Macro Measures of Financial Wellbeing

Wealth, Tangible Financial Wealth and Real Assets	Debt—burden measures relative to current budget, or income, and measures of burden relative to assets
Income	Self-Confidence Indicators, in Knowledge and Execution
Saving and Savings	Major Contributors to or components of Wellbeing—housing, retirement saving, investment portfolios, consumer durables
Credit Score	

¹ Burkhauser, Gustman, Laitner, Mitchell and Sonnega (2008) point out that, in principle, the accurate measurement of wellbeing depends on time allocation and consumption possibilities rather than simply on wealth and income.

There are more narrow aspects, or micro measures, of financial wellbeing that are the subject of other studies in this project by William B. Walstad, Jeanne Hogarth and Sharon Danes. Collins and O'Rourke (2009) provide a broad overview of studies of the effectiveness of financial education and they are usually on micro aspects of wellbeing. Many studies focus directly on the effect of education on knowledge gained or retained among various groups. Danes and Haberman study the effects of the NEFE high school program (2004) and teen financial knowledge, self-efficacy and financial behavior highlighting gender differences (2007). Huston (2009) examines the effectiveness of a college financial education program, while Jacobs et al (2000) study the effectiveness of financial literacy programs for low income adults. Walstad, Rebeck and MacDonald (2009) examine the effectiveness of financial education on financial literacy and attitudes. Shreiner and Sherraden (2006) provide a broad study of the effectiveness of the Individual Development Account program to improve saving among low income adults.

The line between macro and micro measures can become blurred as soon as components of wealth or expenditures become the focus, all the more so as one moves to more and more specific financial instruments and decisions. Since housing is the largest expenditure and owner-occupied housing the largest asset in many individual portfolios and at a national aggregate basis, considerable attention is paid to housing assets and mortgage debt in balance sheets, as well as to housing expenditures and mortgage debt servicing costs in household budgets in studies of macro financial wellbeing. Decisions about specific financial instruments such as checking accounts or credit card debt or usage are examples of more clearly micro oriented decisions and there is less attention to macro assessments of financial wellbeing for many of these factors. This is especially true for individual assessments of wellbeing, such as those for self-efficacy, self-effectuating behavior, or confidence or comfort about financial knowledge or behavior. There are aggregate measures of confidence such as the index of consumer confidence and the index of consumer sentiment, but these measures are used primarily by analysts as indicators of spending and the business cycle, not so much as measures of national wellbeing.

Most studies of the effectiveness of financial education have focused on saving and the accumulation of savings, especially for retirement purposes, or on the use of credit, both mortgage credit and shorter term credit such as credit card debt and student loans. There is also an expansive literature on the management of investment portfolios as well, but the impact of financial education in this area is more limited.

II. The Case for Financial Education is Reinforced by Recent Shocks to Household Portfolios and Saving Behavior

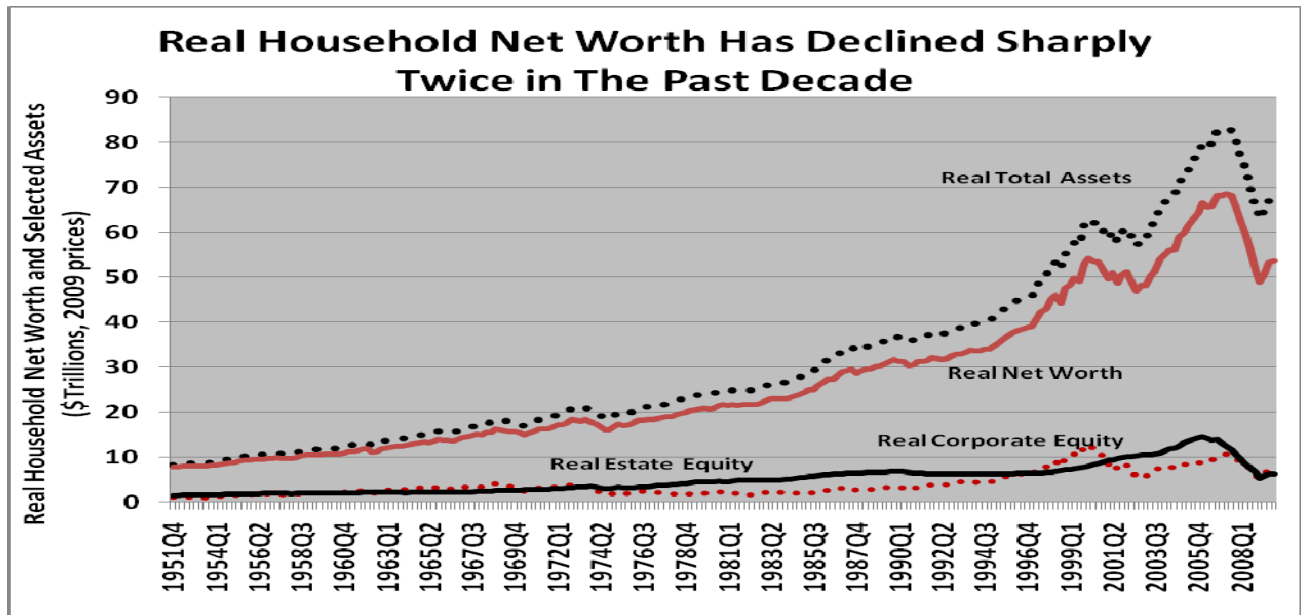
The importance of financial education has been fostered by strong evidence of the poor state of financial literacy, the movement toward more personal responsibility in managing retirement assets and recent shocks to financial markets that have left many households with large wealth

losses, uncertainty about their ability to grow wealth and to achieve retirement goals. The Jump\$tart Coalition for Personal Financial Literacy has been conducting nationwide tests of high school seniors biennially since 1997-98 and these tests show that the average student fails the test and that financial education does not raise scores [Mandell (2006)]. Lusardi (2006) reports that in work with Olivia Mitchell they found only half of the respondents in the 2004 Health and Retirement Survey could answer two simple questions regarding interest compounding and inflation and only one-third could correctly answer all three questions when one on risk diversification was added. Congress created the Financial Literacy and Education Commission (FLEC) in 2003 to improve financial literacy and education and to develop a national strategy for that purpose. In 2008, President George W. Bush created the President's Council on Financial Literacy based on similar concerns.

The FLEC (2006) report was one of the most prominent reports highlighting the weak level of financial literacy in the United States. The ongoing switch from defined benefit retirement programs to defined contribution programs has been a key factor in spurring policy and personal attention to a growing importance of financial education for planning the pace of retirement saving and for critical choices about asset allocation of financial assets. There have been many other factors leading to the growing sense of the importance of financial knowledge and choices and the inadequacy of individual knowledge and behavior. One of the most significant factors reinforcing the urgency of the problem has been major shocks to asset returns in 2000-02 and in 2007-09, with each event compounded by recessions that reinforced declines in net worth with immediate losses on current employment and income for many individuals. Heightened uncertainty about financial wellbeing and the future ability to secure financial objectives fostered reconsiderations of financial regulation and also improved guidance for workers in financial decision making.

Chart 1 shows the real net worth (2009 prices) of households and non-profit firms along with total assets, corporate equity held directly and real estate equity since 1951, as estimated by the Board of Governors of the Federal Reserve System. Note the two large declines in net worth in 2000-02 and in 2007-09. In the earlier instance it was largely a tech stock bust and recession that reduced real net worth from \$54.3 trillion in I/2000 to \$47.0 trillion in III/2002, a \$7.3 trillion or 13.4 percent decline. It took two years for real net worth to recover its previous peak level. In the latest instance, real net worth fell from \$68.6 trillion in II/2007 to \$48.9 trillion in I/2009, a \$19.7 trillion or 28.7 percent loss. By the end of 2009, real net worth had only risen back to \$53.7 trillion, still below its level at the beginning of the century.

Chart 1



Source: Board of Governors of the Federal Reserve System

Scholtz and Seshadri (2008) show that following a few years of recovery in stock prices, of people born before 1954, baby boomers within 10 years of retirement in the Health and Retirement Study, all but about 3.6 percent have accumulated assets to maintain their pre-retirement living standards. There is evidence that changes in the equity portfolio affect the timing of retirement so that large stock price declines such as those in 2000-02 and more recently can be expected to delay retirement for many people who are close to that age and will not have time to recover lost wealth in the recovery of the economy and stock market.

Jacobs (2002) finds that the percent of people optimistic that they would be able to achieve their investment goals had been 80 percent in 1999-2000, as equity markets peaked, but this fell to 77 percent in 2001, comparable to the 1996 low before the tech stock boom. All of these percentages might be considered high, however, and the decline by 2001 is relatively small. The same Gallup survey finds that about 20 percent of investors in 2001 would delay retirement because of the recession (and presumably the associated stock price decline; this was well into the 2000-02 stock price decline, but not yet at the bottom of the market. Among those 20 percent, 36 percent said they would delay retirement by 5 years or more, 32 percent planned up to a two year delay and 21 percent planned a 3 to 4 year delay. In the latest case, the decline in stocks was somewhat smaller than in 2000-02 (\$5.4 trillion vs. \$7.1 trillion), but in the latest case, the decline in home equity was much larger (\$9.1 trillion). Preliminary evidence suggests that in 2007-09 investors largely remained in the market through the decline and

beginning of recovery, much as they had in 2000-02, substantially ameliorating their ultimate loss in retirement saving.

Helman, Copeland and VanDerhei (2010) in an annual review of retirement confidence find that the number of workers very or somewhat confident about having enough money for a comfortable retirement reached a new low in 2010 at 60 percent, down from a peak of 79 percent in 2007. In 2000-02, the decline in this number was smaller, from 75 percent in 2000 to 72 percent in 2002. Note that the number rebounded to new highs by 2007, however. The number of people saving and the size of their savings have both eroded in recent years. Only 69 percent of workers and/or their spouses saved for retirement in 2010, down from 75 percent in 2009, and 27 percent of workers say they have less than \$1000 in 2010, up from 20 percent in 2009. Some 54 percent of workers say their savings and investments, excluding primary home equity and defined benefit plans, are less than \$25,000.

Utkus and Young (2010) show that in the foreclosure/financial crisis, from September 2007 through December 2009, the saving and investment behavior of 401(k) participants changed only marginally. They find that “A very small proportion of participants made changes that might undermine their long-term retirement security if they are not reversed in time” (p. 1). They do find that participants increased their loans from their accounts with 18 percent having a loan balance at the end of 2009, up from 16 percent at the end of 2008. Only 3 percent of active participants completely abandoned equity holding during the period. This “stay-the-course” strategy also paid off as balances grew by 33 percent in 2009 following a drop of 31 percent in 2008, as 6 out of 10 participants saw their balances grow over the period.

Foreclosure Experience

The latest shock to wealth was precipitated by the adjustable rate subprime mortgage loan and foreclosure crisis. The mortgage foreclosure crisis began in late 2006 and has steadily worsened to the present. Initially, the problem was concentrated among subprime borrowers, in particular subprime borrowers with adjustable rate loans. In the fourth quarter of 2006, the overall stock of mortgages in the foreclosure process or inventory was 1.3 percent of all mortgages, according to the Mortgage Bankers Association, but 6.5 percent of adjustable rate subprime mortgages were in foreclosure in the same quarter. Since then, the overall share of all mortgages in foreclosure has risen to 4.6 percent in the first quarter of 2010, over ten times as large a share. The peak in adjustable rate subprime mortgages in foreclosure appears to have been reached in the fourth quarter of 2009, when the share of these loans in foreclosure reached 24.9 percent, about a quarter of all the loans in this category. In the first quarter of 2010, this share declined slightly to 24.6 percent. After the onset of the recession, the mortgage foreclosure problem spread to lower risk categories of borrowers because of rising unemployment. The mortgage foreclosure inventory of prime fixed rate borrowers, which had been 0.4 percent at the end of 2006 and 0.6 percent at the end of 2007, has surged up, reaching 2.2 percent in the first quarter of 2010. The wealth losses associated with this crisis occurred largely from effects on homeowners in the form of a sharp decline in housing prices

over the period, and also in losses to owners of financial institutions who suffered large losses on mortgages and mortgage backed securities. The subprime foreclosure crisis is strong evidence of the severity of the financial illiteracy problem in the U. S. and illustrates one of the most serious adverse effects of the foreclosure crisis. According to Hangen (2007), financial education can improve credit scores, preparedness for home ownership, savings, borrowing capacity, and lower credit costs.²

The Dearth of Saving

A related factor that supports the notion that Americans do not have adequate financial education is the dearth of personal saving. Concern for rising debt and a lack of saving have been strong concerns for many years, but recent adverse shocks to wealth have strongly reinforced those concerns. Lusardi (2008) focuses on the saving problem and how to increase the effectiveness of financial education and saving programs. Two of the most important and early works on the effectiveness of financial education are Bernheim, Garrett and Maki (1997) and Bernheim and Garrett (2003).³ Chart 2 shows that various measures of saving have declined since the 1970s.

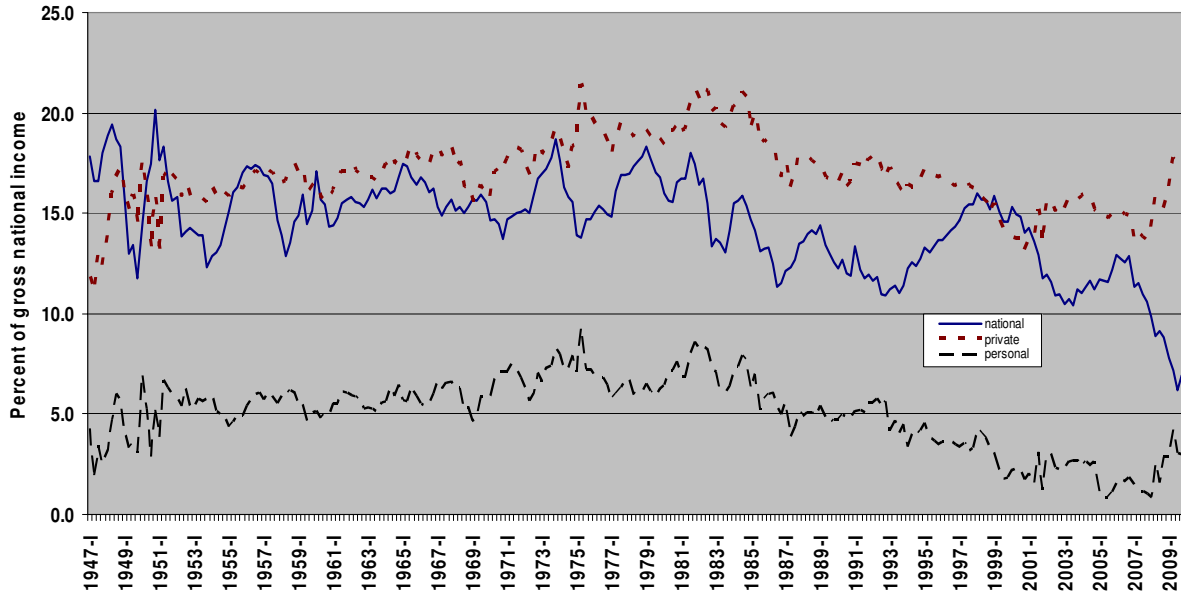
The three measures of saving are personal saving, the measure that receives the greatest attention in the financial education literature, private saving, which also includes business saving or undistributed profits and the cash flow from economic depreciation, and adjusted gross saving, which takes into account the current government surplus and also funds to finance government investment. Adjusted gross saving is the funding for private investment, which boosts economic growth. All three saving figures are expressed as a percent of Gross National Income. Personal saving reached an historic low of 0.9 percent of Gross National Income in the first quarter of 2008.

² Hira and Zorn (2002) provide a useful example of the possibilities of two-stage least squares regression analysis in solving some of the statistical problems discussed above. Their analysis focuses on the influence of pre-purchase counseling on mortgage delinquencies in the Freddie Mac Affordable Gold program. Staten, Elliehausen and Lundquist (2002) also used two-stage least squares to study the effect of credit counseling on credit useage and payment behavior. Caskey (2006) reviews the success and shortcomings of both of these studies, as well as three others.

³ Personal saving and the other measures used here are from the U.S. Department of Commerce Bureau of Economic Analysis (BEA) National Income and Product Accounts. Another measure of personal saving is found from the Federal Reserve System's measure in the Flow of Funds Accounts. The BEA provides annual reconciliations of the two series on their web site, <http://www.bea.gov/national/nipaweb/Nipa-Frb.asp> .

Chart 2

Saving has been declining since the 1970s



Source: U.S. Bureau of Economic Analysis

Table 2 provides a closer look at the recent performance of saving in surrounding the recent shock to real net worth and also in the previous shock associated with the tech bust and 2001 recession.

Table 2
Saving Has Declined During Recent Asset Crises
(Saving measures as a percent of Gross National Income)

	Personal Saving Rate	Private Saving Rate	Adjusted Gross Saving Rate*
Mortgage Foreclosure Crisis			
Six Years before Crisis	2.02%	15.09%	11.72%
Net Worth Decline	1.79	14.80	9.69
One Year after Crisis	3.14	17.35	6.72
Tech-Stock Bust			
Six Years before Crisis	3.40	16.02	14.33
Net Worth Decline	2.30	14.66	12.44
Four Years after Crisis	2.01	15.34	11.49

*Adjusted to exclude government investment spending from government saving

Source: U.S. Bureau of Economic Analysis, National Income and Product Accounts

Table 2 shows that personal saving, private saving and overall adjusted gross saving declined during the recent period when real household net worth declined because of the mortgage

foreclosure crisis and recession (II/2007 – 1/2009), just as it did when real household net worth fell because of the tech bust (I/2000 – III/2002). In the subsequent recovery periods, adjusted gross saving continued to decline. Personal saving and private saving rose in the latest episode, reflecting what many analysts believed was a “new frugality” and others regarded as a response to the decline in net worth. However, large temporary tax cuts are a more likely source of a temporary surge in personal and private saving. Following the recovery from the tech bust and recession private saving rose somewhat, but was still below the pre-crisis level and personal saving continued to decline. More importantly, overall adjusted gross saving did not rebound during or after the large shocks to net worth and the overall trend decline in saving has continued. Whatever the source of the decline in national saving, improved financial education faces an extreme, and probably impossible, burden in reversing these trends.

Summary

Wealth shocks due to the tech stock bust and the more recent foreclosure and financial crisis have highlighted the importance of more effective consumer and investor behavior. Generally individual investors have ridden out the crises well, at least in terms of their 401(k) portfolios and financial assets. The more troubling aspects of recent developments is that an underlying trend of inadequate saving is jeopardizing the future productivity and standard of living of workers and the retired. The current low pace of saving is being soaked up in low risk, low-return government bonds and domestic funds available for productive investment are becoming more limited. While the two shocks have had huge impacts on wealth, especially on the value of the nation’s housing stock in the latest case, and they have weakened the nation’s financial institutions and the housing industry, they have not had more than a transitory effect on some individuals faced with the unfortunate timing of planning to retire in the face of these shocks and having to delay retirement and/or accept a lower standard of living in retirement than they had planned. Evidence suggests that these effects are smaller than generally expected. It is difficult to fully assess the effects of the foreclosure crisis, however, because it continues to worsen as the effects of the past recession on employment is converting that crisis into one hitting prime borrowers even as the experience of subprime borrowers begins to improve.

III. Primary Obstacles to Good Evaluation and the Limitations of Correlations

There are many obstacles to good evaluation, in part because there are many differences in what is being evaluated. For example, programs differ in content, length of program, intensity, topic content, delivery method and the composition of clients. Programs can be delivered in written instruction, class lectures, computer-based, or one-on-one. The evaluation of content and method will differ accordingly. Programs can be targeted at different audiences with shifting emphasis on various financial education topics, including no emphasis at all for most content in highly focused financial education programs. For example, programs might focus on welfare recipients; mortgage applicants; persons with poor credit scores hoping to improve scores and acquire mortgages; elementary, middle school, secondary, junior college, university

and adult special education; a single firm's employees; military; retirees; parents or others.⁴ The effects to be assessed can differ as well, such as changes in knowledge, behavior, confidence or comfort in various financial decision processes. Finally, the time horizon of expected or desired effects can vary depending on content areas.

Another set of problems in effective evaluation concern selection bias. Programs that screen for highly-motivated individuals can find that the program has been effective in improving knowledge or altering behavior, but in reality the observed effects can be fully accounted for by the motivation and efforts of the participants. Highly motivated participants can also self-select into a program and alter the assessment of outcomes. The same issues apply to participants with substantially more previous training or education. One of the more interesting studies that show self-selection of high achieving participants is the Meier and Sprenger (2007) study that shows that prospective students with high rates of time preference or discount are more likely to self-select out of programs when they may also be the least knowledgeable prospects.

Correlations

It is typical in studies of the link between financial education and indicators of financial wellbeing, income gain, saving rate boost and most other indicators of improved financial knowledge, behavior or outcome, to use correlation analysis. This is not always an obstacle to effective assessment. Often the researcher will have more evidence of effect. But sometimes correlation is the only evidence. There are well known reasons why correlation analysis is insufficient, beyond the biases discussed above that limit the power of correlations. While not inevitable, it is common for presenters of correlation results to ignore confidence intervals associated with such measures. Such measures can indicate that apparently meaningful correlations are not in fact statistically significant at conventional confidence levels. Further, statistically significant correlations can be behaviorally or economically insignificant, in the sense that changes in a variable of interest, such as literacy, performance or behavior, might be too marginal or small to be of any practical importance, even for a massive change in one of its statistically significant determinants.⁵ A correlation alone cannot indicate the magnitude of the correlated response to a change in a significantly related variable.

Correlations also can be spurious, arise from relationships to other common factors or arise from reverse causality, in every case being of doubtful or no value. A spurious correlation is one that appears to be strong based on the numerical outcome, but is actually meaningless. A

⁴ McCormick (2009) provides a review of studies of the effectiveness of financial education for children and youth.

⁵ The concept and importance of economic significance is developed in McCloskey (1983). See also McCloskey and Ziliak (1996) and (2008). For a critique, see Hoover and Siegler (2008).

spurious correlation arises in a time series study, or a study of the relationship of two measures over time. Time series studies are rare in efforts to study the effects of financial education on financial outcomes, however.

The greater problem with correlations in studies of the effectiveness of financial education is that the correlations arise from relations to omitted variables, or common, but ignored, relations to third factors. For example, evidence of financial knowledge following a course in financial education can result from an earlier educational experience that encouraged participation and/or affected post-program performance and other factors, such as parental differences, gender, or age that affect participation in a program and post-program performance can give rise to correlations that are really independent of a program's effectiveness.

Another well-known shortcoming of correlation analysis is reverse causation. If a financial education program appears to be correlated with some financial performance measure, it can be due to reverse causality, which means that a pre-program level of financial performance could cause participation in the program, resulting in the correlation, when in fact the program may have had little additional impact of financial outcomes. There are statistical techniques to resolve causality and reverse causality, but most financial education programs are not readily amenable to such tests and even when they are, such tests are not performed.

Finally, another problem pointed out by Caskey (2006) is that a correlation between a financial education program and a behavioral outcome really rests upon two other correlations that may not in fact be statistically significant, though the direct correlation appears to be. In particular, the direct correlation depends on the existence of a correlation between the financial education program and new knowledge obtained by the participant, and second, on a correlation between the participant's new knowledge and the behavioral outcome. The direct correlation may be some evidence of success when in fact the two linkages reject such an inference. On the other hand, it may be sufficient to argue that the behavioral outcome can arise somehow, but without new knowledge.

The gold standard for tests of the effectiveness of a treatment, such as a financial education program, is a random assignment treatment program with blind treatments and a control groups [see Glazerman, Levy and Myers (2002) and Caskey (2006)]. These are more expensive and raise ethical issues for the effective outcomes from an effective program. Such programs are not typical of financial education studies, but their use would add to the confidence of assessment results.

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