The Advisor's Toolbox

Teaching Human Capital By Calculating the True Costs of Education

Leigh S. Shaffer, West Chester University

Human capital, defined as any individual characteristic that contributes to worker productivity, has been presented as a unifying theme for academic advising in higher education (Shaffer, 1997). An approach to calculating the true costs of a college education is presented as an exercise to maximize students' human capital. When considering college expenses, students usually overlook opportunity cost: that is, the income forgone while they are pursuing degrees. In addition to a true-cost calculation worksheet, the paper presents a strategy for making true costs salient to students: projecting the number of years needed for college graduates to recoup their investments. The article closes with suggestions for using the true-cost exercise in academic advising.

Human capital theory offers a valuable, unifying perspective by which to judge the value of advisees' choices and to insure the quality of students' educational investments (Shaffer, 1997). The term *human capital* refers to any characteristic of a worker (skills, special knowledge, health, or mobility) that helps make him or her productive. While higher education professionals have always valued learning for its intrinsic satisfactions, they have also accepted that student preparation for entry into the labor market is an important outcome of formal education. By framing academic choices in a human capital perspective, advisors can redirect advisees who may believe that the acquisition of a college degree is sufficient for workforce success. This belief, often called *credentialism* (Collins, 1977), leads students to perceive that their best (particularly short-term) interests are served by following the path of least resistance to a college degree. By adopting a developmental advising approach that focuses on the human capital concept, advisors can challenge students' assumptions about credentialism.

Presented herein is a useful exercise to help students realize the importance of the academic choices they make. It is an adaptation of a standard Economics 101–style illustration of opportunity costs and has proven, both in advising and classroom use, to give provocative insights into the issues raised by human capital theory. The assignment requires students to calculate the true costs of their college degrees with one additional refinement: They determine the number of years after graduation they must work to recoup their investments in higher education. True-cost calculation forces advisees to look realistically at the economic implications of their various choices, and thereby serves as a basis for motivating them to think seriously about developing human capital.

The True Costs of a College Education

Many college planning guides contain worksheets designed to help prospective students and their parents make adequate financial preparations for college. While all such guidebooks mention tuition and fees and the cost of room and board (on-campus and off-campus), they vary considerably in their treatment of other charges. They commonly list "incidental expenses" which may include some (or all) of the following items: books, supplies, clothing, transportation, parking, recreation, student activities, security, travel expenses, and laundry or dry cleaning. But from the standpoint of economic theory, these booklets miss the mark in two ways. First, they include some expenses that economists would not incorporate, such as that for clothing or laundry, in their analyses. People need to dress whether attending college or not, and therefore, clean attire would not be considered a cost of pursuing a degree. Second, the guidebooks never mention the most important feature of the economic examination of college costs: the opportunity cost.

Economists calculate costs by comparing choices: the cost of any selected activity should include the losses associated with any activities that must be forgone (Baumol & Blinder, 1985). The economists' term for these relinquished endeavors is "opportunity costs." The principle opportunity cost of a college education for a full-time student is the lost wages or salaries that could have been earned if the same time and effort required to attend college had been applied in the labor market. By using an economist's perspective, students can identify opportunity costs associated with earning a degree and calculate the true cost of a higher education. Opportunity cost—some reasonable projection of lost wages—should

replace the incidental expenses category of a family financial-planning guidebook.

Figure 1 is a sample worksheet of true-cost calculations for a college student. Figure 2 illustrates the results of this exercise for a typical student at West Chester University. A member of the Pennsylvania State System of Higher Education, West Chester is a regional, comprehensive university. Lines A & B of Figure 2 are based upon the total tuition and fees for the 1996–97 academic year.

To balance a realistic projection against the cost complexities necessary for greatest accuracy, the exercise utilizes two important simplifying assumptions. First, to estimate the impact of inflation on any principle cost category would be unproductive; the calculations would be more sophisticated than many advisees could assimilate. Second, the exercise does not attempt to add the costs associated with repayment of student loans. The result is an approach that effectively estimates the minimum cost of a college education. Advisees should be informed that the final price may be higher than projected. However, given the typical reactions to the exercise, calculating the minimum costs is usually effective enough to encourage serious thought about human capital development.

The first two lines of the worksheet require students to estimate the final cost of tuition and fees, a calculation that may be more difficult at some schools than others. Where tuition is assessed by the credit hour, a total estimate may be as simple as the charge-per-credit hour multiplied by the minimum number of credits required for a particular degree. Likewise, at schools where tuition is set for all full-time students, the more difficult estimate may be the nontuition fees that are assessed each semester. At both types of institutions, nontuition costs must be multiplied

Figure 1 Worksheet for calculating the true costs of higher education

A. Tuition Costs (Annual Tuition × Number of Years*)	$ _____
B. Fees (Annual Fees × Number of Years)	$ _____
C. Textbooks (Average Annual Costs × Number of Years)	$ _____
D. On-campus Room and Board** (Average Annual Costs × Number of Years)	$ _____
E. Opportunity Costs† (Actual Annual Earnings × Number of Years or Average Annual Earnings‡ × Number of Years = Forgone Income)	$ _____
F. Total Projected Costs	$ _____

Notes. *Using the modal graduation rate, the number of years most students attend an institution before graduation, is recommended: 5 years.

**Room and board is included because on-campus rooming costs are typically higher than other living arrangements.

† Opportunity costs are the earnings students forgo to attend college.

‡ For advisees who do not know this figure, consult the National Center for Educational Statistics (1996) for estimated annual incomes of high school graduates: for men, $28,037; for women, $20,373.

Figure 2 Example of completed true cost worksheet for a West Chester University student using 1996–97 cost data

A. & B. Tuition and Fee Costs ($3,874 × 5 Years)	$19,370
C. Textbooks ($715 × 5 Years)	$3,575
D. On-campus Room and Board ($4,232 × 5 Years)	$21,160
E. Opportunity Costs*	
Men: $28,037 × 5 Years	$140,185
Women: $20,373 × 5 Years	$101,865
F. Total Projected Costs	
Men	$184,290
Women	$145,970

Note. *Estimated annual income of high school graduates from the National Center for Educational Statistics (1996).

by the number of academic terms likely required for degree completion. Freshmen and sophomores may project a 4-year completion date, which may be an unrealistic timeframe; a typical college graduate in the late 1990s required 5 or more years to finish a degree program. Many students will learn for the first time that they are unlikely to graduate in 4 years—a realization that is a valuable outcome of the exercise. Figure 2 uses a 5-year-to-graduation schedule for a typical West Chester University student; a 5-year estimate would apply to most students at other colleges and universities.

The third line requires an estimate of the dollar amount spent on textbooks over the course of a college education. Of all the true-cost estimates, these figures may be derived the least systematically even though students are probably more aware of textbook prices than of other college-related expenses. Cost evaluations must take into account each student's curriculum as well as the availability of used books. A full-cost tabulation would also include a credit for money that a student receives when selling textbooks either to the campus bookstore or to another student. However, the impact of these price details are minimal in estimating overall cost and are not worth expending great efforts to refine. In Figure 2, I based an annual fee of $715 by considering new prices for required textbooks in multiple disciplines.

The fourth line calls for the cost of on-campus room and board over the course of a college education. This figure can be substantial and advisors should give some consideration to whether or not they include it in their versions of this exercise. Some economists, such as Baumol and Blinder (1985), do not include food and rent costs in their estimates on the grounds that students would need to eat and have a place to sleep whether or not they were attending college. On the other hand, others include living expenses because on-campus room and board costs more than home residence; people living with parents or guardians enjoy savings associated with economies of scale. Probably the best, and simplest, solution is to include these costs for residential students and exclude them for commuter students. Again, as with the earlier calculation of tuition and fees, the projected number of years needed to complete the degree is necessary to estimate the total cost.

The fifth line, which is the most crucial to the value of the exercise, is the calculation of opportunity cost. Students should consider the type of job they would have likely taken if, after graduation from high school, they had gone to work full time. Some students have a good idea of what their likely employment would have been—they envision moving from part-time to full-time status in the company where they worked as high school students or joining a family business. However, most advisees have never thought about alternatives to college and have no realistic estimate of the wages paid for a particular job. For these students, advisors need to supply salary figures. The numbers used in Figure 2 represent the median annual income for year-round workers aged 25 or older supplied by the National Center for Educational Statistics (NCES) (1996). For students who have not yet taken an introductory sociology course, the wage discrepancy based on gender may be news! In 1996, the NCES reported the median income for men at $28,037 while the comparable figure for women was $20,373. Once again, this figure must be multiplied by the anticipated number of years to graduation. The total cost figures will differ for men and women.

The last line of the worksheet asks students to add the figures generated in the exercise into a total projected cost. Most advisees will be surprised by the result. Others will find the number so large compared to their level of economic experience that it is meaningless. The exercise demonstrated in Figure 3 helps bring the figure into the realm of understanding. Since students measure their college experience more readily in units of time than in quantities of money, calculating the years required for college graduates to recoup the total expense of their college education brings the true-cost lesson into sharper focus. The ideal advising approach is to have students research the typical entrance-level salaries paid to graduates in their major field. This can be an opportunity for advisees to become acquainted with on-campus career development professionals. However, advisors can help undeclared students by using the NCES (1996) figures for median income of college graduates. See Figure 3.

The key to the last part of the true-cost exercise is the difference between the median income of high school and college graduates. For both men and women, median incomes for college graduates exceed those of high school graduates. This discrepancy is expected from a human capital approach to economics. In addition, students are aware that college graduates have more earning potential and will cite it as a major reason for seeking a degree. For example, the Cooperative Institutional Research Program (CIRP) survey from the Higher Education Research Institute at UCLA found that over 70% of freshmen in all

Figure 3 Example worksheet for projecting investment recouperation rate of West Chester University students.

A. Difference between median annual income of year-round workers 25 years and older (National Center for Educational Statistics, 1996):

	High School Education	Bachelor's Degree	Difference
Men	$28,037	$43,663	$15,626
Women	$20,373	$31,741	$11,368*

B. Years to Recoup True Costs = Total True Costs / Differential Annual Income for College Graduates:

Men	$184,290 / $15,626 = 11.79 Years
Women	$145,970 / $11,368 = 12.84 Years

Note. *Women make 72.7% of what men earn on average each year.

types of postsecondary institutions reported that "making more money" was a "very important" reason for going to college (Sax, Astin, Korn, & Mahoney, 1996). Students who can compare their earning power to that of high school classmates may be better able to place the true cost of college into an understandable perspective. Dividing the total true cost of a college education by the difference in median incomes for high school and college graduates yields an estimate of how many years after college graduation students must work before they recoup their money. Then they will realize how many years will pass before their cumulative earnings will equal or exceed those of the high school graduates from their own senior class. See Figure 3.

Figure 3 reports the median income figures provided by the NCES (1996) and calculates the difference separately for men and women college graduates and their high school–educated counterparts. When women complete these exercises, they usually report a good news/ bad news experience; the good news is that opportunity costs for women are relatively small because they forego less income than men to attend college. The bad news is that, because of their lower earning power, they recover the total cost of a college education later than men. The figures for West Chester University students suggest that, on average, men require nearly 12 years to attain the earnings forgone due to college attendance. Steadily-employed adult women will need nearly 13 years to financially recover.

Advising Outcomes of Performing the True-Cost Exercise

The true-cost exercise engenders student appreciation of the human capital approach to academic advising. However, before they are serious about human capital development, some students will need to see the full economic picture. When advisees fully understand the true costs of college, they can reap the benefits of their investments in higher education. The following are a series of outcomes that have occurred at West Chester University as a result of taking students through the true-cost exercise:

- Undeclared students have made appointments with career development personnel to discover the opportunities and salary scales associated with professions of interest.
- Declared majors in one field have declared minors in areas that offer the transferable skills needed for increasing human capital.
- Advisees have met with student affairs professionals to seek out volunteer positions that provide valuable work experiences.
- Students have used electives to explore possible career paths or to learn new skills.
- Students have adjusted their educational plans and work schedules to graduate in less time.

Also, subtle, nonquantifiable results have been observed at West Chester. Dave, a nontraditional student who was in his middle 30s, completed the true-cost exercise in an introductory sociology course. He planned to use an elementary education degree to work in a nursery when he graduated. Because of his age, the high tuition and fees, and the relatively low earnings of workers in his chosen field, he discovered that he was unlikely to recoup his investment before retirement! After completing the worksheets, Dave sat back, thought for a moment, and said, "But I'm not in this for the money." He explained that he had

worked for many years before returning to college and had been very dissatisfied with his experience. He wanted to "make more of a contribution to society" and he discovered that he "loved to work with kids." I assured him that there were, indeed, important career outcomes besides earning money that students should weigh before making career decisions and we discussed his expectations from working in his newly chosen field. While the exercise had brought him face-to-face with the economic consequences of his decisions, he also came away with a clarified vision of his priorities and a new conviction that he was on the right path.

This self-awareness is a valuable potential result of the true-cost exercise. By introducing a human capital approach to academic advising, I explain to students that financial rewards are not the only—or highest—motivation for becoming educated. However, I have come to believe that the best way to clarify all of the benefits of completing a college education is to present the economic outcomes of a decision to pursue a degree.

The Impact of Financing a College Education

I have excluded the costs associated with borrowing money to finance college expenses from the true-cost exercise. While these are not, strictly speaking, part of the economic calculation of the cost of college, the burden of interest on student loans is of increasing practical importance. The shift in federal policy from grants to loans begun in the 1980s is forcing many students in 1990s to graduate in debt and to mortgage their futures (Keynes, 1995). In a recent study, the American Association of State Colleges and Universities (AASCU) and the National Association of State Universities and Land-Grand Colleges (NASULGC) (1997) documented that borrowing for college has grown at a rate three times the growth of personal income. At AASCU member institutions, the average cumulative debt burden for graduates is $10,000–$12,000; students finishing a baccalaureate degree at NASULGC institutions might incur even higher debts.

Many students are now forced to work to help offset college costs. For example, in 1993 46% of all full-time and 84% of all part-time college students were working while they were enrolled. However, because college expenses have risen so rapidly, to finance an education exclusively from earnings, a full-time student at an average-priced, public, 4-year institution would need to work 44 hours per week at minimum wage. In 1989, the comparable figure was 28 hours (AASCU & NASULGC, 1997). The result is that independent students usually must both work and take out loans to pay for college.

These attempts to mix enrollment with employment have given a new meaning to the concept of opportunity cost: Often the obligation to work diminishes both the quality of students' academic preparations and prevents them from taking advantage of cocurricular activities (King, 1998). Studies have shown that students who work long hours every week may drop out of school at higher rates than those who work a few hours per week (National Center for for Educational Statistics, 1995). Even among full-time college students, the percentage who are working 20 hours a week or more is increasing: from 17% to 25% between 1973–93 (AASCU & NASULGC, 1997). Advisors may be forced to help students think through the costs and the benefits of participating in time- and labor-intensive activities to build human capital—such as those in volunteer positions or unpaid internships—versus working and holding down the amount of their debt at graduation.

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