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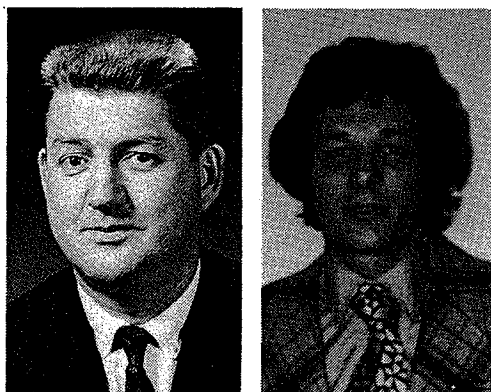
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THE OHIO PLAN REVISITED: SOME POSITIVE ASPECTS OF INCOME CONTINGENT LOAN FINANCING OF HIGHER EDUCATION

By *Richard D. Raymond* and *Michael Sesnowitz*

In 1971, John J. Gilligan, the then newly elected Governor of Ohio, proposed that the state subsidy to higher education be converted into interest free loans which students would repay on the basis of their future income. Specifically ex-students would be required to make annual payments equal to 2% of their gross income less \$100 in years when their gross income exceeded \$7500. Payments would cease when the total amount of the state subsidy has been repaid.¹ Thus, the Ohio Plan in effect proposed to raise tuition to a full cost level and simultaneously grant all students an interest free loan equal to the difference between existing tuition and full cost tuition.



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¹ Office of the Governor, "The Ohio Plan," Columbus, Ohio, Mimeo, undated.

The Plan was met by a barrage of criticism from the representatives of public higher education both within and outside the State of Ohio. John D. Millett, then Chancellor of the Ohio Board of Regents, called it double taxation.² The Executive Director of the American Association of State Colleges and Universities, Allan W. Ostar, stated that it was "a reversal of what public higher education has stood for for more than 100 years."³ In his commencement address at Ohio State University, Clifton R. Wharton, Jr., President of Michigan State University, objected to the whole notion of income contingent repayments since they lead ". . . toward a greater burden being born by the student and his family."⁴

While the critics were plentiful, an analysis of the effect of the Plan on students and citizens of Ohio was absent. This paper is an attempt to fill that void. The rationale underlying public financing of higher education will be briefly examined in Section I. Section II presents detailed empirical estimates of the financial impact of the Ohio Plan upon students. The third section considers possible extensions of the Ohio Plan and the paper concludes with a summary of some of the positive aspects of loan financing of higher education.

I.

Justification for the Public Support of Higher Education

Subsidies for higher education are based upon both equity and efficiency considerations. Public financing of higher education allegedly leads to a more equitable distribution of wealth and opportunity by giving children from poorer families a chance to attend college. The fact of the matter is, however, that very few youngsters from poor families actually do attend college. Less than 20% of the children from the lowest socio-economic status quintile attend college while the corresponding figure for the highest quintile is approximately 79%.⁵ Thus, most of the subsidies to higher education go to students from upper and middle class homes and not to the poor. Based upon an investigation of the situation in California, Hanson and Weisbrod have concluded "that whatever the degree to which our current high-

² *Columbus Dispatch*, Sunday, March 21, 1971, p. 19A. Double taxation evidently refers to the fact that students will repay their subsidy and also pay taxes on the higher incomes resulting from their education. If a businessman borrows to purchase a physical asset which increases his future income he must repay the loan and pay taxes on his higher income. To argue that the Ohio Plan would result in double taxation of students is to argue that all investments are subject to double taxation. Such an argument obviously is without merit.

³ *Chronicle of Higher Education*, March 29, 1971.

⁴ Clifton R. Wharton, Jr., "Financing Higher Education II," Commencement Address, The Ohio State University, September 3, 1971, mimeo, p. 11.

⁵ Robert H. Berls, "Higher Education Opportunity and Achievement in the United States," in *The Economics and Financing of Higher Education in the United States*. A compendium of papers submitted to the Joint Economic Committee of the Congress, 1969. The basic source of the Berls' data "is unpublished data from Project Talent, five year follow up surveys of the 1960 twelfth and eleventh grade high school students," p. 146. Since these data combine public and private institutions, the income class differential will be somewhat greater than the differential for the public sector separately.

er education programs are rooted in the search for equality of opportunity, the results leave much to be desired.⁶

The efficiency argument hinges upon the belief that some portion of the benefits of higher education accrues to all members of society and not just to those receiving the education. If this is correct then charging students the full cost of their education will result in fewer college educated individuals than is socially optimal. Some potential students would choose not to attend college because their tuition would exceed the benefits which they would receive. But if they were to attend college, they would generate benefits for the rest of society, which, when added to the benefits accruing to the students themselves, would exceed the cost of providing their education. The tendency toward under investment in education may be removed by giving the students a subsidy equal to the value, at the margin, of the social benefits generated by their education.

In theory, the efficiency argument is quite sound. The difficulty arises in measuring the social benefits and in translating them into an appropriate student subsidy. The professional literature exhibits widely varying estimates of the quantitative importance of the social benefits generated by higher education. Friedman argues that these social benefits are either non-existent or at best completely insignificant in size.⁷ Howard Bowen, on the other hand, seems to feel that society's gains from higher education are virtually all-encompassing.⁸ By its actions society has indicated a strong belief in the significance of the public benefits of higher education. In 1971-72, for example, public expenditures on higher education in the U.S. amounted to more than \$13 billion,⁹ with Ohio accounting for approximately \$300 million.¹⁰ The reduction in subsidies incorporated into the Ohio Plan assumes that the current distribution of cost between taxpayers and students is weighted too heavily toward taxpayers.¹¹

II.

Financial Position of Students Under the Ohio Plan

The arguments opposing the Ohio Plan in particular and income contingent loan plans in general have concentrated on the impact of these plans upon students. The repayment obligations are regarded as simply too "burden-

6 W. Lee Hansen and Burton A. Weisbrod, "The Distribution of Costs and Direct Benefits of Public Higher Education: The Case of California," *The Journal of Human Resources*, Vol. IV, No. 2, Spring 1969, p. 191. This article gave rise to a series of comments and replies published in the J.H.R. in 1970-71. The situation in a number of other states has been examined and found to differ somewhat from that of California. The conclusion cited in the text seems to have remained intact.

7 Milton Friedman, "The Higher Schooling in America," *The Public Interest*, Spring 1968.

8 Howard R. Bowen, "Finance and the Aims of American Higher Education," in M. D. Orwig, ed., *Financing Higher Education: Alternatives for the Federal Government*; The American College Testing Program, Monograph 1971.

9 The Carnegie Commission, *op. cit.*, p. 20.

10 "The Ohio Plan" mimeo, Office of the Governor, Columbus, Ohio.

11 Taxpayers provided approximately 65% of the money outlay for higher education in Ohio in 1971-72. Office of the Governor, *The Ohio Plan*, mimeo.

some" and "unfair" to be seriously considered. While the social benefits of college are not easily measured, it is possible to measure the private benefits and to observe the effects the Ohio Plan would have on them. An attempt will be made below to demonstrate that an investment in college is financially attractive and that the Ohio Plan's impact on the economic benefits enjoyed by the student would be negligible.

A college education may be viewed as an investment in human capital. The student's outlay consists of his foregone earnings, tuition, required fees and expenditures on books and supplies. The return accrues in the form of a higher income stream in the future and can be measured by the difference between the income of the college graduate and that of a high school graduate after allowing for ability differences. A college education may well yield consumption benefits independent of the graduates' higher income stream. As a result, the monetary benefits from a college education are actually the lower limit of the total benefits. The Ohio Plan would affect the monetary benefits by reducing the income differential in the years in which payments are made. Before this can be judged "unfair", however, the economic position of a student attending a public institution of higher education in Ohio under the Ohio Plan must be compared with his position if he had not gone to college.

The income stream presented in column 3 of table 1 pertains to a male who graduated from college in 1973. The column 4 figures depict the position of a male who graduated from high school in 1969 and immediately entered the labor force.¹² The column 5 income differentials after the age of 22 are, in effect, purchased by the student during his four years of college. The foregone earnings, shown as negative income differentials for ages 18-21, total \$9802 and represent over 70% of the students' investment in education. Tuition, required fees and books and supplies add another \$3420, giving a total investment for the four years at a public institution in Ohio of \$13,222.¹³ The state subsidy for this four year period, which the Ohio Plan would have converted to a loan, was \$3,337.¹⁴ The required repayments based on the gross income of column 6 are given in column 7. The repayments clearly represent a very small portion of the income differential accruing to the college graduate. The repayments cease completely at age 37, after which the college graduate enjoys large annual income differentials for over two decades.

12 The incomes were generated by fitting polynomials to 1970 census age-education-income profiles, assuming, (a) a growth rate in money terms of 3.5% (b) ability differences between high school and college graduates which account for 15% of their income differentials and (c) a tax rate of 25%. The ability adjustment was based upon Zvi Griliches and William Mason, "Education, Income and Ability," *Journal of Political Economy*, May/June, 1972, Part II. A detailed appendix setting forth all assumptions and techniques used to generate the income streams is available from the authors on request.

13 For a detailed breakdown of the costs see R. Raymond, D. Curran, and M. Senowitz, *Loan Financing of Higher Education*. Report prepared for the office of Policy Research, State of Ohio, 1973.

14 Provided by the Ohio Board of Regents.

A direct comparison of the income differentials and student outlays would be misleading, however, since the benefits accrue in the future. The investment can be considered a good one only if the outlays made would not have generated a larger income stream had they been used to undertake an alternative investment. Table 2 is designed to illustrate the relative positions of the college graduate under the Ohio Plan and the high school graduate who uses the \$13,222 to undertake an alternative investment with an after tax rate of return of 6%.¹⁵ At the time of graduation, the student's outlays including 6% interest compounded annually total \$15,218. This amount is shown in column 4 as the capital available to the high school graduate at the age of 22. It is, in effect, the amount the college graduate could have accumulated by age 22 had he invested in financial assets rather than in an education. The high school graduate with this amount of capital would be better off than his college counterpart if he could use the capital to generate an income stream greater than that of the college graduate.

During the 22nd year of age, the \$15,218 yields \$913 in interest. Since the income differential in this year is \$1194 the high school graduate must draw \$281 from his capital stock of \$15,218 to generate an income equal to that of the college graduate's. This leaves the high school graduate with \$14,937 to begin the next year. The results generated when this procedure is repeated each year are shown in columns 3-6 of Table 2. As the figures indicate, the high school graduate's attempt to maintain an income equal to that of the college graduate would exhaust his capital stock before the age of 34. At this time the college graduate would have fully recovered his investment. From age 33 on the high school graduate would be unable to match the income of the college graduate.

Clearly then, the Ohio Plan would not place the college graduate in a position inferior to that of a high school graduate. The college graduate's advantage may be further emphasized by noting that the high school graduate would have to earn a return of 16.36% on an alternative investment in order to match the income stream enjoyed by his college counterpart. The 16.36% rate represents the internal rate of return on the investment in college.¹⁶ Investments with such a rate of return obviously are not available to the average high school graduate.

15 Both the 6% rate of return and the 3.5% growth rate used to project incomes into the future were selected to reflect long term market conditions. The higher rates currently (1975) prevailing could be used without altering any of the conclusions reached.

16 The internal rate of return is defined as that rate which equates the discounted value of the benefit stream with the costs of an investment. More formally if C_t is the cost in year t and R_t is the benefit in year t , then the internal rate of return, r , for an investment with a life of n years is found by solving the following:

$$t = 0 \frac{\sum_{t=0}^n (R_t - C_t)}{(1 + r)^t} = 0$$

Not only does a college education remain profitable under the Ohio Plan but the additional cost to the student is relatively insignificant. The students' benefit stream in the absence of the Ohio Plan is given in column 5 of Table 1. When this is compared with the column 8 benefit stream under the Ohio Plan, the observed difference is quite small. Eliminating the Ohio Plan repayments allows the student to recover his investment less than one full year earlier and raises the internal rate of return on the investment in education by less than one-half of one percentage point (to 16.68%).

Not all students complete four years of college. Under the Ohio Plan such students would be required to repay the subsidy for the years of attendance in accordance with the same formula. The effect of the Ohio Plan on these students would be similar to the effect on those who graduate. The subsidy for individuals completing 1 and 2 years of college was \$1178.¹⁷ Allowing for repayments, which would continue to age 37 for this group, the internal rate of return on the educational investment is 15.65%.¹⁸ Once again it appears that attending college under the Ohio Plan is an excellent investment. For the small group of students who drop out after 3 years, an investment in higher education is admittedly less profitable.¹⁹ Nevertheless, this group would also earn the reasonably high rate of return of 11.80% on their investment under the Ohio Plan.

III.

Extensions of the Ohio Plan

Equality of opportunity in education could be further encouraged, by extending the provisions of the original Ohio Plan. The extensions suggested would entail no additional cost to the taxpayers; they would, under most circumstances, actually result in a lower tax burden. The income figures presented in Table 1 leave no doubt about the college graduate's future ability to pay for his education. But students from low income families often cannot raise the necessary funds to pay tuition, fees, etc. at the present time. The private capital market cannot meet the needs of such prospective students since in general, they will lack tangible assets to use as collateral. While the Ohio Plan simply ignores this very important problem, an income contingent loan plan could be designed to match the timing of payments for college with the timing of the receipt of its financial benefits. This could be accomplished by lending the student an amount sufficient to defray full cost tuition plus fees. Repayment schedules would be set up to cover the full cost of the loan including interest, calculated at the state

17 Census data do not permit the separation of individuals completing 1 and 2 years of college.

18 The corresponding rate without the Ohio Plan is 15.81% indicating that the Plan's impact upon this group is also very slight.

19 Only 11% of those completing at least 1 year of college fall in this group. U.S. Bureau of the Census, Census of Population, 1970 *Subject Reports*, Final Reports PC (2) - 5B Educational Attainment, Table 7.

borrowing rate, and administrative costs.²⁰ A loan plan of this type would not be burdensome to students since a movement to full cost tuition in the absence of a loan would only reduce the internal rate of return on an investment in four years of college from 16.68% to 15.0%. Any loan at an interest rate of less than 15% would increase the internal rate of return on the investment. The average graduate would repay a loan covering full cost tuition and fees plus 6% interest by age 44 if repayments were based upon 4% of income less \$100 for all incomes over \$7500.

More ambitious schemes might also be considered. Potential students from the poorest families may still be unable to provide for their living expenses and thus may be excluded from participating in Ohio's higher education system. A loan including a \$1,000 living allowance might go far toward achieving the goal of equality of opportunity. Under the modest repayment formula described above, such a loan would be repaid, including 6% interest by age 57. Since some students are likely to object to such a long repayment period it would appear advisable to provide them with options of shorter repayment periods combined with larger repayment rates. The two variables can be set in a variety of ways so as to take into account the different preferences of students without affecting the cost of the program to the state. The extended loan would not reduce the profitability of a college education to the student since the extra \$1000 debt would be precisely offset by a reduction of \$1000 in current foregone income. The added loan could in fact increase the profitability of the investment since it would provide a cheaper source of funds for students forced to borrow to cover living expenses. Those students who have the funds for living expenses will extend their loans only if doing so is to their advantage. Such might be the case, for example, if the rate at which they could lend exceeded the rate at which they could borrow from the state.

Current methods of promoting equality of opportunity involve the provision of grants to students from low income families. An income contingent loan scheme is capable of providing equality of opportunity without redistributing income to those who will not be poor in the future. A loan covering tuition and fees and a living allowance would, for example, enable most individuals to participate. If repayments were designed to cease when the educational cohort as a whole, rather than each individual member, had repaid the loan at the specified interest rate, then each individual's total repayment would be tied to his income.²¹

20 This might result in a subsidy to the student since a state can borrow at rates substantially below those charged to private citizens. If a greater subsidy was deemed appropriate, the repayments could be reduced accordingly. It should also be noted that if interest were charged on the full loan, the cost to the state of providing higher education would be nil.

21 Exit provisions could be employed to ensure that no student is made to pay too large a share of the cohort's loan. A discussion of various opt-out provisions is contained in Robert L. Bish and David A. Dorfman, "An Alternative For Financing Higher Education in Washington State: The Washington State Higher Education Assistance Program." Institute of Governmental Research, University of Washington, April 1972.

IV.

Conclusion

The overwhelmingly negative response of the educational establishment and the general public to the Ohio Plan failed to comprehend, or even to consider a number of the advantages offered by loan financing of higher education. Although loan financing would represent a radical, and therefore intellectually painful departure from past practices, there are good reasons for giving it much more serious consideration than it was afforded by the State of Ohio. The preceding analysis has attempted to establish this point by clarifying the following positive aspects of loan financing:

1) Loan financing would shift the cost burden of higher education from taxpayers to the students who are the primary beneficiaries of the education. The working man with a high school education would no longer be called upon to subsidize the education of future teachers, doctors and professional personnel who, in most cases, will earn incomes significantly in excess of his own.

2) Loan financing would not result in the placing of an unfair or excessive burden upon students. Failure to realize this apparently stems from a serious underestimation of the financial benefits emanating from a college education. In addition, there is a pervasive tendency to confuse the financial status of the student's parents with that of the student himself after he leaves school and begins to earn his own living. College graduates from low income homes also earn above average incomes.

3) Loan financing plans may be designed to foster equality of opportunity by reducing the current financial burden associated with college attendance. Appropriate modification of such plans could also open up more training opportunities to low income youngsters. This would require extending eligibility to students.