

Institute of Economic Development and Research  
SCHOOL OF ECONOMICS  
University of the Philippines

Discussion Paper No. 70-8

April 1, 1970

THE PERFORMANCE OF THE HIGHER EDUCATION INDUSTRY  
IN THE PHILIPPINES

by

Evelyn Miao

NOTE: IEDR Discussion Papers are preliminary versions circulated privately to elicit critical comment. References in publications to Discussion Papers should be cleared with the author.

## I INTRODUCTION

The popular assaults on higher education in the Philippines culminated in widespread student demonstrations in January and February of 1969. The central themes articulated by student leaders concerned the issues of student rights and the poor quality of education provided in the predominant private-profit making enterprises of higher learning.<sup>1/</sup>

While these two grievances were not unrelated, the first appears representative of a more universal movement of students to establish their identity as an interest group in the larger society; the latter is very much a local issue arising out of a peculiar institutional phenomenon of profit-making educational institutions. And yet, such an institutional structure has more than local relevance. It is, at once, a hypothetical alternative to public provision or the non-profit institutions which characterize western societies and a possible

---

<sup>1/</sup> Approximately 90 per cent of collegiate enrolments are at private institutions of which the sectarian sector accounts for approximately 34% nationally and 20% for the greater Manila sample.

model for developing countries.<sup>2/</sup> Such economies, in their times of transformation, experience certain demands to educate and simultaneous pressures to husband economic resources. Who should provide education is a normative question which requires, at one level, an understanding of efficiency and, at another, an examination of social preferences.

This study addresses itself primarily to efficiency aspects. How does a largely private enterprise educational system, such as the Philippines', operate? What behavioral implications are embedded in an institutional structure comprised of public, private non-profit, and private profit-making sectors in higher education? We shall proceed to evaluate actual performance by applying [human capital and industry models to the Philippines].<sup>3/</sup> Both sets are appropriate because the challenge levelled at the Philippine education industry

---

<sup>2/</sup> Thailand is reportedly entertaining such possibilities.

<sup>3/</sup> Gary Becker, Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education (New York: National Bureau of Economic Research, 1964); and Barry N. Siegal, "Towards a Theory of the Educational Firm," unpublished manuscript, Center for Advanced Study of Education Administration, University of Oregon, 1966).

focuses on the compatibility of private capital seeking profitable outlets and public welfare in education. Our empirical results derived from a limited sample survey should shed light on two questions by yielding a fuller descriptive picture of how the structure operates and by providing an assessment of the benefits and costs of such a regime. We regard these both from the point of view of the individuals, and therefore individual decision-making processes; and from the society's point of view and therefore the problem of efficiency in the allocation of resources.

We proceed, then, to establish first efficiency and equity issues in education by <sup>①</sup>developing the rationale for public participation. The theoretical superstructure is developed in two parts: <sup>1.A</sup> the relationship of education to manpower which provides a means of valuing the benefits of education, and <sup>1.B</sup> the behavior of the student individuals and the institutional decision-making units. Before the empirical assessment of benefits, which provides a performance indicator, we must sketch some descriptive background on the structure of the education industry.

As we proceed, we shall try to make clear the limitations of the methodology which we utilize to examine perform-

ance. While the technique of present value is well known and widely discussed in the literature, we try to demonstrate that for our purposes of comparing intersectoral benefits, this framework is useful.

The areas of refinement and further development are apparent. While all institutions differ in some ways, it appears to be useful to consider variations by some classifying distinctions which do not overstate the difference between individual institutions: such as policy treatment which suggests a tripartite grouping into public, private sectarian, and private non-sectarian institutions.

In identifying the major issues in the formulation of an educational policy, the following economic questions have been posed: (1) What demands shall be placed on the educational system? (2) What is the appropriate level of total resource allocation into the educational system, (3) What should be the composition of that allocation? While these questions are laden with normative connotations with regard to equity and efficiency considerations, it is common to dwell on the latter efficiency aspects so that maximization of efficiency becomes an implicit proxy for the more intractable welfare function. It is useful to distinguish the efficiency from the distributive

aspects and we will be interested in doing so: for the search for the optimally efficient among feasible alternatives has certain equity implications. But this study deals mainly with the third question and our technique is most adequate to address questions at this level. In other words, we can make stronger statements predicated on the present value methodology about the relative efficiency of the private profit-making, private non-profit and the public sectors of higher education than to compare, say, the efficiency of human with non-human capital investments.

*myt* Still the distributive consequences may be of substantial interest for the Philippines. For although West has noted that mixed public and private systems tend to imply that the higher income subsidizes the lower income groups; where publicly financed schools are superior in quality and more expensive; it is very likely that here the poor actually subsidize the rich.<sup>4/</sup>

These transfers may be further accentuated where, as in the Philippines, (a) public higher education tends to be

---

<sup>4/</sup> For this finding in the case of the California system, see W. Lee Hansen and Burton A. Weisbrond, Benefits and Cost of Public Higher Education. A Report to the Joint Committee on Higher Education, California State Legislature, November 15, 1967, Madison, Wisconsin, IV-20 - IV-26. See also E.G. West, Education and the State: A Study in Political Economy (London: Institute of Economic Affairs, 1965).

considerably more costly,<sup>5/</sup> and taxes based largely on excise revenues tend to be regressive in nature.<sup>6/</sup> Hla Myint suggests that in mixed systems where public education is of superior quality, it is apt to be the poor but able who suffer when popular pressure for expansion of enrolments causes quality to deteriorate.<sup>7/</sup>

Where private enrolments and full cost pricing predominate, the distribution of income may impinge further on the allocation of resources in education. This is true when capital markets for human capital borrowing are highly imperfect or non-existent. In such a case, the initial distribution of

---

<sup>5/</sup> See cost estimates cited in Don DeVoretz, "Investment in Philippine Educational Resources: 1966-74," (unpublished Ph.D. Thesis, University of Wisconsin, 1968), p. 87; Priscilla Eugenio, "Sources and Uses of Income in Five Private Universities 1956-65," (unpublished Master's Thesis, School of Economics, University of the Philippines, 1968), p. 93; Howard Hayden and the Office of the Study of the Role of Institutions of Higher Education in the Development of Countries in Southeast Asia. Higher Education and Development in Southeast Asia, Vol. II: Country Profiles (Paris: UNESCO and the International Association of Universities, 1967), p. 614.

<sup>6/</sup> While it is income taxes and professional taxes which must be considered for possible incentive consequences on educational investments, all tax revenues are involved in the income taxes see Angel Yoingco and Ruben Trinidad, Fiscal Systems and Practices in Asian Countries (New York: Frederick Praeger, 1968), 335-337.

<sup>7/</sup> See Hla Myint, "The Universities of Southeast Asia and Economic Development," Pacific Affairs, XXXV, No. 2 (Summer, 1962), p. 123.

wealth bears heavily on educational decisions. The non-availability of resources or, similarly, the discrimination in capital markets not based on productivity potentials inhibits a more rational allocation of resources. Such losses are symptomatic of imperfections, which themselves require economic costs to mitigate.

Apart from the distribution aspects, which are only conceptually separable from efficiency, the case for investigating higher education industry rests on several grounds. First there is the question of the efficiency of the resource allocation. While the resources involved in higher education are less substantial than at lower levels in the Philippines, where political and social literacy motives strongly color economic policies, a more cogent case has been made for the rationalization at higher levels. Higher education involves the supply of skilled manpower resources. Simultaneous labor shortages and surpluses provide considerable evidence of labor market disequilibria which may be accentuated by the education markets.<sup>8/</sup> Unemployment suggests that the shadow price of

---

<sup>8/</sup> One study cited that 18.2% of those with college education were out of work, and looking for work. 8.4% were out of work but not looking. An estimated 27% of the college educated labor supply is thus estimated to be redundant. See Republic of the Philippines, Office of Manpower Services, Department of Labor and Division of Surveys, Bureau of the Census and Statistics, Department of Commerce and Industry, "Summary



educated labor is less than the market price. ~~The~~ brain drain and unemployed intellectual phenomena, indicators of labor surpluses, have been repeatedly cited in regard to the Philippines.

/A possible explanation for the concurrent labor surpluses and labor shortages is the variety of education outputs which imply that the education differs not only by field of specialization, but institution granting the degree as well. That is to say, certain degrees, ostensibly qualifying individuals for certain occupations, and job responsibilities, do not do so in fact. Occupational placement of those holding the same nominal degree varies as among schools. This suggests of course an irrationality or a lack of information on the part of students as to the stability of degrees from different schools in job markets. This possibility of mislabeling of education such that, for example, engineering graduates from certain schools are employable only as technicians, must be investigated by looking at occupational placement by sector and perhaps even by school.

---

Report on Inquiry into Employment and Unemployment Among Those With High School of Higher Education, May 1961" (unpublished Report, Manila, 1961), p. 68. For a decade analysis of unemployment, see "An Anatomy of the Unemployment Situation in the Philippines for the Decade 1956 to 1967," Journal of Philippine Statistics, XX, No. 2 (Second Quarter, 1969), vii-xiii.

Secondly, de facto policies influencing education do exist, although some of their impacts have yet to be analyzed. Moreover policies affecting higher education continue to be made. President Marcos' response to the student demonstrations in January and February, 1969 was to order a tuition roll-back to 1966 levels in the private commercial sector of higher education and to explain rates of return in excess of 12 per cent.<sup>9/</sup> In July 1969, President Marcos signed into law a measure to convert profit-making insititutions into foundation status.<sup>10/</sup> Without the establishment of a thorough financing mechanism to implement this enactment, and because several conceivable loopholes exist, it is difficult to anticipate the impact of this legislation. It does, however, represent a submission to popular opinion, which could not condone education as a profit-making business enterprise.

There are others who had earlier suggested that the government support or subsidize the private sector as a way

---

<sup>9/</sup>"F. M. Okays Students' Demands. Orders Tuition Fees Reduced to 1966 Levels," Manila Times, February 5, 1969, Sec. 1 and 2, pp. 1-A, 2-B; "Student Strike Far From Over. Marcos Pledges Reforms," Manila Chronicle, February 5, 1969, Sec. 1, pp. 1-A, 14-A.

<sup>10/</sup>"The Cure? New Law Will Erase All Schools of Profits," Manila Bulletin, July 31, 1969, pp. 1, 3; Editorial, "Two New Laws," Manila Chronicle, July 31, 1969, p. 13.

of abetting a movement away from profit-making. Others have recommended that sectarian institutions be subjected to the same tax conditions which prevail in the private non-sectarian sector.<sup>11/</sup>

But rational economic policies must be predicated on economic analysis. And while popular journalism abounds on the issue of profit-making in education, serious analysis is lacking.

On still another level, the structure of the Philippine educational industry is of more universal interest. In a western setting, Friedman has urged the case for private enterprise in educational activities.<sup>12/</sup> Hla Myint has similarly suggested the usefulness of profit-making institutions in Southeast Asia to alleviate the pressure on the public sector to provide more college places.<sup>13/</sup>

---

<sup>11/</sup> For such proposals for equal treatment throughout the private sector by a journalist, the Philippine Chamber of Commerce, and Senator Kalaw, respectively, see Josefina Constantino, "What has the Government Done for Private Schools?" Manila Chronicle, February 2, 1969, Sec. 1, p. 5; "Religious Schools Tax," Manila Times, July 28, 1969, Sec. 1, p. 24-A; "Private Schools Aid Urged," Manila Times, March 9, 1970, Sec. 1, p. 26.

<sup>12/</sup> Milton Friedman with the assistance of Rose D. Friedman, Capitalism and Freedom (Chicago: University of Chicago Press, 1962), pp. 85-107.

<sup>13/</sup> Myint, 117.

The Philippines, with its hybrid institutional structure, offers a living example of the private profit-making, a private non-profit making, and a public sector. The mixed comments in praise and disparagement of private commercial institutions of higher education suggest that an analysis of this institutional system and its performance is warranted.<sup>14/</sup>

The findings of the suggested analysis have direct implications for educational planning policy. But it is not the objective of this study to construct an educational plan.<sup>15/</sup>

Rather we assess the higher education industry not by mere price and output dimensions: such information misses too much in the Philippine case. Nor do we look simply at profit figures, even if we could identify and quantify and analogous concept for the public and private non-profit sector. As a

---

<sup>14/</sup> Ibid, 117, 125; V. Sinco, Education in Philippines Society (Quezon City: University of the Philippines Publications Office, 1959); and Sixto Rocas, "Investment in Education: The Philippine Experience," The Philippine Economy Bulletin, II, No. 1 (September-October, 1963), pp. 32-39.

<sup>15/</sup> Indeed some pioneering efforts to formulate an optimizing plan using linear programming have been made. See DeVoretz.

capital good, educational demand is a derived demand. Because the product differentiation is to some extent discernible at the outset, an appropriate method for evaluating each sub-sector's performance is to compare net earnings, occupational placement, labor force participation, and employment rates associated with each of the institutional types. This technique has the further merit of evaluating the investment contribution of education to the economy since education is embodied in individuals, who are themselves economic resources.

If students are not behaving as rational investors in education markets and such a rationalization policy is deemed appropriate for economic and social priorities, certain measures can be introduced. On the part of employers, we have more reason to suspect that they do, indeed, recognize quality differences in education and reward these differences correspondingly. For one thing, this has been cited by other researchers<sup>16/</sup> for another, a predominantly competitive, private enterprise economy would tend to enforce rational hiring behavior.

---

<sup>16/</sup> Mauricio Leonor, Jr., Severino Santos, Jr., and Martin Jarmin, "Technical Manpower Needs in Agriculture as Reported by Employers," (paper read in a seminar on "The Present Situation and Outlook of Manpower in the Country, National Science Development Board, Manila, February 3-5, 1969), p. 12.

From the standpoint of public policy, it is necessary to distinguish social benefits and costs from private benefits and costs. Private costs understate total resource costs to society to the extent that education is subsidized or tax receipts are foregone. Likewise, total benefits include pecuniary and non-pecuniary gains to the educated individual, as well as pecuniary and non-pecuniary gains to others in the society. But who comprises society? If we identify society with a national government or fiscal entity, apart from the individual members, still another perspective could be usefully adopted. Migration can alter the locus of benefits and may thereby impinge upon public investment decisions. The rationality of public policy poses a separate question from that of individual behavior.

While we are only incidentally interested in the labor market, we will tie it up with the education market. The supply of various kinds of educated labor is a lagged function of the demand for education, adjusted for individual work-leisure decisions. It is conceivable that the relation between the demand for education and the supply of educated labor inclusive of the work-leisure decision is relatively stable over

some intermediate lengths of time.<sup>17/</sup>

At the same time, the demand for education is derived from the demand for labor. The demand for labor itself is a function of technological relationships and value variables. That is to say, the value of labor as an input depends on its physical (marginal physical product) and financial (marginal revenue) productivity.

Education intermediates between raw and improved labor because physical productivity is believed to be a function of education.<sup>18/</sup> Even the marginal revenue component of labor's contribution to output is related to the education market, for in general equilibrium analysis, there is an interdependence among all goods markets.

We acknowledge, at the outset, education's dual nature as an investment and consumption good or service. We further

---

<sup>17/</sup> See Edita A. Tan, "Implication of Private Demand for Education on Manpower Planning," The Philippine Economic Journal, VIII, No. 2 (Second Semester, 1969), 117-129. She makes the supply of labor a direct function of the demand for education. That is,  $D_{ed} = f(PV_{ed})$  of labor and  $PV$  represents the discounted value of future earnings.

<sup>18/</sup> See Edward Denison, "Measuring the Contribution of Education to Economic Growth," in the Residual Factor and Economic Growth," Readings in the Economics of Education, selected by M.J. Bowman, et.al., "Contribution of Eds. to National Income Growth," Journal of Political Economy, LXXII, No. 5 (October 1964), 450-65.

recognize that the conventional classification of capital and consumption goods by function is not useful here in discerning the net benefits on which educational policies might be based. We cannot assume that those who do not employ their education in their jobs or that the unemployed are consumers rather than educational investors. The essential question, however, is: are they behaving as if they are making economic investments in their education decisions?<sup>19/</sup> For while we can not judge motives, actual behavior is observable.

As an additional adjustment to reality we allow for the heterogeneity of education even when comparable levels and nominally equivalent degrees are involved. Where quality issues prevail as in Philippine higher education, provision for this variability should be made.

On this study we indeed heed the dictum of Jack Wiseman who counseled:

---

<sup>19/</sup> John Vaizey, The Economics of Education (London: Faber and Faber), pp. 26-35. For a discussion of some of the other benefits and a defense of the usefulness of regarding earnings streams, see Burton A. Weisbrod, "Education and Investment in Human Capital," Journal of Political Economy Supplement, LXX (October, 1962), 106-123.



Essentially "market oriented" studies have to be concerned with the behavior of individuals, families, governments, and other social groups as producers or consumers of education: they examine the behavior of the "knowledge industry" in which the educated are the "consumers" and the schools and other relevant enterprises the "producers" . . . . These need to be descriptive, institutional, quantitative and to distinguish relevant types of education rather than treat it as a global magnitude, as would an applied study of the steel industry.<sup>20/</sup>

\*\*\*

In the next section, we raise a number of hypotheses which can be usefully investigated. To suggest their relevance to the Philippine context, the introductory remarks consider both broad economic concepts and specific local issues, in order to identify the economic content of educational problems in the Philippines. For the actual empirical portion of this study, the focus has been narrowed, for both pragmatic data considerations and because the richness of this research topic permits treatment of only a subset of the hypotheses originally set forth. Those under 2. will be omitted from the final study or handled descriptively, where it appears useful to do so.

---

<sup>20/</sup> Jack Wiseman, Cost-Benefit Analysis in Education and the Southern Economy, p. 11, as quoted in Robert L. Farrell, "An Examination of Differentiated Cross-Sectional Price, Cost, Quality and Demand Relationship in Higher Education," (Unpublished Ph.D. Thesis, George Washington University, 1968), 35.

✓  
Chapters III and IV are theoretical in nature. [Ch III, IV available upon request from author] The first expands on equity and efficiency concepts with regard to the structure of the educational industry and actual policy; it further establishes the link between labor and education markets. The second develops the micro-economics of individual and institutional behavior. The present value technique is discussed as an investment criteria and as a way of evaluating benefits and costs.

Chapter V provides an orientation to the Philippine setting, by referring to the pertinent literature and presenting additional data. The second half of this study utilizes sample data to address some of the hypotheses we raise in chapter II.

## II THE SCOPE OF THE STUDY

A number of hypotheses will be investigated and submitted to empirical testing. Our approach to utilizing data resources will be a rather pragmatic one. Therefore resort will be made to several sources and where necessary, new information will be elicited. While these questions are positively stated below, they will be examined in conventional null hypothesis terms.

The hypotheses reflect three distinct perspectives from which to view the benefits of education: (a) individual rationality requires an assessment of private benefits and costs, which tend to understate the total costs where institutions are subsidized in the public and private sectarian sectors. The private benefits can be regarded as the earnings streams which accrue to educated labor.

For (b) society and social welfare goal of allocative efficiency, the concept of benefits and costs must be modified to include total resource costs and benefits. Therefore, for example public and private subsidies must be included in costs. Non participation in the labor force and outmigration from the country can be considered as social losses.

From (c) institution of higher learning's perspective, net income or firm profits are an appropriate measure of performance, when the institution is profit-seeking in nature.

The hypotheses are classified below into those calling for the human resources approach and those which involve micro theory of the firm. These major sets of hypotheses are supplemented by other specific questions we shall address.

1.1 Individual investment choices are consistent with an investment hypothesis. In other words, judging from labor force performance of graduates and school leavers from different institutions, individuals behave as if they are maximizing the present values of future earnings or internal rates of return.<sup>21/</sup>

If individual tastes and educable capacities are not binding constraints, rates of return or present values net of cost would tend to equalize at the margin. However, differences in taste and non-pecuniary components of employment suggest that disparities in rates of return or present value are compatible even with educational opportunities unlimited by imperfections

---

<sup>21/</sup>I have reason to believe that most of us do not look at the expense incurred to get a diploma as investment." O.B. Corpuz, Undersecretary of Education, "The Administration of Educational Policies of the Philippines and the Marcos Economic Program" (Philippine Economic Institutions, Occasional Lectures and Speeches Series, No. 5, School of Economics, University of the Philippines, January 23, 1967), p. 12.

in information or capital markets. But interinstitutional differences in the labor force benefits to the same fields of study or to nominally equivalent degrees, suggests that quality differences in schooling inputs are reflected in the outputs.

This hypothesis requires information on the net present values or rates of return to different fields and to different institutional products, by field and by school type.

While labor force performance provides one indicator of institutional quality, we are interested in matching the quality of the inputs against the quality of the outputs. Poor quality education may be economic from the students point of view because of the substantially lower direct costs and foregone earnings. It may be that poor quality education is a worthwhile investment from the students point of view because it sufficiently enhances employment and earnings over high school graduates and school leavers.

1.2 Private decisions tend to promote an efficient allocation of education resources. In providing a description of employment performance, we dwell on quantifiable benefits to the student educatee. Costs are netted out of gains without regard

to possible subsidies provided. To view from the social perspective which public policy adopts in assessing efficiency, requires an alternative definition of costs and benefits one which better reflects the true resources utilized. This is an exercise in optimization within the framework of currently existing alternatives, thereby disallowing for innovations and assuming that such educational benefits can be replicated through expansion. The substantial effect of policies may differ from the marginal findings on which they are predicated.

1.3 There exist significant differences in performance among the public, private profit-making, and private non-profit making institutions in the industry. From the standpoint of the students, the appropriate means of determining returns on investments in human capital focuses on occupational placement, earnings, employment, and labor force participation differences among educated school outputs.<sup>22/</sup> The present value technique permits these factors to be incorporated in making an estimate of the financial benefits of schooling.

It has been remarked that lower quality education is

---

<sup>22/</sup> Labor probably depreciates with the mere passage of time, so participation differences take on significance.

greater wastage and hence the inference of greater inefficiency.<sup>23/</sup> Individual rationality and allocative efficiency can be evaluated in these terms to demonstrate whether, in fact, attrition from such programs is 'wasteful' or implies a lumpiness in human capital investment.

1.4 There exists a systematic relationship between quality and institutional profit within the private profit-seeking sector. This hypothesis stems from a conventional belief that it is the exploitation of students which gives rise to abnormal or excessive profits to certain institutions. Profit or net income has its analogue in not-for-profit educational sectors, but differences in motives due to non-payout of net income and tax treatment suggest that the profit and quality correlation is most meaningful internal to the profit-making sector. For if motives were the same, the latter would certainly seek the tax benefits of foundation status.

The traditional argument proceeds on the assumption that the profit margin is enhanced by cutting corners on costs and thus overpricing the output, largely educational services. Alternatively, the institutions employing inputs most efficiently

---

<sup>23/</sup> Howard Hayden has suggested this hypothesis in Hayden and the Office of the Study of the Role of Institutions of Higher Education in the Development of Countries in Southeast Asian Higher Education and Development. in Southeast Asia, Vol. I, Director's Report, 68, 184.

ought to be more profitable. Of course an institution presumably can always enhance its own quality through increasing student expenditures or educational reinvestment.

The question however is an empirical one. Which institutions with what quality characteristics are the most profitable, whether efficiently or cutting corners is the chief reason?

This time we look at profits as determined from the financial statements of institutions. We measure quality by the schooling inputs and the outputs' labor force and board examination performance, for conventional measures do exist for the former; and industry studies suggest rates of return on equity or rates of return on assets as an appropriate measure of firm profits.<sup>24/</sup>

While profits offer a measure of productivity to the firm, the value of outputs can also be assessed from the labor force performance of the schooled. We shall also relate these measures of output quality to input quality and institutional profits.

---

<sup>24/</sup>Rate of return on book value not market value would be the relevant concept because the stock market would tend to capitalize such oligopoly earnings. See Kalman J. Cohen and Richard M. Cyert, Theory of the Firm: Resource Allocation in a Market Economy (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965), 259.



1.5 The two concepts of profits, firm profitability and labor force performance of school leavers, as performance indicators of the industry are systematically related to each other. Furthermore, student inputs themselves may vary among institutions not only by innate ability differences but also by substantial foregone earnings differentials. Differences in part-time or full-time attendance characteristics of students in different institutions suggest that this major component of the resource costs of education may be important.<sup>25/</sup>

1.6 There does not exist a pattern of specificity between occupation and income or kind or level of education. Such a finding of interoccupational or intereducational or formal education-experience substitutibility weakens the case for manpower requirements approach specificity. That is there is kind of mislabeling. This may be economic, but unless it is well known to students, they suggest a second best situation.

The present value technique permits us to include unemployment, labor force performance, and earnings and foregone

---

<sup>25/</sup> Estimates from a sample of 12 private non-sectarian institutions found that between 20% and 80% of enrolments were at sight. In a follow up sample of 1306 working students, 1190 were found to work eight hours or longer per day. Guillermo Reyes, "A Study in the Time Adjustment of Working College Students in Colleges and Universities in Manila," (unpublished Master's thesis, College of Education, U.P., 1960), 36, 51.

*Econ - 3695 f*

earnings differentials. If the important differences are in the quality of education rather than in the student input, why does such a differentiated system persist if shown to be uneconomic?<sup>26/</sup>

Where capital markets are not well developed, individuals are constrained by initial wealth positions. Therefore, certain alternatives imposing high initial outlays (in direct or foregone earnings costs) become extremely costly. In a situation of credit rationing, certain investment opportunities are simply prohibitive in terms of true opportunity costs to particular individuals.

The foregoing hypotheses have been framed to address higher education industry performance by firm profitability and educated individuals' productivity. We adopt at the outset an investment perspective; that is, while the benefits of education are largely personal and may contain considerable consumption value, the institutions in the industry are assessed with respect to labor market performance on the one hand and firms' net earnings, on the other. In addition to

---

<sup>26/</sup>Weisbrod, Kelley, and Hansen suggest that there may be greater payoffs, in terms of productivity, to developing the inferior and not the superior student. Burton A. Weisbrod, Allen C. Kelly, and W. Lee Hansen, "On the Distribution of Benefits of College Teaching" (unpublished manuscript, n.p., n.d.), 11. A lack of information on the student side is another important hypothesis.

these aspects of performance, we shall examine empirically the industry for certain behavioral expectations. Because we are dealing with an institutional problem, it is necessary to provide some descriptive background on the structure. Without undertaking a full scale investigation, we sketch some of institutional frameworks through a number of hypothesis about institutional behavior which reflect importantly on student choice.

2.1 There is a clustering of prices charged by institutions producing close substitutes.<sup>27/</sup> This suggests that quality differentiated segments of the industry may be isolated. We can investigate further to determine whether this clustering pattern coincides with the classification of institutional types which we discerned.

2.2 There are significant differences in the composition of output of low per pupil cost outputs and high per pupil cost (non-science versus science courses, undergraduate versus graduate courses) outputs among institutional sectors. This

---

<sup>27/</sup> Seymour Harris found evidence for this hypothesis in the United States. See Seymour Harris, Higher Education: Resources and Finances (New York: McGraw-Hill Book Company, Inc., 1962), 101-105.

may have policy implications where certain fields of study and research outputs generate more external or social benefits relative to other curricula and teaching outputs. Graduate (or post graduate as they are also called in the Philippines) school programs have experienced only token development in the profit-making institutions, for although this is prerequisite to obtaining university status and corollary prestige.

2.3 Public and private non-profit institutions utilize non-price rationing while the private commercial sector engages in price rationing in the face of demand fluctuations. The private market would price ration and so reduce  $r_e$ , the return to education; the public sector would use non price or quality rationing and so raise  $r_e$ . However, because demand for education has been secularly rising and not fluctuating, and because selective scholarships are one important way of obtaining quality differentiation in student inputs, price discrimination may actually be used more extensively by the public and private non-profit sectors. It is costless to buy uneconomic discrimination if there is administered pricing, but economic discrimination which reduces wastage may payoff

well, if there are no constraints.<sup>28/</sup> These divergent behavioral implications derive from alternative objective functions among kinds of institutions. The latter statement does not contradict the former, although the empirical data may not permit us to discriminate.

Of the many questions we may raise, we shall isolate a few for further examination.

3.1 There exists a 'sheepskin effect' such that the graduation event itself provides an extra kick to earnings. On the other hand it may be most able who do indeed complete degree courses.

3.2 Income is a positive function of educational attainment and age where age is a proxy for two effects which operate in opposite directions: Work experience and vintage of education. That is,  $Y = f(E, X, V, A, H)$ , where  $Y$  represents income,  $E$  represents educational attainment,  $X$  represents work experience,  $V$  represents vintage of education,  $A$  represents innate ability, and  $H$  hours

---

<sup>28/</sup> A.A. Alchian, "The Basis of Some Recent Advances in the Theory of the Firm," The Journal of Industrial Economics, XIV, No. 1 (November, 1965), 32.

worked. We expect income to rise with age, controlling for ability and educational attainment when the experience effect outswamps the vintage effect.<sup>29/</sup> While such findings have been determined elsewhere,  $\partial Y/\partial X > 0$ ,  $\partial Y/\partial V < 0$ ,  $\partial Y/\partial X - (\partial Y/\partial V)X$  are only behavioral hypotheses and must be empirically verified. If present value of same age cohorts is the same within occupations, regardless of quantity of education, experience just offsets the advantage of formal education. Linearity and multicollinearity of the relationship must be tested.

3.3 There exists a supplementary relationship between formal education and on-the-job training such that those receiving the most on-the-job investment on the part of employers are in fact the highly more educated.

---

<sup>29/</sup> Using a data set from Sweden which includes I.Q. at age 10 as an 'innate' ability variable, Griliches finds little intercorrelation between ability and amount of schooling, although the ability variable significantly increases the explained variance of log of income. He suggests, then, that schooling is not distributed according to an ability criteria. In a less developed country, like the Philippines, the scarcity of public places would imply rationing according to ability. The large number of private enrolments and limited scholarship schemes, suggest that the composition of Philippine collegiate enrolments may more closely resemble that of a developed country. Griliches, op.cit., 32, 36. Others have applied adjustments to earnings streams to allow that the more educated tend to be the more able. Becker, op.cit., p. 82; Edward Denison, The Sources of Economic Growth (Committee for Economic Development, Washington, D.C., 1962), p. 69; B.A. Weisbrod and Peter Karpoff, "Monetary Returns to College Education, Student Ability and College Quality," Review of Economics and Statistics, L (November, 1968), p. 495.

3.4 There does not exist evidence of sex discrimination in employment. This hypothesis warrants investigation because of the fuller labor participation of women in the Philippine labor force, especially among those with higher educational attainments. Here we must appropriately control for age, work experience, and quality of education. We shall look for discrimination in terms of occupational placement and earnings.

These hypotheses 3.1 to 3.4 are called supplementary not to suggest that they are of lesser significance. Rather the data assembled to address earlier hypotheses permit us to investigate these important questions, in passing.

### III ISSUES IN PROVISION AND FINANCE

Who should provide education and how should costs and how should benefits be distributed are three separate questions which must be addressed in terms of educational goals. In this study of higher education in the Philippines, we will be specifically interested in determining whether private educational choices are efficient and whether public subsidies are efficiently allocated. While these questions hold substantial interest for policymakers everywhere, they take on additional interest in the Philippines because of the extensive development of private commercial enterprise in higher education. A privately financed, privately provided sector co-exists with a public financed, public provided sector. The theoretical premises for government intervention in the sphere of education are essentially two: an efficiency and an equity argument.<sup>30/</sup>

#### (1) EFFICIENCY

The efficiency argument states that the presence of benefits which accrue external to the buyer would lead to an

---

<sup>30/</sup> There exists a considerable body of literature debating the issue of private enterprise in education. See J. Vaizey, The Costs of Education, (London: Allen and Unwin, 1958), 148-155; Jack Wiseman, "The Economics of Education," Scottish Journal of Political Economy, (February, 1959), 48-58; G.W. Horobin and R.L. Smyth, "The Economics of Education: A Comment," Scottish Journal of Political Economy, (February, 1960), 69-74; E.G. West, op. cit.; Millon Freedman, 85-107.



insufficient allocation of resources relative to the social optimum, because the personal economic calculus does not incorporate these non-personal gains, whether they be pecuniary (reduced vandalism)<sup>31/</sup> or non-pecuniary ( a more informed electorate) such that the free market fails in pricing and provision.<sup>32/</sup> That is, the existence of benefits which accrue to other than the educated individual would lead to private underinvestment relative to the social optimum. Public provision has been proposed to remedy such a shortage because society as a whole can internalize all the benefits external to the individuals educated.

On the other hand, the presence of geographical externalities may lead even the public authorities to underprovide relative to some more universal concept of social optimum. Such disparities in the location of benefits and costs arise because human mobility may transcend the political boundaries of governments. A brain drain has been observed in the Philippines, Great Britain and elsewhere, as well as between sub-

---

<sup>31/</sup> A case can be made against including preventative costs in gross national product. Such services, which protect goods against destruction, affect the distribution of income but not the level of production. Martin Bailey, *National Income and the Price Level: A Study in Macro-theory* (New York: McGraw-Hill Company, Inc., 1962), 275.

<sup>32/</sup> There may be important cases in which this underprovision conclusion need not follow. See A.G. Holtmann, "A Note on Public Education and Spillovers through Migration,"

national units. These geographical externalities which arise from migration tend to imply underprovision also.<sup>33/</sup> However, this time it is on the part of the public fiscal unit so that one way of eliminating geographical externalities is to more fully internalize the benefits and costs to the migrating unit: that is, private and not public financing of education. Another proposal is to broaden the public internalizing agency--say one federal government rather than many state fiscal units.<sup>34/</sup>

## (2) DISTRIBUTION

The distribution argument for government intervention enjoys somewhat less currency. It focuses on education as a mediating mechanism in the process of generating the income dis-

---

Journal of Political Economy, LXXIV (October, 1966), 524-26.

<sup>33/</sup> If, however, externalities accrued to a well-defined group, then there do exist economic incentives for them to internalize the costs as well through subsidies. For example, it may be rational for the United States to subsidize in migration of certain kinds of labor by direct payments to the governments who financed the educations, because the benefits exceed the costs to U.S. government. See B.A. Weisbrod, External Benefits of Public Education: An Economic Analysis, (Princeton, N.J.: Industrial Relations Section, Princeton University, 1964).

<sup>34/</sup> See W. Lee Hansen and Burton A. Weisbrod, op. cit., p. VI-3. While only real technological externalities threaten efficiency, penuniary externalities may have adverse incentive effects.

tribution. Equality of educational opportunity does not insure equality in the distribution of income, but rather, it promotes an earnings distribution in which personal preferences and abilities are allowed maximum free play in determining the actual distribution. It has been observed in the U.S. since World War II, there has been no significant change in the income distribution. However, Becker found that the increasing relative supplies of skills has accompanied a secular decline in wage ratios or differentials. Vaizey remarks:

. . . generally the evidence is, striking that money differentials have declined and that the more highly developed an economy, the lower the gap between the very skilled and the very unskilled.<sup>33/</sup> ?

Froomkin argues that income disparities are smaller when the rate of return for each succeeding level of education is smaller than the preceeding level.<sup>34/</sup> This is indeed the finding for the secondary and collegiate levels in the Philippines according to the Williamson and DeVoretz study, subject, of course, to possible shortcomings in their methodology and data.

---

<sup>33/</sup> J. Vaizey, The Economics of Education, op. cit., p. 106.

<sup>34/</sup> Froomkin

Progressive income tax structures, such as that found in the Philippines tend to diminish income differences also, although of course, the effective tax rate may be considerably less progressive because of known loopholes and evasion.

On the other hand, it has been claimed that education may have an adverse effect on the income distribution by creating relative income differences through education-induced productivity differentials.

These two claims need not be incongruous when interpreted in the following manner. Theoretically, the ready availability of educational opportunity will eliminate rents to scarce educated outputs. \*The relative scarcity of certain educated outputs may have several possible causes: (1) barriers to entry in the educational industry, (2) an ultimate scarcity of ability or educable capacity in student inputs,<sup>35/</sup> and (3) discrimination not based on productivity differences in the labor market. Rents will persist if any of these conditions are operative in labor or education markets.

---

<sup>35/</sup>This favors the hypothesis that inputs are educationally changed and not merely labelled. Otherwise, only accidentally would original ability endowments cater to the structure of labor demands of course, we recognize that even if education merely sorts out different labor capacities, this information is valuable to employers.

Observed earnings differentials, then, derive from several sources and these distinctions are of significance to the economist. The observed earnings differentials based on individual differences in tastes and preferences or non-pecuniary benefits would persist even if equality of educational and employment opportunities were secured in a society. Discrimination based not on productivity but race, religion, connections, etc. is inefficient.<sup>36/</sup>

\* These theoretical premises abstract from possible market imperfections regarding capital and information. For these, instead, to be valid foundations for public intervention, the presence of such imperfections must be established as empirical matters. Economists believe these factors to significantly affect education markets and therefore the efficiency of resource investment in human capital.<sup>37/</sup>

---

<sup>36/</sup> For rejoinder to this argument, see Gary Becker, *Economics of Discrimination*

<sup>37/</sup> For the argument and a rejoinder, see George Stigler, *Imperfections in the Capital Markets*, "Journal of Political Economy", LXXV (June, 1967), 287-292.

### (3) POLICY IMPACTS

Actual educational systems, which we examine against our hypothetical models, have policies embedded in them. Observable consequences do not net out deliberated or ad hoc policies, so it is useful to identify the influences of common economic policies. The dual identity of education as a consumption and investment good complicates the task of an educational planning. Public policies in this sphere, typically, take the form of regulatory action and public finance. These policies are distinct and mutually exclusive in theory so that control can be manipulated by either means. Indeed, the presence of externalities or neighborhood effects does not obviate the sufficiency of educational regulation; the existence of such effects justifies government intervention, but does not necessitate public finance. However, in the Philippine case, like most others, we find both regulation and public finance.

The presence of educational subsidies such as government supported education, private endowment or subsidies in kind (ecclesiastical faculty in parochial schools) introduces disparities between personal and total resource costs even when the foregone earnings component of personal costs are taken into account.

The presence of taxes on earnings drives a wedge between the private and social return. The net effect of such policies on the private relative to the social rate of return can go either way. Therefore a public university which charges less than full costs may, a priori, aggravate the inefficiency of allocation unless coincidentally, taxes and subsidies just cancel out each other.

\*Taxes on income, by reducing the present discounted value of future earnings diminishes the demand for education, (Figure A) relative to other investment alternatives and can be demonstrated by a leftward shift in the demand curve. Educational subsidies to institution such as public universities cause the supply curve to shift to the right (Figure B). That is, private marginal costs are below total marginal costs to society, which must include the resource value of the subsidy. If, on the other hand, subsidies are provided to individuals, rather than institutions, the demand curve would shift upwards and to the right (Figure C). Individual or institutional subsidies will suffice to increase enrolments from  $E$  to, say,  $E'$ .

FIG. A

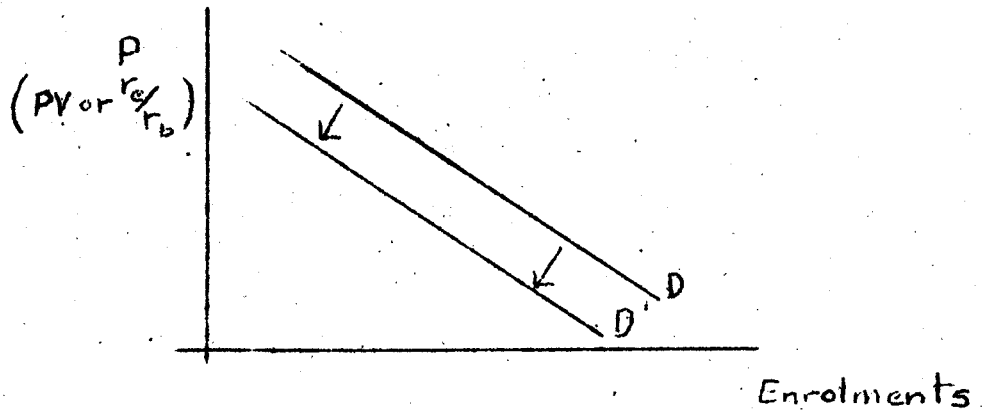


FIG. B

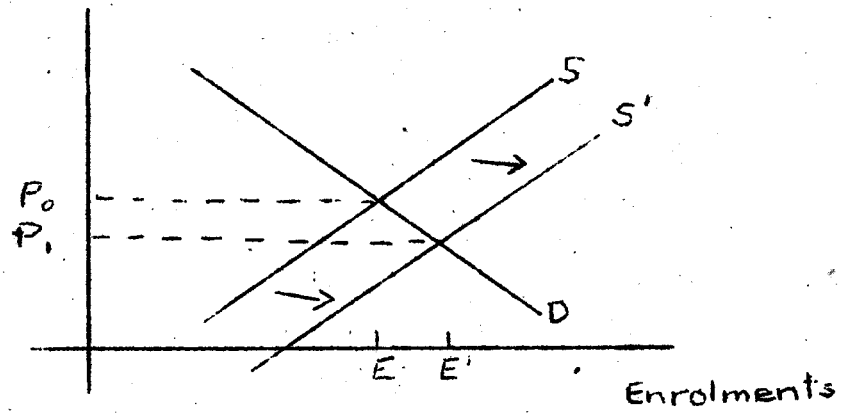
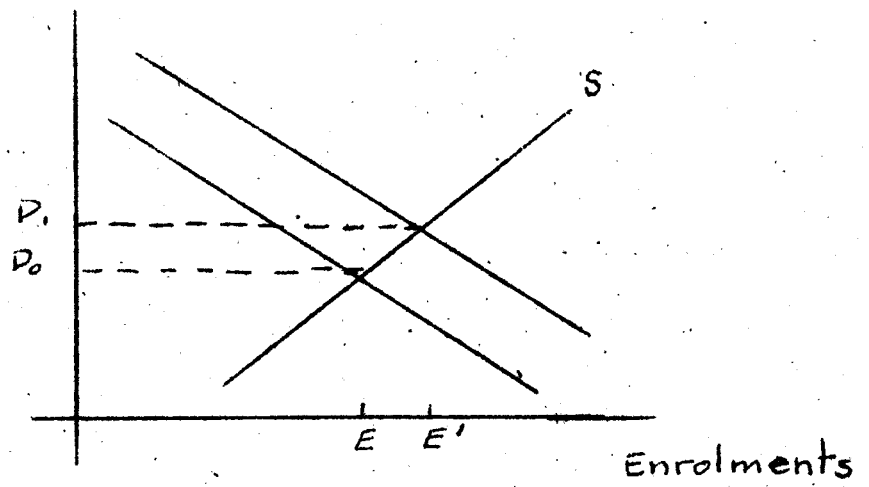


FIG. C





While an institutional framework such as that found in the Philippines alleviates certain pressures on government budgets to provide enrolments and so offers an attractive alternative to developing economies, such as regime has many public finance implications. As long as a public sector co-exists, there is the consequence of unequal government subsidies. Even if such a development is compatible with other, say, efficiency goals, the distributive consequences merit identification.

If the government accepts efficiency priorities, and if the government rations places according to an ability criteria, it may still not be true that the most able pre-college students stand to reap the largest productivity gains from education.<sup>38/</sup> Then too, ability or school performance may be income related characteristic, especially since high school enrolments are largely private and heterogeneous with respect to cost and quality.

EQUITY If the government espouses an equity motive, then is an ability criterion which provides relatively few places in an elitest system consistent with equality of opportunity although

---

<sup>38/</sup> See B.A. Weisbrod, Allen C. Keeley, and W. Lee Hansen, "On the Distribution of Benefits of College Teaching," n.d., n.p., mimeographed, p. 12.

it is patently not equal subsidy.

Alternatives to rationing according to ability include rationing according to productivity enhancement potential vis-a-vis manpower needs, rationing according to financial need so that low income families may gain access to higher education, and thereby equalize educational opportunities, or providing equal subsidies to all through direct payments to all students, or giving subsidies to those who are most likely to produce the largest externalities as gauged, for example, by choice of field.

Other public finance consequences of public policy in higher education are the following. One of the features of tax treatment in this sphere is to attract private capital into educational activities by taxing it at a lesser rate than other private industry 10% on net income compared with 25% on the first ₹100,000 and 35% thereafter.<sup>39/</sup> The private sectarian sector additionally enjoys many tax exemptions on purchases as

---

<sup>39/</sup> The 10% tax on net income of the private non-sectarian sector of education may have the effect of attracting capital to this industry, but does not alter the profit-maximizing price-output combination for the profit maximizing educational firm. This has a simple mathematical proof.

well as immunity from income taxation.<sup>40/</sup> Furthermore, in so promoting educational enterprise, the government has not only reinforced the labor losses represented by foregone earnings, but may have concomitantly deprived the public treasury of its tax revenue share of those earnings. Very recently, certain educational expenses, like tuition payments, have been made tax deductible.

This discussion suggests that in the Philippine case, there is a substantial body of public policy with allocative and distributive consequences. In part, through provision of a dual system of private provision and private finance, public policy has promoted the development of a heterogeneous cost and quality structure in higher education and has given rise to a system of unequal subsidies. While these deductions call for empirical substantiation, they logically follow.

---

<sup>40/</sup> Aside from an income and donations tax, the private non-sectarian sector is subject to import duties on imported equipment and educational materials, which are exempted for the sectarian sector.

## THE EDUCATION MARKET AND THE LABOR MARKET

The link between education and employment is a direct one.<sup>41/</sup> Education possesses features of both a consumer and an investment good. As a capital good or service embodied in human beings, the demand for education is derived from the demand for labor which is itself derived from technical production function relationships.

The optimal capital stock depends on rates of demand for goods and services, a flow concept. The demands of households, business firms, and governments per unit time can be served by the current stock of inventories or new production flows.

While it is difficult to relate <sup>specific</sup> inputs to outputs in multi-period production theory, it is possible to conceptualize that a certain output configuration, a stock concept, requires a certain labor stock, given the state of technology. In a manpower requirements framework, the input requirements are strictly technologically determined because of the assumption of fixed coefficient production function. If substitution pos-

---

<sup>41/</sup> Because growth goals preoccupy less developed countries and condition national planning, the appropriateness of an investment orientation is less in dispute than in developed countries where the social demand approach to educational planning (most often mere extrapolation of enrollment trends) enjoys as much popularity as the manpower requirements and the rate of return approach. For different planning approach see Robinson Hollester,

sibilities exist among inputs, optimization must take place with respect to economic and technological parameters.

Demand for the labor input varies with (a) changes in output demand, (b) technical change in the production function and (c) changes in the relative price of inputs, variables which are not constant over time.

While the labor force is a stock concept at any moment, over time, the labor stock is subject to inflows and outflows resulting from individual work-leisure decisions, new and re-turning entrants and retirements. Furthermore, even if there were no net flows to or from the stock, the labor force is hardly static because of the internal turnover and mobility which characterize modern labor forces.

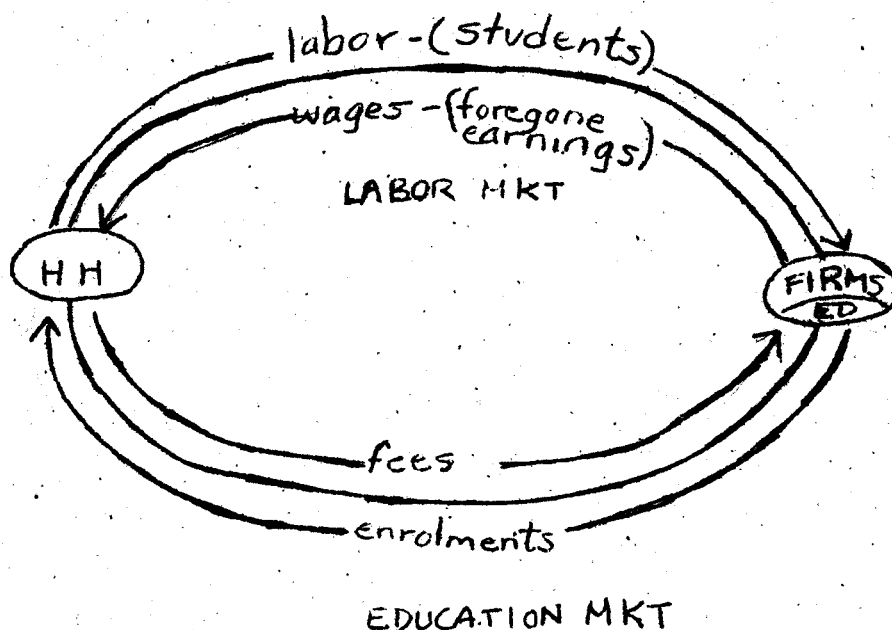
---

The Economics of Manpower Forecasting International Labour Review (April, 1964), pp. 371-397; John Conlisk, "Determinants of School Enrollment Performance," Journal of Human Resources, IV (Spring, 1969), 140-157; Mark Blaug, A Cost-Benefit Approach to Educational Planning in Developing Countries, OECD Report No. EC 157, Paris: OECD, December 20, 1967.

In our investment framework, the demand for education is derived from the demand for labor. In the extreme case of zero substitutability between inputs, the demand for a specific type of education is the product of the marginal physical product of education (which is subject to diminishing returns to fixed input, say student capacity) and the marginal earnings of the individual. While the marginal earnings of any one earner is apt to be equal to the average wage because no single laborer is important enough in the market to affect the market (that is, the demand curve facing any single labor supplier is horizontal), the ceteris paribus market demand curve for a homogeneously skilled labor is downward sloping giving rise to downward sloping marginal revenue function. Of course, diminishing marginal physical product of education alone is sufficient to render the demand for education downward sloping also. The interdependence of markets suggests how imperfections in one market can be passed on to another.

The exchanges which comprise the labor and education markets are depicted in Figure D. The exchanges taking place in the upper loop compromise the labor market. Households supply labor with different educational and productivity characteristics to employers in exchange for payments of wages,

FIG. D-III



salaries, and fringes, and other returns to labor. The transactions in the lower loop define the market for education.

Households purchase education from educational institutions or firms, incurring direct costs of foregone earnings in payment for education. So far, this diagrammatic abstraction makes no specification as to whether education is a consumption or an investment good and is not compelled to do so. An investment hypothesis would link the markets more closely by making the households demand for education, a derived function of the demand for labor.

The exchanges which define the markets for educational inputs and outputs consist of the following. The institution of higher education is typically a multiproduct firm:

The great universities typically produce at least four sets of outputs of rather different sorts: liberal education, pre-professional and professional education, applied research in both the natural and the social sciences, and fundamental research and the preservation of knowledge and more broadly culture.<sup>42/</sup>

That is, not only are enrolments differentiated by subject matter and nominal degrees but there are other activities, some corollary to education, some independent. While it is sometimes argued that some of the outputs are joint products, it is apparent that some products like hospital services in nursing education or research outputs are more interrelated to the processes of educating students than are other auxiliary activities such as cafeteria and dormitory services. That is, while the application of schooling inputs to train and to enhance the productivity and educational capacities of high school educated student inputs, other activities may not be fully independent. Are the research activities of faculty complementary or competitive with teaching activities? In providing education, a school offers enrolments, library and laboratory facilities. But one critical

---

<sup>42/</sup> Carl Kaysen, "Some General Observations on the Pricing of Higher Education," Review of Economics and Statistics Supplement, (August, 1960), pp. 55-60.



input in the educating process is the student himself. Therefore, in order to make the transition of evaluating the products a school places on the education market, by the student's post graduation performance in the labor market, one must control for the student input himself. This alone provide a source of variability in labor force performance.

If we use as a criterion, that the services for which an individual pays comprise education related activities, then, in general, teaching, administration library, athletic programs, and the school newspaper become a part of one education package for which the student pays. Dormitory, cafeteria and most research activities are separate activities of an education institution.

In payment for the education the individual must incur direct costs in tuition and fees, books and supplies, transportation and other expenses specific to obtaining a college education. That is, board and lodging expenses can only be included to the extent that they are greater than board and lodging expenses which would have been incurred otherwise, whether the student or his family would have had to meet them.

The direct costs are understated or overstated to the extent that money payments do not reflect resource costs. Educational subsidies represent real resource costs, although they are not charged to the student himself.

Since education is a time consuming process, one of the real resource costs to the student and to the society is an indirect one: the value of the earnings foregone by not being in the labor force. This presumes a full employment economy for a non-zero value, a positive opportunity cost for the marginal labor unit requires that there exists an employment alternative. Since foregone earnings do not involve an actual outlay, this component of cost is depicted in the upper loop of Figure D as a reduction in labor and wage flows because education is time consuming and productive worklife given survival statistics is thereby diminished.

The link between labor and education markets is important because education as an investment good is valued because it enhances labor productivity. If there are rigid technological relationships between education content and manpower skills, this would predicate educational planning on the manpower requirements necessary to produce a certain configuration

of output. Educational planning becomes a matter of determining the physical input requirements to provide the necessary education and, thereby, the necessary manpower. On the other hand, if there is substantial substitutibility among training and educated labor inputs, then, the educational planning task is an economic one of maximizing benefits, incorporating cost information.

#### IV. THE MICROECONOMICS OF DECISION MAKING: STUDENT DEMAND

The individual's choice problem in allocating his resources, whether human or non-human wealth is concerned, is governed by the same principles. The decision-maker is confronted by an investment opportunities function. The student, like the entrepreneur of a firm faces a variety of internal and external investment alternatives in the sense that his real capital investments in people or goods are conditioned by the financial opportunities usually characterized by 'the bond market'. Maximization of utility in the single period implies the maximization of consumption, savings and investment behaviour arises in the context of multi-period analysis. And the intertemporal decision-making encompasses real and financial alternatives.

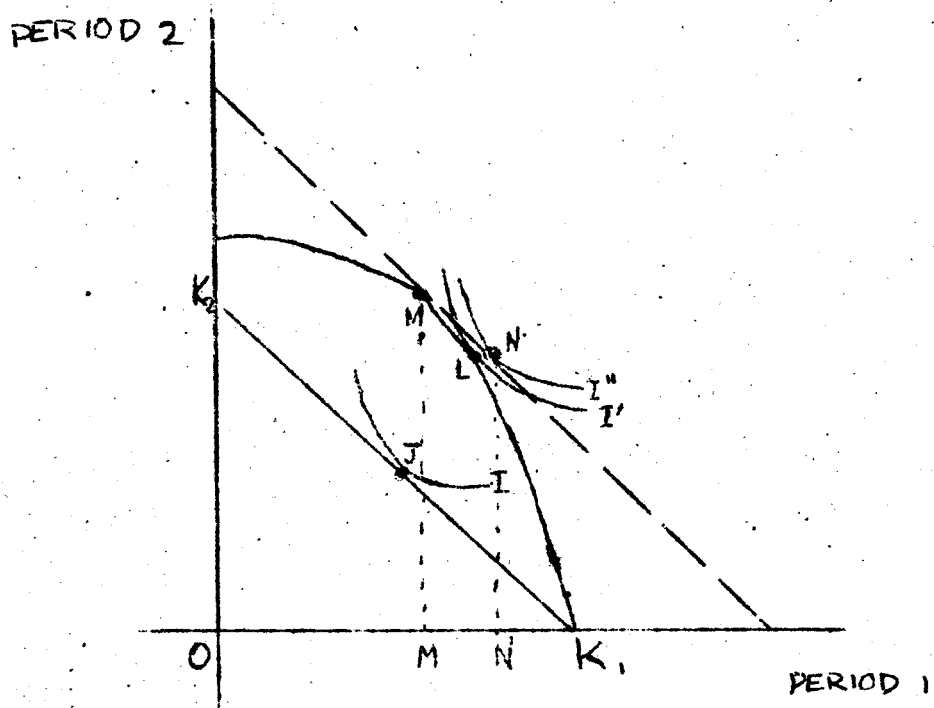
The individual's actual decision depends on a number of things: (1) the individual's subjective rate of time preference, (2) the market borrowing and lending rate, which may only be assumed equal for the sake of simplicity, (3) the investment opportunity function.<sup>43/</sup> If borrowing and lending markets exist,

---

<sup>43/</sup> See Hirshleifer for graphical analysis of investment behavior in two period cast and under wide variety of assumptions. J. Hirshleifer, "On the Theory of Optimal Investment Decision," Journal of Political Economy, LXVI, No. 4 (August, 1958), 329-352. For mathematical presentation, see James M. Henderson and Richard E. Quandt, Microeconomic Theory: A Mathematical Approach (New York: McGraw-Hill Book Company, 1958), 225-251.

the individual is not restricted to his initial endowments in making investment choices. In the absence of capital rationing the availability of borrowable funds may only increase the individual's utility possibilities, depending on whether he was effectively constrained by his own initial asset position. The ranking of investment priorities, however may change with the lifting of capital rationing. Previously unattractive alternatives can now become worthwhile only if the constraint that is lifted was binding. For some individuals, the availability of low cost educational loans will render some capital investment attractive. For others, aptitude limitations may suggest that no payoffs can be obtained from certain human capital investments, under a wide range of opportunity costs which may be assigned to real resources. That is, following Hirshleifer a capital endowment  $K_1$  in the initial period has a constant present value along line  $K_1 K_2$ , which represents different combinations of income in the first and second periods with equivalent present value as  $OK_1$  income in the current period. There exist an infinite number of parallel lines in this two-period space, one for each possible level of current income, with slopes equal to  $-(1+i)$ , where  $i$  represents the common borrowing and lending rate. The indifference map is represented by an infinite number of indifference curves, of which  $I, I'$ ,

FIG A-IV



and  $I''$  are just three.

If financial transactions and not real investment opportunities were available to an individual, he would maximize utility by seeking the tangency of the highest indifference curve, to  $K_2$ ,  $K_1$ , or point J in our illustration. If real production possibilities are available but no financial markets, the highest utility level attainable is represented by point L. If real and financial possibilities are available, the individual would produce at point M to maximize present value and would consume at N to maximize utility. This requires a higher level of current consumption ON than current income from production OM, and so requires borrowing for consumption in the first period.

Without borrowing possibilities, the individual is confined to utility levels tangent with his production possibilities. That is, even without borrowing possibilities, our example demonstrates that the individual should forego some current income to undertake real investment. Point L represents the best level of production, in that case, because it is consistent with the utility optimum.

The graphical analysis offered by Hirshleifer yields a simple application to human capital investment. For one thing,

most educational investment opportunities are not independent in the sense that they cannot be undertaken simultaneously. While some investments can be undertaken sequentially, the configuration of cost and benefits necessarily changes because the student himself is one of the scarce inputs. Hirshleifer suggests that the presence of mutually exclusive production opportunities, the present value criteria is superior to internal rate of return criteria which is ambiguous in the case of multiple tangencies.<sup>44/</sup>

The consumption problem (the ultimate goal of all economic activity according to Adam Smith) has implications to investment behaviour in the multi-period case. But research involving individual indifference maps is difficult to provide with empirical content. Our analysis employs a conventional approach which utilizes the correspondence between observable pecuniary income and non-observable utility. However, monetary income is only an index of the real benefits which yield utility. To make our theoretical concepts operational, we use this correspondence, acknowledging the implicit assumption that the relationship is

---

<sup>44/</sup> Concavity to the origin indicates diminishing returns to investment, which need not hold in the instance of lumpiness or a 'sheepskin' effect.



indeed meaningful for our purposes.

In addition, capital market constraints can also render otherwise identical investment schemes unequal among individuals.. At the relevant time, one may not be able to afford foregoing the foregone costs of education. On the other hand, the price variation associated to different kinds of education may discriminate against the less well-to-do, if loans are not available. Costs matter more than probable returns in such a case, because of the finding capital constraint in early periods. The individual must make a joint decision about occupation and institution to attend. The present value of a medical education which may present attractive investment opportunities to individuals without financial constraints in the aggregate, may be more or less attractive depending on the individual institution. And we know that institutions may effectively discriminate by entry requirements and prices. Therefore, different financial positions suggest a wide range of appropriate rates (private rate of time preference) at which to discount future earnings, apart from possible differences in earnings streams by institution.

Poor information with regard to occupation present values or occupational, employment, and earnings attainment by institution, aggravates the inefficiency of investment decisions.

Therefore on the micro level, individual maximizes present value of future benefits, net of costs, subject to the constraints which effectively bear on his decisions: his own initial endowment and his access to capital markets, and his information position. The incidence of unemployment presents an objective element of risk to the <sup>potential</sup> labor force affected. The subjective probability may be widely divergent from the average for any particular individual so that his decisions involve an estimation of his personal risk of unemployment.

Were there a zero level or only a frictional level of unemployment, the uncertainty which characterizes the real world, the dispersion around averages suggests that the individual can only maximize the expected present value of future income from investments. Actually the correspondence between money income and utility deteriorates under conditions or uncertainty, depending on subjective attitudes towards risk. To some individuals, a small chance of receiving a large income is not equivalent to a large probability of smaller earnings, even if the mathematical expectation of both alternatives is the same because the marginal utility of money is not constant at all levels.<sup>45/</sup>

---

<sup>45/</sup> See the Friedman-Savage hypothesis which offers an explanation for this kind of behavior. One hypothesis which is tendered to explain the widespread attractiveness of law studies

In face of uncertainty, flexibility in future labor markets which is associated to higher levels of educational attainment raises the employment options of the individual by making possible future horizontal and vertical mobility.

### Student Choice: Theoretical To Operational Concepts

Therefore, the investment opportunity sets confronting different individuals are distinct. The sources of variability are several. For one thing, personal qualities matter: that is not only innate aptitudes and learned abilities but also individual motivations. Since the student himself is a critical input into the educational process, this presents the possibility of wide ranging variability in the investments payoffs. The same objective investment becomes an individualistic thing. And because the institution has something to say about who it chooses to enroll, all potential students do not have the same access to the same opportunity set, apart from already mentioned personal payoff differences.

Other sources of disparities among individual investment opportunities arise from information imperfections such that:

---

in spite of placement and unemployment difficulties is the attractiveness of the small chance in the highly remunerative potential sweepstakes.

If capital markets were perfectly competitive and freely accessible to individuals for loans to finance additional education, each student's subjective rate of time preference would equal the market rate of interest and the latter would provide an accurate measure of the investment opportunity in the rest of the economy . . . . With an imperfect market, students' subjective discount rate is apt to exceed the market rate . . . . Because human capital is an illiquid capital asset, the yield of additional education might necessarily exceed the market rate but not necessarily the subjective discount rate of students or their parents.<sup>46/</sup>

Because the individual may not have good information on his potential and because introspection of this sort is fraught with dangers, average performance may indeed be the relevant yardstick for one to decide by.<sup>47/</sup> To some extent information can be purchased but complete information may not be optimal.<sup>48/</sup>

#### Uncertainty Due to Unemployment

In theory, the existence of levels of unemployment in excess of frictional component implies that the marginal productivity of labor and, therefore, the marginal rate of return to investments in labor is zero. In such a labor market one would expect relatively more discrimination against new entrants.

---

<sup>46/</sup> Mark Blaug, "An Economic Interpretation of the Private Demand for Education," Economica, XXXIII, No. 30 (May, 1966), 168.

<sup>47/</sup> Michael Brennan, Preface to Econometrics: An Introduction to Quantitative Methods in Economics, Second ed. (Cenumatti: Southwestern Publishing Company, 1965), 367.

<sup>48/</sup> Cohen and Cyert, op. cit., Ch. 15.

Certain conventional practices such as cumulative employment benefits and pension plans as well as the employers sunk investment in training workers inhibits labor mobility. After some point, decreasing productivity with advancing age inhibits voluntary turnover on the part of the old may further introduce specific biases against new entrants in spite of their more recent formal education for institutional reasons.

But so long as new entrants into particular labor markets do obtain employment for which they prepared, the marginal rate of return or present value of such educated labor is not zero in the subjective sense. That is there are many distributions of subjective risk which are compatible with certain distribution of objective risk. A persistent pool of unemployment implies that the expected present value is correspondingly reduced. The averages to which the individual behaviour is geared reflects the fact that these individuals do not expect to be the marginal unemployed members to whom rates of return are zero, although from society's point of view a zero marginal rate of return is a signal to cease further production of such educated labor and such education. A pool of unemployment does not mean new entrants will merely feed into it.

Moreover, the 'overeducated' individual has the option of obtaining employment requiring lesser educational qualifications. An unemployment rates for previous levels of educated labor not only imply that average rates of return or expected present values are correspondingly reduced but that foregone earnings of obtaining additional education are similarly overstated, making it less costly to continue one's education than it would otherwise be. Of course, this underscores the implicit working hypothesis of the rate of return technique that earnings and unemployment rates hold through time. This assumption permits us to draw time series implications from age-earnings profiles constructed from across section data.<sup>49/</sup>

#### Link Between Present and Future

But this picture is still rather artificial for it is a static one. Investment flows are dynamic and the importance of time lags and gestation periods is apparent in educational investments. These suggest a cobweb effect, and even a private free-market educational system which lacks clairvoyance would warrant some education and manpower planning.

---

<sup>49/</sup> Beverly Duncan has suggested that the amount of schooling is inversely related to employment. That is, when unemployment rates are high, enrolments are high, and dropout rate is low because the opportunity cost of obtaining education is simultaneously reduced. One can better afford to obtain an education when employment and earnings prospects are relatively bleak. In fact,

Today's investment decision is a function of future returns. But future benefits -- and we look only at earnings or private pecuniary income -- depend on future markets. We make a connecting link by hypothesizing that the future is a function of the present and past observations. Indeed a most common specification is that future earnings patterns are unchanged. This hypothesis has been shown to be a reasonable one.<sup>50/</sup> It has the property of minimizing forecast errors. We will utilize human capital models with static time patterns of earnings, acknowledging some shortcomings.

Conventionally it is assumed that in doing so current cross section earnings information will hold over time.<sup>51/</sup>

---

in the midst of educated manpower surpluses, there may be an unnecessary upgrading of education requirements. Beverly Duncan, "Dropouts and Unemployed," Journal of Political Economy, LXXIII (April, 1965), 121-134.

<sup>50/</sup> "For an important class of time series, the linear function of past values of the series that minimizes the error variance of forecast (if past values of the series are all that one has to go on) is obtained from exponentially declining weighted average of .... of past values of  $X_t$ ; that is  $X_t^*$  is a moving average of  $X_t$  using past values only." *Italics his/*. Bailey op. cit., pp. 229, 231, 232.

<sup>51/</sup> It can be shown that even if all occupations experience a proportionate increase in future earnings, the ranking of present values is not thereby changed.

There is some feeling that this is less appropriate in a less developed country where structural changes characterize the transitional economy. Because connections seem to matter more and information is less diffused than in developed countries, the proportion of income attributable to education is correspondingly reduced.

\* In the education market, then, the demand for education is a function of the relative return to education which consists of discounted earnings net of the costs of education. Alternatively stated, the demand for education is a function of the present value net of costs associated to the specific kind and level of education. In cross section analysis it is acceptable to compare rates of returns between different pairs of types or levels since the rate of return to other non-educational investment can be presumed to be constant. For a time series study, the rate of return to other investment opportunities may vary and thereby effect investment in education. And, of course, in the long run, taste and preferences are variables.

Because of the sequential nature of education, that is the quantity choice involves intertemporal decision making and prior levels are usually necessary to obtain higher levels; it is conventional to calculate rates of return to incremental levels of education. For example, Williamson and DeVoretz determined that the rates of return to college beyond high school



to yield a private rate of return of 12% and a social rate of return of 11% in the public sector; and a private rate of return of 13% in the private sector.<sup>52/</sup>

In principle, we can further refine our investment periods to additional semesters of schooling. There may actually be a certain amount of lumpiness in capital investment such that returns to incremental units of education depend on the level of education. This suggests that there is a discontinuity in the rate of return to a completed degree program rather than a partial sequence because of indivisibilities in investment. Supporting evidence can be assembled from the following unemployment rates for 1965: high school graduates, 11.3%; college graduates, 5.7%. However for school leavers who did not complete a college degree, unemployment rates were sharply higher than for college graduates at 16.4%, 11.6%, and 16.9% for those who completed one, two, and three years, respectively.<sup>53/</sup>

---

<sup>52/</sup> J.G. Williamson and Don J. DeVoretz, "Education as an Asset in the Philippine Economy," (I.E.D.R. Discussion Paper No. 67-15, November 6, 1967), 39. Using the same earnings streams to reflect benefit, but different costs to allow for the greater resource expense of public education, this result is not surprising.

<sup>53/</sup> Republic of the Philippines, Bureau of the Census and Statistics. The BCS Survey of Households Bulletin, Series No. 19. Labor Force, Manila: 38.

Here again, it may be that there is a genuine lumpiness in educational investment or at least behaviour on the part of employers which promotes such pattern. On the other hand, it may be that the less able and less diligent ones are the drop-outs, such that unemployment differentials merely reflects their correspondingly lower educable potential.

A 'sheepskin' effect would show up if there were any market value to the graduation event itself apart from the preceding education.<sup>54/</sup> We evaluate this hypothesis by observable behaviour rather than non-observable motives. We recognize the significance but exclude the psychic income components from our actual empirical investigation. We do this in part because while we might make some useful inferences on the psychic income attributable to certain levels or types of education or occupations, psychic income, being subjective is far less tractable notion than money income. Under these circumstances, all behaviour can be economically rational with this catch-all term.

---

<sup>54/</sup> This 'sheepskin effect', which Hansen, Weisbrod and Scanlon discuss may not easy to pin down empirically because of the necessity of identifying the reason for non-graduation. That is, here again we must control for ability and motivation factors. See Hansen, Weisbrod, and William Scanlon, "Determinants of Earnings: Does Schooling Really Count?" (Discussion Paper No. 20-68. Institute for Research on Poverty, University of Wisconsin, August, 1968).

Apparent inconsistencies are explainable by offsetting psychic income.

### Investment Criteria

A more correct but not necessarily more useful formulation, which would allow for non-pecuniary elements, is the following: an individual should invest in further education when

$$\sum_{t=0}^T \frac{(Y_{e'} - Y_e) + (P_{e'} - P_e)}{(1+r)_t} - \sum_{t=0}^N \frac{(C_{e'} - C_e)}{(1+r)_t} > 0$$

That is, assuming that the rate of discount  $r$  is constant through time for money income  $Y$ , psychic income  $P$ , and of course that psychic benefits and disbenefits are convertible into money equivalents, an individual will undertake additional schooling  $e'$ , over  $e$  when the present value of those incomes net of costs  $C$  attributable to additional schooling is positive. The individual is indifferent in the case where present value just equals zero. This is analogous to PV formulation:

$$PV = \sum_{t=0}^T \frac{B_t - C_t}{(1 + r_t)^t}$$

If capital is constrained, however, the nominal value of costs may understate the opportunity costs. It may not be feasible to undertake all projects with positive present values. To highlight the importance of opportunity costs when the capital resources are scarce, alternative formulations have been introduced such as  $\frac{PV'}{K}$ , where  $PV'$  is defined as  $\sum_{t=0}^T \frac{B_t - C'_t}{(1+r_t)^t} / K$ .<sup>55/</sup>  $C'_t$  includes operating costs while  $K$  represents initial capital outlay.

Similarly a present value criteria for investment choice which maximizes the present value is valid only if the capital constraint is not effectively binding. In the Philippine case where capital markets for educational loans are scarce or unavailable, apparently uneconomic behaviour can still be shown to be rational under scarcity pricing on an individual basis.

But the individual must decide not only whether to undertake additional quantities of education, but he must decide among curricula and among schools. Because the stu-

---

<sup>55/</sup> See Leon Mears, Economic Project Evaluation with Philippine Cases, Vol. I (Quezon City, Philippines: University of the Philippines Press, 1969), 13-17.

dent himself is one of the scarce inputs, educational opportunities become mutually exclusive and subjective to some extent. Individuals differ in the degree of certainty and specificity about their own career plans, and while not absolutely pinned in by initial choice of institution and curriculum, the range of possibilities has been reduced to some extent, if we believe education to be job-specific at all. While additional degrees or courses are obtainable in spite of earlier education choices, the time consuming nature of education already impinges on future work life and thereby earning capacities specific to education. Different sets of educational opportunities are available to different individuals because of the two sided nature of decisions on enrollments and because of individual indifferences in ability and motivation.

Human capital unlike physical capital investments decisions, seek at any moment of time to maximize present value rather than undertaking all projects which have a present value greater than zero, because of the mutually exclusive nature of educational investments. However, the rule of investment priorities remains the same in both instances. At the same time, because of the sequential nature

of education, decisions are not intertemporally independent. It is appropriate to assign a value to the option to continue one's education, which is made possible only by the attainment of prior levels.<sup>56/</sup> For example, a bachelor of laws which may not be a relatively attractive alternative is usually necessary to obtain a master of laws which may be very well rewarded in the labor market.<sup>57/</sup> Therefore the option value of obtaining a masters should be imputed to the value of acquiring a bachelors. \* The present value of current alternatives must include the option value of future opportunities to further education, employment, and consumption made accessible.

### Market Demand

To proceed from the individual decision-maker, the firm and the household, to the industry requires the aggregation of individual supply and demand functions to obtain market supply and demand curves. While we have referred to a higher education industry, we recognize that strictly speak-

---

<sup>56/</sup> ... The present value of a project reflects the fruitfulness of any further investment it occasions, but only if there is some special reason for associating the future investment with the present project .... Feldstein and Flemming, op. cit., p. 84.

<sup>57/</sup> It is likely that a labor market which values, say, a master's of laws degree will feed into the bachelor's of laws market.

ing, there are as many distinct (though related) market supply and demand curves, and therefore education markets, as there are types of educational enrolments which are product differentiated in the minds of the consumers. [ It is apparent that enrolments differ by fields; it is suggested that they differ by other quality vectors.

Evidence of this product differentiation is observable from the wide array of prices that individuals and families are willing to pay for nominally equivalent degrees. In the Philippines, the cheapest enrolments are not rationed by ability criteria; for the private, commercial sector, to a relatively large extent, is not selective with regards to ability or financial resources criteria.]

We acknowledge the weakness of doing so, but follow the convention of abstracting from the aggregation problem to conceptualize aggregate market behaviour, because, of course, aggregation involves more than a simple horizontal summation of individual supply and demand functions. Social benefits and costs are consequent on the aggregation of individual behavior.

Market demand is the horizontal summation of individual demands. We can generalize a demand function to include

the specific variables of income, population, and relative prices. Ceteris paribus restrictions on income, population and other prices, in addition to unchanging tastes and preferences, permits us to determine rate of demand as a unique function of own price, thereby generating a demand curve

$$1.1 \quad D = f (Y, P_e/P_b, E, Z)$$

By holding income (Y), other prices ( $P_b$ ), population (E), and tastes (Z) constant we derive a familiar single valued demand curve 1.2 where D for specific educational output is a function of price alone.

$$1.2 \quad D = g (P_e)$$

For an investment good which yields<sup>a</sup> stream of income, price is not quite the appropriate independent variable and relative prices ( $P_e/P_b$ ) in 1.1 can be replaced by relative rates of return ( $r_e/r_b$ ) where  $r$  is the 'bond' rate, a shorthand proxy for other markets' rates of return

$$1.3 \quad D = h (r_e/r_b)$$

$$1.4 \quad D = i (PV_e)$$

Unique correspondence between  $r_e$  and  $PV_e$  permits us to



derive 1.3 and by holding  $r_b$  constant converting to present value, we get 1.4.<sup>58/</sup> Demand for education whether using rate of return or PV is derived from expected life-time earnings net of costs. Allowing for unemployment and uncertainty we get 1.5.

$$1.5 \quad D = j \sqrt{E (PV_e)} ,$$

where  $E$  denotes the expected value.

We shall not dwell on the rate of return to education relative to other investments except to point out that shifts in  $r_b$  alone are enough to induce adjustment to a new equilibrium in capital markets. Other things being equal, a rise in  $r_b$  would lead to disinvestment in education and expansion in other investments. More realistically other things

---

<sup>58/</sup> The rate of return criteria becomes equivalent to the present value criteria when 1) projects are perfectly divisible, 2) there is no capital constraint, and 3) proceeds can be reinvested at the same rate of return as the original investment. See M.M. Dryden, "Capital Budgeting: Treatment of Uncertainty and Investment Criteria," Scottish Journal of Political Economy, XI (November, 1964), 235-59. The present value rule to undertake all investments where  $PV > 0$  where

$$PV = \sum_{t=0}^T \frac{B_t - C_t}{(1 + r_t)^t}$$

$T$  = retirement age  
 $B_t$  = earnings in time  $t$   
 $C_t$  = Costs specific to investments  
 $r$  = discount rate (s) of net benefits and costs

are not equal and we would have to disentangle the effect of changes in  $r_b$  or  $r_e$  from those due to changes in income, taste, and population.

Furthermore, capital market imperfections would suffice to maintain a permanent disparity between  $r_e$  and  $r_b$  so a tendency to equalize may not be presumed.

Since education is scarcely a homogeneous product, it may be useful to conceptualize different aggregate demand functions of separate field and groups of institutions.<sup>59/</sup>

---

The internal rate of return rule is to undertake projects to maximize IRR where IRR is determined by solving the following equation for  $i_t$ :

$$\sum_{t=0}^T \frac{B_t - C_t}{(1 + i_t)^t} = 0$$

To assess the value of additional education, the rate of return to incremental education utilizes the same equation but  $B_t$  and  $C_t$  are interpreted as the benefits and costs to additional amounts or levels of education. It can be shown that in equilibrium where capital is not constrained and present value equals zero. The present value and internal rate of

return have a certain equivalence sets  $\sum_{t=0}^T \frac{B_t - C_t}{(1 + r_t)^t}$  equal to

zero. See M.S. Feldstein and J.S. Flemming, "The Problems of Time Stream Evaluation: Present Value vs. Internal Rate of Return Values," Bulletin of Economics and Statistics, XXVI (1964), 79-85.

<sup>59/</sup> Whether choice of institution or field of study is antecedent or has preponderant influence on actual education choices has yet to be researched.

For our purposes, a tripartite classification may be although education may appear to be most accurately represented by the monopolistically competitive model. If exists a high elasticity of demand with respect to price among public, private commercial and private non-profit institutions, the rate of demand would be sensitive to its own rate of return and the rate of return of other institutions.

Another aspect of reality remains troubling. Unlike most markets where purchasing power is sufficient to negotiate a transaction, one of the inputs (whose opportunity costs or foregone earnings may outweigh the direct costs) is the student himself. And this factor may be sufficiently variable to exclude certain market transactions. This is referred to as the ability variable and explains why individuals may not have equivalent access to markets. There are non-competing groups.

There remains this gap between psychology and occupational choice and economic theory and we offer no dramatic means of contending with this important issue.<sup>60/</sup> In addition

---

<sup>60/</sup> Eli Ginzberg has suggested a useful framework for considering occupational choice and summarizes it in the following paragraphs:

This, then, is our general theory. First occupational choice is a process which takes place over a minimum of six or seven years, and more

tion, even those who acknowledge this matter have not been very successful in empirically implementing this feature.<sup>61/</sup>

If we can somehow abstract from ability variables, demands for education becomes a function of expected lifetime earnings net of costs and can be translated into terms of present value or rate of return.

---

typically, over ten years or more. Secondly, since each decision during adolescence is related to one's experience up to a point, and in turn has an influence on the future, the process of decision-making is basically irreversible. Finally, since occupational choice involves the balancing of a series of subjective elements with the opportunities and limitations in reality, the crystallization of occupational choice inevitably, has the quality of a compromise.

Eli Ginzberg, *The Development of Human Resources* (New York: McGraw-Hill Book Co., 1966), p. 57. For efforts of economists in this area, see Edita A. Tan, "Supply of Professional Degrees in the United States," (unpublished Ph.D. Dissertation, University of California, Berkeley, 1967).

<sup>61/</sup> Martin Carnoy makes the explicit assumption that his sample is homogeneous with respect to the Z, or characteristics of a group so that Z can be dropped from his model equation for demand for incremental education:

$$D_t(S, Z) = Y + (S, Z) - Y_t(S-1, Z)$$

where D is the demand function for each education level and Y is the earnings function specific to each age t. Martin Carnoy, "Rates of Return to Schooling in Latin America," Journal of Human Resources, II (Summer, 1967), 359-74.

## V. THE MICROECONOMICS OF DECISION MAKING: INSTITUTIONAL SUPPLY

On the supply side of the market for education, the supply conditions depend on the market structure, cost conditions, and objective functions. In the competitive case, supply is related to cost in a simple way and can be solved for by utilizing the first order condition for profit maximization, marginal cost equals price, <sup>this is</sup> if/the correct behavioral hypothesis, to determine quantity supplied as a function of own price. In the more apt non-competitive case where the firm is a price maker rather than a price taker, there is, in effect, no supply curve.

That is, changing demand conditions are necessary to generate new profit-maximizing price-quantity combinations which will yield a supply curve in the monopoly model. Oligopoly structures, with their large variety of possible conjectural variations present alternative supply situations.

The long run investment decision and the short run price and output decisions of the commercial institutions have their analogs in the microeconomics of the business firm. Profit maximization appears to be the relevant behavioural hypothesis. For the non-profit educational institution, more cogent variants have been proposed. Barry Siegel has suggested

that while the structural equations of cost and demand need not vary in principle between the commercial and non-commercial sectors, the profit-maximizing objective function is probably a poor behavioral specification for the private non-profit or public sectors.<sup>62/</sup>

### Models of Institution Behavior

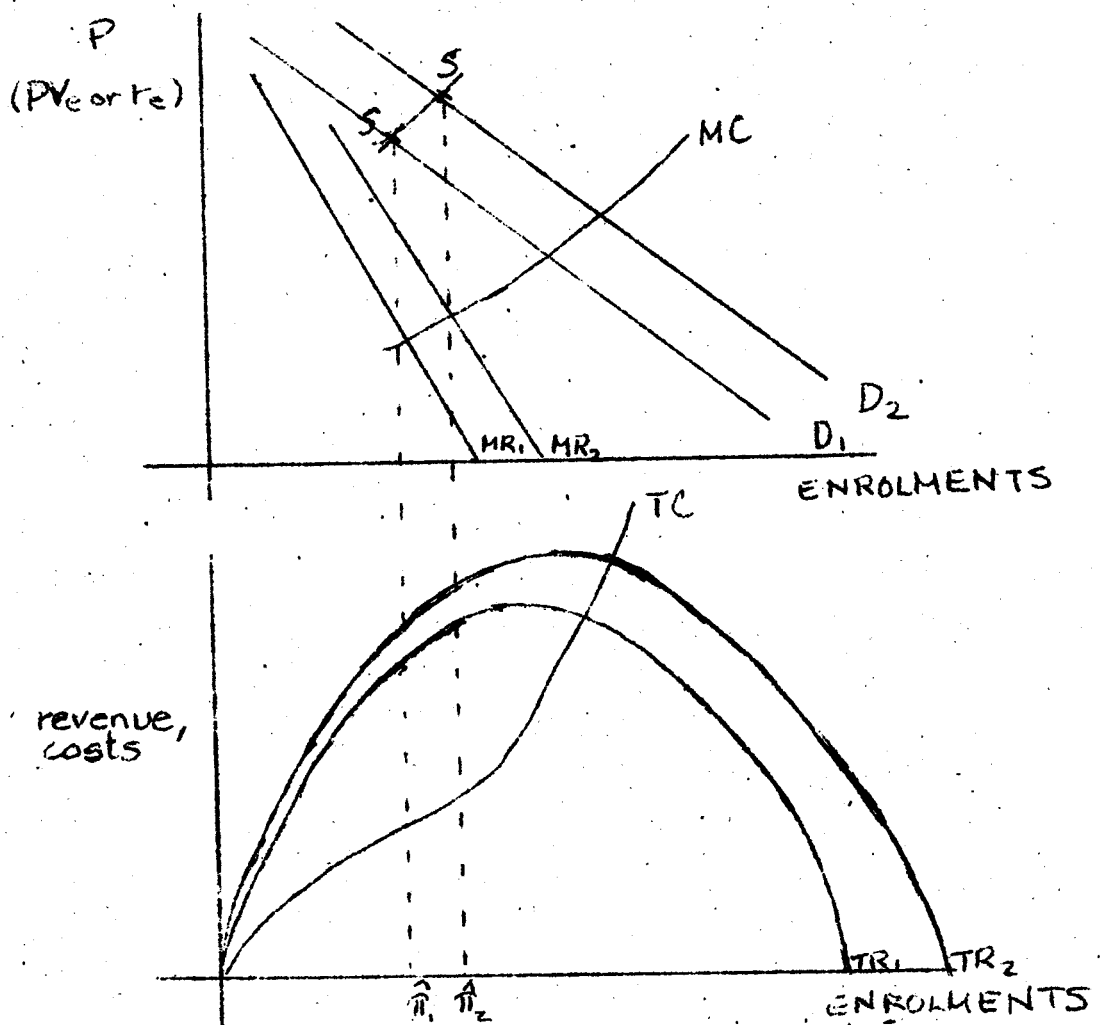
Even if demand and cost conditions were identical, yielding identical structural equations, differences in the behavioral specifications give rise to alternative objective functions. This suggests that conventional micro-theory may be inappropriate in non-profit seeking firms such as those found in the education industry.

#### (1) Profit-maximization

For the commercial institution of higher learning which is profit-seeking, supply curve is generated by shifts in demand. That is, according to a monopolistic model, a price and output decision, is determined where marginal costs equals marginal revenue and marginal cost is rising. The supply curve is designated by SS in Figure B. Because

---

<sup>62/</sup> Barry N. Siegal, op. cit., p. 2.



price would be higher and output lower than the competitive equilibrium would suggest, welfare losses are attributed to non-competitive market structures. Even if monopolistic competition more appropriately described the educational industry structure and behavior than oligopoly models, there still remains the problem of excess capacity. For in the Chamberlian long run equilibrium, price does equal long run average

cost, but this intersection is not the minimum point on the long run average cost curve so that excess capacity is said to occur.<sup>63/</sup> The presence of economies of scale or monopoly elements in other markets alters these theoretical conclusions.

## (2) Outlay or Revenue Maximization

The observation that many institutions of higher learning are not profit seeking or profit making has led Siegal to suggest an alternative formulation of school administrators' objectives. He hypothesizes that their utility is a function of outlays, which equal revenues because of a balanced budget constraint. The supply curve for such an institution is a relatively simple one to derive because total revenue under conditions of downward sloping straight line demand is maximized where elasticity of demand equals one. The behavioral hypothesis is:

---

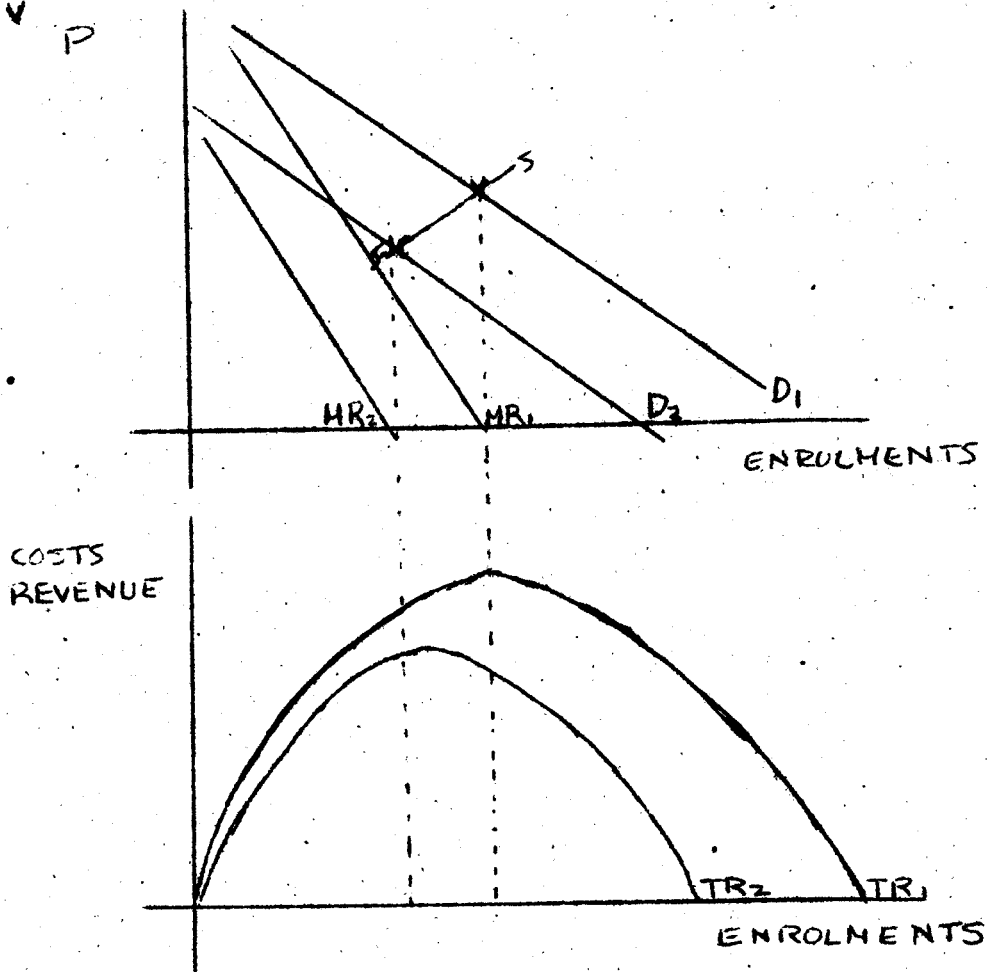
<sup>63/</sup> Bishop has shown that since a movement to increase output so that average costs are minimized will require exit from the industry as remaining firms expand their levels of production. This exist suggests a narrowing of product variety. If this is the more efficient pattern of production, it is so at the cost of disregarding the original demand curve and an inefficiency in consumption. See Robert L. Bishop, "Monopolistic Competition and Welfare," Monopolistic Competition Theory: Studies in Impact. Essays in Honor of Edward H. Chamberlin, (New York: John Wiley and Sons, Inc., 1967), pp. 251-264.



$$U = u \text{ (outlays)}$$

and shifts in demand give rise to a distinguishable supply function, much like the profit-maximizing case, and is demonstrated below:

FIG C.-IV



Marginal cost pricing is feasible in this sector to achieve the efficient level of output. The market supply curve for such firms is identical to the marginal cost curve above average variable costs. Since marginal cost is everywhere below the profit-maximizing supply curve on figure B, the

quantity supplied by the not-for-profit firm should be greater at every price. However, we cannot say anything definitive about the revenue-maximizing supply curve vis-a-vis the marginal cost pricing supply curve.

A non-profit service even a public university encounters a budget constraint when appropriations are formalized in advance. A utility function which incorporates this consideration appears to be moving in the direction of reality. And these pressures for solvency exist in both the public and private non-profit sectors, although the former may have more certain recourse to financial assistance in the event of deficits, by dint of its identification with the government. While capital funding for expansion can be specifically budgeted for public institutions, private institutions must finance such capital expansion, in lieu of other sources, by donations or savings out of operating income.

It should be noted that the revenue-maximizing supply curve  $S' S'$  is everywhere below the profit maximizing supply curve  $S S$  (Fig. B). In the former case output is determined where marginal cost equals marginal revenue and price is set from the demand curve itself. In the latter case, output is

determined where total revenue is equal to zero. Because marginal cost is non-zero in the general case, marginal revenue will equal zero at an output higher than marginal revenue equals marginal cost; and therefore the revenue-maximizing supply curve will be everywhere lower than the profit-maximizing supply curve.

### Quality in the Utility Function

By incorporating quality considerations, Siegal introduces a more cogent specifications, where utility is a function of outlays and enrolments:

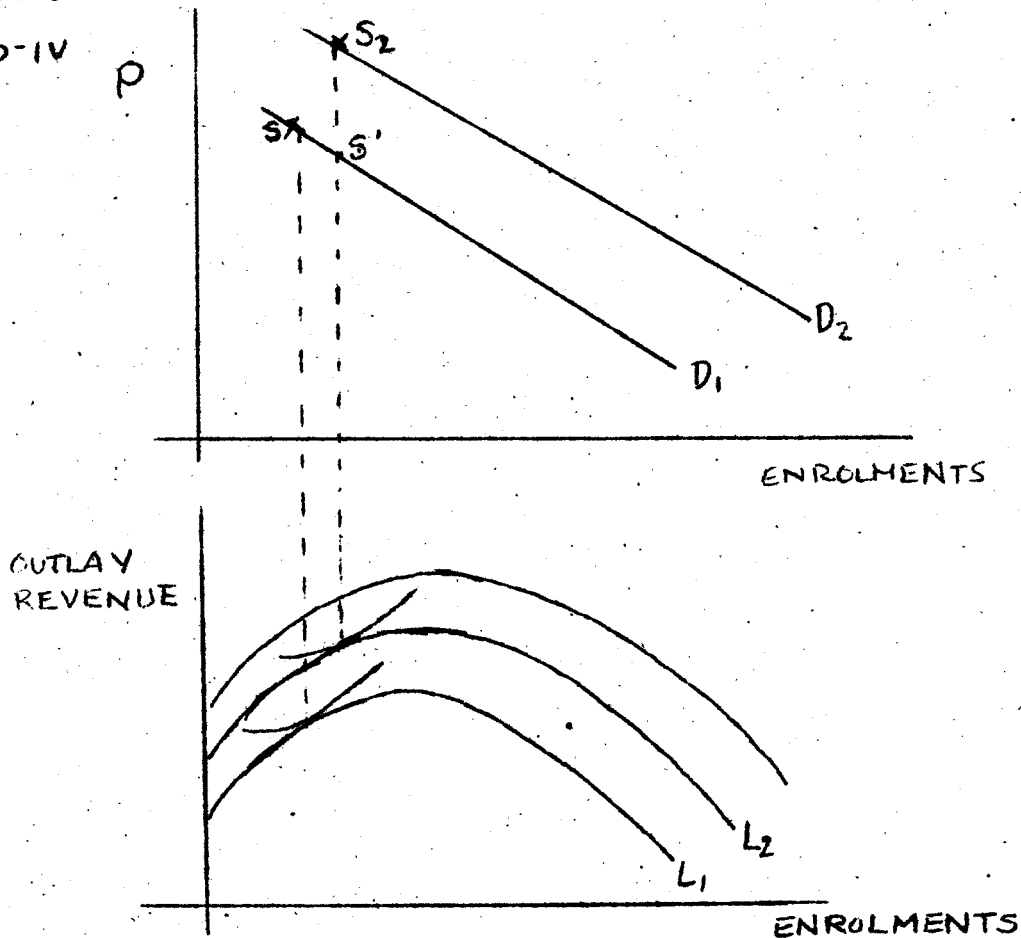
$$U = v(\text{outlays, enrolments}) \text{ and } v_1' > 0, v_2' < 0$$

Thus, an increase in outlays without an increase in enrolment raises the quality of education. Alternatively, an increase in enrolments without an increase in outlays will cause quality to deteriorate. The shape of the institutional supply curve depends on the indifference map.

A supply curve is generated by changes in demand. Each demand curve gives rise to a corresponding opportunity locus (combinations of enrolments and outlay-revenue given by each demand function). Institutional utility is maximized where the indifference curve is tangent to the oppor-

tunity locus in outlay (revenue)-enrolment space as shown below.

FIG D-IV



### Digression on Externalities

Even efficiency motivated (marginal cost pricing) educational firms would fail to achieve the socially optimum level of output, if private costs and benefits do not reflect social costs and benefits. Because this may have useful application in regard to research outputs and certain education outputs suggested by the coexistence of manpower shortages and surpluses, we discuss these matters here.

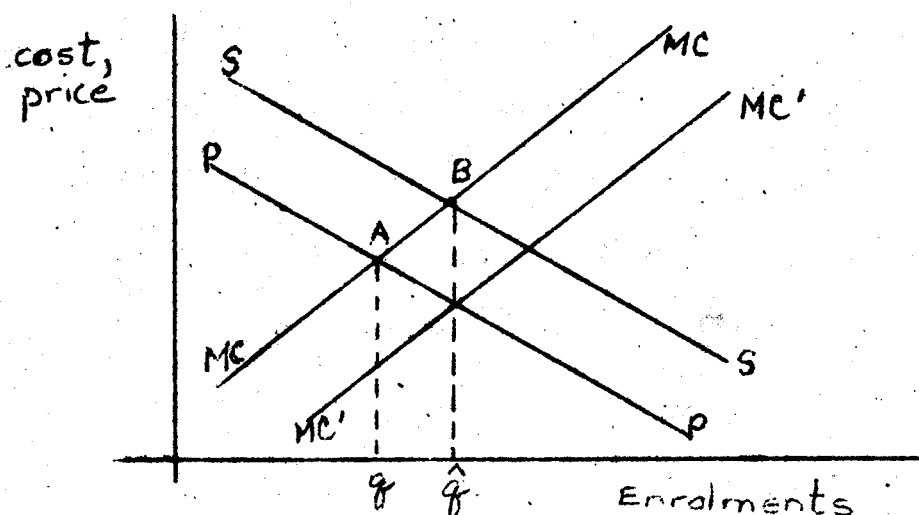
The presence of real external costs or benefits, on the other hand does not necessarily imply provision of a non-optimal level of output, although it does raise that suspicion. The beneficiaries of the external benefits have an incentive to encourage, say, educational production. When they are a highly diffuse group, there may, however, be an organization problem. In cases where it is difficult to exclude access or to internalize benefits and costs because of non-immediate, and perhaps unknown payoffs, the decision to undertake such tasks as basic research may require a government caretaker.

If there are real or pecuniary benefits of education which are external to those obtaining the education (whether we choose individuals or households as the relevant unit) society's demand for education (SS) exceeds the sum of private demands (PP).<sup>63a/</sup> While the intersection of supply and demand for the industry as a whole is at point A where the marginal value to private individuals equals the marginal value of the resources utilized, the social optimum is at point B.

---

<sup>63a/</sup> The pure public good case, of course, suggests that a vertical rather than a horizontal summation of individual demands is the appropriate aggregate demand curve for evaluating social worth. It does not appear that a very convincing case can be made for education as a pure public good.

FIG E-IV



The private market, in such a case, will underprovide enrolments of amount  $q$  relative to the efficient level  $\hat{q}$ . If taxes alone (abstracting from government expenditure policy) is the source of disparity, elimination of tax shifts  $pp$  to  $ss$ . If there are real externalities which only the community as a whole can internalize, other action may be necessary. For example subsidies to institutions may lower  $MC$  to  $MC'$ , so leading the private market to produce quantity  $\hat{q}$ . Alternatively, subsidies to students may raise  $pp$  upwards and to the right to likewise eliminate gap  $q - \hat{q}$ .

Price control will not promote a more efficient level of output in this case, although output controls may. However, the incentive to economize may pose a threat to the quality of education.

### Policies to Affect Allocation

Ignoring the revenue problem of the method of raising funds for subsidies, taxes and subsidies may be efficacious in altering the level of output (see Ch. III, pp. 5-7). The effect depends on the institutional model. However because of the imperfect market structure as characterized by the downward sloping demand curve facing the firm, the excess capacity problem would persist, even if the socially optimal level of enrollments is achieved.

Because Pareto optimality values efficiency alone, it is insensitive to the distribution of income. That is to say the private market may fail to achieve the efficient allocation (though there are an infinity of efficient allocations depending on the distribution of income) under the foregoing circumstances because price uniquely sets output but it is only the latter physical magnitude with which we are concerned. Of course, manipulating price control is one way to achieve the optimum quantity but there may be others as well. For example direct control of output by penalizing outputs in excess or shortage of the optimum amounts may be used to secure that quantity.

### Composition

At the next logical level, selective taxes or subsidies may be warranted. Compositional differences in educational policies may be appropriate to deal with the long run question of optimal investment and the related, but conceptually distinguishable short run problem of pricing and (therefore) output.

To rationalize why selective policies may be needed; that is, to theorize as to why certain manpower shortages may persist and in isolating the causes, we may identify the appropriate measures to cope with them.

Building upon the reasoning of the foregoing sections, an obvious case would be that of differential externalities. If significantly larger externalities can be attached to certain occupations and therefore certain fields of study, the private incentives to undersupply relative to the social optimum and individual decisions to underinvest relative to the optimum would be more severe in these areas. The shortages in science and technology careers may arise because individuals are motivated by a calculus of private benefits which may understate social benefits.



On the other hand, it is believed that certain occupational pursuits by their very nature encompass fewer external benefits so that professional and preprofessional education differ from liberal education in just this way. Similarly, profit-making institutions would have less incentive to produce non-marketable outputs such as research, relative to marketable outputs like enrolments. In his illustration, Siegal specifies a utility function where the marginal rate of substitution of institutional expenditures and enrolments is positive. Alternatively, the indifference map contains positively sloped indifference curves. This case is demonstrated to yield an output below that of the revenue maximizing case. The introduction of subsidies in this case would lead to a decrease in price and an increase in enrolments. Other indifference maps yield alternative results.

If price ceilings are sanctioned by law, public opinion, or public spiritedness of the institutions themselves, Siegal argues that non-price or quality rationing is a common behavioral expectation for the non-profit institution in face of increasing enrolment demands. This implies improvement in the quality of the student input unless subsidies keep pace, so that enrolments can be increased too.

### Subsidy Policy

Subsidies to individuals which cause demands to shift can raise equilibrium enrolments. In the most reasonable case, equilibrium price will also be higher. In the profit-maximizing model an increase in demand shifts up and outwards the marginal revenue curve, leading to a new equilibrium at a higher level of enrolments. This represents a new point on the original hypothetical supply curve because changes in demand are the only way to generate new price output combinations. As a result the quantity supplied has increased but the original supply curve has not shifted, so equilibrium price is also higher.

In the outlay maximizing model, subsidies to individuals which increase demand causes a concomitant shift in the marginal revenue function. Therefore maximum revenue, where marginal revenue equals zero is at a new higher level of enrolments. As in the previous case the equilibrium quantity supplied has risen but the 'supply' curve has not shifted.

If subsidies to individuals increase demand in the outlay-enrolment utility function case, equilibrium quantity and price are likewise increased, reflecting again a movement along the original supply curve rather than a shift in the

supply function.

If, however, Siegal's special case is relevant and prices are constrained, equilibrium price and outputs may not increase when demand is rising. Rather institutions engaged in non-price rationing. Subsidies to individuals in this case will not succeed in increasing student enrolments. On the other hand because institutions can be more selective with regard to student inputs, educational investments of individuals may enjoy better payoffs and possibly even rents depending on the market equilibrium relative to the social optimum level of enrolments.

#### Subsidies to Institutions (based on enrolments)

In the profit maximizing case, subsidies to institutions will shift downwards the marginal cost function. Institutional subsidies thus raise the equilibrium level of output and lower the equilibrium price.

In the outlay maximizing case, subsidies to institutions will not be effective in shifting up the supply curve because the school will still determine the locus of price output combinations where the elasticity of demand equals one. Therefore the demand function must shift to generate new price and quantity combinations which represent movement along the same demand curve rather than a shift in the demand function.

In the outlay-enrolment utility function case, increases in demand lead to a movement along its institutional supply curve. The additional specification of a price ceiling may prevent even this and give rise instead to quality improvements of the student enrollees. A subsidy to institutions permits outlays beyond those implied by the demand curve. The opportunity locus is raised similar to increase from  $L_1$  to  $L_2$ . But because shifts in demand cause an increase in the opportunity locus, equilibrium price and output supply is  $S'$  rather than  $S_2$  as shown in figure D.

If additionally, price controls are in effect,  $S'$  is a possible point unless price is fixed rather than subject to a ceiling. Subsidies to institutions will raise enrolments where subsidies to individuals will not because of the price ceiling. Joint subsidy in this third case would lead to a price and quantity combinations which represents an output greater than and a price lower than  $S_2$  (subsidy to individuals only) but a higher price than  $S'$  (institutional subsidy alone). Of course depending on the relative sizes of the subsidies to individuals and institutions, different results are possible. Since welfare economics conclusions are neutral with respect to the distribution of income (so that outputs

matter and prices do not, if they are separable) subsidies to individuals or to institutions will work to alter the level of enrolments. For the principle of joint subsidy to hold, as Siegal proposes it, the additional specification of an effective price ceiling is necessary. It is, however, unclear as to why resistance to price ceilings will persist when subsidies are being distributed to students. And Siegal does recognize that conceptually joint subsidy may not even be essential. To get the joint subsidy requirement, he has to specify in addition to the outlay-enrolment utility function, an effective price ceiling and the impossibility of a reduction in the standards of institutions with respect to the quality of the student inputs. But in fact these monopolistic models may not be very good at all, if the interdependence of firms in the industry requires specific cognizance of this feature. Although there are numerous firms in the industry, several producers are dominant. It seems that for certain subsectors of the industry at least, price and output decisions may be constrained to some degree by other firms actual and potential behavior plus that of possible new entrants.

### Barriers to Entry

Barriers to entry remain the primary distinguishing difference between monopolistic competition and oligopolistic market structures with the corresponding implications of excess profits in the latter. By comparing profit margins in this industry to the structures known to be competitive or oligopolistic, we might isolate excess profit position of the educational industry. The variables which appear to be candidates for effective barriers to entry in the educational industry are (a) capital requirements, (b) economies of scale, (c) licensing requirements, and (d) trademarks or established reputation.

A tentative means of checking the importance of each of these factors might be an investigation of the ease of entry as judged by approvals against application and an examination of the range of capital requirements and the size of enrolments of institutions in the industry. In the Philippine case, neither appears to be a substantial constraint on entry.

At the outset, it appears probable that the industry is characterized by an oligopoly layer of institutions and a monopolistically competitive fringe. Where barriers to

entry are minimal, why doesn't the monopolistic subsector erode the oligopolistic core? Because the core enjoys certain economies of scale and, related to its size, an established name.

That is, while there are over 400 firms in the industry, and they are spatially and product differentiated, there appears to be sufficient cross-elasticity with respect to price to suggest, despite the range of quality, industry is a meaningful concept here. Furthermore, within the industry there appears to be subgroups in which intragroup substitution is higher than inter-group substitution. These remarks are of course hypotheses rather than facts. Similar comments have been made regarding U.S. colleges.<sup>64/</sup> This behavioral interdependence along with concentration and conditions of entry, suggest that oligopoly provides the relevant structural model. The unequal distribution of wealth and ability would reinforce product variety. Serious imperfections in information points to the value of incurring selling costs.

---

<sup>64/</sup> Harris, op. cit., pp. 101-105.

### Efficiency Incentives in the Profit-Seeking Sector

By setting aside organizational and managerial differences, we do not wish to understate the importance of administrative efficiency. High cost producers will be competed out of business in a private free enterprise system. The non-profit institution has less incentive to efficiency because profits earned can only be ploughed back and not distributed to owners. This is in essence the traditional reasoning which argues that incentives to efficiency are greater in a firm which seeks maximum profits; gross inefficiency will drive a firm out of business.

On the other hand, if administrators salaries in the non-profit sector, were demonstrated to be correlated with size; and surpluses were an essential source of revenues for capital and enrolment expansion, there would be an incentive to efficiency. Moreover, if the product is technically complex, or information about the quality of education and labor force performance were not well known, there is the possibility of poor quality and exploitation of students.

Barriers to entry may protect the inefficient much as access to government finance may support inefficiency in the public sector. But there are incentives to efficiency even



where oligopoly market structures prevail. The greater profit margin in imperfectly competitive than in competitive structures suggests only a larger margin for survival of the inefficient.

The nature of the charge against the profit seeking motive in education focusses not on efficiency per se, but rather the possibility of reducing costs and increasing profits by the use of inferior inputs on the part of profit seeking entrepreneurs.

Clearly, costs are not a comprehensive index of efficiency. Higher costs are justified by superior quality. So it becomes important to discern the cause of cost differences among institutions: quality differences or inefficiencies. For example, there are regional cost differences because of economies of scale allowed by larger markets in urban areas. Access to such lower cost enrolments is limited to rural students by transportation costs which must be incurred. Therefore a pattern of regional cost differences would persist. This factor can be removed by concentrating on geographically proximate institutions. Even then, because of quality variations or product differentiation, it is difficult to identify which institutions are inefficient or overpriced by the marginal cost criterion.

An analysis of supply and demand on an individual (firm and student) and market levels helps to understand behavior of the relevant micro units and therefore the impact of policies to influence the behavior of students and educational firms. The social consequences follow from the aggregate of individual behavior on the supply and demand side in education markets.

1. The first part of the document is a list of the names of the members of the committee who have been appointed to the various sub-committees. The names are listed in alphabetical order, and the sub-committees are listed in the order in which they were appointed. The names of the members of the committee are listed in the first column, and the names of the members of the sub-committees are listed in the second column. The names of the members of the committee are listed in the first column, and the names of the members of the sub-committees are listed in the second column.