ECONOMIC GROWTH CENTER

YALE UNIVERSITY

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CENTER DISCUSSION PAPER NO. 160

# THE PRIVATE DEMAND FOR EDUCATION IN RELATION TO LABOR MARKET CONDITIONS IN LESS DEVELOPED COUNTRIES

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October, 1972

# The Private Demand for Education in Relation to Labor Market Conditions In Less Developed Countries*

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A common situation in developing countries in the past two decades was a shortage of educated manpower relative to the expressed needs of the economy. Many development planners felt that this skilled manpower shortage was seriously retarding the development process, and considerable resources were devoted to tooling up the educational system to produce more graduates in the shortest possible time. Citizens saw education as providing themselves and their children with the qualifications needed for the best-paying, highest-status jobs; the more schooling spaces, the greater the likelihood of a particular child securing the necessary credentials. It is in this sense of families seeking to have their children educated that we shall talk about the demand for education. More specifically, throughout this paper, we shall use the term "demand for education" to mean the number of persons who would like (or whose parents wish them) to be enrolled in school under existing conditions. All indications are that during the years of shortages of skilled manpower the demand for education was very strong.

In recent years, however, many less developed countries have suddenly and apparently to their surprise found themselves with too many (relative to the absorptive capacity of the economy) rather than too few workers with intermediate educational attainments. Forecasts of impending surpluses of even university

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*This paper is based on Gary S. Fields, A Theory of Education and Labor Markets in Less Developed Countries, Unpublished doctoral dissertation, Department of Economics, University of Michigan, Ann Arbor, 1972, hereafter referred to as Thesis. The preparation of the thesis was aided by the Rockefeller Foundation; the United States Agency for International Development; the Institute for Development Studies, University of Nairobi; and the Center for Research on Economic Development, University of Michigan. Thanks are extended to Professors Elliot J. Berg, George E. Johnson, Frank P. Stafford, and Lester D. Taylor for their invaluable criticisms and suggestions at all stages of the thesis research.

graduates are becoming increasingly frequent. Yet, even as surpluses of educated workers grow larger and larger and the employment prospects of workers with a given level of education continue to deteriorate, the people continue to demand education.

In this paper, we construct a model of the demand for education in relation to labor market conditions in less developed countries to try to understand why a high demand for education might be expected to persist in countries characterized by a substantial surplus of educated labor. It might be argued that the continued demand for education merely reflects the failure of citizens to adjust their behavior to current labor market conditions. This position implies that the demand for education will fall, perhaps drastically, as expectations come into line with reality. However, in contrast to this position, we demonstrate in this paper that under several alternative labor market scenarios the sustained private demand for education is quite rational and can be explained by the net private benefits which the educated individual receives in the labor market.[1]

The plan of the paper is as follows. We first review the available evidence on private rates of return to investment in schooling in less developed countries and then formulate a model of the demand for education as a function of the private return to education. After showing the ways in which this return depends on the total number of persons educated and the number who enter the different labor markets, we then construct demand for education schedules under four alternative models of labor market behavior. We show that in two of these models, when relatively well-educated workers are entering the labor force for less skilled jobs the resulting labor force allocation is such that the private returns to education and the demand for education would remain constant regardless of the number of surplus educated persons. Furthermore, in a third model, the demand for education would be expected to <u>increase</u> with the size of the educated surplus. We suggest that these possibilities taken together with

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[1] In general, economists concerned with education have not made explicit the linkage between the demand for education and the demand for educated people. A notable exception is Blaug (1965).

other factors which might cause the demand for education to be inelastic with respect to the supply, provide an economic explanation for the sustained high demand for education in less developed countries despite educated unemployment and underemployment.

## I. The Demand for Education and Private Returns

Education is desired by different groups for different reasons: by private individuals who for job-related or other reasons want their children educated; by firms and governmental bodies who wish to employ educated persons; by policy-makers who feel that a well-educated populace is necessary for national development; and by teachers who are employed by the school system. The private demand by families who would like their children educated up to a particular level is our central concern in this paper, and we are using "demand for education" to mean the number of persons who wish to be enrolled in school under existing conditions. This demand is not expressed in textbook fashion whereby citizens demand different quantities in a marketplace at different prices. Rather, the private demand for education is manifested through the political process as citizens bring pressure to bear on government officials to increase the number of schooling spaces, not only at the given level but at prerequisite levels as well. The concerns of employers, development planners, and teachers in turn determine the willingness of the educational planners to adjust the supply of educational opportunities in response to the private demand and the speed of adjustment.

It appears that the primary factor motivating citizens to demand education is not the economic or social development of the society as a whole but rather the enhancement of their own personal economic and social status. The demand for a given level of education may therefore be presumed to depend on the size of the expected private return to that level of schooling.[1] The cross-country

[1]This is not to imply that citizens actually compute such returns, but rather, following Friedman (1953), they behave as if they do. Nor is it meant to imply that the size of the private return is the only determinant of the demand for education. The status, power, and prestige of being educated may be of equal or greater importance than monetary considerations. We may view these non-pecuniary factors as determining a minimum value of the demand for education and high private returns as raising demand above the base.

evidence collected by Psacharopoulos and Hinchliffe (1971) shows that private rates of return to investment in education are very high; of three levels of education for each of eleven[1] less developed countries for which data were available, only one is less than ten percent and most are above twenty percent.[2] With few constraints imposed by the necessity of financing educational investment by recourse to a capital market,[3] the very high private rates of return are readily translated into a very high private demand for education.

## 2. A Model of Educational Demand

Let us consider a person's decision of whether or not to demand education. Suppose for simplicity that we may distinguish between two groups of workers: those who have received at least a given level of education, and those who have received less; we call these groups the "educated" and "uneducated" respectively. Let us also suppose that there are two types of jobs: jobs which can be filled only by educated persons[4] and jobs in which education may be a desirable but not essential qualification; we call these "skilled" and "unskilled" jobs respectively. We consider two types of unskilled jobs: jobs in the modern urban sector, which we will call "urban unskilled" or simply "unskilled," and jobs in agriculture.

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[1]These are Puerto Rico, Mexico, Venezuela, Colombia, Brazil, India, Philippines, Thailand, Nigeria, Ghana, and Kenya.

[2]In most less developed countries, schooling costs are heavily and often entirely subsidized, so that the out-of-pocket costs of schooling are small. However, the high private rates of return are probably better explained on the benefit side. Percentage wage differentials between different skill levels in less developed countries, particularly those in Africa, are much greater than in the "advanced" countries.

[3]This is another effect of large subsidies to education.

[4]This formulation is consistent with either (1) a neoclassical production function such that the marginal product of an uneducated worker in a skilled job is always less than the wage he must be paid, or (2) a production function with fixed coefficients.

If an individual does decide to be educated and is able to find a place in school, he must pay the school fees and forego earnings in the unskilled labor market while in school. The benefit he receives is a higher expected income over the remainder of his life. How profitable (in economic terms) is educational investment to him?

For expositional ease, let us assume that it takes one period to acquire an education and the direct out-of-pocket costs are some amount C. The income foregone during this period is the unskilled wage ($W_U$) times the probability of being employed in that period ($P_U$). The sum of these is the private cost of education.

The expected gains begin one period later. Let $V_E$ and $V_U$ be respectively the present value of expected earnings of educated and uneducated persons if they enter the highest-paying labor market open to them, i.e.,

$$(1) \qquad V_E = \max\ (V_{ES},\ V_{EU})$$

and

$$(2) \qquad V_U = \max\ (V_{UU},\ V_{UA}).$$

$V_{ES}$ is the present value of expected lifetime income of an educated person if he enters the labor market for skilled jobs, $V_{EU}$ if he enters the market for unskilled jobs. Similarly, $V_{UU}$ is the present value of expected lifetime income for an uneducated worker who enters the unskilled labor market, and $V_{UA}$ is the present value for an unskilled worker who enters (or remains in) agriculture. Since education takes one period and the benefits do not begin until the following period, we must subtract from the earnings streams $V_E$ and $V_U$ expected earnings in the current period. We therefore have the expected incremental present value of benefits of education equal to

$$(3) \qquad (V_E - W_S P_S) - (V_U - W_U P_U).$$

The profitability of educational investment may be expressed either in internal rate of return or in present discounted value terms. Since the former requires solution of a complicated quadratic expression, we shall use the more convenient present value formulation. Taking the difference between expected benefits and costs, we find that the present discounted value of investment in education (PV) is

$$(4) \qquad PV = V_E - V_U - W_S P_S - C.$$

In the usual manner, aggregate demand for education may be expressed as a smooth positive function of the present value of investment in education:

$$(5) \qquad D = f(PV).^{1}$$

Equation (5) establishes the demand for education as a function of the present value, which equation (4) tells us depends upon the maximum amount one can expect to earn if he has an education as compared to his expected earnings if he is uneducated. The present value also depends upon the probability of obtaining skilled employment. Both the maximum earnings and the probability of finding a skilled job depend in turn on the total number of persons educated and the number who enter each labor market. Through these interrelationships, it becomes clear that:

> When there is a surplus of educated labor relative to the absorptive capacity of the economy resulting in unemployment and underemployment of the educated, the demand for education depends on the supply of education and the allocation of the labor force between the various labor markets.

[1] The omission of other possible right hand side variables is intended to emphasize the importance of the expected private economic returns as a motivation for the private demand for education. Non-economists such as Somerset (1971) and Court (1972) find that the desire for education is strongly related to one's job prospects and when the probability of obtaining a high-level job is low, the desire for education falls along with it. Even as ardent a supporter of the mass demand for education as Bereday (1969) writes that "perhaps men should not want quite so much education quite so badly, since so many want it for the wrong reasons" but, he continues, "whatever his motives, an individual's desire for education cannot be ignored."

This point has not generally been recognized by economists.

In the remainder of this paper, we shall explore these relationships in greater detail. We will first describe four models of labor market conditions in less developed countries, then derive demand for education schedules in each case and show how the patterns differ, and finally interpret the persistent demand for education in light of the resultant patterns.

## 3. Four Models of Labor Market Behavior[1]

The literature concerning the labor market behavior of workers and employers in the less developed countries with respect to education offers two general conclusions. First, educated people do as a rule accept lower-level jobs, presumably when it is to their personal advantage to do so[2]. Second, employers in many countries appear to be using educational attainment as a criterion for hiring and selecting the better-educated in preference to those with less education.[3] This suggests that the bumping model (to be described below) may be a better general description of labor market behavior in the less developed countries than the other models. However, since the available evidence in no way rules out the applicability of the other models in other countries, we shall analyze them as well.

For a number of reasons (which are explained in Thesis) we adopt the simplifying assumptions that the total number of modern sector jobs and the educational mix of those jobs are fixed. What follows may then be thought of as a partial equilibrium model of the relationships between education and labor markets.

[1]The first three of these models are presented formally in Thesis.

[2]Figures collected by the OECD (1969) for 53 countries show that while the highly-educated are much more apt to be in the professional or managerial occupations than persons with less education, a high degree of educational attainment is neither necessary nor sufficient for entry into the most lucrative and prestigious occupations.

[3]Preferential hiring by educational level is documented in studies of India by Blaug, Layard, and Woodhall (1969) and of Turkey by Krueger (1971), in unpublished data from the 1971 Nairobi Household Survey, and in a symposium of manpower and education experts (see Skorov (1968)).

A common feature of each of our labor market models is the failure of urban labor markets to equilibrate in order to assure full employment of the labor force. Traditional labor market theory would predict that if the prevailing urban wage is too high to clear the market and wages are flexible, some surplus workers would offer their services at a lower wage, employers would pay less and adopt more labor-intensive technologies, and employment and output would likely increase. This process would continue until the urban wage (adjusted for cost-of-living differences) equals the rural wage.

The conventional prediction has been challenged on two grounds. One school of thought is that institutional factors which affect the bulk of the labor force set the wage structure above market-clearing levels and prevent workers and employers from (legally) making employment- and out-put-increasing adjustments. The institutional causes frequently mentioned include the widepread effects of minimum wage legislation, the impact of government wage scales throughout the modern sector of the economy, and wage gains negotiated by labor unions.[1] A second and (not necessarily competing) argument is that several alternative economic circumstances--the reduction of hiring and training costs and gains in worker efficiency as wages are raised and the determination of the urban wage by macroeconomic savings-investment equilibrium--could cause a rural-urban wage differential and consequent urban unemployment in equilibrium. Whichever set of forces -- economic or institutional -- predominate in a given country at a given time, there can be little doubt that in the less developed countries today the resulting wage level lies above the market-clearing rate and that unemployment is the consequence. Hence, our model approaches the question of labor market equilibrium by reversing the conventional role of wages and the labor force. Here, wages are given and the number of workers in various labor markets adjusts in order to determine an equilibrium in terms of expected (lifetime) earnings.

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[1]On these points, see Berg (1966), Reynolds (1965 and 1969), Frank (1968 and 1971), and Johnson (1972).

[2]These circumstances are analyzed thoroughly in Stiglitz (1972a and 1972b).

A. The Bumping Model

In the bumping model, we assume that workers are income maximizers and enter that labor force which offers the highest expected income. Furthermore, we suppose that employers prefer to hire persons with more education at the prevailing wage rate. This may be because the educated are (or are believed to be) more productive than the uneducated, because employers prefer for non-economic reasons to associate with the better-educated,[1] or (some argue) because the educated elite seek to legitimize their own positions at the top of the pecking order by using an "objective" criterion like educational attainment to exclude others.[2]

If it is profitable (in an expected value sense), we would expect that some surplus educated persons would move to the front of the queue for the unskilled jobs and be hired first at the unskilled wage rate, "bumping" a less-educated person from a job. Uneducated workers in unskilled jobs might be fired and replaced immediately, or instead displaced over time as uneducated retirees are replaced by the educated. For simplicity, we will assume zero frictional unemployment of educated persons in the unskilled labor force.

Following our earlier distinction, the uneducated may choose between the urban unskilled and agricultural labor forces, but they are excluded from the skilled labor force due to lack of educational qualification. In this and the following two models, the uneducated are presumed to choose between these alternatives in order to maximize the expected value of their incomes.

In the bumping model, educated workers are hired first. This means that uneducated workers are left with whatever unskilled jobs the educated workers do not take. Thus, education may be demanded in order to receive the advantage of a better relative chance of being hired for an unskilled job. It is of course conceivable that after a point there may be so many educated persons that the uneducated are effectively excluded from obtaining modern sector employment and the relative advantage is very great indeed.

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[1] Such a utility-maximizing model is considered in Johnson (1970).

[2] See for instance Bowles (1971) and Carnoy (1971).

## B. The Labor Market Stratification Model

### (1) Labor Market Stratification on the Supply Side

In contrast to the bumping model just described, education in less developed countries has sometimes been criticized for inculcating the few fortunate students with the feeling that they are superior to the masses.[1] Carried to its logical conclusion, the implication is that the educated would always seek high-level, high-status jobs and never seek or accept low-level jobs which would "dirty their hands," even if they could earn more by doing so. In such an economy, any surplus of educated persons would always be in the labor force for skilled jobs and never consider employment in unskilled jobs. In such circumstances, labor markets are stratified by considerations of status and prestige.

### (2) Labor Market Stratification on the Demand Side

Suppose that educated persons are willing to work in unskilled jobs but employers refuse to hire the educated, because they believe that the educated are more apt to have low morale, resulting in lower productivity while on the job, greater absenteeism, and more frequent quits. The labor market is also stratified in this case because it is fruitful for the educated to search only for the skilled jobs. As in the previous case, any extra educated persons will be unemployed in the skilled labor force and never underemployed in an unskilled job.

These two cases, although causally distinct, are analytically equivalent and will be treated so subsequently.

## C. The Pooling Model

The bumping model assumes that educated workers are favored by employers and hired in preference to the less educated for unskilled jobs. The labor market stratification model (demand side version) assumes just the opposite.

[1] See Myrdal (1968).

The pooling model embodies the third possibility: that education is neither a help nor a hindrance in one's search for unskilled jobs.

In the pooling model, we still regard education as necessary for the skilled jobs. We have, however, a large pool of workers searching for the unskilled jobs, these workers being undifferentiated by educational attainment. In the pooling model, the unskilled jobs are divided between the educated and uneducated according to some random process.[1]

D. The Bright Lights of the City Model

The bright lights of the city model embodies the view held by some[2] that the city exerts an overwhelmingly strong pull on those who come in contact with it. This model postulates that as a consequence of the "bright lights of the city" no workers, whether educated or uneducated, once in the city would ever return to the farm. We shall, however, assume that educated workers are expected income maximizers and will, if it is profitable to do so, bump the less educated out of unskilled jobs.

4. Demand for Education Schedules Under Alternative Labor Market Conditions

In this section, we derive the demand for education as a function of supply in each of the four models of labor market behavior just described. This is done in comparative static terms, asking in each case what is the effect on the demand for education if society decides for whatever reason to educate another person.

A general expression for the change in the demand for education if another person is educated may be found by differentiating (4) and (5) with respect to

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[1]The educated may have better contacts and therefore better chances of being hired. However, we neglect this possibility.

[2]See for instance Little (1965)

S. Doing so, we obtain

$$(6) \qquad \frac{\partial D}{\partial S} = f' \left[\frac{\partial PV}{\partial S}\right] = f' \left[\frac{\partial V_E}{\partial S} - \frac{\partial V_U}{\partial S} - W_S \frac{\partial P_S}{\partial S}\right].$$

The specific values of the partial derivatives in this expression are not constant. Rather, they are determined by the reallocation of the skilled and unskilled labor forces between the various labor markets which follows the education of another person. The specific labor market outcome depends on whether the situation is one of labor market stratification, bumping, pooling, or bright lights of the city and the size of the surplus of educated persons. In order to determine the signs and magnitudes of the consequent reallocation for each alternative sized surplus in each of the different models, we require rigorous statements of the models and derivations of the results. This is done in Thesis for the first three models[1] but due to the length and tedium of these steps we shall only state the qualitative results but not repeat the derivation here.

A. The Case of Labor Market Stratification

Consider the first zone of the labor market stratification model in which, at the existing wage level, educated persons are in short supply. Because of this shortage, each educated person can expect to be fully employed. This does not change if another person is educated, provided there is still a shortage. Since $P_S = 1$, $\frac{\partial P_S}{\partial S} = 0$ and $\frac{\partial V_E}{\partial S} = 0$.
Furthermore, by choosing between the rural and urban unskilled labor forces in order to maximize their expected incomes, uneducated persons will reallocate themselves so that the probability of obtaining an unskilled job is unchanged in equilibrium, which implies $\frac{\partial V_U}{\partial S} = 0$. Any other reallocation would cause

[1] A formal statement of the present version of the bright lights of the city model and mathematical derivation of the results presented herein are available from the author upon request.

there to be a higher expected income in one labor market as compared to the other and would not be an equilibrium since income-maximizing workers would migrate in order to erode any such temporary differential.[1] Substituting the above into (5), we have $\frac{\partial D}{\partial S} = \frac{\partial PV}{\partial S} = 0$. We therefore find that when there is a shortage of educated workers the present value of investing in education and the demand for education will remain unchanged if another person is educated.

Once the educational system has produced more than enough educated workers to fill all the skilled jobs for which hiring is taking place, each educated person must expect to be unemployed part of the time. If another person is educated, the greater number of educated persons lowers the probability of finding a skilled job, which in turn lowers the present value of becoming educated. Hence, $\frac{\partial D}{\partial S} < 0$, and our model implies that when there is a surplus of educated workers in the case of labor market stratification the demand for education will decline if another person is educated.

These results are illustrated graphically in Figure 1. Zones I and II correspond respectively to shortages and surpluses of educated workers. In quadrant (i), we see that the present value (PV) is constant while there is a shortage of educated workers and declines monotonically thereafter. Taking an illustrative D = f(PV) function in quadrant (iii), we derive the demand for education as a function of the supply of education, shown as D = g(S) in quadrant (iv). We see that if labor markets are stratified, after a point the larger the size of the educated surplus in a country all other things equal the smaller the demand for education.

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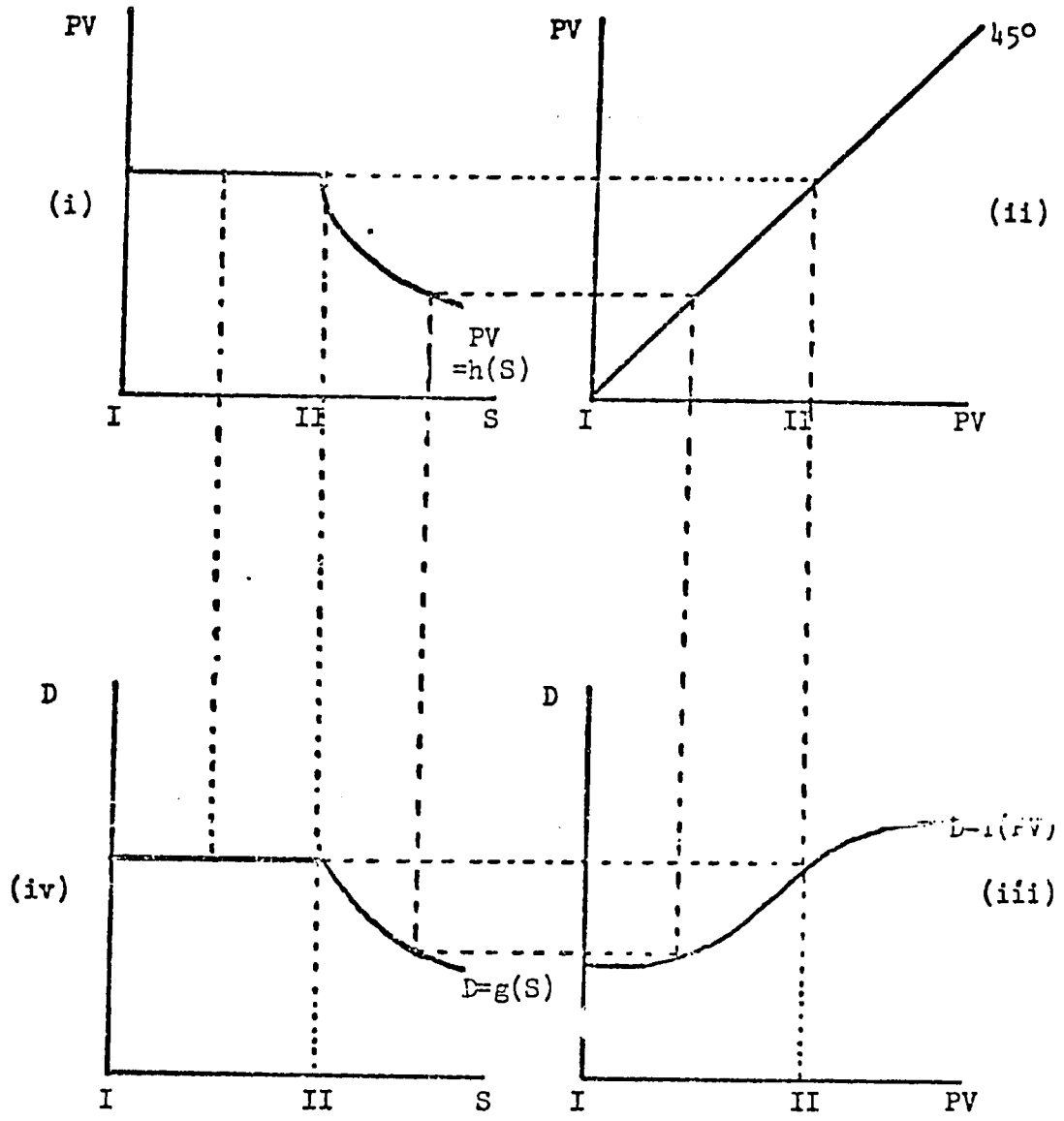
[1]Consider a simple migration model of the type used by Harris and Todaro (1970) such that the agricultural wage (Wa) equals the expected urban wage which is the wage of an employed urban worker (Wu) multiplied by the probability of being employed (Pu). If we regard Wa and Wu as fixed, any outside shock will have only short run effects on the probability of finding urban employment, since Pu will be unchanged in equilibrium. The result in the text is derived in an analogous manner from a much more complicated model of the allocation of the labor force between labor markets.




(Note: Roman numerals indicate the beginning of the respective zones)

Figure 1. The Demand for Education in the Case of Labor Market Stratification.

B. The Case of Bumping

In the bumping case, there are four distinct zones depending on the number of educated workers relative to the number of jobs. For ease of reference, these four zones are summarized in Table I.

Table I

Labor Market Zones in the Bumping Model

| | |
|---|---|
| Zone I. | Fewer educated workers than skilled jobs |
| Zone II. | Surplus of educated workers, all enter skilled labor force |
| Zone III. | Bumping occurs, i.e., some educated workers enter the unskilled labor force and are hired preferentially |
| Zone IV. | All modern sector job vacancies are filled by educated persons |

The first zone is defined by a shortage of educated workers relative to skilled jobs. Since the skilled wage is higher than the unskilled wage, all educated workers would enter the labor force for skilled jobs and be fully employed.

A second zone begins when there first occurs a surplus of educated persons relative to skilled job hiring. For some small surplus of educated workers, there would be sufficiently little educated unemployment and a sufficiently high probability of being employed that the present value of expected lifetime income of an educated worker in the skilled labor force ($V_{ES}$) would continue to be greater than the present value of expected income of an educated worker in the unskilled labor force ($V_{EU}$). This being the case, income-maximizing employees would choose partial employment/partial unemployment in the skilled labor force in preference to full-time underemployment in the unskilled sector.

Zones I and II in the bumping model are formally equivalent to the labor market stratification case just described. Therefore, the pattern of the demand for education as a function of supply (constant over Zone I and falling over Zone II) also holds in the bumping model.

After some point, there would be sufficient unemployment that $V_{ES}$ would be driven down and equal to $V_{EU}$. This point marks the beginning of a third zone, in which it would be profitable for educated workers to bump uneducated workers out of unskilled jobs.

Once Zone III begins and underemployment becomes profitable, the demand for education no longer declines monotonically with the number of educated persons. Rather, we find that

> When bumping is taking place, educated and uneducated workers, each choosing between the various labor market alternatives open to them in order to maximize their expected incomes, will allocate themselves so that the private rate of return and the demand for education will remain constant as more persons are educated.

This result is demonstrated mathematically in Thesis. Here, we limit ourselves to a few words of explanation concerning its economic origins.

When bumping is taking place, educated workers are choosing between the skilled and unskilled labor markets so that the present values of expected lifetime income is each ($V_{ES}$ and $V_{EU}$) are equal. If the markets are in such an equilibrium and another person is educated, the equilibrium will initially be disturbed. If the additional educated worker enters the skilled labor market, his presence causes the probability of finding a skilled job to fall and thereby lowers the present value of expected income of an educated worker in the skilled labor market below what he could earn in the unskilled labor market. This would induce other educated workers to leave the skilled market and enter the unskilled market, which raises the probability of finding a skilled job. Equilibrium is restored when there has been sufficient shifting to raise the probability of finding a skilled job ($P_S$) and the expected skilled income ($V_{ES}$)

back up to their original levels.[1] The same adjustment processs and resultant equilibrium follow if the additional educated workers were to have initially entered the unskilled labor force.

Turning now to the markets for unskilled workers, the presence of additional educated persons in the unskilled labor market reduces the number of jobs available to uneducated workers and thereby lowers their probability of employment. The urban unskilled labor market is now less attractive than agriculture and income-maximizing uneducated workers find it to their advantage to return to or remain on the farm. As they do this the probability of an uneducated workers finding an urban unskilled job increases and $V_{UU}$ rises relative to $V_{UA}$. After sufficient out-migration of unskilled workers from the urban sector, the unskilled labor markets will equilibrate with the probability of obtaining an urban unskilled job and the present value of expected income of an uneducated person unchanged from their original levels.

We have therefore shown that when bumping is occurring and another person is educated, the reallocation of the labor force between the various labor markets will leave unchanged the present values of expected incomes for workers in each labor market. Hence the present value of investing in education and the demand for education will also remain the same in the zone where bumping is taking place.

Bumping could continue until educated workers are hired to fill all unskilled job vacancies. After that point, a final zone would begin with educated workers competing amongst themselves for both skilled and unskilled jobs and uneducated workers effectively excluded from breaking into the modern sector.[2] If society were to decide to educate another person this would add to the number of seekers for skilled jobs, which would lower the probability of an educated worker finding a skilled job and lower the expected income if one is educated. The expected income of an uneducated worker, which is the lifetime

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[1] They must return to their original level for a reason similar to the process described in the last footnote.

[2] Due to seniority provisions and other reasons for job fixity, uneducated workers already employed in unskilled jobs are (except for normal turnover) retained.

agricultural wage, would remain the same. Therefore, the present value of investing in education and the demand for education would decline the larger the educated surplus in Zone IV.

The demand for education for alternative supplies in the case of bumping is summarized in Figure 2.

C. The Case of Pooling

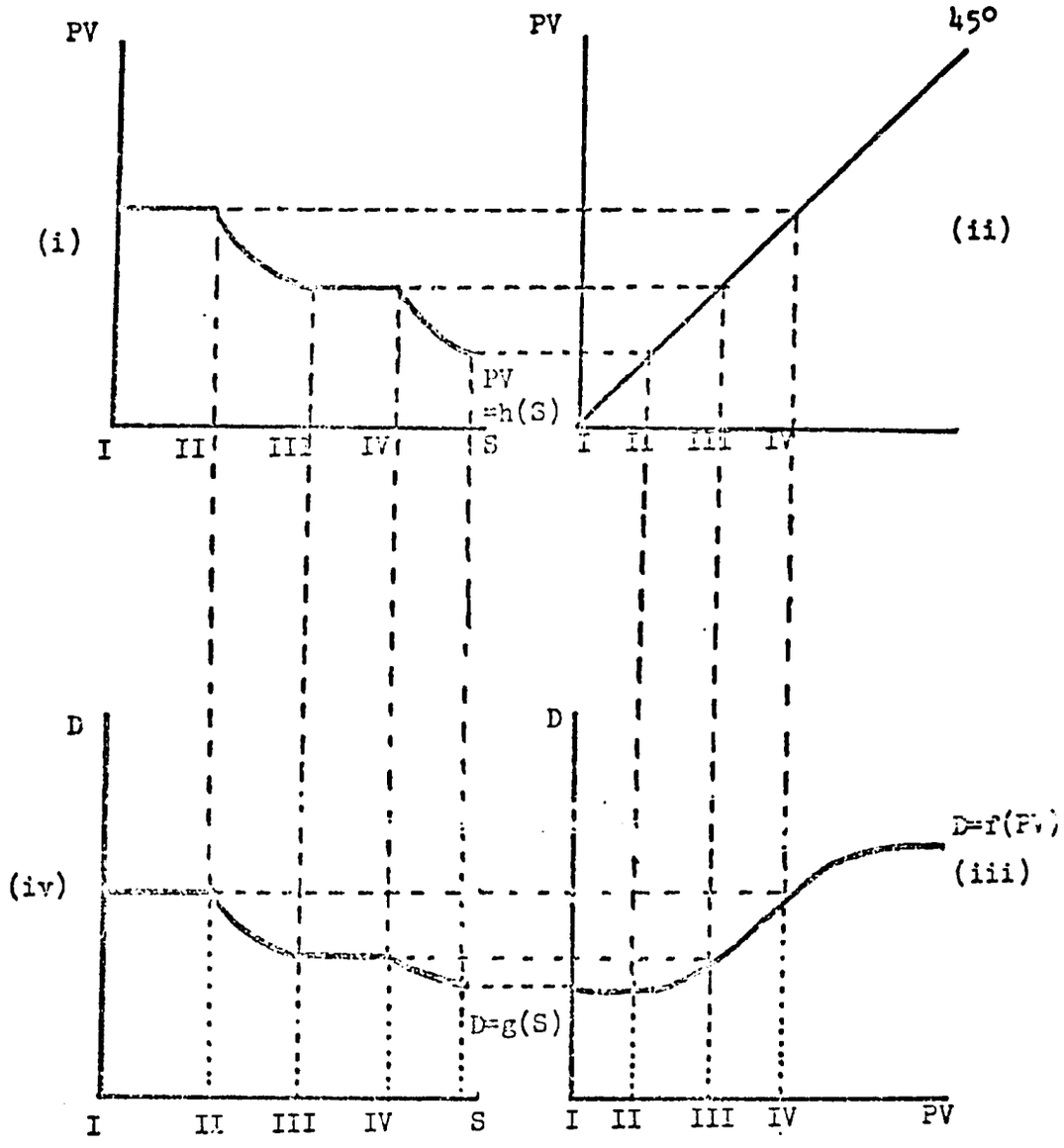
In the pooling model, there are four distinct zones. The first two are identical with those of the bumping model. After there is sufficient unemployment to reduce $V_{ES}$ to $V_{EU}$, there begins a third zone in which some surplus educated workers enter the pool of workers for unskilled jobs but unlike the bumping model are not hired preferentially. After a point, there begins a fourth zone in which uneducated workers do not find it profitable to enter the urban unskilled labor force and that market contains only educated workers. These zones are summarized in Table 2.

Table 2

Labor Market Zones in the Pooling Model

| | |
|---|---|
| Zone I. | Fewer educated workers than skilled jobs |
| Zone II. | Surplus of educated workers, all enter skilled labor force |
| Zone III. | Educated workers enter the unskilled labor force |
| Zone IV. | Uneducated workers have vacated the unskilled labor force |

We shall show that the pattern of the demand for education as a function of the supply shown in Figure 2 also holds in the pooling model. In the pooling model, the allocation of the labor force as another person is educated in Zones I and II is the same as in the bumping model since the two are analytically equivalent.




(Note: Roman numerals indicate the beginning of the respective zones)

Figure .2. The Demand for Education in the Cases of Bumping and Pooling.

Thus, the demand for education is constant in Zone I and falls in Zone II. There is one important difference between the bumping and pooling models, however, and that is that Zone III in the pooling model begins later. This is easily understood economically. In the bumping model, an educated worker who chooses to enter the unskilled labor force earns the skilled wage $W_U$ and is fully-employed. In the pooling model, he is only partially employed, so the present value of his expected income is lower. Consequently, the opportunity cost of being unemployed in the skilled labor force when there is pooling is less than when there is bumping. Workers would therefore be expected to tolerate more unemployment in the pooling case than in the bumping case.

Once Zone III is reached and educated workers begin to enter the unskilled labor force, the pooling model predicts a pattern which the reader may find surprising: Although educated and uneducated workers in the urban unskilled labor market are paid the same wage and have the same probabilities of employment, if another person is educated, educated workers would replace uneducated ones in the unskilled urban labor market. Viewed in terms of job search opportunities, this makes good economic sense. By being in the cities, educated workers have a better chance of obtaining high-paying skilled employment than if they were on the farm. The movement of uneducated workers between the urban unskilled and agricultural labor markets assures that the present values of expected income are equal. This means that educated workers can earn the same wage in the city as on the farm and yet while in the city have a better chance at a skilled job. Thus, we would expect that educated workers would settle in the cities. As they do, this adds to the pool of seekers for unskilled jobs, lowering the probability of finding one, reducing the present value of expected income in the city below the present value in agriculture, and driving uneducated workers (who have the least to lose) back to the farm until the present values are again equal. Thus the demand for education would be constant for alternative educational supplies in Zone III.

Note that if educated workers did not have this improved job search opportunity, the only change when another person is educated would be that there

would be one more person in the urban unskilled labor market with education rather than without.

Finally, in Zone IV, $V_{UU} < V_{UA}$ and uneducated workers have vacated the urban sector. Except for starting with a larger educated surplus, this zone is formally equivalent to Zone IV in the bumping model and all previous results obtain.

D. The Bright Lights of the City Case[1]

The bright lights of the city model is a variant of the bumping model. Rather than behaving in a pure expected income-maximizing manner, workers are assumed to maximize income subject to the behavioral constraint that no one living in the city would move back to the farm ever if he could expect to earn more there.

This behavioral limitation has no effect on the outcomes in Zones I and II, since there is migration of both educated and uneducated workers into the cities. However, once bumping begins, the bumping model requires there to be migration back to the rural areas in order to preserve equilibrium between the labor markets for uneducated workers. Since this is not allowed in the bright lights of the city model, the uneducated labor markets would be in disequilibrium. This raises an intriguing possibility.

> When bumping is taking place in the bright lights of the city model, the labor force allocation will be such that the private rate of return and the demand for education would be expected to <u>increase</u> if more persons are educated.

Why might this be expected? If another person is educated, the educated workers will choose between the skilled and unskilled labor forces so as to leave the present value of expected incomes in the two markets equal to one

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[1]This model was first suggested in my "Private and Social Returns to Education in Labour Surplus Economies," Institute for Development Studies, University of Nairobi, Discussion Paper No. 104, April, 1971, a revised version of which is published as Fields (1972a). In neither version, however, was the prohibition against out-migration from urban areas made explicit.

another and unchanged from their original levels. This requires that at least[1] one educated worker enter the urban unskilled labor force. There is now one less urban unskilled job available for the remaining uneducated workers. As a result, the probability of an uneducated worker obtaining an urban unskilled job falls, and this lowers the expected urban income for an uneducated worker. Since by assumption of the bright lights of the city model uneducated workers would not move from the city, the disequilibrium is not eroded as in the bumping model and the present value of expected income of an uneducated worker falls. The combined effect of a constant expected income for the educated worker and a lower expected income for the uneducated is, of course, to raise the present value and hence the demand for education.

Finally, there is such a large surplus of educated workers that uneducated workers have no chance of being hired for unskilled jobs. This marks the beginning of Zone IV, in which there will be unemployment of the educated in both the skilled and the unskilled labor markets. If another person is educated, the more educated persons there are seeking a given number of jobs and so the lower the probability of any given educated worker being employed. This lowers the expected value of being educated, which in turn lowers the demand for education.

The demand for education schedule in the bright lights of the city case is shown graphically in Figure 3. For ease of comparison, the demand for education schedules derived for the four labor market models are shown together in Figure 4.

## 5. Concluding Remarks

We have described several alternative accounts of possible labor market behavior by workers and employers in less developed countries. Our analysis,

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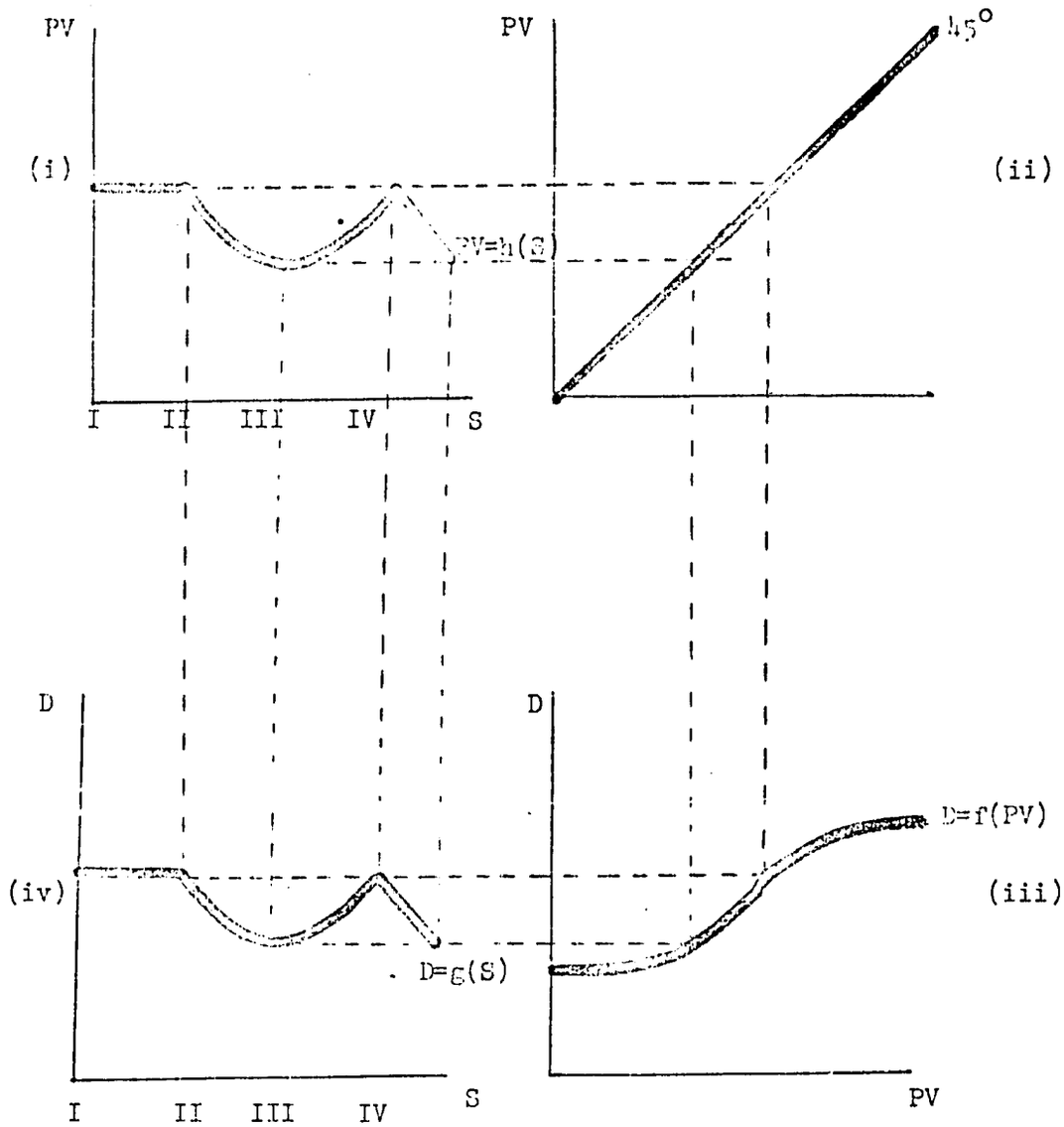
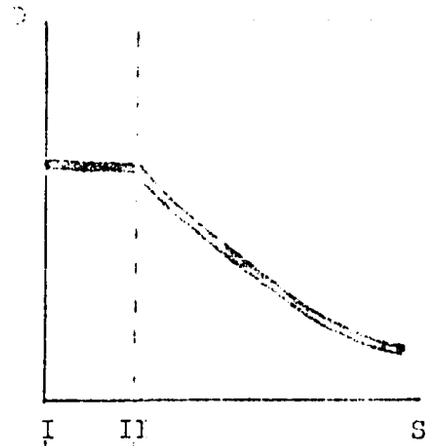
[1]There will be only one if educated workers employed in unskilled jobs have no chance of obtaining a skilled job, more than one otherwise.



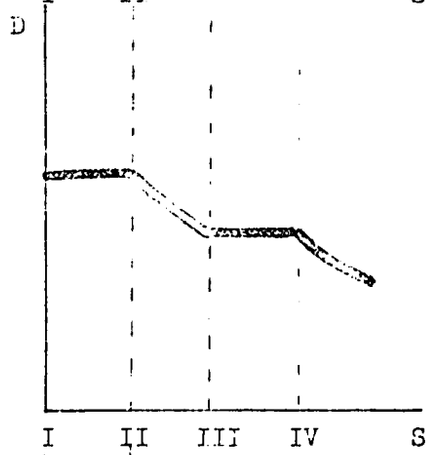

(Note: Roman numerals indicate the beginning of the respective zones)

Figure 3. The Demand for Education in the Bright Lights of the City Model.

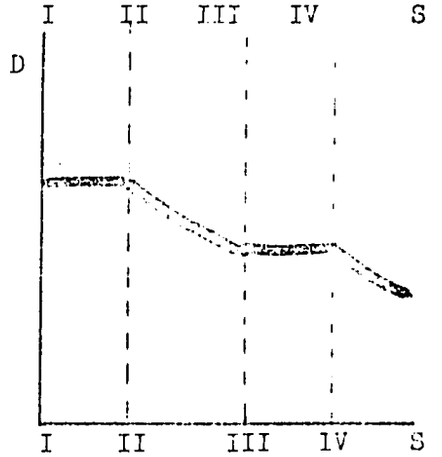
The Labor Market Stratification Case




The Bumping Case




The Pooling Case




The Bright Lights of the City Case

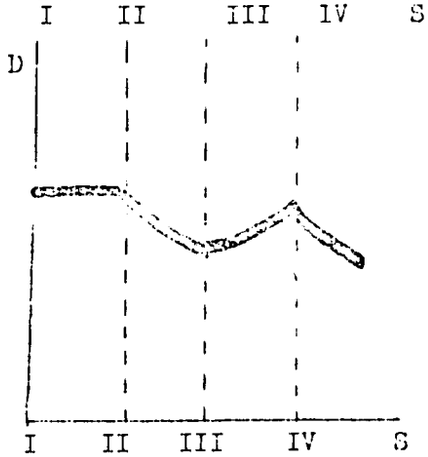



Figure 4. Demand for Education Schedules in Four Labor Market Models.

as summarized in Figures 1 - 4, suggests three possible explanations for the persistence of a high demand for education despite unemployment and under-employment of substantial numbers of educated persons.

One possibility is that the scenario described by the bright lights of the city model -- a range during which the demand rises as the supply is increased -- essentially describes the particular labor market circumstances and particular stages of development of at least some less developed countries today. However, the validity of the bright lights of the city model has not been established by rural-urban migration studies to date.[1]

A second possibility is that the demand for education may be relatively inelastic with respect to private returns. This may be because education is demanded primarily for the consumption or non-pecuniary investment benefits it confers and not for those financial returns which are measured by present values. Alternatively, it may be because the present value is already so large that education is obviously a sound personal financial investment. The available evidence is fully consistent with the latter position.[2]

A third possible explanation for the persistence of a high demand for education is that the present value of investing in education may be relatively inelastic with respect to the supply of education. To my knowledge, this hypothesis has not as yet been subjected to empirical test.

It should be remarked that these three possibilities are in no way mutually exclusive. Rather, they reinforce each other, and to the extent each is correct, they provide sound economic reasons for expecting the private demand for education to remain strong despite the existence of a large and growing surplus of educated workers in the labor market. This prediction challenges the view that the sustained demand for education results from over-optimistic labor market expectations compared to reality.

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[1]This is the conclusion reached by Frank (1971) after a thorough review of the rural-urban migration literature.

2 [2]See Psacharopoulos and Hinchliffe op. cit. and footnote 1, p. 6.

This conclusion suggests an important policy implication for educational planning. Suppose that in light of a surplus of highly-educated workers the government of a less developed country wants to reallocate its educational budget away from secondary and higher education and toward primary education. In the short run, the government could simply adjust supply in the desired manner. However, in the absence of complementary measures to reduce the demand for secondary and higher education, the people would continue to push for more high-level educational facilities. Not only might the political pressures on officials tend to subvert the reallocation program but the people might also (as they did in Kenya) join together to construct their own private or community secondary schools which would result in an even larger surplus of educated workers. Thus, in order for a governmental program to reallocate educational resources to be effective, steps must be taken to reduce the private present value of investing in education.

We have seen that the private returns to investing in education depend on the earnings and employment probabilities of educated workers relative to the uneducated and the private costs of acquiring an education. This points to the areas where leverage might be exerted. One possible means of reducing the size of the private present value is to introduce an incomes policy, either by narrowing nominal skilled-unskilled wage differentials or by making the tax structure more progressive. Another is to cause employers to question whether preferential hiring by educational level is really necessary.[1] Yet another is to charge students a larger share or perhaps even the full cost of their schooling; students who receive higher education could be charged full costs, to be repaid over their working lives.[2]

None of the proposed changes would be easy to implement, given the political power of the groups whose interests would be adversely affected. But when one considers the deleterious effect on the economic and social development of a country of continuing to spend scarce public funds to produce a well-educated and unemployed few while many others could be made literate, there is cause for concern.

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[1]See Blaugh, Layard, and Woodhall (1969)

[2]Alternative loan schemes are considered in detail in Fields (1972b).

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