

Fields, Gary S.

**Working Paper**

## The Allocation of Resources to Education in Less Developed Countries

Center Discussion Paper, No. 171

**Provided in Cooperation with:**

Yale University, Economic Growth Center (EGC)

*Suggested Citation:* Fields, Gary S. (1973) : The Allocation of Resources to Education in Less Developed Countries, Center Discussion Paper, No. 171, Yale University, Economic Growth Center, New Haven, CT

This Version is available at:

<https://hdl.handle.net/10419/160100>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

ECONOMIC GROWTH CENTER

YALE UNIVERSITY

Box 1987, Yale Station  
New Haven, Connecticut

CENTER DISCUSSION PAPER NO. 171

THE ALLOCATION OF RESOURCES TO EDUCATION IN

LESS DEVELOPED COUNTRIES

Gary S. Fields

January, 1973

Note: Center Discussion Papers are preliminary materials circulated to stimulate discussion and critical comment. References in publications to Discussion Papers should be cleared with the author to protect the tentative character of these papers.

# THE ALLOCATION OF RESOURCES TO EDUCATION IN LESS DEVELOPED COUNTRIES\*

Gary S. Fields

January, 1973

In the last few years, 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. Yet, even as surpluses of educated workers grow larger and larger, the school systems continue to expand and the people continue to demand education. Elsewhere,<sup>1</sup> we have sought to understand the persistence of a high demand for education in countries characterized by a substantial surplus of educated labor. In this paper, we construct a political model of the allocation of resources to education in less developed countries to try to explain why educational systems continue to grow in the face of such surpluses.

The specific plan of the paper is as follows. We begin in Section 1 by summarizing some of the available evidence on educational and labor market phenomena in less developed countries in order to give the reader a feeling for the **problems** and issues involved. Then, in Section 2, we consider and then tentatively reject a social cost-benefit explanation for educational expansion. As an alternative, in Section 3, we offer a political model whereby more schools are constructed so long as the private

---

\*This paper is based on sections of 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.

<sup>1</sup>Fields (1972).

demand for education exceeds the supply. Section 4 describes the path of adjustment toward and nature of equilibrium as predicted by our model. Finally, we conclude by considering some welfare and policy implications of the analysis.

1. The Labor Market Background of the Growth of School Systems

If the citizens, politicians, and students of less developed countries were asked to name the issues of greatest interest and concern to them, the employment problem and educational policy would probably rank high on most lists. The reasons for the concern with the employment problem in less developed countries are several. From the individual's point of view, a good job is seen as the road to success, whether measured in terms of high wages, favorable working conditions, or status and prestige. To academicians and policy-makers, the lack of employment opportunities wastes human resources, hinders the rate of economic growth, and has unfavorable social and personal consequences. And the political power structure, perceiving massive unemployment and underemployment as threatening the security of their positions of leadership, seek to protect themselves by effecting employment-creating measures. For these reasons, it is not surprising that policies to promote employment have been actively encouraged and often implemented.

If increased employment is a popular goal, educational investment is a popular means of trying to achieve it. A common belief in the last decade was the notion that unemployment in the less developed countries

was largely of a structural nature due to the apparent shortage of skilled manpower.<sup>1</sup> It was felt that by increasing a country's stock of skilled manpower, the newly-educated would fill high-level manpower vacancies and extra unskilled laborers would be employed to complement the additional skilled manpower. In this way, increased investment in higher levels of education would help to increase employment and accelerate economic growth.

Educational investment was also urged at the lower levels, although only partly for employment-related reasons. While economists tended to advocate the spread of primary or secondary education for its presumed role in increasing worker productivity (especially in agriculture), others stressed the possibility of spreading desirable social values and skills through the schools and the potential of the educational system as a vehicle for social mobility and an equalizer of opportunity.

The people also urged large-scale investments in schooling. Citizens saw education as providing themselves and their children with the qualifications needed for the best jobs; the more schooling spaces, the greater the likelihood of a particular child securing the necessary credentials. As long as more persons wanted to attend school than the number of spaces available, there was an excess demand<sup>2</sup> for education and political pressure to expand the educational system.

By promoting an expansionary educational policy, elected politicians could appear to support the consensus development strategy and represent the wishes of their constituents and thereby remain in everyone's favor.

---

<sup>1</sup>The general mood of the time is conveyed in Harbison and Myers (1964).

<sup>2</sup>It is in the 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 and who are able to pay the direct costs of schooling.

The result of the interaction between the strong popular demand for education and the acquiescence of the educational planners was the so-called "education explosion"<sup>1</sup> of the Sixties.

Table 1 may give some insight into the magnitude of the growth of school systems in the less developed countries. Primary school enrollments increased by about 5% per year as many countries moved closer to the goal of universal primary education. The largest rates of increase--about 10% per year on average--were at the secondary and post-secondary levels. In large part, this was motivated by the desire to make up "skilled manpower shortages" as quickly as possible. An additional factor of considerable significance in the newly-independent African countries was the wish to replace colonialists by locals, both in the civil service and in the private sector.

It is important to realize that in most less developed countries the schools and colleges are constructed, operated, and financed largely by the central government, as opposed to either local governments or private organizations. Furthermore, the amount of financial aid to students is not trivial, since students in primary and secondary education are generally charged only a small fraction of the costs of their schooling and higher education is frequently entirely subsidized. As a result, educational expenditure is probably the largest single item in the budgets of most less developed countries. Since governments are the largest single source of development finance, educational policies may have important consequences for overall development strategy.

---

<sup>1</sup>The term "education explosion" was popularized by Bereday and Lauwerys (1965).

Table 1

Average Annual Rate of Growth of School Enrollments

---

---

	Primary	Secondary	Higher	Total
<b>Africa</b>				
Avg. % 1960-65	6.5%	11.3%	10.9%	7.1%
Avg. % 1965-68	4.1%	9.3%	6.0%	4.8%
<b>Latin America</b>				
Avg. % 1960-65	5.1%	11.5%	9.5%	6.1%
Avg. % 1965-68	5.5%	9.7%	12.0%	6.3%
<b>Aisa</b>				
Avg. % 1960-65	5.5%	7.6%	11.8%	6.0%
Avg. % 1965-68	5.2%	3.4%	9.7%	5.0%

---

---

Source; UNESCO, Statistical Yearbook 1970, pp. 62-67.

In contrast to the skilled manpower shortages of the last decade, the school systems in many less developed countries are now producing many more school leavers<sup>1</sup> than can be absorbed into employment. The problem of surplus school leavers is not a new one. India has had it for years, and the now classic article by Callaway (1963) pointed out this phenomenon in Africa ten years ago. What is new is the scope.

What happens to the surplus educated workers? Some thought that they would all have been inculcated by the schooling process itself with a strong aversion to manual labor and would choose to be unemployed more or less permanently while searching for the most desirable and rewarding jobs.<sup>2</sup> The evidence is that this is not now the case. Examination of occupation-education profiles of the labor forces of less developed countries shows clearly that large numbers of highly-educated workers actually do accept lower-level jobs.<sup>3</sup>

However, many of the surplus educated are in fact unemployed. Using the standard Western definition of unemployment (actively looking for work but without it), the available evidence suggests a general pattern which is perhaps surprising: unemployment rates are highest for persons with intermediate educational attainment. Complete education-unemployment profiles for seven less developed countries reveal that with one exception (Colombia) the incidence of unemployment is highest among primary and secondary school leavers as compared with the uneducated and persons with higher education. (See Table 2)

---

<sup>1</sup>"School leaver" is a British term denoting a completer of a particular level of schooling. Contrary to American parlance, "dropping out" is not implied.

<sup>2</sup>See, for instance, Myrdal (1968).

<sup>3</sup>See OECD (1969).



Table 2

Education and Unemployment, Selected Countries

	Illiterate	1 to 5 years education	6 to 11 years education	12 or more years education
Colombia, Bogota April 1967 Total labor force: Males Females	11.5% 4.1%	15.3% 22.0%	14.9% 16.3%	13.2% 11.3%
Argentina, Buenos Aires 1965 Total labor force	Illiterate	Primary	Secondard	Post secondary
Venezuela, 1969 Urban areas: Total labor force	3.8%	4.3%	5.7%	3.3%
	4.3%	7.0%	10.2%	2.3%
India, 1960/61 Urban areas: Total labor force	Illiterate	Below matriculation	Matriculation	Graduates
	1.2%	2.7%	7.0%	2.8%
Ceylon, 1963 Urban areas: Total labor force	Illiterate and Primary Grades 1-4	Secondary, Grades 5 to 8	Ordinary Certification	Higher Certificate and above
	7.1%	7.3%	11.8%	2.3%
Malaya, 1965 Urban areas Total labor force 15-24 Male Female	Illiterate	Primary	Secondary grades I to IV	Higher Certificate and above
	10.4% 17.2%	19.5% 32.4%	30.9% 69.7%	15.5% 27.5%
Syria, 1967 All areas: Total Labor force	Illiterate	Literate	Elementary to Secondary	Graduate
	4.3%	5.2%	11.7%	4.4%

Source: Turnham (1971, p. 51).

2. Social Returns to Investment in Education in Less Developed Countries

We have observed that school systems in many less developed countries are producing too many highly-educated workers relative to the absorptive capacity of their economies. Some surplus educated are found entering lower-level occupations and others are experiencing considerable unemployment. This pattern raises a new set of questions for assessing the social desirability of additional educational investment.

If we agree, at least in principle, that social costs and benefits should be given serious weight in social decisions regarding the allocation of resources to education, we must ask: "What sort of work is the marginal graduate going to do, given that there is already a surplus of educated persons, and what kinds of benefits (economic and other) will society receive?" We must also ask: "What does it cost to educate another graduate? Do the benefits justify the costs?"

These questions may be summarized by a marginal social rate of return, which may be defined as that rate which sets the discounted stream of additional social benefits attributable to the schooling of the last person educated equal to the cost incurred by society of educating him. Nobody to my knowledge has actually computed such a marginal social rate of return. Significantly, however, where a similar measure (a shadow rate of return) has been constructed and compared with the average social rate of return

as conventionally measured, the results changed dramatically. For our purposes, the most interesting conclusion of the study by Psacharopoulos (1970) is: "In the case of Greece, investment priorities with respect to investment in skills estimated on the basis of observed labor earnings would have suggested a change in the wrong direction of the educational output." (Emphasis added.)

It may well be that in countries characterized by a surplus of educated labor, the marginal social rate of return to education might be very small or even negative despite generally high "social rate of return,"<sup>1</sup> As we shall argue below, the marginal social costs (in real terms) are positive and frequently large and the marginal social benefits might often be quite small, even though the average benefit may be large. This gap between the average and marginal social benefit from investment in education may cause the marginal social rate of return to be much less than the average rates reported by Psacharopoulos and Hinchliffe. Let us now consider the social costs and benefits in some detail.

---

<sup>1</sup>Psacharopoulos and Hinchliffe (1971) summarize social rate of return studies for fifteen less developed countries. Only for primary education in the Philippines and higher education in Kenya and Colombia were the reported rates less than ten percent.

### Social Costs

In economies with surplus educated labor, the social costs of education may be very large. Typically, such economies have a large and perhaps redundant supply of unskilled and uneducated labor, with severe shortages of both physical and human capital. The educational system is a large user of both human and non-human capital. A glance at the capital budgets, wage bills of teachers, and number of teacher training spaces relative to education for other occupations confirms this view.<sup>1</sup> Thus, the resources devoted to producing education are extremely valuable in light of the important alternative uses to which they could be put.<sup>2</sup>

---

<sup>1</sup> For instance, in Kenya, about two-thirds of the approximately 11,000 post-secondary students (excluding those at foreign universities) are enrolled in teacher education courses. Education accounts for 15% of the Kenya government's budget and 10% of its development expenditures. Personal emoluments to teaching and non-teaching staff in schools amounted to £10 million, which is 8% of the total government budget. Source: Fields (1971).

<sup>2</sup> In private discussions on this point, some persons have taken exception to the view that the educational system is a large user of capital with valuable alternative uses. It is pointed out that with respect to human capital, in some countries, many teachers are themselves only generally-educated secondary school graduates of whom there is a surplus. With respect to physical capital, the resources used to construct schools might simply not be supplied otherwise. To the extent that labor is especially volunteered and physical materials are gathered or made or foreign governments or international agencies construct educational facilities, the real resource cost of educational expansion may be quite small. My response to the first counter-argument is that although the school leavers employed as teachers might have been unutilized otherwise, this in no way negates the fact that valuable governmental budgetary resources are diverted from other possible uses to pay their salaries. With regard to the second counter-argument, although some country schools are literally built by the townspeople, these schools often encounter financial difficulties after the initial enthusiasm wanes. Furthermore, the construction of higher educational facilities by an outside body frequently commits a country to larger recurrent expenditures than it can reasonably afford. On this point, see Heller (1971).

Another substantial component of the social costs of education is the financial aid granted to students. In many less-developed countries, students in secondary and post-secondary education pay none or only a small fraction of the costs of their education, receive housing and other payments in kind, and in addition may receive a small cash living allowance. If the government's budget is relatively flexible, this is merely a transfer of purchasing power from taxpayers to students to enable them to pay the costs of their schooling. But if the government's budget is more or less fixed in the short run, the value of the financial aid is represented in real terms by the social welfare which would be realized if the money were used on the next best public projects.

In contrast to economies which have shortages or full employment of educated workers, the output foregone by having potentially-productive workers in school in economies with surplus educated labor is minimal. If uneducated persons are temporarily withdrawn from the labor force while in school and there are others available to fill the jobs they would have held, there would be a loss of output only to the extent that the persons selected for further education are more productive on the job than those who replace them.

#### Social Benefits

At the risk of oversimplification, it would seem useful to distinguish three arguments which have been used to justify social investment in education.

First, educational investment is seen, mainly by economists, as a desirable means of promoting economic development. There are two distinct

versions of this argument. Some contend that educational investment produces additional high-level manpower which is in short supply. The manpower needs which are filled as the newly-educated are employed may alleviate bottlenecks to economic growth or expansion of lower-level employment. Thus, educational investment is sometimes justified on grounds of multiplier effects. However, this argument is of little relevance in countries which already have an excess of educated workers.<sup>1</sup>

A second economic argument, used mainly in favor of investment in lower levels of schooling, is that education creates human capital which is as necessary to economic growth and development as roads and other types of social overhead capital. This would be the case if education makes workers more productive in the work they do. For instance, by this line of reasoning, literate farmers are better farmers, highly-educated clerks and civil servants are more skilled and have better work habits and so are more productive on the job, etc. If the surplus of educated persons results in widespread absorption of relatively well-educated workers in lower-level jobs, the productivity effects of education may be quite important. That large productivity effects from education do in fact result is more a matter of faith than of empirical verification. In the absence of convincing evidence that educated workers are significantly more productive than

---

<sup>1</sup>A variant of this position is that it is necessary to produce a surplus of educated persons today so that there will be enough in the future to fill all the new skilled jobs in growing economies. As a counter-argument, we note that generally the rate of increase of the educated labor force far exceeds the rate of growth of skilled employment.

their uneducated counterparts in the same kinds of jobs, one cannot help but be skeptical about the importance of this argument.<sup>1</sup>

Third, investment in education is sometimes justified on grounds of social development. It is alleged that education inculcates the citizenry with desirable social values, produces national and community leaders, and creates a populace which is better able to enjoy leisure and the so-called good things of life. A thorough consideration of this point is well beyond the scope of the present discussion. Suffice it to say that reliance on this argument begs the question of whether it is worthwhile to devote scarce economic resources to the production of education, which would then best be regarded as a public consumer good whose benefits are incapable of measurement.

#### Social Returns

We have seen that when there are surplus educated workers as is the case in many less developed countries the costs of providing additional education are likely to be large and the incremental benefits small. If this is correct, the (marginal) social rate of return to additional educational investment at these levels would be low and would argue against educating so many. Thus, the continued expansion of educational systems which we observe in the face of inadequate absorption of educated workers in the labor market does not seem to be explained adequately by considerations of the economic benefits to society. Some other explanation must be sought.

---

<sup>1</sup>There are a number of reasons why employers might continue to hire the educated preferentially, even if their education did not make them more productive. One factor is the selection for schools. In general, opportunities for continuing one's schooling are few and only the highest scorers on examinations are able to continue on to the next level. To the extent that this reflects ability (as opposed, for instance, to the financial capacity of parents to hire private tutors) and this ability increases one's productivity on the job, educational attainment may (on average) serve as a useful signalling device for employers. Second, there may be non-pecuniary reasons (such as more stimulating lunchtime conversation) why employers might prefer to hire the better-educated. Finally, relatively well-educated employers may establish an unnecessarily high "objective" hiring criterion such as educational attainment to justify their own high salaries and ward off possible threats to their job security from the less educated.

### 3. A Political Interpretation of the Supply of Education

We postulate that the "education explosion" in many less developed countries has a simple political explanation. In light of the presumed low marginal social rates of return, optimal education policy would dictate the contraction of school systems. This would free scarce capital for investment or for the production of non-educational output and also lower the cost of financial aid to students, thereby reducing the pressure on the government's budgetary resources or on taxpayers.

However, there may be important political forces exerting pressure for a larger educational establishment. These include parents who want more education for their children, teachers' unions with a large vested interest in the size of the educational establishment, and employers who wish to hire the relatively well-educated. Each of these groups would be perfectly rational in considering the private gains they would expect to realize from a larger educational system in relation to the private costs and expressing their views in the political arena. For obvious reasons, teachers and employers would expect to gain more from a larger educational system than it would cost them. But what about ordinary citizens? There are at least four reasons why they might want a large educational system. (1) They may be near-sighted and fail to connect lower output of other public goods or higher taxes with a large educational system. (2) Even if they correctly perceive the costs, each parent may be over-optimistic about the likelihood that his particular child will be admitted to the next level of schooling. (3) Even if there are no misperceptions of costs or likelihood of receiving benefits, parents may be gamblers and be willing to take risks



(i.e., pay higher taxes) even if there is only a small chance of receiving the high private return, which is conditional upon his child being able to go on.<sup>1</sup> (4) Finally, even if parents are not gamblers, investment in education in less developed countries yields very high private returns despite substantial unemployment and underemployment amongst the educated, and a space in school therefore has a large monetary value. As we have noted earlier, educational systems in less developed countries typically are heavily if not entirely subsidized so that the private costs are small. Furthermore, each step in the educational ladder roughly doubles one's lifetime earnings. As a consequence, private rates of return to investment in education in less developed countries generally are on the order of 20% per year or more.<sup>2</sup>

For all these reasons, there is cause to believe that a demand for education in excess of the supply is a politically unstable situation. It would seem that given the political nature of the demand for education and the strength of feeling behind it, rather than contracting school systems in response to low social returns, politicians could help secure their positions<sup>3</sup> by moving in the opposite direction and using their influence to expand the school system. Hence, we postulate a simple adjustment process, namely, that supply adjusts according to the relation

---

<sup>1</sup> An interesting bit of evidence along these lines is the reaction of parents in former British colonies to the proposed replacement of the traditional British curriculum by a program emphasizing vocational and agricultural education. The parents apparently felt that such a curriculum would effectively exclude their children from university and were unwilling to risk not winning the big payoff.

<sup>2</sup> See Psacharopoulos and Hinchliffe (1971).

<sup>3</sup> This is sometimes expressed negatively: that failure to expand educational opportunities is tantamount to political suicide.

$$(1) \Delta S = n(D - S), \quad n < 1$$

i.e., at any point in time, the number of new schooling spaces being built ( $\Delta S$ ) is some fraction  $n$  of the difference between demand ( $D$ ) and supply ( $S$ ). The coefficient of adjustment may be assumed to vary positively with society's taste for education, positively with the level of national income, and negatively with the cost of constructing and operating schools. In short, what we have is teachers, employers, and ordinary citizens facing one set of signals --- high private rates of return --- and the political system responding to those same private signals while the social rate of return to additional educational investment may be quite small.

#### 4. Demand and Supply of Education and the Nature of Equilibrium

If the supply of education is determined politically in the manner just described, when does expansion end? From the supply adjustment relations (1), it is clear that our political model implies that the supply of education stops changing only if the demand and supply of education are equal. The condition

$$(2) \quad D = S \iff \Delta S = 0$$

is thus necessary for static equilibrium in the market for education.

This condition  $\Delta S = 0$  is not sufficient for a stable equilibrium. Viewed in a dynamic context, anything that would systematically alter the demand for education would also disrupt any static equilibrium in which condition (2) may have been temporarily satisfied. In particular, the stock of persons being educated today corresponds to the inflow of educated persons into the labor force tomorrow. Unless the inflow is exactly equal to the outflow of educated persons on account of death or retirement, the size of the educated labor force will change. This will alter employment conditions and change the private rate of return and the quantity of education demanded.

Changes in other economic variables would have the effect of shifting the entire demand for education schedule. These factors include net population growth, changes in the skilled-unskilled relative wage ratio, non-neutral technological change, and changes in the composition of the relative demand for workers of different educational attainments. We shall hold these factors constant and consider in a partial analysis the path of adjustment to equilibrium.

The change in the educated labor force ( $\Delta L_E$ ) is the inflow of newly-educated persons ( $S$ ) minus the outflow from the labor force, which is the dropout rate ( $\delta$ ) times the educated labor force ( $L_E$ ):

$$(3) \quad \Delta L_E = S - \delta L_E.$$

In order to keep employment conditions constant,  $L_E$  must remain unchanged. Thus, the condition

$$(4) \quad S = \delta L_E \leftrightarrow \Delta L_E = 0$$

is necessary for dynamic equilibrium in the market for education.

When condition (2) is satisfied, there is no tendency for the supply of education to change. Similarly, when (4) is satisfied, under the conditions described above, there is no tendency for demand to change. Therefore, (2) and (4) together constitute a set of necessary and sufficient conditions for a stable equilibrium in the market for education.

Let us consider an economy which initially has an excess demand for education (disequilibrium in the education market) and which is experiencing a growing surplus of educated workers (disequilibrium in the labor market). Such an economy is illustrated in Figure 1.<sup>1</sup> The initial excess demand for education is the gap between  $D_0$  and  $S_0$ . The existence of a growing surplus of educated workers is illustrated by the inflow to the educated labor force ( $S_0$ ) lying above the outflow ( $\delta L_E$ ).

---

<sup>1</sup>In Figure 1, the demand for education is drawn as a downward sloping function of the number of persons educated. This shape is consistent with either flexible or rigid wages. If wage rates are flexible, this shape may be explained by the fact that an additional supply of education lowers the wage received by educated workers, which in turn lowers the private rate of return to investment in education. If instead wages are considered to be fixed, the intuitive justification for the downward-sloping relation is that a larger number of, say, university graduates in the labor market lowers the expected income of each by reducing the probability that any particular one will be the next highly-paid university president. Elsewhere, I have shown that under several alternative labor market constructs, the demand for education would not be expected to decline smoothly (see "The Private Demand for Education in Relation to Labor Market Conditions in Less Developed Countries"). However, the monotonically declining relation in Figure 1 eases exposition without affecting the nature of the final equilibrium or the process of adjustment to it.

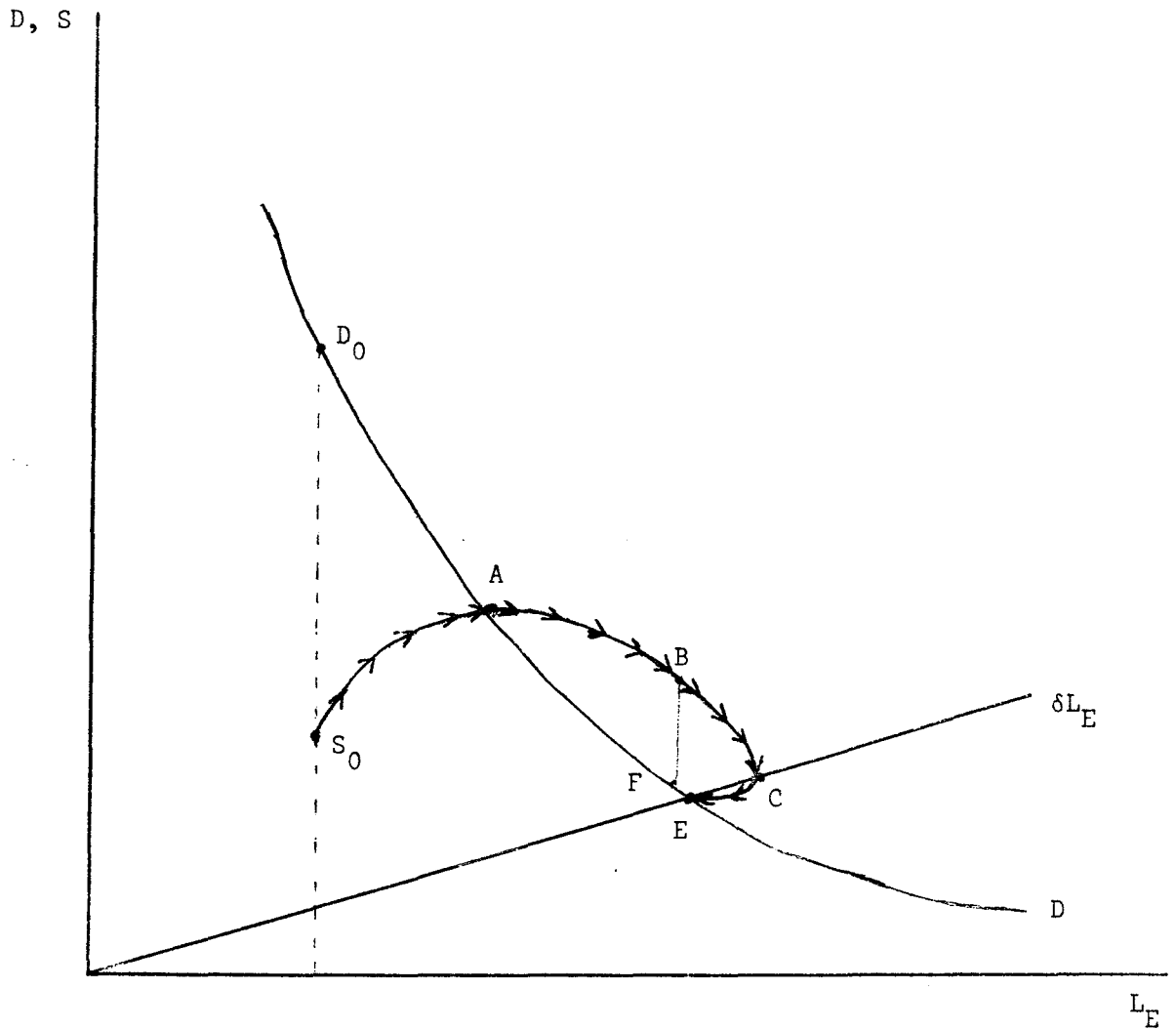


Figure 1.

The Supply and Demand for Education and Adjustment to Equilibrium.

Because the demand for education is greater than the supply, by (1), the political mechanism would cause the educational system to expand. The fact that the number of new entrants to the educated labor force is greater than the outflow due to death and retirement implies, by (3), that  $L_E$  is increasing. In the rigid wage case, this lowers the probability of finding a skilled job. In the flexible wage case, the wage actually paid to educated workers is reduced. Thus, in either circumstance, the demand for education will fall. The growing supply of education and falling demand for it are shown in Figure 1 by the respective positive and negative slopes of the S and D curves. Since the difference between demand and supply is narrowing, the change in supply gets smaller as the number of persons educated increases. Therefore, the supply increases at a diminishing rate, illustrated by the flattening of the supply function between  $S_0$  and A. At point A, the demand and supply of education are equal and  $\Delta S = 0$ .

In the past, some writers (including myself) have looked only as far as A. Although this point satisfies the condition for a static equilibrium in the market for education (2), it is not a dynamically stable equilibrium. This is because at A the number of newly-educated workers is greater than the number leaving the labor force. Thus, the educated labor force ( $L_E$ ) is growing, which implies a systematic rightward tendency and a continued deterioration in the labor market prospects for educated workers. As a result, the demand for education will fall beneath the supply, creating excess capacity in the schools and leading to a reduction in their number.<sup>1</sup> Since there is only partial adjustment ( $\eta < 1$ ), the supply contracts slowly at first (between A and B). The excess supply increases and reaches a maximum (at BF), after which supply decreases faster than demand until such time as the supply of education equals the number of dropouts from the educated labor force ( $S = \delta L_E$ ) at point C. At this point, the inflow of newly-educated workers into the labor force exactly equals the outflow on account of death and retirement, which satisfies condition (4) for equilibrium in the education market. However, at C, the supply of education exceeds the demand; therefore, condition (2) is not satisfied and the supply of education is contracted. As a consequence, there are not enough newly-educated to replace labor force dropouts, which means that the educated labor force contracts. We therefore move southwestward on the graph, approaching a stable equilibrium at E, where the supply and demand for education are again equal and the flows into and out of the educated labor force are also equal.

---

<sup>1</sup> The financial difficulties of many colleges and universities in the United States at the present time may foreshadow just such a contraction as the result of an overproduction of graduates relative to job opportunities.

The analysis may be amended to take into account the possibility that in addition to altering the supply of education in response to an excess demand for schooling spaces, politicians may also seek to reduce the excess demand by altering the parameters which enter into the individual's computations of private costs and benefits. This might be done by raising the private cost of education by means of increased school fees, by lowering the benefits by reducing the size of the educated-uneducated earnings differential by means of an incomes policy, by erecting capital market barriers to prevent potential students from raising the requisite funds, or by lowering the entire demand for education function by ceasing to stimulate people's tastes for education. Two demand for education curves are shown in Figure 2. Curve  $D_1$  is constructed on the assumption of given costs, wage differentials, capital market conditions, and tastes. Curve  $D_2$  assumes that politicians act to reduce the demand for education in any or all of the ways mentioned above. By tracing a supply adjustment mechanism of the type shown in Figure 1, it can easily be shown that  $D_2$  would lead to a lower peak supply and lower equilibrium supply than  $D_1$ .

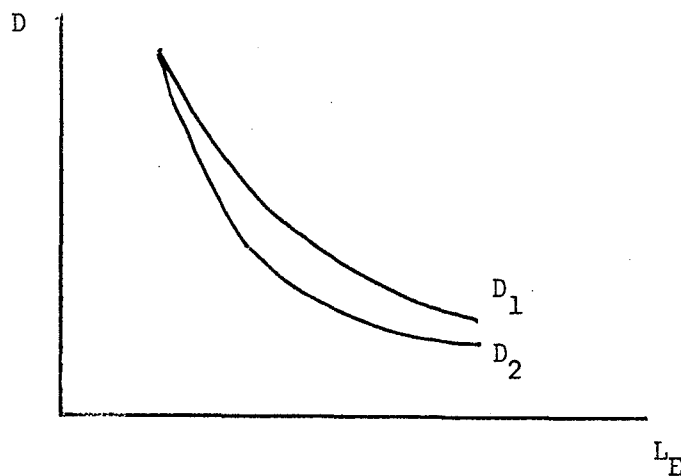


Figure 2.

Demand for Education Functions With and Without Changes in Private Cost and Benefit Conditions.



The most noteworthy feature of the interaction between privately-motivated demand for education and politically-determined supply is that, as equilibrium is approached, school systems would be expected at first to expand, although a halt or even contraction may be anticipated later. It might well be asked what it is about our model which moves the economy toward equilibrium in this roundabout way. If the ultimate equilibrium is at E, why would vote-maximizing politicians not anticipate the future direction and simply move directly there? The answer to this is that they are maximizing votes at the time and if they get too far ahead of the electorate they would lose voter support. What we have here is a situation which in a formal sense closely resembles the behavior postulated in physical capital models and which embodies many of the same stock-flow complications. Even if I have reason to believe that there will be a business downturn five years hence and I will then require a smaller capital stock than I now have, it would not make sense for me to disinvest now if I also anticipate a boom over the next few years. In like manner, politicians probably see the current excess demand for education and respond to that and will worry about surplus school spaces when and if the situation arises. Far from being myopic, they seem to have the best chance of being in office in the future if they take steps to increase their current popularity. As in physical capital models in which rational maximizing behavior leads to marked cycles in inventory investment,<sup>1</sup> so maximizing behavior in our human capital model leads us to expect first an increase and then a reduction in human capital investment.

---

<sup>1</sup> See, for instance, Lovell (1964).

The fact that adjustment to equilibrium leads first to an expansion and then a contraction of school systems gives us reason to believe that the education explosion is not a permanent feature in less developed countries. The apparent slowing of rates of growth of school systems in Africa and Asia and the virtual constancy in Latin America during the latter Sixties (See Table 1) are consistent with the pattern predicted by our model. Despite this predicted trend, the slowdown may nonetheless take a long time and entail a costly overcommitment of resources to education in the meantime. Furthermore, demand-reducing policies which limit the availability of education to the poorest segments of the population could also be introduced in the interim, with important implications for the distribution of income. In the final section, we consider some consequences of these and other predictions of our model.

## 5. Conclusion

In this paper, we have suggested that the allocation of resources to education in less developed countries should be viewed as the result of political decisions rather than as the outcome of any sort of social cost-benefit calculation. Such an allocative process has three important consequences for the development paths of the countries involved.

First, educational supply decisions in less developed countries do not seem to reflect any sort of conscious social choice as to what is the best use of a country's scarce resources. While one may question whether a social rate of return is a meaningful guide to educational decisions, there can be little disagreement about the inadequacy of an allocative mechanism which does not seek to weigh the social gains from education in relation to the social costs of supplying it. Yet, the political model we have proposed in this paper is exactly such a mechanism. Educational decisions in less developed countries are apparently made with reference to private costs and benefits. Since there is reason to believe that these diverge sharply from the social costs and benefits, it is hard to imagine that decisions made in this way would turn out to be optimal in any sense.

Second, the political model we have proposed leads us to expect an expansion of the schooling system in the short run despite unemployment and underemployment amongst the educated. The importance of this lies in the fact that governments in the less developed countries are the major

source of national savings and investment. Any additional competing claims on governmental budgets would likely divert resources from important and socially profitable public projects, thereby reducing savings and investment and leading to a slower rate of economic growth. Thus, the allocation of resources to education by political forces raises important questions of efficiency.

Third, the political forces we have described also have important consequences for the distribution of income. We have noted that the political response to an excess demand for education would not only be to take steps to raise the supply closer to the private demand but also to take action to lessen the demand. One such action might be to reduce the expected private benefits of education by narrowing the skilled-unskilled wage differential, either through higher taxes or a slower rate of growth of upper-level incomes. A lower wage would be expected to lead to more jobs and more output, provided there are no strongly adverse effects on worker efficiency or turnover. Not only would we expect there to be a larger pie to divide but we might reasonably expect it to be divided among more people. However, contrary to this seemingly beneficial effect, there might well be other and less favorable outcomes of demand-reducing policies. Higher school fees, erection of (or failure to remove) capital market barriers, and measures to shift people's tastes for education would all act to limit the private demand for education. And it would be the poor people who, for reasons that such diverse economists as Becker (1967) and

Bowles (1971) seem to agree on, would be hit the hardest. Since education is of great importance in determining one's income position in a less developed country, the new incentive structure and opportunities for acquiring education would, by making education prohibitively costly to the children of the poor, tend to perpetuate existing income inequalities and maintain the position of those at the top.

These considerations suggest the need, both on efficiency and on distributional grounds, to fundamentally change the process by which resources are allocated to education in less developed countries. These choices ought not to be made by politicians whose very tenure in office depends on satisfying popular demands. Instead, the power to make decisions on educational matters should be transferred to a body which is relatively insulated from political pressure. One such possibility might be a government educational planning board with actual decision-making authority. In any case, when one considers the potentially harmful effects on growth and income distribution if resources continue to be allocated to education in the present manner, there is cause for concern.

REFERENCES

- Bereday, G. Z. F. and Lauwerys, Joseph A. [1965]. The Education Explosion, London, Evans Brothers, Ltd., 1965.
- Becker, Gary S. [1967]. Human Capital and the Personal Distribution of Income, W. S. Woytinsky Lecture No. 1, Department of Economics and Institute of Public Administration, University of Michigan, 1967.
- Bowles, Samuel [1971]. "Unequal Education and the Reproduction of the Social Division of Labor," The Review of Radical Political Economics, Fall/Winter, 1971.
- Callaway, A. C. [1963]. "Unemployment Among African School Leavers," Journal of Modern Africa Studies, July, 1963.
- Fields, Gary S. [1971]. "The Educational System of Kenya: An Economist's View," Mimeo, 1971.
- Fields, Gary S. [1972]. "The Private Demand for Education in Relation to Labor Market Conditions in Less Developed Countries," Economic Growth Center, Yale University, Discussion Paper No. 160 (Revised Version), December, 1972.
- Harbison, Frederick and Myers, Charles A. [1964]. Education, Manpower and Economic Growth, New York, McGraw Hill, 1964.
- Heller, Peter S. [1971]. The Dynamics of Project Expenditures and the Planning Process: with Reference to Kenya, Unpublished Doctoral Dissertation, Harvard University, 1971.
- Lovell, M. [1964]. "Determinants of Inventory Investment," in Denison, E. F. and Klein, L.R., eds., Models of Income Determination, Princeton, N.J., Princeton University Press for NBER, 1964.
- Myrdal, Gunnar [1968]. Asian Drama, New York, Pantheon, 1968.
- Organisation for Economic Co-operation and Development [1969]. Statistics of the Occupational and Educational Structure of the Labour Force in 53 Countries, Paris, 1969.
- Psacharopoulos, George [1970]. "Estimating Shadow Rates of Return to Investment in Education," Journal of Human Resources, Winter, 1970, pp. 34-50.

Psacharopoulos, George, and Hinchliffe, Keith [1971]. The Economic Returns to Investment in Education in the Process of Growth and Development: An International Comparison, Higher Education Research Unit, the London School of Economics and Political Science, 1971.

Turnham, David [1971]. The Employment Problem in Less Developed Countries, Paris, Development Centre of the Organisation for Economic Co-operation and Development, 1971.