

Relative Earnings and Manpower Allocation in Developing Economies

by

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INTRODUCTION

The less developed countries (LDC) present two kinds of challenge to economists. First, they invite us to develop hypotheses about how economic growth begins and about structural changes during the early decades of growth. Second, they provide a fresh terrain on which specialists in particular subject-matter areas can test accepted notions about economic behaviour.

For investigations in labour economics, the structure of earnings provides a convenient starting point. (It is best to say "earnings" rather than "wages" because most workers in the LDC's are self-employed.) Analysis of earnings requires an examination of manpower supplies and requirements. This leads into the economics of agriculture, industry, government, and other labour-demanding sectors on one side, and into a study of education and other skill-producing agencies, on the other. Thus by starting with the earnings structure, one is led rather directly into the heart of the economy.

Some readjustment of ideas is necessary at the outset in view of basic differences between the LDC's and the advanced industrial countries. Certain issues which are important in Europe and the United States do not bulk large in the present context. Cost-push pressure on the price level, and the problem of reconciling high employment with price stability, are not major issues. The concept of income distribution as a division between profits and wages is applicable only within the small sector of "modern industry". The concept of a general wage level, with the implication that particular wages in a synchronized way, is not very meaningful. The more interesting problems concern *relative*

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earnings in different regions, sectors, firms, or occupations, *i.e.*, they are problems in microeconomics.

A serious difficulty is that there is no such thing as a "typical" less-developed country. The range of variation is much wider than in the North Atlantic world. Consider the differences between Malawi and Mexico in income level, composition of output, skill distribution of labour force, weight of government in the economy, wage-determining institutions.

Admitting this difficulty, let us examine a fictitious or "median" LDC with the following characteristics:

First, it is a "mixed economy". Government operates public-utility industries and perhaps certain branches of manufacturing in addition to producing public services.

Second, the economy is at an early stage of development, with "modern" business enterprises producing a small proportion of national output. It is neither Malawi nor Mexico, but more nearly like Thailand, Pakistan or Colombia.

Third, the economy is growing, *i.e.*, per capita output is rising.

Fourth, population and labour force are growing rapidly — say, at 2 to 3 per cent per year. There is surplus labour, or, perhaps better, "labour slack" in the economy, consisting partly in utilized labour time and partly in disguised unemployment. (This is an assumption, not a factual assertion. We cannot here enter into the debate over how "surplus labour" should be defined, what empirical tests of its existence are relevant, and whether it is actually a common situation in the LDC's.)

The occupational groups to be analysed are: self-employed workers in agriculture; self-employed workers in traditional urban occupations; low-skilled workers in "modern" private enterprises and in government; and white-collar workers requiring some period of formal education. We shall examine the forces affecting the earnings of each group at a point of time, and suggest hypotheses concerning the movement of relative earnings during the first few decades of development. The discussion is necessarily speculative and hypothetical, because reliable earnings data are rare in the less developed world, and careful analysis of these data is also rare. The purpose is to stimulate investigation rather than to draw conclusions.

II. EARNINGS IN AGRICULTURE

We begin with agricultural workers, whose earnings are often regarded as constituting a base for the urban earnings structure. Agriculture is a diversified industry, including many products and numerous forms of production organization. It may include large plantations, producing for export and hiring wage

labour. It includes landless labourers hired on a daily or weekly basis. It includes peasant farmers who own or rent the land they cultivate. So we must first decide whose incomes we are talking about and what kind of agricultural organization we are assuming.

We limit the discussion to peasant farmers who may be either owners or tenants. We assume that all farm work is performed by household members, and ignore the possibility of hired labour. We assume also a clear separation of people and incomes between country and city. People who move to the city settle there permanently. There are no informal income transfers — farm people do not ship food to relatives in town, nor do town dwellers help to support rural relatives. This is meant to exclude the African migratory labour situation, in which it becomes difficult to segregate and compare “rural incomes” with “urban incomes”.

It is necessary next to consider the meaning and measurement of “earnings”. A variety of measure may be desirable, depending on the purpose. In estimating production functions, earnings per man-hour of labour applied to agriculture may be the relevant figure. For analyzing inducements to rural-urban migration, one may want to know the average monthly or annual earnings of adult workers in agriculture, relative to earnings in alternative urban occupations. An appraisal of welfare requires total income per farm household for households of varying size and composition. In principle, one should have all these measures which will not necessarily move in the same direction over time. In practice, one must make do with whatever data have emerged from agricultural censuses or sample surveys.

At an early stage of development, farm income consists largely of production for home use. This is not merely food production, but includes almost everything the family consumes — clothing, housing, furniture, personal services. Salt, tea, shoes, cloth, and a few metal tools and cooking utensils may be the only purchased items. So it is important that all household output be counted, and that it be appropriately valued. Well-known problems arise from the difference in rural and urban price levels and price structures, and from differing “market baskets” consumed by rural and urban households.

Having made these distinctions, what can one say about the probable behaviour of peasant incomes? These incomes are certainly “low”, though perhaps not as low as may appear, because of a bias toward undervaluation of household output in existing measurements. It is not certain either that real incomes of rural households are below those of urban households engaged in “traditional” trade, service, and handicraft activities.

More interesting, however, is the question of movement over time. In

growth models of the Lewis or Fei-Ranis type, this is important because the level of agricultural earnings determines the supply price of labour to the "modern" sector, and hence the real wage level in that sector. It is often specified that real agricultural earnings remain constant over time, yielding a constant wage level in the modern sector as well.

In actuality, however, there seems no reason to assume that real agricultural earnings (per man-hour, or per worker-year) will be constant rather than rising or falling. The outcome depends on numerous variables, some of which are importantly influenced by public policy: the rate of increase of real consumer income in the economy; the income elasticity of demand for foodstuffs; the price elasticity of demand for foodstuffs; whether government intervenes to regulate farm prices through price supports, marketing boards, or other government purchase schemes; the rate of increase of factor inputs and factor productivity in agriculture, which again depends partly on what government does to discover and disseminate new techniques and to make modern inputs available; the rate of increase of farm population, which may differ from that of total populations; the division of output between landlord and tenant, which again can be altered by government through "land reform" measures; and the marginal rate of taxation on farm incomes.

There are many possible combinations of assumptions on these points, and it is easy to construct sets of assumptions under which farm earnings would rise, or remain constant, or decline over time. Intuitively, a model with rising earnings appears most constant with the picture of a successfully developing economy. If a growing economy is to avoid the Ricardian food bottleneck, and to avoid falling into dependency on food imports¹, food production per capita (and probably also per farm worker) should be rising over time. Landlords may capture part of this increase, and government may capture a further portion through taxation; but a 100-per-cent marginal tax rate seems neither feasible nor wise. Increased output requires that farm households supply increased labour inputs, learn new techniques, and assume new risks. It seems unlikely that they would be willing to do this for zero return.

Is the behaviour of farm earnings important only for agriculture, or does it react also on the urban wage level? In the Lewis and Fei-Ranis models, there is a direct reaction. The supply curve of labour to the industrial or "modern" sector is drawn horizontal at a level sufficiently above earnings in agriculture to induce rural-urban migration. If the level of farm earnings rises, this horizontal urban labour supply curve shifts upward. The wage of low-skilled urban labour moves upward over time at the same rate as agricultural earnings.

¹There are, to be sure, cases such as that of Hong Kong or Puerto Rico, in which growing food imports financed by export of manufactures may be quite appropriate. But such cases are untypical of LDC's in general. In the typical case, rising agricultural output is necessary not only to feed the population but to increase the country's export capacity.

It may be more plausible, however, to draw the supply curve of labour to the modern sector (SS in Figure 1) as sloping upward in the usual way. Although we have spoken for convenience of an average level of earnings in agriculture, actual earnings vary widely because of variations in soil, climate, water availability, cropping patterns, and the farmer's own capacity. The wage at which individuals find it worthwhile to transfer from country to city will vary correspondingly. Moreover, the modern sector draws only part of its recruits from agriculture. Some come from other urban activities, and some are new entrants to the labour force². For these people, too, it is reasonable to suppose that the higher the industrial wage, the larger will be the number of job applicants.

The truth behind the Lewis-type diagrams is that, at the wage level prevailing in the modern sector (OW in Figure 1), the number of workers desiring employment (ON) may exceed the number demanded (OE). There is a disequilibrium situation. The interesting question is how the wage OW was established, and why it does not fall in the face of a labour surplus. A possible explanation of this phenomenon is suggested in a later section.

An increase in agricultural earnings would shift the supply curve leftward, say from S to S₁. But this would still leave a labour surplus, and would not directly affect wages or employment in the modern sector.

In contra-distinction to some existing growth models, then, we suggest that there is no general presumption of real wage constancy in agriculture over time; and that the wage level in the modern industrial sector is not necessarily geared directly to change in earnings.

III. THE LOW-PRODUCTIVITY URBAN SECTOR

Simplified models of development sometimes assume that all non-agriculturalists are employed in the modern sector. But this is inaccurate. The urban population comprises two distinct areas of employment. These may be termed the traditional and modern areas, or the small enterprise and large enterprise areas, or the low productivity and high productivity areas.

In the early stages of development, most of the urban labour force is in the low productivity area. This includes handicrafts manufacturing, retailing, labour intensive transport of goods and people, domestic and personal service, and a variety of other service activities. Most of these people are self-employed, resembling in this respect the agricultural population. Entrance to the occupations in question is open. Most of them require little or no skill, and also little or no capital. They, thus, provide a natural entry point for migrants from the

²In a sample of 1,000 new factory workers in Puerto Rico, Reynolds and Gregory found [12] that about one-fifth had transferred from agriculture, two-fifths were drawn from other sectors of the economy, and another two-fifths were new entrants to the labour force. It would be useful to have comparable evidence from other industrializing countries.

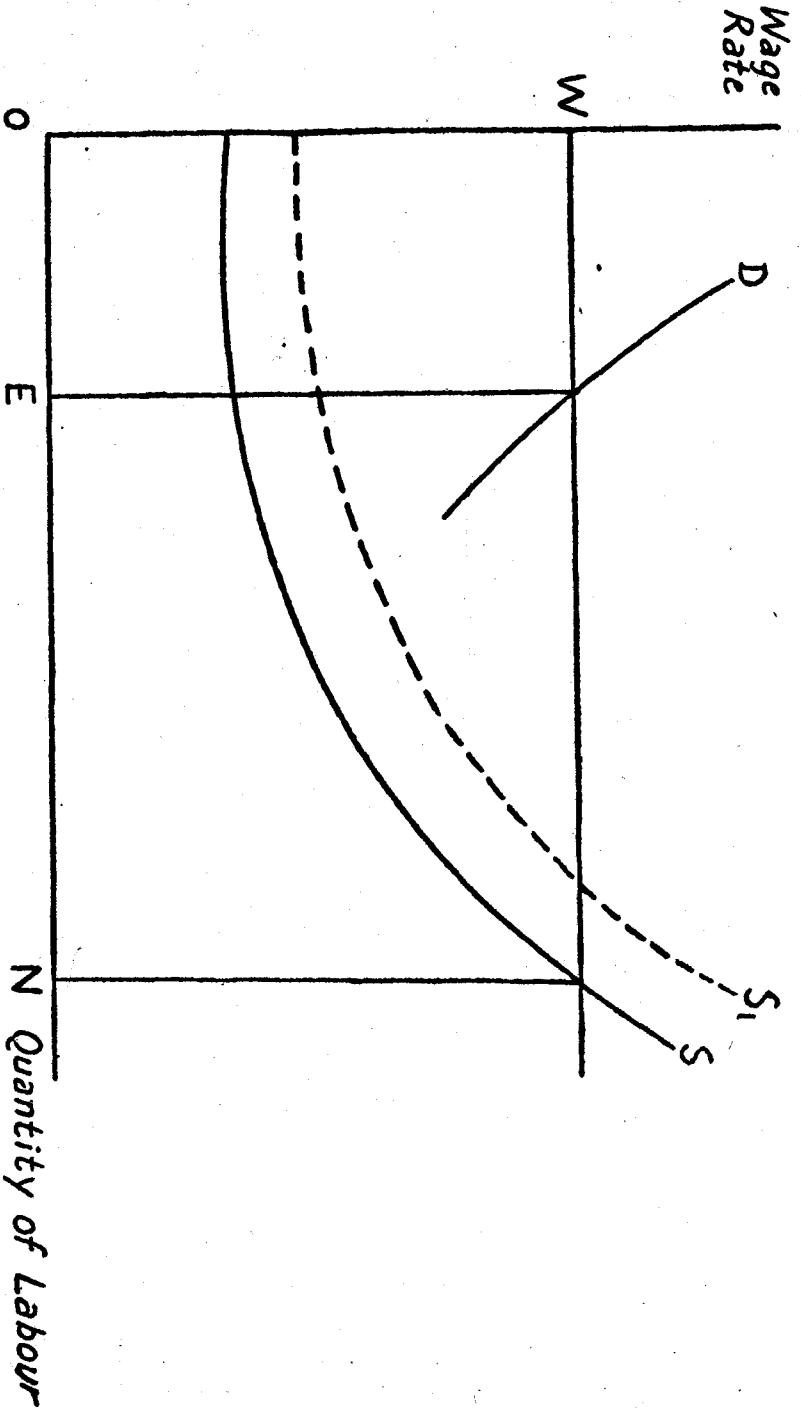


Figure 1

country, who win a precarious foothold in the urban economy by crowding into petty trade, services, and other small-scale activities. Overmanning of these activities contributes to low output and income per worker. While most people manage to work a little and earn a little, some remain wholly unemployed. They presumably subsist by being attached to a household which has some source of income; but their presence reduces real income per household member.

Little is known about incomes in this sector. Statistical effort tends to be concentrated on wages and salaries in the modern sector. But suppose that information were available. What would one expect to be the relation, in equilibrium, between real earnings in agricultural and in traditional urban activities? The equilibrating factor would be rural-urban migration. So the question may be put in this form: what assumptions about migration would lead one to expect income parity between agricultural and (traditional) urban occupations³?

One could assume that everyone growing up in the countryside has the option of remaining in agriculture (no one is literally pushed out by land scarcity); that the only alternative to agricultural employment is employment in the low-productivity urban sector (which ignores the chance to secure employment in the high-wage modern sector); that differences in real household income are the only determinant of migration (the "bright lights" and other presumed attractions of city life are not relevant); that whole households migrate; that accurate information is available; and that migration costs are zero. Under these conditions one might expect real incomes to tend toward the same level. Any disruption of equilibrium resulting from differing rates of population growth in country and city, or from differing rates of increase in labour demand, would be speedily corrected by migration.

Migration is clearly more complex than this, and we do not know much about it. Labour market information is poor, the costs and risks of migration are substantial and urban ways of life may be more expensive.

On these counts it is often argued that the equilibrium level of real income will be higher in the city. But there are also forces working in the opposite direction. If rural population growth is rapid and land scarce, people may be forced out of agriculture willy-nilly. City life also has considerable non-monetary attractions: enlarged opportunities for social contact, greater variety of recreational opportunities; the possibility of learning new skills and moving up the economic ladder; better educational opportunities for one's children. Moreover, there is in the city a modern high-wage sector alongside the traditional sector. The actuarial likelihood of getting employment in this

³For migration analysis, parity should doubtless be construed in terms of *household* income. Equal income per household in country and city will not mean equal income per worker, because of possible differences in family size and in labour-force participation rates.

tives in manufacturing and comparable groups in other industries. These jobs require only a short training period, and are usually paid at not much more than unskilled labour rate.

The limited statistical evidence suggests two observations concerning these rates. First, they seem to vary considerably more among establishments than is true in more developed countries, suggesting greater imperfection of the labour market (including the widespread prevalence of underemployment and surplus labour). This variation is observable, for example, in data on wage rates by size of manufacturing establishment. It is normal everywhere for smaller enterprises to pay less than larger ones; but in the more developed countries the differential is moderate. Taira found [14] that in the United States, Britain, and five West European countries, manufacturing plants with 50-99 employees typically paid 80-90 per cent as much as establishments with 1,000 employees and over. But the smaller enterprises pay only 55 per cent as much in India and 65 per cent as much in the United Arab Republic.

The second striking fact is that wage levels in the modern sector seem high relative to earnings in traditional activities. Instead of the modest 30 or 40 per cent premium hypothesized in some growth models, they are often 2 to 3 times as high. Foreign-owned oil and mineral companies seem particularly prone to pay wages much above traditional levels. Evidence is available (*see* [2; 3; 11; 12; 14]) from areas as diverse as Jamaica, Puerto Rico, Zambia, Uganda, the Lebanon, Iraq and Iran. One should not over-generalize. In Pakistan, Khan [10] found that the average income of wage-earning families was below the average for rural economies. There may well be other such cases. So modern enterprises apparently "over pay" in some countries, but not in all countries. It would be interesting to know why.

Where modern employers do pay more than the supply price of labour, *i.e.*, where the situation is as sketched in Figure 1, why do they do this? There are several possible reasons. First, a high-wage policy often costs very little. In capital-intensive manufacturing and extractive industries, labour cost is a small percentage of value added. Moreover, if the company's profits are taxed at, say, 50 per cent, half of any wage premium is paid by government.

Second, a high-wage policy has productivity advantages, and so again costs less than it may appear to cost. It enables the employer to skim the cream of the local labour force, to secure workers of relatively low age, superior physique and intelligence, above-average education, stable work habits, good scores on tests of manual aptitudes. It helps to reduce turnover and absenteeism. It enables supervisors to demand a good pace of work plus attention to quality of product and care of machines. Higher wages may also add to workers' strength and efficiency by permitting better nutrition and health care.

Third, there are less tangible but important advantages in the company's public relations. In the ideological atmosphere of most LDC's, high profits are viewed with suspicion and may lead to demands for nationalization or heavier taxation. Foreign-owned enterprises are especially vulnerable to political attack. Profit-sharing through an obviously generous wage level may seem good long-range strategy.

Fourth, employers are not entirely free to choose. Trade unions are typically not very consequential in the LDC's, operating mainly as political pressure groups rather than as bargaining organizations. Government wage regulation, however, is quite important. In many LDC's the political climate is welfarist and egalitarian. The urban employees, including government employees, the university students, and the writers and intellectuals, are a force to be reckoned with by government. Given the high wage-paying ability of modern industry, it is entirely natural for governments to pursue a high-wage policy (high, that is, relative to earnings in traditional activities).

Government policy operates, first, through the wage level it sets for its own employees. Government departments and state enterprises employ a considerable share, often 20 to 40 per cent, of the workers in the modern sector. So it can, and frequently does, act as a wage leader for this sector.

The other main device is minimum wage legislation, which is widespread in the LDC's and usually exerts substantial pressure on the wage structure. Even if the initial minimum is in line with traditional earnings, there is a strong tendency toward frequent and large increases. One can always show that existing wages are too low to support a "decent" standard of life, and it can be argued plausibly that employers will somehow absorb the higher labour costs. In Uganda, for example, the minimum wage in government was tripled between 1954 and 1964, a period during which the average incomes of peasant proprietors rose very little [11]. In Puerto Rico, too, minimum wages in manufacturing almost tripled between 1950 and 1963 [12]. Increases of 10 per cent a year are not uncommon in other countries.

Once a wage differential has developed, for any or all of these reasons, it tends to harden into custom. There develops, in a sense, a dual labour market. Given this kind of split-level wage structure, the earnings gap between the modern and traditional sectors may well widen over the early decades of development. An important consideration here is that value added per worker in the modern sector is likely to rise quite rapidly over time—partly through "learning" by both workers and managers which is normal in new enterprises, partly through other types of technical progress.

The fact that output per worker is rising does not *per se* provide any reason for wage increases, since wages are already above the supply price of

labour. But if wage rates were actually held stable, or at least held stable relative to product prices, profit margins would widen continuously. This is politically unacceptable for reasons suggested earlier, and there will be strong pressure to keep wages moving upward.

Earnings in traditional activities may also be rising if agriculture is progressing satisfactorily; but they are likely to rise only gradually. It is, thus, a reasonable hypothesis that the wage level in the modern sector will diverge farther and farther above earnings in traditional activities.

A rough test of this hypothesis may be had by comparing the movement of real wages in each country with that of real product per capita. This indicates whether employees are improving their position relative to the population in general. The data are very unsatisfactory. A study by A. D. Smith [13] suggests, however, that in Tropical Africa the rate of wage increase has everywhere outpaced that of GNP increase. This has also been true generally in Central and South America, though Brazil and Peru may constitute exceptions. In Asia, the picture is mixed. Wages have advanced materially faster than output per capita in Ceylon, but not in Pakistan or India. Khan finds [10] that real wages in Pakistan industry declined somewhat over the period 1954-63.

How is continual forcing up of the unskilled labour rate, where this occurs, likely to affect the earnings of higher grades of manual labour? As regards semi-skilled workers, there is a tendency toward compression of skill differentials. When the minimum wage is raised, workers, who are only a short distance above the minimum, usually receive increases as well. But these are often not equal in absolute terms, and still less in percentage terms, to the increase in the minimum wage. If, however, the shrinkage of differentials reaches the point of interfering with incentive to learn and perform semi-skilled jobs, the employer has the option of widening them once more. These rates are market-determined in the sense that the premium over the common labour rate must be sufficient to call forth the required supplies.

The wages of skilled manual workers are also market-determined, and their premium over unskilled labour is considerably larger than in more developed countries. In Britain and Western Europe, skilled men typically earn 20 to 30 per cent more than the unskilled. In the LDC's, however, they almost invariably⁵ earn at least 50 per cent more, and quite often earn two to three times the

⁵In Chilean manufacturing, Gregory found [9] that skilled workers earned on average only 42 per cent more than the unskilled in 1963. Argentina seems also to have only moderate skill differentials. These two countries, of course, are semi-industrialized and not really typical of LDC's in general.

labourers' wage⁶. The movement of skilled rates over time depends on relative rates of increase in demand and supply. In a growing economy, with considerable investment in infrastructure and industry, demand for skilled tradesmen will be rising rapidly. The response of supply is lagged because of the length of the training period. In some newly independent countries, where skilled work was formerly done by expatriates or by ethnic groups regarded as "foreign", nationalization of these jobs may also restrict supply for the time being.

On balance, the market price of skilled labour seems likely to advance rapidly in economies which are really progressing. The minimum rate for the unskilled is being pushed up meanwhile by the non-market pressures noted earlier. Whether the skilled-unskilled differential widens or narrows over time depends on the balance of these two sets of forces. The evidence assembled by Berg suggests that there has been some tendency toward compression of skill differentials in the post-War II period; but that this tendency has not been uniform among countries. Of 13 LDC's for which wage relations in the early 'sixties could be compared with those in the early 'fifties skill differentials had fallen in 8 and risen in 5; but in several cases the change was too small to be significant in view of the crudeness of the data.

The fact that the modern sector wage level is high and rising tends to reduce employment opportunities in that sector. This is most obvious in the case of government. Suppose GNP is rising 5 per cent per year and that the tax system has unit income elasticity, so that revenues rise 5 per cent per year. If the government wage level is also rising 5 per cent per year, and if the proportion of the budget allocated to wage-salary payments remains unchanged, there can be no increase in government employment. Formally, if we assume that the amount which government can budget for labour services is independent of the wage level, the elasticity of demand for labour in the public sector is -1 .

Elasticity in the modern business sector is harder to estimate, but must also be negative and substantial. Wage pressure leads to efforts to economize labour, both through better management and through capital-labour substitution. This is certainly one reason, though not the only reason, why manufacturing employment in Puerto Rico rose only 65 per cent between 1950 and 1962, although value added in manufacturing increased more than four-fold⁷.

⁶See a summary of the available evidence by Berg [3]. He points out, however, it is not easy to identify the rate for a certain category of skilled labour. There is usually a wide variety of rates for any job title. One reason is that the classification itself is heterogenous, comprising some people who are truly all-round craftsmen along with a large number with less skill and training. The gap between the labourer and the true craftsmen is considerably wider than is suggested by studies which use median earnings of all those classified as skilled.

⁷Greater detail is presented in [12]. Strictly manufacturing output should be valued in constant dollars. The Puerto Rican price level rose moderately from 1950-62, in line with that of the United States mainland. Even on this basis, however, there would remain a gross discrepancy between output and employment trends.

A similar slow growth of industrial employment, despite large increases in industrial output, is reported from many LDC's (see, [1 ; 7]).

A further effect of rapid wage increases in the modern sector is to stimulate rural-urban migration. The higher the wage level in the modern sector the greater, other things equal, will be the volume of migration; and the higher also will be the equilibrium level of urban unemployment.

These surmises about wage-employment behaviour in the modern sector are summarized in Figure 2. The subscript 1 denotes an initial situation while subscript 2 indicates the situation, say, five years later. On the assumption that earnings in agriculture and other traditional occupations are rising, the labour supply curve S_2 starts out at a higher level than S_1 . But it bends outward to the right because of the growth of population and labour force. The demand curve for labour is shifting rightward because of expansion in both the business and government sectors. The wage level is assumed to have shifted upward to W_2 for reasons suggested earlier.

In the new equilibrium, employment in the modern sector has increased, from OE_1 to OE_2 , which is considerably less than the rightward shift of demand. Unemployment and underemployment⁸ have also increased from E_1N_1 to E_2N_2 . This may be a rather typical situation for high-population growth countries during the early phases of development.

V. THE MODERN SECTOR: EDUCATED LABOUR

Our explorations in this area must necessarily be brief. We consider only white-collar occupations, and we assume that some degree of education is required for employment in these occupations. Initially, we shall assume that there is only one grade of "educated labour", characterized by secondary-school graduation. We assume also that educated labour is produced and employed wholly within the country, *i.e.*, we ignore the possibility of hiring expatriates, and the reverse possibility of "brain drain" losses to more advanced countries⁹.

Figure 3 illustrates wage determination for the single category of secondary-school graduates. The stock of such people is fixed in the short-run at OE . The demand curve D , in conjunction with the fixed supply, determines a wage OW . The potential supply curve, S , may be presumed to start near the unskilled wage level in the modern sector¹⁰, and to slope upward in the usual

⁸Figure 2 does not show directly the number of unemployed. Some of those arrayed along the distance E_2N_2 are wholly unemployed; some are partially unemployed who work a short week; most are disguisedly unemployed, *i.e.*, working normal hours but producing and earning below what they could earn in "modern" activities. It seems plausible that, as the distance E_2N_2 lengthens, its three components increase more or less proportionately. But this hypothesis would require an empirical test.

⁹The complications arising from expatriate labour are explored in [8].

¹⁰Not at the unskilled level, if decisions are rational, because of foregone income and educational expenses during the training period.

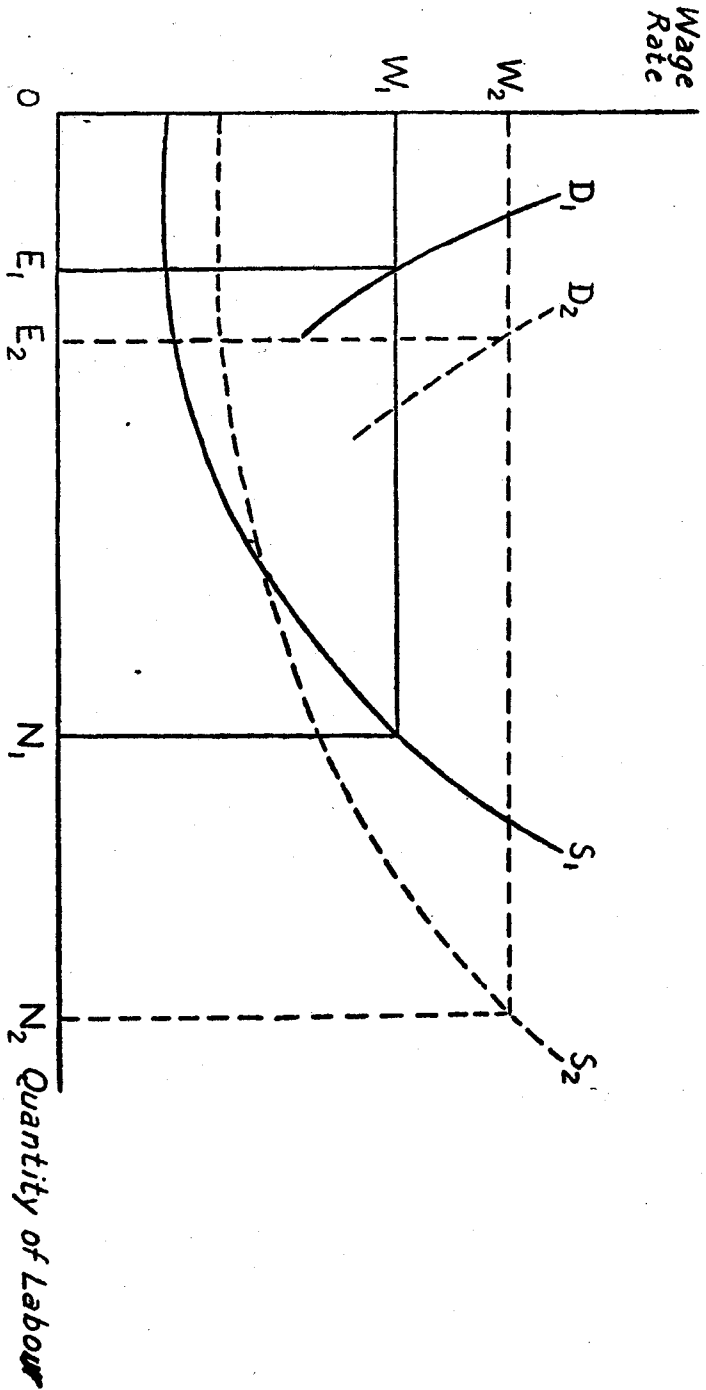


Figure 2

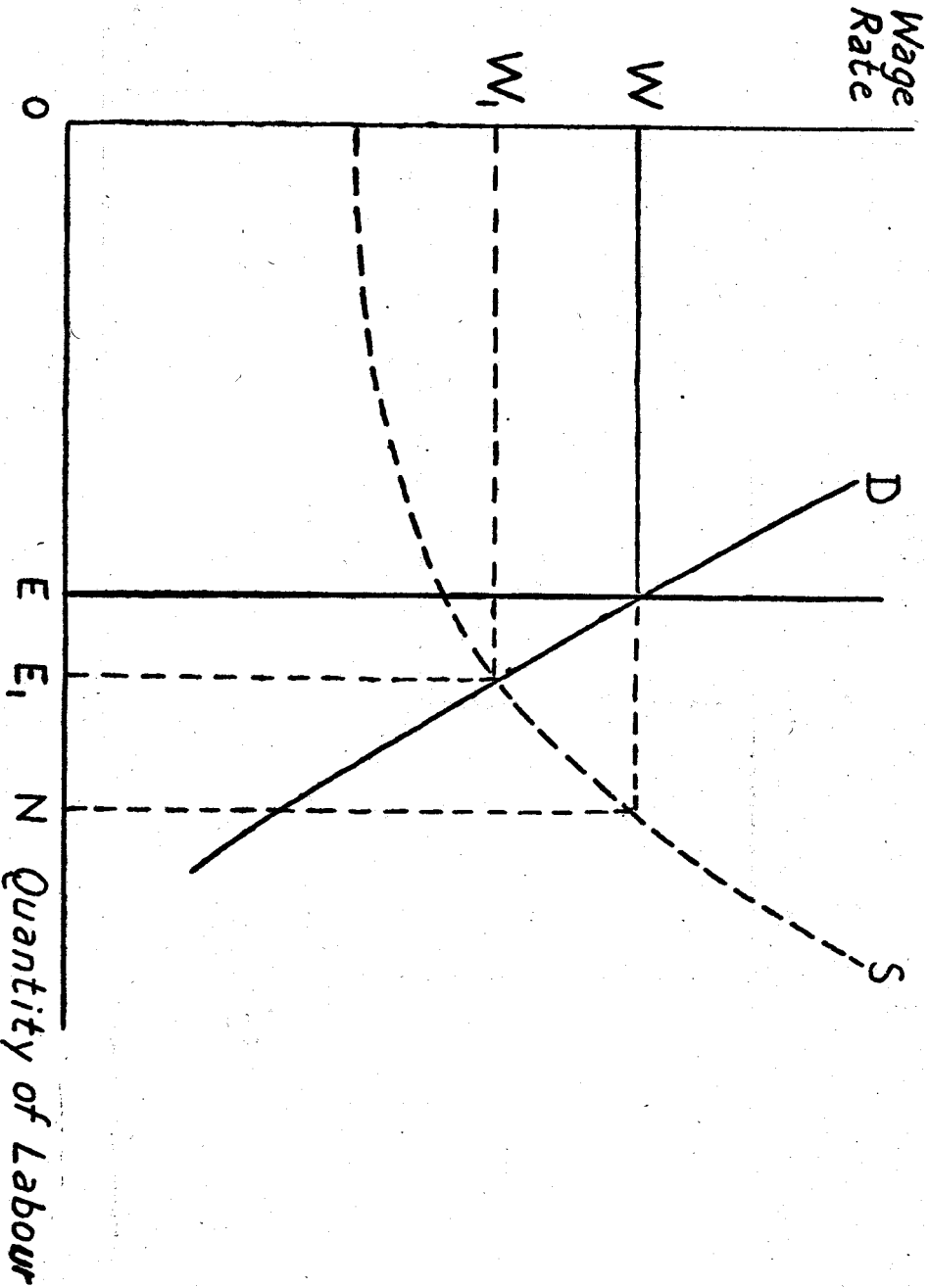


Figure 3

way. This curve does not affect the wage level because of the supply bottleneck imposed by the educational system. Educated labour earns a rent equal to the area between the wage line and the supply curve.

Rental incomes are usually viewed with suspicion. What would happen if efforts were made to eliminate this type of rent? One might reason that the proper wage is OW_1 , at the intersection of the D and S curves, and might try to impose a ceiling at this level. The first effect of this, however, would be to create excess demand of EE_1 . There would be competition for educated labour among government departments, public enterprises, and private industry. Unless workers could be allocated among employers, the wage line OW_1 could not be held.

One could arbitrarily restrict the demand for educated labour in the public sector, with possible adverse effects on output and productivity in that sector. A more constructive approach is to increase educational capacity. But by how much? Should one aim at a target on ON, which would take care of all those willing to apply for education at the prevailing wage? This would overshoot the mark. A supply of ON, in conjunction with the demand curve D, would in a competitive market cause earnings of educated people to fall substantially, and many of those who had chosen education would be disappointed. Or, if the wage OW is rigid downward for institutional reasons, there would be "educated unemployment" of EN.

Because of the time required to expand educational capacity, such overshooting is unlikely in practice. But setting educational targets is clearly a complex problem, and any target which may be selected has wage implications which are not always recognized¹¹.

Figure 3 assumes that at the outset of development, educational facilities are so restricted as to produce substantial rents for school graduates. This will not necessarily be true in every country. There are indications, however, that large wage differentials for educated white-collar workers are common in the LDC's. In Chile in 1960, the monthly earnings of manual workers in manufacturing averaged about 65 escudos, while office workers averaged 163 escudos [9]. In Uganda, in 1965, when the rate for unskilled government employees of whom no education is required was £90 per year, holders of a Junior Leavers' Certificate (8 years of education) were averaging £204 per year in the civil service, while holders of School Certificates (12 years of education) earned an average of £556 per year [11]. Taira presents data [14] on relative

¹¹The complexities, indeed, are not fully revealed by Figure 3. Labour quantities such as OE and ON are *stocks* at a moment of time. The output of the educational system, however, is a *flow* per unit of time. The time needed to raise the stock OE to ON will depend on the annual output capacity of the educational system and on attrition rates. Since time is required, the demand curve (and probably the wage rate) will meanwhile have shifted to a new position. The problem of educational target-setting must thus be analysed in a time dimension.

earnings of unskilled labour and bank tellers in 9 more developed countries and 15 less developed countries. In the MDC's the ratio of tellers to labourers' earnings in 1963 varied from 0.8 in New Zealand to 1.7 in Australia. In the LDC's, however, tellers typically earned 2 to 4 times as much as labourers, the ratio rising as high as 5.9 in Chile, 6.1 in Kenya, 6.5 in Nigeria, and 6.9 in Guatemala. While such large differentials may contain a conventional element, they seem to be mainly market-determined, with educational supply restrictions playing a key role.

How will the premium for educated manpower behave over time? This depends on the relative rates of increase in demand and supply. Even without expansion of educational facilities, E will move rightward if the annual output of graduates exceeds attrition through death and retirement. The higher the rate of expansion in school capacity, the more rapidly the stock of educated manpower will rise. The rate at which the demand curve shifts to the right depends on the rate at which output is rising in the modern sector, and on its inputs of educated labour per unit of output. The input coefficient is no doubt adjustable, but not indefinitely; and in the public sector custom may enforce educational qualifications for each civil service grade regardless of job content.

A country with a high growth rate and a laggard educational programme may experience widening differentials for educated manpower for quite some time. In this event, the scarcity of educated manpower might be expected eventually to reduce the growth rate. On the other hand, a modest growth rate plus vigorous educational expansion may produce a shrinkage of differentials almost from the outset.

Matters become more complicated when one recognizes that there are several levels of educated manpower. There are primary graduates, secondary graduates, and university graduates (even overlooking dropouts at intermediate levels). The behaviour of supply at these various levels, and the consequent behaviour of earnings differentials, will depend on the strategy of educational expansion.

The allocation of secondary school graduates is particularly crucial. They are demanded from three sides: as teachers for primary schools, as employees in other public and private sector activities, and as inputs (students) to the university system. Different allocations imply a different development of the earnings structure. Suppose, for example, that there is a massive push to enlarge primary education with a view to early achievement of universal literacy. A high proportion of secondary graduates is ploughed back into primary teaching thus reducing the numbers entering other employments and going on to university. The consequence may be a rise in relative earnings of secondary and university graduates, possibly accompanied by a decline in relative earnings of primary graduates.

Suppose, on the other hand, that without much enlargement of secondary education the proportion going on to universities is increased sharply. This will again raise the earnings premium for secondary graduates, since it reduces the supply available for immediate employment. But if the rise in university outputs outpaces the rise of demand at that level, the relative earnings of university graduates will fall. Thus, it is quite possible that differentials for some educational levels may be widening while others are declining.

A further complication is that university education comprises numerous specialities. Depending on training capacity for each speciality relative to demand movements, the prices of different skills may move in different directions. Relative earnings of engineers may rise while those of philosophers fall.

These complex issues cannot be pursued here, but several things should be clear. First, future requirements for different levels of educated manpower cannot be calculated independently of market prices. Second, strategy should be guided, not by the present structure of relative earnings, but by the structure as it may appear ten or twenty years hence, on the basis of explicit assumptions about demand elasticities and demand shifts¹². Third, the actual movement of earnings for different levels of educated manpower will be heavily influenced by educational decisions. Earnings structure, manpower allocation, and educational expansion are aspects of a single interdependent problem.

VI. SOME IMPLICATIONS FOR POLICY AND RESEARCH

It is not the purpose of this paper to explore wage policy. We may note, however, several issues which stand out clearly from the discussion.

(1) What is the primary function of the earnings structure in early economic growth? This structure serves a variety of purposes. It distributes income between capital and labour, and within the working population. It provides an indicator of relative skill scarcities. It influences the allocation of labour to industries, occupations, and regions. It affects workers' effort and productivity. What relative weights should be given to these functions in judging whether a particular earnings structure is optimal?

(2) At what rate should real income per farm household increase over time? This is mainly a matter which concerns the agricultural sector; but it also influences rural-urban migration and the earnings level in traditional urban activities.

¹²I do not mean by this to take sides in the controversy over physical manpower planning versus rate-of-return analysis. If labour demand curves are quite price-inelastic, then shifts in the curves may be the most important consideration. Nor do I mean to suggest that it is at all easy in practice to work out a correct educational strategy along these lines. There is a large literature in this area. In addition to the older studies of Becker, Bowen, Harbison and Myers, and others, see recent contributions by Blaug [4], Bowles [5], and Eckaus [6].

(3) Given that there will be considerable underemployment of labour during the early decades of development, what is the best distribution of this underemployment between town and country? Should rural-urban migration be discouraged, and if so by what means?

(4) How far should wages of low-skilled workers in the modern sector be permitted to rise above earnings in agriculture and other traditional activities? It may well be impossible to avoid undesirably wide differentials; but it is still worthwhile to define what wage behaviour would be optimal if it could be achieved.

(5) What is the optimal size of the educational budget, and the optimal allocation of this budget among levels of education and specialized courses? This is basically a problem in manpower economics, involving relative earnings as well as physical manpower flow.

(6) To what extent can large market differentials be eroded by progressive income taxation? Can one assume that, the higher the wage or salary level, the larger the rental element which can be recaptured without affecting supply? Can one assume also that the groups involved will not seek to restore their post-tax position by a further widening of pre-tax differentials?

It should be clear that no LDC, even if it could define objectives and had effective policy instruments, presently has enough knowledge to devise optimal policies. The following may be suggested as high-priority research problems:

i) Measurement of the main dimensions of earnings structure, and of how it has changed over time. This will usually require major improvements in the statistics on wages and income.

ii) Farmers' production and consumption responses to increase in real household income.

iii) The volume, incidence, and determinants of rural-urban migration.

iv) The rate and sources of productivity increase in the modern sector, including the incentive role of wages.

v) Elasticity of demand for labour in modern employment, private and public.

vi) The interaction between earnings differentials for "high-level manpower" and the structure of the educational system.

vii) Projection of supplies, requirements, and prospective earnings in occupations requiring extended education.

viii) Optimal educational strategy, viewed in the light of such projections.

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