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THE MANPOWER APPROACHES TO EDUCATIONAL
PLANNING: THE ETHIOPIAN CASE

by

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ABBREVIATIONS USED

- AEMR = An Assessment of Ethiopia's Manpower Requirements and Resources for Economic Development - 1961/70 EC.
- CSO = Central Statistical Office.
- ESR = Education Sector Review
- IBRD = International Bank for Reconstruction and Development
- ILO = International Labour Office
- MNCD & SA = Ministry of National Community and Social Affairs
- PCO = Planning Commission Office
- EC = Ethiopian Calendar
- GC = Gregorian Calendar

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INTRODUCTION

The quest for planning - the intervention of 'visible hands' in regard to society's resources allocations - has grown overwhelmingly in most of the underdeveloped countries. The emergence of mixed and command economies in most of these countries has its roots in the historical socio-economic make-up of these countries.

Planning has a multi-faceted role in these countries. It serves as a guide for appropriate, timely and consistent decision in regard to the progress of the various sectors of the economy. It assumes a substitutive role where market mechanisms have structural deficiencies in their distributive capacity. Planning is also used as an instrument of mobilizing the masses to participate in the development efforts of their country. Planning, as such, plays economic as well as non-economic roles in the development process of these countries.

Planning as a system consists of: input elements, formal structure, actors that participate in it, an outcome and feedback mechanism. The preparation of a realistic plan requires an appraisal and assessment of its resource capacity - human, financial, administrative - to meet its stated objectives. The input dimension as such has a major role in determining the size of any plan. The general direction of this paper is limited to one aspect of these inputs, viz., Human, and, in particular, to the study of the techniques of assessing and determining the requirements of the 'skilled' aspect of manpower.

The theoretical basis of linking education to economic development is not yet settled and firm. The traditional Cobb-Douglas production function and subsequent studies ¹ reveal that changes of physical capital and labour inputs cannot fully explain the growth of output over time. The residual factor of the production function is attributed to 'Human factor' and in particular to 'improvement in knowledge'. T. Balogh and P.P. Streeten point out that such aggregation as 'improvement in knowledge is a tantamount to saying that it is the necessary condition for a growth in production and that education is a homogeneous input. In their words, "the concept therefore suffers both from illegitimate isolation and from misplaced aggregation"². The theoretical basis of this paper thus rests on what P.P. Streeten calls 'the coefficient of our ignorance'. However, we assume that there are certain types of education that have positive effects on the development process which require identification and incorporation in the planning system.

The rationale for educational planning rests on two basic premises: (1) the institutional infrastructure for the operation of the labour market in most of the underdeveloped countries is non-existent. Social values, customs and culture are not yet conducive for the optimal operation of the labour market. Even if we assume that the market can operate in these countries, the mechanism of the demand and supply interactions is far from the optimum condition. The short run nature of the demand for labour and the long-term character of the supply have created a continuous disequilibrium in the labour market - the cobweb theory.

¹
T.W. Schultz, "Investment in Human Capital", Economics of Education 1, ed. by M. Blaug (Baltimore: Penguin Books Ltd., 1968), pp. 13-33.

²
T. Balogh and P.P. Streeten, "The Planning of Education in Poor Countries", Economics of Education 1, ed. by M. Blaug (Baltimore: Penguin Books Ltd., 1968), pp. 13-33.

(2) As the result of the ineffectiveness of the labour market, it is deemed necessary for planners to determine the share of education in the total resources available for development in relation to other sectors. Various approaches have been developed to this effect.

The three major approaches that have been used to integrate educational and economic planning are: the rate-of-return approach, the optimization model and the manpower approach. Under the rate-of-return approach, the discounted lifetime earnings of individuals are compared against the discounted estimates of their respective educational costs at different levels and types of education to estimate their respective rate-of-return to educational investment. In the case of the optimization model, the defined objective function at each level of education is either maximized or minimized against the specified constraints of the model. The manpower approach is geared to estimate the required levels and mix of manpower inputs to meet certain social and economic targets.

The purpose of the manpower approach is mainly to provide information and guidelines on the required levels of the expansion or contraction of the training institutions without creating, or at least minimizing the manpower imbalances in the future. "In all cases, what we do is try to forecast shifts in the demand and supply curves for different types of manpower and hence to identify future long-run equilibria".³ It serves, therefore, as a basis for manipulating educational variables and cost estimation.

³ Ahamad Bashir and Mark Blaug (eds.), The Practice of Manpower Forecasting, (New York: Elsevier Scientific Publishing Company, 1973), pp. 6-7.

The manpower approach rests on implicit as well as on explicit assumptions. It explicitly assumes that it is possible to ascertain the optimum amount of education for achieving specified socio-economic targets. This is an implicit indication of ex ante near zero elasticities of demand for skills. It also implicitly assumes that there is a divergence between a society's needs for education and an individual's needs and as such reasonable to define the individual needs on the basis of the society's needs.

The genesis of this paper is the study of the different methods of manpower approach in relation to the underdeveloped countries and in particular to Ethiopia. We deal with the theoretical issues of the different methods in the first chapter. In order to draw a framework for the understanding of the role of manpower approach in the underdeveloped countries, we briefly discuss the nature of manpower problems in the second chapter. We then examine the technical capacity of these approaches to obviate the identified problems. The third chapter deals specifically with Ethiopia. It basically follows the same approach as the second chapter: identification of the problem areas; interpretation of the major manpower documents, and test of the implications of the adopted models against the performances of the country in the past.

There is no single valid and sound basis for the adoption of the manpower approach as the area of study in this paper. But it appears that the writer's desire emanates from a mere academic interest and an understanding that the subject has a relation to manpower planning practice in Ethiopia. However, the purpose of the paper should be viewed within the context of the following basic premises:

- (i) The paper takes a narrow perspective of manpower planning. A mere emphasis on the production of high-and-middle level manpower without giving due emphasis to the whole field of human resources may perpetuate class distinctions in a society. The writer believes that this is not a healthy phenomenon and as such the practice of linking education to development should go beyond manpower planning.
- (ii) At this transition period in Ethiopia, the results of the paper may have little practical value for planners. But the practice of deriving the different methodologies and isolating the determinant variables paves the way for further research findings and subsequent policy recommendations.
- (iii) The paper does not at any rate pretend to cover all the manpower studies that have been carried out in Ethiopia. It rather attempts to build experience from those that are available to the writer.

CHAPTER I
THEORETICAL SURVEY OF THE ALTERNATIVE
MANPOWER PLANNING APPROACHES

INTRODUCTION

The adoption of manpower approaches to educational planning has spread over several countries. This phenomenon has stimulated scholars in the field to devise various alternative methods that could fit different socio-economic systems.

In order to familiarize (or refresh) the readers with the basic concepts of the major manpower approaches and prepare them for the subsequent discussion, we will present the major approaches in this chapter. The order of the presentation goes from the highly aggregated 'Correa-Tinbergen- Bos' model to the relatively detailed approach of the Mediterranean Regional Project and, finally, to the least discussed but widely used three approaches, viz., the Establishment Surveys; the International Comparison Method; and the Density Ratio Method.

All these approaches, however, share a common property of assuming fixed coefficients of their parameters. As such, they are sometimes classified as 'fixed coefficient' approaches.

I.1 CORREA- TINBERGEN- BOS APPROACH

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The macro model of Tinbergen- Correa moves directly from the estimates of national income and productivity of the labour force by each level of education to estimates of the requirements of the two types of education at that productivity level. The six-equation model distinguishes two types of education, i.e., secondary and tertiary level. Primary education is assumed to be no bottleneck for the required expansion of secondary and tertiary level of education. The time unit chosen is six years, i.e., secondary and tertiary education is assumed each to take the same span of time.

The following symbols are used for the main variables:

- V = total volume of production of the country;
2
N = the labour force with a secondary education;
3
N = the labour force with a third-level education;
2 2
m = those who have entered the labour force N within
the previous six years;
3 3
m = those who entered the labour force N within the
last six years;
2
n = the number of students in secondary education;
3
n = the number of students in third-level education;

The following symbols are used for the coefficients:

- 2 3
v v = the constants of proportionality for the develop-
ment of second and third-level education
respectively. That is, the inverse productivity
of each type of labour;
2 3
λ λ = the proportions of the labour force of educational
levels two and three who dropout during the six-year
period;

4

H. Correa and J. Tinbergen, "Quantitative Adaptation of Education to Accelerated Growth," in Kyklos, Vol. 15, No. 11, 1962.

$\pi^2 \pi^3 =$ teacher-student ratios at levels two and three respectively.

The following relationships are assumed to hold between those variables:

$$N_t^2 = v V_t^2 \quad (1)$$

$$N_t^2 = (1 - \lambda^2) N_{t-1}^2 + m_t^2 \quad (2)$$

$$m_t^2 = n_{t-1}^2 - n_t^3 \quad (3)$$

$$m_t^3 = n_{t-1}^3 \quad (4)$$

$$N_t^3 = (1 - \lambda^3) N_{t-1}^3 + m_t^3 \quad (5)$$

$$N_t^3 = v V_t^3 + \pi^2 n_t^2 + \pi^3 n_t^3 \quad (6)$$

The equations above express the following relationships: Equation (1): the labour force with secondary education is used for production only and must develop proportionally with the volume of national production.

Equation (2) and (5): the labour force of each level of education consists of those already in it one time unit before (six years) and those who have joined it during the previous six years. It is assumed that a proportion λ^2 and λ^3 respectively of those already in the labour force one time earlier has dropped out owing to death or retirement.

Equation (3): the number of newcomers to the labour force with a secondary education is equal to the number of students one time unit earlier minus the number of students now in third-level education.

Equation (4): the number of newcomers to the labour force with a third-level education is equal to the number of third-level students one time unit earlier.

Equation (6): the labour force with a third-level education consists of those employed in production, and is assumed to be proportional in numbers to the volume of production, and of those teaching at both levels of education and assumed to be proportional to the respective student numbers.

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The model has been refined in order to bring it closer to reality. Some changes, though not significant, have been introduced into the model.

(i): realizing that the inverse productivity coefficients would not remain constant Tinbergen and H.C. Bos introduced an additional variable - per capita income - into the first equation. According to Tinbergen and Bos, the added per capita income influences the demand for manpower if there is any change in the composition of the national products:

(ii): understanding the aggregate nature of the total national products, these two authors attempted to explain the model with two sectors.

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Jan Tinbergen and H.C. Bos, Econometric Models of Education - Some Applications, (Paris: OECD, 1965).

(iii): the oversimplified assumption of "no dropouts" is slightly refined. Equation (3) and (4) are improved by introducing coefficients that explain the proportion of graduates from the second and the third-level respectively who join the labour force.

$$m_t^2 = \mu_{t-1}^2 n_{t-1}^2 + \mu_{t-1}^3 n_{t-1}^3 - n_t^3 \tag{3a}$$

where;

μ^2 = a fraction of students who enroll at secondary level one time period earlier who joined the labour force.

μ^3 = proportion of third-level students who do not complete their studies.

$$m_t^3 = \mu_{t-1}^3 n_{t-1}^3 \tag{4a}$$

whereas;

μ^3 = labour force participation rates of the third-level labour force.

(iv): the aggregate rates of dropouts from the labour force (λ^2, λ^3) are further decomposed into specific retirement rates that characterize each age cohort.

(Note: that the model assumes that the only reasons for labour withdrawal in the short run is retirement.)

(v): having pointed out the importance of introducing different educational processes, the authors tested the model by splitting the third-level education into Humanities and Technical fields like:

$$m_t = n_t^2 - n_t^3 - n_t^4$$

where;

n_t^3 = the number of students in Humanities
 n_t^4 = number of students in Science departments.

Despite some modifications of the basic assumptions, the model in general suffers some major drawbacks.

The correlation between the educational structure of the labour force and the volume of output implies that education is a necessary condition for the latter. If there is such deterministic unidirection, it means that levels of income determine the supply of educated labour and the corollary is not true. A related issue is the question of whether or not it is true that the level of income is the only explanatory variable for the levels of production of educated labour force.

The assumption that the inverse productivities of each type of labour (v_t^2, v_t^3) reflect the required stock of persons with secondary and tertiary education means that the present situation is in a state of an equilibrium labour market. Factors of production are optimally distributed and their respective prices reflect the marginal productivity of each type of labour. This hardly seems tenable.

Mere projection of educated labour force on the basis of constant education - output ratios could lead to production of surplus manpower, i.e., unemployment. Note that the model does not distinguish between the employed and the unemployed.

The model in order to have instrumental value, has also to have the quality of flexibility to adapt to various socio-economic milieu. For instance, non-economic factors which are totally ignored have to find their way into the model.

Given the fact that any model is doomed to fail if it attempts to explain several variables, we do not hesitate, paradoxically, from suggesting that this model, in order to serve the purpose of educational planning, requires further refinement.

I.2 THE MEDITERRANEAN REGIONAL PROJECT METHOD (MRP)

The outstanding contribution of the Organization for Economic Cooperation and Development (hereafter OECD) to educational planning is the Mediterranean Regional Project (hereafter MRP). This long-term educational plan, largely preoccupied with the manpower requirements approach, involved six Mediterranean countries.⁶

The whole exercise of the MRP approach can be precisely presented by the following schema:

$$L_i = \sum_j \frac{L_{ij}}{L_j} \frac{L_j}{X_j} \frac{X_j}{X} (X) \tag{1a}$$

$$L_k = \sum_i \frac{L_{ik}}{L_i} L_i \tag{2}$$

Subject to

$$\sum_j \sum_i \sum_k L_{jik} \leq L \tag{3}$$

6

The M.R.P. involved Greece, Italy, Portugal, Spain, Turkey and Yugoslavia.

where:

j = Economic sector ($j = 1, \dots, n$)

i = Occupational type ($i = 1, \dots, m$)

k = Educational level ($k = 1, \dots, n$)

X = GDP

X_j = the GDP origin in each sector.

L_{ij} = the labour force in occupation i in sector j .

L_i = the total amount of manpower in each occupation.

L_{ik} = the amount of manpower in occupation i with a level of education of k .

L_k = the total manpower of educational type k .

$\sum_j \sum_i \sum_k L_{ijk} \leq L$ = the total forecasted manpower by educational levels is less than equal to the total forecasted aggregate labour force.

The MRP approach exercise begins with a target figure of economic growth. The overall target figure of the national economy (X) is disaggregated into the main sectoral distribution of output (X_j/X) and subsequently interpreted into sectoral distribution of employment (L_j). The sectoral distribution of employment is converted to an occupational distribution of the total labour force (L_{ij}). The occupational distribution of the additional total labour force is then translated into educational equivalences (L_{ik}). The resulting estimates of the required manpower by educational levels are compared against the current stocks of manpower less its dropouts from the labour force in order to estimate the required expansion (or contraction) of the educational system

at different levels of education over the plan period.

A detail scrutiny of the MRP approach requires a further systematic approach. To this end, we can classify it into the following general categories and discuss their pertinent aspects.

- I.2.1. Assessment of the current manpower stocks.
- I.2.2. The process of determining the manpower requirements (i.e., the Requirement Model)
- I.2.3. Evaluation of manpower supplies and target setting (The Supply Model)
- I.2.4. Critiques of the MRP approach.

I.2.1. Assessment of the current manpower stocks:

It goes without saying that precise and systematically - defined mathematical models indicate the direction of research, of data collection and of interpretation of results. By the same token, close observation of the basic mathematical equation of MRP above strongly suggests that it requires basic information on major economic and social variables. The following data should be available as a minimum.

I.2.1.1. Labour force participation rates: the percentage of each age-sex group of the active labour force. Depending on the level of the research capacity of a country, these rates could appear from the very crude form of the total labour force participation rate - i.e., total labour force by the total population - to more detailed specific age-sex participation rates. The presentation of such participation rates, however, has to be accompanied by clarification of concepts, like definition and criteria of classifying labour force and footnoted statements on the procedure of estimating the rates.

This is particularly important where educational planning unit is an independent unit from the central planning. The documentation of such time series data on labour force participation rates also serves for purposes of its trend analysis.

I.2.1.2. Estimates of unemployment and underemployment:

The evaluation of manpower requirements without taking into account the existing utilization of the labour force leads to erroneous conclusions with considerable costs (human as well as financial). The size and distribution of the unemployment and the underemployment of the existing labour force is a necessary step toward manpower forecasting. This is particularly important where such problems are rampant. When there are stubborn pockets of urban unemployment or, as in the case in many developing countries when there is substantial disguised unemployment in the agricultural sector, the magnitude of these problems must be known if they are to be ameliorated.

I.2.1.3. Occupational distribution of employed workers:

We now turn our attention from the estimation of the current utilized and underutilized labour force to the composition of the employed labour force. The quest for such occupational distribution of employed workers is to solicit information on the number of employed workers in different occupations of every sector so as to serve as a basis for forecasting the future composition of the employed labour force. For the purpose of occupational classifications, the MRP approach adopts the aggregated four major occupational categories of

7
the International Standard Classification of Occupations
(hereafter ISCO): "Class A: All occupations for which
a university education or an advanced teachers' college
degree, or its equivalent, would normally be required."
"Class B: Occupations for which two or three years of
education beyond the secondary level may be required."
"Class C: Occupations for which secondary school
education (either technical or academic), or its equiv-
alent, would normally be required." "Class D: All
occupations not included in Class A,B or C." Professor
Parnes, the advocate of MRP approach, defends such clas-
sifications on the basis that merely differentiating among
occupations requiring general and those requiring scien-
tific-technical preparation would be of great value in
guiding the allotment of educational expenditures among
8
the several levels and branches of the educational system.

I.2.1.4. Education-occupation classification: The
crux of the whole approach lies in relating the occupation-
al composition to educational equivalences. The need to
channel trained manpower in accordance with the requirements
of the economy at a future date necessitates detailed exam-
ination of the optimum education of the various occupations.

7
The International Standard Classification of Occupations (ISOC)
was prepared by ILO in 1968.

8
Herbert S. Parnes, "Scope and Methods of Human Resource and
Educational Planning," Manpower Forecasting in Educational Planning,
(Paris: OECD, December 1965), p.33.

The adoption of the ISOC method of classification by the MRP approach facilitates the interpretation of the occupational composition to educational equivalences. Under this method, the very process of defining occupations (see I.2.1.3.) in terms of educational requirements provides the basis for education-occupation classification. The MRP recommends, on this basis, obtaining information on the current distribution of personnel in each of the occupational categories by levels and types of education, i.e., Education-occupation matrix.

I.2.2 The requirement model:

In order to systematically follow the estimation procedures for manpower requirements, it is deemed necessary to look in some detail at the most general and crude mathematical presentation of the MRP approach schema presented above (equation 1a, 2 and 3). The interpretation and discussion of the schema gives way to better understanding of the MRP's procedures of estimating manpower requirements for some future date.

The last mathematical entity (equation 3), i.e.,

$$\sum_j \sum_i \sum_k L_{jik} \leq L$$
 has to be determined before going ahead to forecast the required levels of manpower. The equation states that the forecasted labour force by levels of education cannot exceed the total labour force forecasted for the plan period. The total size of the labour force (L) for the forecast year constituted the upper limits for the summation of specific manpower requirements $(\sum_j \sum_i \sum_k L_{jik})$.

The projection of the size of the labour force at some future date ⁹ can only be carried out if we have the following information:

- i) the size of the potential labour force at the forecasted year;
- ii) current labour force participation rates.

The basis for the projection of the labour force is the estimation of the population by age-sex specific for the forecast year. Having projected the size of the population, we apply the accepted or appropriate age-cohorts to estimate those who are considered to be in the potential labour force. We then determine the size of the active labour force by applying the labour force participation rates to the potential labour force. The labour force participation rates, like the other variables, have to be estimated either by extrapolating time - series analysis and/or by taking into consideration the likely effects of anticipated changes in socio-economic, cultural and political variables, before they are applied to the projected potential labour force.

The starting point in estimating manpower requirements under the MRP approach is the attempt to translate forecasted sectoral outputs (X_j) into employment equivalences (L_j). In most of the MRP documents, there is a little discussion on the procedures of estimating the national economic growth (X) and its sectoral break downs (X_j).

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We assume that the forecasting period at least covers ten years since the lead period for educational output is long.

There seems to be an understanding that these variables are determined, independent of the manpower planners, in the central planning units of the Mediterranean countries. If that is the case, however, it is largely the duty of the economic planners to specify the underlying assumptions, the conceptual basis and the methodology used in setting the level of gross domestic products and its distribution among the sectors. The manpower planners, in addition to fully understanding these technical elements, should also be aware of the political implications of such targets. After all, the final national and sectoral targets largely reflect political decisions rather than those of the technical experts, i.e., planners.

There is no single operational method of employment projection that can be applied to a particular country irrespective of its stage of socio-economic development. This has posed several challenges to those people in the field of making accurate employment projections.

As is shown on equation 1a, the MRP requires the separate projection of labour productivity (i.e., output-labour ratio) in each sector of the economy (X_j/L_j). The procedure to forecast employment by each sector is to establish a column vector of sectoral distribution of output [X_j] at the target year and a diagonal matrix of inverse productivity of labour of each sector [$1/L_j$] and compute the product:

$$L_{jt} = (\ell_{jo}) (X_{jt})$$

where the inverse productivities are defined:

$$\ell_{jo} = L_{jo} / X_{jo}$$

whereas;

j = economic sector ($j = 1, \dots, \Lambda$)

o = base-year

t = forecasting year

L_{jt} = gross employment in each sector in period t

ℓ_{jo} = inverse productivity in each sector in year o

X_{jt} = output originating in period t in each sector

X_{jo} = output originating in each sector in base-year at constant prices

The projected gross employment figures are the required levels of employment that are necessary to meet the forecasted sectoral distribution of output, assuming that the present coefficients of labour productivities remain constant. This could be a very wild assumption since factors like qualitative and quantitative changes in capital equipment, qualitative improvements in the labour force, etc. are likely to alter the coefficients. Therefore, the gross employment projection has to be qualified in the light of planned changes in the structure of production. To this end, different methods, though most are not far from a simple linear extrapolation of past trends, have been used to estimate the changes in labour productivity. The

most pertinent problem in this area is the failure to fully comprehend the factors that are responsible for changes in labour productivities.

The same technique of employment projection can be further refined depending on the availability of data, the level of planning expertise, and the sophistication of planning techniques.

We have so far estimated the number of workers that are required in each sector of the economy in the target year. If we strictly follow the MRP approach (equation 1a), we are left with the forecasting of the occupational composition of (L_{ij}/L_j) the estimated additional number of workers in each sector. In order to estimate the future occupational structure, we have to forecast the changes in the occupational composition of the workers. In other words, the base year coefficients of the occupation-industry matrix have to be updated to take into consideration the changes that arise due to inter-sectoral occupational mobility and intra-sectoral occupational mobility.

There are various approaches that could be adopted to forecast the occupational structure of the labour force. It should be kept in mind that we already have an occupational-industry matrix for the base year (see I.2.1.3.).

A country can employ trend analysis, if it has well-developed data on manpower statistics. In such a case, planners study the ratio of particular occupational categories to total employment of each sector over a number of years and establish the relationship to make a trend projection.

Countries that do not possess adequate time-series data have to utilize all possible options to update their occupational - industry coefficients. One option is to make comparison with other countries like the case of Tanzania (refer to page 44). Countries can make use of data from other countries that demonstrate homogeneous economic characteristics. There is an explicit assumption here that the countries are on the same aggregate production function.

The other possible approach is to use the leading firms of a country to predict for the various sectors of the economy. The rationale is that the leading firms at present use the most optimal production functions of the economy and other firms are likely to follow suit. Planners study the occupational distribution patterns of these industries and apply the same procedures to the other firms. This is nothing but the affirmation that the leading firms are taken to reflect the shape of future developments.

The simplest mechanism is to send questionnaires to employers to indicate their planned changes in their industrial structure. Planners use the information as a basis for manipulating the coefficients. However, this approach is inherently of a short run nature.

The other least applied but most convincing approach is to keep occupational classifications separate and distinct from educational ones. Contrary to the views of the advocates of the MRP approach, Blaug argues that occupations must be defined in terms of the skill content of jobs and workers

must be classified in terms of their capabilities to perform assigned tasks.¹⁰ This implies that education should not be taken as the sole criterion of occupational classifications and as such, the present occupational classifications should be abandoned.

Having employed one or a combination of the above methods to forecast the occupational structure of the workers, the subsequent step is to multiply the updated occupation - industry matrix by the column vector of the number of workers required in each sector $[L_{jt}]$. The estimated numbers of workers in a given occupation in each sector are then added up for all sectors in order to arrive at an estimate of the total number of workers in the occupation required to reach the targets of total output. That is,

$$L_i = \sum_j \left[\frac{L_{ij}}{L_{jt}} \right] [L_{jt}] \quad (1b)$$

It was previously cited that to lay the foundation for converting the various occupations into required outputs of the educational system, the MRP approach has established, on the basis of ISOC, the education - occupation matrix of the economy.

As is depicted in equation 2, the product of either the education - occupation matrix and column vector of total number of workers in each occupation or, alternatively, the product of the education - occupation matrix and occupational - industry matrix converts the industrial employment into education-

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Mark Blaug, "The Manpower Requirements Approach", An Introduction To The Economics of Education (Baltimore: Penguin Books, Ltd., 1970), p. 158.

al requirements. That is, the estimates of the required number of workers in the labour force having each type of education are determined.

I.2.3. Evaluation of manpower supplies and target setting:

The subsequent steps of the approach are to estimate the stock of manpower that will be available to meet the requirements and determine the magnitude of the discrepancies.

The process of estimating the stock of manpower supplies is twofold:

i) Estimate the survivals for the target year from those already in the labour force in the current year.

What we do in effect is to estimate the withdrawals from the labour force due to death, retirement or other reasons and subtract from the current inventory of manpower. This requires some knowledge on the death rates (preferably age-sex specific mortality rates), on the retirement rates (on some basis like projected age-sex structure of the population), and on factors that affect the stability of labour force participation rates.

ii) Estimate the labour force that will be produced by the actual structure of the educational system and all other training institutions. Since all graduates do not join the labour force, we apply the labour force participation rates to qualify the actual participants. In addition, the graduate figures are cumulated on the grounds that a certain proportion of graduates goes to

the next level of education. One other point is to estimate the withdrawals from among the new entrants due to death or some other reasons.

The sum of the survivals from the current labour force and the new entrants from the school system produces the future stock of available manpower.

The difference between the required levels of manpower and the estimated future stock of manpower available is the number that is expected to be produced or contracted by the educational facilities. That is the target that should be achieved if the planned output levels are to be met.

The final target serves as a basis to manipulate educational policy variables.

It seems from the outset that the MRP approach has precise mathematical procedures in translating the forecasted sectoral distribution of output into the equivalent educational distribution of the labour force. But a detailed scrutiny of its theoretical setups and the experiences of some of the Mediterranean countries reveal the contrary.

I.2.4. Critiques of the MRP approach:

The major areas of criticisms emanate from the:

I.2.4.1. Projection of labour productivity

I.2.4.2. Projection of occupational structure

I.2.4.3. Precise specification of the relationship between education and occupation

I.2.4.1. Projection of labour productivity: Economic development implies rapid and profound changes in methods of production. It is marked by dynamic and uneven technological change. The theoretical inference that levels of productivity determine the state of technology and as such the projection of change in labour productivities determines the future rate and nature of technology is subject to further research findings. Unfortunately, the manpower requirement approach rests on such insecure theoretical foundations. The art of translating output into employment levels on the basis of linear projections of labour productivities fails to fully realize the changes in factors of production (qualitative as well as quantitative) and the possibility of different factor mixes. It implies rigidities in the production process. Uncertainties about the rate and nature of change in production might lead to erroneous conclusions in educational planning. The issue of estimating productivity changes remains unsettled until the residual factors of production functions are fully understood and controlled.

I.2.4.2. Projection of occupational structure: The uncertainty about productivity change is translated into uncertainty about the occupational distribution of the labour force. Aside from this, the method of occupational classification has its most noticeable weakness in its assumption that at a given point in time, a given level of output in a particular economic sector requires a fixed number of workers with a particular type of education. Such an assumption of rigid occupational coef-

ficients ignores the possibility of varying inputs to the production process. It gives no room for changes in factors mix in case the supply of manpower in a given occupation substantially changes. This assumption is also equivalent to the assumption that employment of manpower is independent of changes in relative wages, prices and salaries. Taking the latter point, Blaug¹² introduced the concept of 'elasticity of substitution' to test the validity of the manpower requirements approach. He suggested relating two types of manpower who perform the same set of tasks to their earnings. One concludes from his analysis that if it is true that the partial elasticity of substitution is zero, that is, the demand curves are vertical lines and output cannot be increased unless additional quantities of that particular type of manpower are hired, then the working assumption of the MRP approach holds true. The plausibility of MRP's theoretical assertions of the one-to-one relationship between output and a particular type of occupational structure needed for that output had¹³ been questioned and tested on the ground that there are substitution possibilities of one type of manpower for another to perform the same tasks.

The issue of substitution effects is further accentuated with the extent of disaggregation of occupations for pur-

12

Ahamad Bashir and Mark Blaug (eds.), loc. cit.

13

R. Hollister, "Summary of the Technical Evaluation of the MRP Experience," Manpower Forecasting in Educational Planning, (Paris: OECD, December, 1965), pp. 142-144.

pose of manpower forecasting. If it is possible to define precisely the relationship of a particular type of occupation to its educational equivalences, detailed occupational classifications are appropriate for educational planning. But in the absence of enough knowledge about the mobility of worker from one occupation to another, i.e., substitution possibilities, precise definition is hardly possible. Realizing this, Herbert S. Parnes defends the MRP approach by stating that:

"the estimates of future manpower requirements do not need to be detailed in order to be useful for educational planning. A country that wishes some guidelines for deciding the relative proportions to which to expand its secondary and university education can be satisfied (emphasis mine) with estimates of manpower requirements expressed in terms of the grossest occupational categories."¹⁴

The issue of what ought to be the optimum levels of disaggregations for the purpose of educational planning has not been solved to date.

The other area of difference is the method of occupational classification. The MRP approach follows the process of defining occupation by educational levels, i.e., classifying the labour force by levels of educational attainments. The other point of view for grouping occupations according to actual functions carried out by workers. This method fails to question whether or not the present incumbent's functions are relevant to his/her training. Blaug, disregarding both arguments, urges occupations to be defined on the basis of detailed job analyses. In his words,

14

Herbert S. Parnes, "The OECD MRP in Retrospect," The World Year Book of Education, ed., by Bereday and Lauwerys (New York: Harcourt, Brace & World, 1967), p. 153.

"...occupations must be defined in terms of skill content of the jobs, requirement that is not satisfied by any of the standard classification schemes. It is high time, therefore, that manpower forecasters abandon once and for all official statistics on occupations as worse than useless for their purpose."¹⁵

The last, but not the least drawback of the application of fixed occupational coefficients is its capacity to transmit the existing imbalance of the occupational structure into the future. It lacks flexibility to adapt to radical changes in the structure of any economy.

I.2.4.3. Precise specification of the relationship between education and occupation:

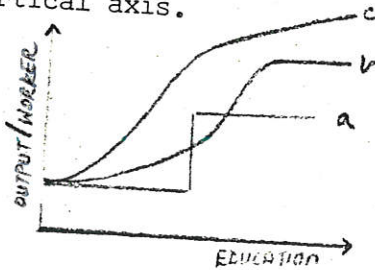
Another major aspect of the MRP model is its mechanism to convert occupational categories into educational equivalences, upon which theoretical and practical experience has thrown considerable doubts.

The construction of an educational-occupation matrix on the basis of the current educational qualifications of workers within each of the occupational categories implies that the existing pattern of qualifications of the labour force is ideal. This is not necessarily true in countries where some occupations have substantial proportion of persons who are inadequately prepared, or where occupations in which the level of preparation of incumbents is unrealistically high in view of the functional requirements of the job.

15

Mark Blaugh, op. cit., pp. 158-159.

The assertion that there is a unique relationship between a specific occupation and a particular level of education should also be seen with the same degree of suspicion, if not more. This would be demonstrated if we briefly introduce Blaugh's theoretical discussion.¹⁶ He hypothesized that there are three possible relationships between occupation and education: (a) there is a minimum educational qualification for each occupation, below which the task in question cannot be carried out at all but above which additional qualifications have no economic value; (b) the output of workers in particular occupation increases with these educational qualifications, very gradually at first, then at a sharply increasing rate beyond a certain threshold level, after which it levels off again, and; (c) the productivity of workers in particular occupations increases monotonically with their educational qualifications, first at an increasing rate and then at a decreasing rate but it never levels off. These three cases, relating to specific occupations, are illustrated below with educational qualification measured as a single dimension on the horizontal axis and any other index of performance -- in this case output per worker -- in the occupation measured on the vertical axis.



16

Ibid., pp. 141-142.

The challenging aspect for the MRP's approach is if case c represents the real world where the optimum amount of education for an occupation depends on the factors associated with additional education and cannot be defined independently of them. This implies that a single occupational category does not solely represent a unique type and level of education.

Such possibilities like preparing an individual in different methods of education -- formal as well as non-formal and varying levels of required performance among jobs within the same occupational category could erode the viability of MRP approach in reality. However, the point is that, "both advocates and critics of the manpower approach agree that we know very little about the relationship between particular occupations and education they require."¹⁷

Another possible source of error that arises in MRP approach is in the projection of output from the current educational structure. The sensitivity of the parameters like enrollment ratios, advancement ratios, etc. and the capacity to make comprehensive survey of all training institutions are among the major ones. Moreover, the approach does assume that the gap can be closed by expanding formal educational programmes. As such it fails to recognize the utilization of the existing labour force by the reorganization or upgrading through crash programmes, on the job

17

Robinson Hollister, "Forecasting Requirements for Highly Qualified Manpower as a Basis of Educational Policy," Manpower Forecasting in Educational Planning, (Paris: UNESCO, 1967), p. 31.

training, and adult education.

The MRP approach fails in general on the grounds that it assumes too much that individuals will adjust their academic interests to the planning guidelines. In short, the approach does not incorporate an incentive structure. "It is one thing to estimate the needs for manpower of various qualifications but quite another to induce persons to prepare for and engage in occupations which are most vital for national growth."¹⁸

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I.3. OTHER METHODS OF THE MANPOWER PLANNING APPROACH

In this section, we shall examine briefly the three other common methods of manpower planning, i.e., the Establishment Surveys method; the International Comparison method; and the Density Ratio method.

In the case of the Establishment Surveys method, planners send questionnaires to employers in the various establishments in the country. The purpose is to get the employers' plan on their future production and employment. On basis of such information, they estimate the demand for different types of manpower in the economy for the target year.

This approach has two major deficiencies - methodological and the validity of the information. In order to minimize non-responses and to control ambiguous and/or biased responses, the questionnaires have to be devised with maximum precautions, particularly in setting

18

F. Harbison, Educational Planning and Human Resource Development, (Paris: UNESCO, 1967), p. 33.

up the format, in choosing the words or phrases (minimize ambiguous and technical wordings), and in timing the period of the survey.

However, aside from the technical considerations, the survey serves a minimal purpose for long-term forecasting. This is because employers are less aware or certain about the long-run than the short-run. This is particularly so in countries where employers rely on the operation of the market mechanism as the basis of decision-making.

Some countries that lack time-series data adopt international figures either as substitutes or supplements in their planning models. But as long as the countries in question differ in their production functions, in their degree of utilization of production capacity, and in other salient socio-economic characteristics, such comparisons would lead to erroneous planning errors. The use of such data should be accompanied with maximum understanding of their implications.

The Density Ratio approach is the most popular approach to manpower planning, particularly in most East European countries. In this method, they establish the fractions of qualified manpower in the labour force of each economic sector. That is, unlike the MRP approach where they estimate the proportion of the labour force to sectoral output, the Density approach derives the fractions of each type of the labour force to the total labour force of each economic sector. Planners apply these fractions to the forecasted labour force of each sector. The aggregate of all sectors would give the estimate of the required manpower in the economy. A variant of this method, i.e., the fraction of one type of manpower to another, is used in conjunction with the Density Ratios to check planning inconsistencies in the projection of the labour force.

Various methods of manpower planning have culminated in the absence of a single universal operational methodology of manpower forecasting. Given the fact that there is such a proliferation of methods that differ in type and in details, the writer has limited himself to highlight the above common methods.

CHAPTER II

THE CONTEXT OF MANPOWER APPROACHES IN THE UNDERDEVELOPED COUNTRIES

INTRODUCTION

The adoption of a planning system, as a supplement and/or substitute for the market mechanism, has spread to most of the underdeveloped countries (UDCS). Among others, the urge for rapid development and the demonstrated rapid socio-economic progress of most East European countries in a short span of time, are the main persuading elements in the adoption of such a mechanism.

In order to lay a general framework for the specific case of Ethiopia, a member of the UDCS, it is deemed necessary to introduce briefly in this section the profile of UDCS. This chapter begins with an indication of the spectrum of development theories and their implications for the definition and for the choice of development patterns in these countries. It will be followed by an overview of the nature and magnitude of the manpower problems. Finally, we shall briefly discuss the technical adaptability of the manpower approaches to some of these countries in order to draw some tentative conclusions.

II.1 THE SPECTRUM OF DEVELOPMENT THEORIES

The underdeveloped countries, as nation states, are geographically distributed in most of Asia, the whole of Africa, the Middle East, Latin American countries and the Caribbean islands. These countries are not only of different types but also at different stages of development.

They are not only different in economic terms but also in social and political terms.

Since the 1950's, several development theories have been produced to explain the causes and the solutions of underdevelopment in these countries.

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It is difficult to summarize, let alone to discuss the individual theories of underdevelopment in this paper. Underdevelopment, to some writers, is nothing but the lack of certain critical growth factors like shortage of capital, unfavorable natural endowments, poor quality of the labour force, etc. In some cases, these and other factors are listed as a body of reference to what is meant as characteristics of underdeveloped countries. For some others, underdevelopment is viewed not only as a mere list of these independent factors as such but as a system that embodies certain critical interdependent factors. The most familiar are the vicious circle of poverty, the quasi-stable equilibrium system and the critical minimum efforts. The theories of dualism, breaking such assertions as the homogeneity of socio-economic characteristics state that there are rather distinct socio-economic characteristics in individual countries. The sociological and technological dualisms explain the presence of two distinct sectors labelled as: "traditional", or "subsistence", or "agricultural", or "lagging" and "modern", or "market-oriented", or "industrial", or "leading" sectors in each of the underdeveloped countries. There are other theories, too, that depict the characteristics of underdeveloped countries as natural and a necessary

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The following sources have a comprehensive survey of the major development theories: Benjamin Higgins (ed.), Economic Development - Problems, Principles and Policies, (New York: W.W. Norton & Co., Inc., 1968); Charles P. Kindleberger, Economic Development, (New York: McGraw-Hill Book Co., Inc., 1958); and Gerald M. Meier and Robert E. Baldwin, Economic Development - Theory, History, Policy, (New York: John Wiley & Sons, Inc., 1957). However, for a succinct briefing, see Tamas Szentes, The Political Economy of Underdevelopment, (Budapest: Akade' Miai Kiado', 1973), pp. 13-127.

historical phenomenon and that it is normal for countries to be at different stages of development. The theories of underdevelopment are confined not only to the internal features of these countries per se. The explanation of the causes of underdevelopment are further sought in the historical links between these countries and the developed world through colonialism, international trade, foreign investments and other mechanisms.

On the same level, as the spectrum of these theories enlarges, several terms have emerged, like "poor", "backwards", "lagging", "less developed", "emerging" to define these countries. Terminological distinctions on a semantic basis and proliferation of polemics have created a lack of consensus on an internationally - accepted definition. More than that, no matter what the implications of these terms are, most of these countries are still poor and underdeveloped. Given the fact that the present developed countries did not develop in isolation from the so called the "Third World" countries, and judging such historical links, it seems appropriate on my part to designate these countries as the underdeveloped countries. I would not go into the justifications, since the framework of the paper is not designed for that. But this term is adopted as standard in the subsequent parts of this paper.

The complex and heterogeneous socio-economic characteristics of these countries have posed several limitations on most of the theories that endeavor to explain the causes of underdevelopment. Development strategies based on these ill-substantiated theoretical foundations have mishaped and distorted the development pattern of most underdeveloped countries. Development is associated in most cases with the rate of economic growth, as measured by the index of GNP. Most of these strate-

gies have their theoretical roots in the theories of dualisms with implications of concentrated efforts on the industrialization of the modern sector. This is further strengthened by the school of thought advocating higher growth rates to bring about desirable levels of income distribution in the long-run and as such, countries should tolerate the growing disparity in income distribution as a panacea to the future well-being of the society. "Dualistic models of growth, some explicitly but more often implicitly, have constituted the basis on which broad development strategies have been created."²⁰ But the hard fact is that the majority of the people are still in the "poverty strata". Their very existence is being threatened. There is a growing sense of human despair and loss of personality. The distortion of some of the economies of the UDCS is manifested in the gross inflation of the service sector with a grossly inflated agricultural sector, polarized between inefficient production of food for local consumption and the production of export crops for a world market. Such deteriorating phenomena, despite high growth rates, and aroused several writers to question the meaning of development. To quote some of them;

"When you rip aside the confusing figures on growth rates you find that for about two thirds of humanity the increase in per capita income has been less than one dollar a year for the last twenty years....Even this increase, miserable as it may seem, has been unevenly distributed with the poorest 40 per cent of the population hopelessly squeezed in its struggle for existence and sometimes getting even less than what it received twenty years ago".²¹

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Keith Griffin, "Underdevelopment in Theory", The Political Economy of Development and Underdevelopment, ed. by Charles K. Wilber, (New York: Random House, Inc., 1973), p. 16.

21

Mahbub W. Haq, "The Crisis in Development Strategies", The Political Economy of Development and Underdevelopment, ed. by Charles K. Wilber, (New York: Random House, Inc., 1973), p. 368.

"Lack of structural change in agriculture is thus intimately related to the mushroom growth of parasitic megapolises in which the gulf between excess of luxury and excess of misery shatters the human dimension".²²

These authors indicate the actual state of affairs in most of the underdeveloped countries. It is high time, therefore, to reconsider the definition of economic and social objectives rather than echoing the concept of economic growth as the only objective of the society. Dudley Seers, conforming to the need of the re-definition of development, suggests that the questions to ask about a country's development are: What has been happening to poverty? what has been happening to unemployment?²³ and what has been happening to inequality? Such a re-definition also implies a search for a new development strategy.

To sum, we highlight the most salient aspects of this section so as to maintain the relevance to subsequent discussions. Several theories have been produced to explain the causes of underdevelopment. Some of them have been utilized as a basis for development strategies. However, some of them have failed to result in the construction of strategies that would realize the human personality. In light of this, there is a growing demand for the re-definition of development and for a search for different strategies to meet the basic needs of the neglected poverty-stricken strata of the underdeveloped world. It is within this context that we examine the nature of manpower problems in these countries.

22

Keith Buchanan, "Profiles of the Third World", Developing the Underdeveloped Countries, ed. by Alan B. Mountjoy, (New York: Wiley-Interscience, 1971), p. 30.

23

Dudley Seers, "The Meaning of Development", The Political Economy of Development and Underdevelopment, ed. by Charles K. Wilber, (New York: Random House, Inc., 1973), p. 7.

II.2. NATURE AND MAGNITUDE OF MANPOWER PROBLEMS

The paradox in most of the underdeveloped countries is the mounting number of the so-called 'educated unemployed' in the face of manpower planning. The incidence of such phenomena has been widespread across several countries. W.C. Cash, describing the situation, says: "the adverse consequences would be the problem of the 'educated unemployed', which has arisen in Egypt, India, Pakistan, the Philippines, Taiwan, South Korea, and several Latin American countries."²⁴ But, such a prediction has already materialized in most of the African countries, as can be learned from the Richard Jolly and Christopher Colelough statement: "Shortages of manpower are giving way to surpluses among secondary school leavers in East Africa and often among University graduates in West Africa".²⁵ The same problem has been the major concern of planners in India long before the independence of most African countries.²⁶ The case of Ceylon (presently Sri Lanka), aside from its unique economic characteristics portrays an extreme case of such phenomena, as is shown below:

²⁴

W.C. Cash, "A Critique of Manpower Planning in Africa", Economics of Education 2, ed. by M. Blaug and Richard Clay, (Bungary: The Chaucer Press, Ltd., 1969), p. 103.

²⁵

Richard Jolly and Christopher Colelough, "African Manpower Plans: An Evaluation", Employment in Africa, (Geneva: ILO, 1973), p. 232.

²⁶

For detailed discussion, refer to Mark Blaug, Richard Layard and Maureen Woodhall, The Causes of Graduate Unemployment in India, (London: The Penguin Press, 1969).

TABLE 1.

Ceylon: Open Unemployment Rates among young people by level of education reached, 1969-70.
(those seeking work as % of total in active labour force.)

Highest level education reached	Aged 15-19	Aged 20-24
None	23	8
Primary	34	15
Middle	46	39
Secondary (O-level) ²⁷	92	63
Secondary (A-level)	--	27

Source: Dudley Seers, "New Light on Structural Unemployment: Lesson of a Mission to Ceylon", International Labour Review, (Vol. 105, No. 2, Feb. 1972), p. 102.

There is no doubt that there is a growing disparity between educational output and employment opportunities in most of these countries. The question is, as such, not whether there is such a puzzling case or not, but rather, what are the causes of such phenomenon. There are various opinions on this aspect. For instance, Erik Thorbecke, commenting on the above table says: "This type of unemployment, which is for instance extremely marked among the young educated in Sri Lanka, is not simply related to income differentials, but also to higher degree²⁸ of job security and status attached to these more desirable jobs."

²⁷

At the time of the survey a probability of about one-third university graduates were unemployed, the proportion being higher among those with Art degrees.

²⁸

Erik Thorbecke, "The Employment Problem: A Critical Evaluation of Four ILO Comprehensive Country Reports," Strategies for Employment Promotion, (Geneva: ILO, 1973), pp. 60-67.

For others, like Dudley Seers, the phenomenon is rather the manifestation of global and structural imbalances of the whole economy. We can reduce the attributed causes to three levels:

- II.2.1. Inadequacies and distortion of the development process;
- II.2.2. Education remaining an appendage to such a development process;
- II.2.3. The attitudes, values, and expectations of the educated towards work preferences.

✓ The global economic imbalance rests on the relative emphasis on the modern sector. This sector, being the small sector in most of the underdeveloped countries, and being characterized with capital intensive techniques, employs a small proportion of the available labour force. This results in a contradiction of rising labour productivity and huge reservoir of underutilized labour force. Such a strategy assumes that the surplus underemployed labour force can be absorbed in the modern industrial sector. But available statistics do not convincingly confirm such cases. If we take Keith Griffin's snap-shot example, for instance, between 1955 and 1964 the trend rate of increase of non-agricultural employment was -1.0% in the Cameroons, -0.5% in Kenya, -0.7% in Malawi, -0.4% in Tanzania, -0.1% in Uganda and -0.9% in Zambia.

The agricultural sector is largely neglected from being a possible impetus of development. The rural sector is, rather, the epitome of archaic and the antithesis of progress. Primary school leavers, lacking the necessary environment to retain them, join the mass exodus to the urban centers. "The exodus results from such mixed motivations as the legitimate hope of the younger generation for change and improvement, and the

expectation of higher income together with an aversion to manual work or a desire to escape from the sweat of rural life to an office in the city." ³⁰
As the result, a continuous brain drain from the rural areas deprives the agricultural sector of the most essential human elements and inflates disproportionately the urban traditional sector. The aggravated unemployment, as such, has its roots in an unbalanced development pattern.

Education, in some African countries, is simply adopted as the extension of the colonial period. It was then designed to produce manpower that would serve the colonial administration. It served the needs of the 'Settlers' towns and as such was disentangled from meeting the demands of the overwhelming rural sector. In some other underdeveloped countries, the educational system is the consequence of the already-distorted development strategies. The report of the World Bank on its assessment of the trends and relevance of education in these countries concludes that in many respects, it seems that educational policies were simply keeping company with the overall development objectives which were themselves ³¹ irrelevant to the societies and conditions of developing countries. The appearance of the educated unemployed is as such attributed to a simultaneous expansion of the educational system to staff the initially tiny modern sector. Gun Hunter, commenting on such incidences in Africa, writes: "Relatively huge number of Africans were pouring out of schools; the modern sector was far too small to absorb them; the cities were growing at an alarming rate; and the demand for jobs was growing even faster." ³²

³⁰

G. Skorov, "The Highlight of the Symposium," Manpower Aspects of Educational Planning, (Paris: UNESCO, 1968), p. 29.

³¹

World Bank, Education-Sector Working Paper, (Washington: December, 1974), p. 11.

³²

Guy Hunter, "Employment Policy in Tropical Africa," Employment in Africa, (Geneva: ILO, 1973), p. 110.

"Education designed to provide paper qualifications for jobs that are not available, and at the same time making school-leavers unwilling to take jobs that are, is of negative economic value."³³ This implies that the work preference of the individuals is the other dimension that could be related to the growing unemployment. This is rather a tautological statement since the values and the attitudes of individuals are partly the products of the school systems. We have to be able to separate the effects of the educational institutions on individual behavior in order to determine the effects of individuals work preference related to the "educated unemployed". However, we can hypothesise that there is some relationship between individual's willingness to take certain jobs and the growing rates of the unemployment in certain occupational areas.

We might not be able to realize the actual magnitude of the problem of the educated unemployed, if we take unemployment figures at face value, without being critical of the inherent limitations of its definition. Employment is defined in terms of job opportunities without taking its other dimensions - i.e., its income-generating capacity to cover the 'social optimum' level of individual's income and the utilization of the labour force. The occupation of jobs, particularly in underdeveloped countries, does not necessarily guarantee the earnings of a minimum-required income. Dudley Seers, commenting on such type of employment on the individual's psychological make-up, writes: "But to play none of these accepted roles - i.e., to be chronically unemployed, dependent on another person's productive capacity, even for food - is incompatible with self-

33

Richard Jolly, Dudley Seers and Hans Singer, "The Pilot Missions Under the World Employment Programme," Strategies for Employment Promotion, (Geneva: ILO, 1973), p. 26.

respect, especially for somebody who has been spending years at school, perhaps at university, preparing for an active role." ³⁴ The point to be stressed here is that the actual magnitude of unemployment is far greater than what is presented in various reports.

Such chronic unemployment has effects on the society as well as on the individual. Indiscriminate expansion of the school system without due consideration to its right mix and to fitness to the development objectives means misutilization of a country's resources. This is particularly the case for certain types of education that allow low occupational mobility. When there is high inflation of educational qualifications, employing agencies tend to up-grade the educational equivalences for various jobs or raise the standard requirements for job entry. Graduates will be obliged to take posts that require actually less educational qualifications. The most hard hit in such cases are the less-educated who are forced to compete with the more educated. The upward push of demand reinforces the built-in tendency of education at one level to be a preparation for the next. Certain types of education, as such, become dysfunctional to the society. Individuals are left with less attractive choices: Some migrate to other countries - the much talked-about 'brain drain phenomenon'. Those who remain in the country either remain dependent on somebody until they get wage employment or they start self-employing enterprises. Aside from economic and social losses, there is also the fact that being unemployed causes psychological damage to the indiv-

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Dudley Seers, "The Meaning of Development", loc. cit.

iduals who suffer from frustration. A growing proportion of the unemployed labour force is also a potential political destabilizer in the long-run either for good or bad to the society.

To sum up, manpower problems fall into two categories: (a) those relating to the relevance of the educational industry in skill and knowledge generation and (b) those relating to unemployment and to under-employment of the labour force. The issue is as such not only how to produce educated manpower but also how to utilize it.

II.3. THE TECHNICAL ADAPTABILITY OF THE MANPOWER APPROACHES

The concept of manpower requirements is the leading method in most of the underdeveloped countries. It is used for various motives: (a) to indicate policy priorities and guidelines to educational planners (b) to document the achievements of the Government for latent motives, and (c) to serve as a basis for international financing.

Most of the manpower surveys have been concentrated in cities, whereas the most critical needs in most cases are in the rural areas. In other words, they are oriented to the dominant modern sector in the economy. Moreover, most of the plans are concentrated on skill requirements in wage earning employment, giving little attention to self-employment in general.

There are inherent problems in closely scrutinizing the relevance of this approach to the underdeveloped countries. Most of them are practically deficient in the basic historical data to make some level of performance evaluations. The only possible approach to pass judgments is to

examine the theoretical and conceptual basis of the manpower planning approach, along with some fragmentary reports. As such, we focus on the inherent limitations of this technique in the underdeveloped environment.

The central part in the demand projections of manpower is the estimation of the required incremental levels and types of manpower to meet planning (or projected) development goals. Almost all of the manpower plans relate their projections to growth and structural change in the economy, but with emphasis on growth.

The concept of GDP, as a measurement of growth rates, should be applied to underdeveloped economies with reservations. The static concept of per capita income is a deficient index of measurement of economic growth. It fails to indicate the pattern of income distribution and the pattern of ownership in a society. It is also bound to contain a high margin of statistical error in most underdeveloped countries where the actual definition, measurement and valuation of subsistence output is susceptible to socio-economic conditions. Failure to make precise estimates of growth rates (see the table below) could lead to erroneous policy decisions.

TABLE II

Assumed GDP Growth Rates in Manpower Surveys
Compared with Observed Rates up to 1969

Country	Projection Year	Average Annual increase in GDP at constant prices (%)	
		Assumed	Observed up to 1969
Botswana	1967-72	5.2	3.0
Egypt	1965-70	7.2	1.5
Ghana	1960-65	5.0	2.6
	1963-70	5.5	1.5
Ivory Coast	1963-70	7.2	7.5
Kenya	1961-66	1.9	7.0
	1964-70	5.7	6.1
Nigeria	1960-70	4.0	1.3
	1964-70	4.0	-0.2
Rhodesia	1961-70	4.1	4.5
Tanzania	1961-66	1.9	5.7
	1962-67	5.0	5.5
	1964-69	8.5	5.2
Uganda	1961-66	1.9	5.7
	1967-71	6.3	6.5
Zambia	1961-70	4.2	7.8
	1965-70	11.0	6.6

Source: Employment in Africa, (Geneva: ILO, 1973), pg. 248

Most of the underdeveloped countries, in their pragmatic approach, adopt mixed type of economies. In such economies, planners have little influence in persuading employers in the private sector to adhere to their production and employment targets.

Most of the manpower plans in these countries fail to specify the paths by which the planned targets are to be approached over time.

The interpretation of the GDP rate into employment levels is mostly crude and unreliable. Most of these countries lack historical data to make measurements and projections of changes in labour productivity. They rely heavily on figures obtained from the developed countries. The Thomas Survey³⁵ in Tanzania relied on the example of the United States of America where productivity increased at a rate of 2.6 per cent per annum between 1929 and 1961, and the French example of an estimated increase of 4.4 per cent per annum between 1959 and 1970, to estimate the growth rate of productivity. Secondly, most of these countries fail to adapt the western definition of employment to their socio-economic characteristics. If we limit ourselves to those 'who are seeking jobs in a specified period of time', we are ignoring those who are self-employed and the discouraged job-seekers. The magnitude of such an omission is relatively high in underdeveloped countries where the urban and the rural traditional sectors are disproportionately high. The other related concept is the standardization of the duration of 'fully-employed' labour. How can we precisely measure, for example, seasonal unemployment in the agricultural sector? In short, the failure of most manpower plans to incorporate the fast-growing 'informal sector' and to utilize realistic definitions of employment reflect the shaky position of this approach.

35

George Skorov, Integration of Educational and Economic Planning in Tanzania, (Paris: UNESCO, 1966), p. 32.

The same arguments can be extended to the definition and classification of the labour force in these countries. The procedure of setting the demarcation line of those who are in the labour force or not seems to follow a rather inflexible rule-of-thumb. There are also qualitative changes over time in participation rates that affect the intensity of work. The specification of lower and upper age limits and labour force participation rates is uniquely related to given socio-economic and cultural factors of a society. This requires that the application of the manpower approach be flexible enough to take these factors into consideration. In addition, most of the plans are deficient in basic information on the age-sex distribution, experience, training and education (classified by occupation and by sector) which is required for the analysis of the characteristics of the labour force.

The other technical dimension of this approach is the construction and the forecasting of occupational classifications of the employed labour force. By the very process of employment projection and adoption of a standard classifications system, the framework of the occupational structure ignores self-employing and small-scale enterprises. Secondly, in most cases, the very set-up of the occupational structure is oriented to the modern sector. Thirdly, with a few exceptions, most of the plans project the occupational composition by a simple arithmetic extrapolation of the existing number of posts in each sector or in the whole economy. They make little allowance for changes in the occupational or educational structure. Such rigidity, in light of the growing educated unemployment, erodes the utility of the approach. A case like Pakistan where "no more than 50 p.c. of all degree-holders were in 1961 in professional occupa-

tions; and more than 25 p.c. of all degree-holders were employed in clerical occupations", indicates the need to revise continuously the different components of the manpower approach. Finally, the system suffers heavily from high mobility of occupational transfers in most under-developed economies where the service sector has a relatively large share.

The translation of occupations into educational equivalences is also another area of major concern in these countries. Some of the manpower plans lack the basic tabulation of occupations by types and levels of education. In a few countries that have such classifications, the consequences of the imbalance of educational expansion have exacerbated the process of defining the educational equivalences of the various occupations. Since there is no conclusive and operational theory of relating education to occupation, we limit ourselves only to pointing out the discrepancy of the approach.

On the supply side of the manpower approach, the current inventory of manpower should contain a complete list of formal and non-formal educational and training facilities. These countries have to identify and make use of the most economical ways of meeting manpower requirements from alternative sources of supply. There is no evidence that suggests most of these countries undertake complete census of all possible sources. The focus is mainly rather on the supply estimates of the educational output from the school systems. Even such estimates are bound to have a high margin of statistical errors. The estimation and the manipulation of the key educational coefficients-attrition rates, progression rates, enrollment ratios, graduation rates, etc. - are mostly crude and non-detailed.

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Pakistan Institute of Development Economics, Manpower Planning in Pakistan, Seminar on population problems in the Economic Development of Pakistan, Jan. 2-3, 1967.

By way of concluding this section, we include some gross generalizations about the characteristics of the manpower approach in the underdeveloped countries. First, most of the manpower plans are oriented towards the modern industrial sector. Second, most of these countries are characterized by the lack of time series data on the key elements. In some cases, even where there is some data basis, they are not appropriate for a trend analysis of some countries. Such is the case for some African countries: "To Africans in new Africa, moreover, the past represents backwardness, stagnation, exploitation; trends must be broken, not continued."³⁷ Thirdly, the inherent socio-economic characteristics of these countries aggravate the statistical and methodological weaknesses of the manpower approach. Most of the conceptual bases of this approach - like the inherent weakness of per capita income as an index of poverty - have less relevance to these countries. The operational value of the approach rests on its capacity to adapt to different environments. Finally, the direction of this approach is merely to the production of highly skilled manpower. But, paradoxically, these countries are marked with growing educated and non-formal educated unemployment. In light of these facts, the approach should also be geared to the utilization of the existing labour force.

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W.C. Cash, op. cit., p. 101.

CHAPTER III
MANPOWER PLANNING APPROACHES IN ETHIOPIA

INTRODUCTION

Ethiopia embarked on a comprehensive type of planning in 1956/57.³⁸ It has since then passed through three consecutive five-year development plans. Over these three development periods, the orientation of the plans has shifted from a mere emphasis on the development of physical infrastructure to a relative concentration on the agricultural sector. The planning formulation process has been that of a disaggregative nature where the various sectors are meshed together at the macro level. The country has no perspective plan and regional planning is a very recent issue.

There is no ground to assert that educational planning in Ethiopia has been integrated to high-and-middle level manpower requirements of the country. But, the mushrooming reports indicate that there is at least the realization of the needs. The first section of this chapter indicates the nature and the areas of their needs. The second part overviews, derives the basic methodologies and isolates the major parameters to study their variability in the last section.

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The Ethiopian calendar (EC) comes a little under 8 years from the Gregorian calendar (GC). For example, the year 1968 EC. runs from September 11, 1975 to September 10, 1976 in Gregorian calendar. To avoid confusion and inconveniences, the G.C. will be used throughout this paper, unless and otherwise the EC is used in quotations.

III.1 REALIZATION OF THE NEED FOR MANPOWER PLANNING

A starting point of any field of study is a statement of the 'felt need' that requires enquiring in that specific area, i.e., the problem realization stage. It is as such necessary to touch the problem area that has aroused a growing concern in Ethiopia since the early period of the 1970's.

The socio-economic as well as the political structure of Ethiopia poses conceptual and practical problems in making a precise assessment of its development resources. In the absence of a comprehensive survey of the population, labour force and employment, the precise estimates of Ethiopia's manpower resources are hardly attainable. Notwithstanding these facts, however, there are various sample studies that have been undertaken in recent years.

The most notable is the one that was attempted by the PCO³⁹ to determine the magnitudes of employment/unemployment under different assumed development patterns in the future. Using information that is available from a series of partial surveys and cross-sectional estimates of other countries, the PCO projected the size of the population and labour force under these different hypothesized annual growth rates for the period 1970-90. The projection of the population is based on 2.3 percent as a low hypothesis, 2.4 percent as a medium hypothesis and 2.6 percent as a high hypothesis. For the projection of the labour force, they assumed 2.4 percent as a low hypothesis, 2.5 percent as a medium hypothesis and 2.6 percent as a high hypothesis. Unlike the conventional approach, the size

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The Planning Commission Office (PCO), The Employment Problem in Ethiopia, (Addis Ababa: 1971).

of the population in the age cohort 10-14 is included in the labour force and the population in the age group 60-64 is excluded from the labour force.

The PCO staff tested these demographic patterns against two assumed growth models of the economy: (1) the future development patterns would be simply an extension of past trends in sectoral growth (Alternative I) or (2) it would take the 'most likely development' pattern which unlike the existing growth model gives primary emphasis to the growth of the agricultural sector and incorporates maximum employment as its main goal (Alternative II). Under these two alternative development approaches, they roughly estimated the level of employment and unemployment during 1970-90. (refer to Table A-I and Table A-II in the appendix) However, to give a comparative picture of the magnitudes of unemployment under the two alternative approaches, we present below the projected unemployment under the medium hypotheses of population and labour force growth rates.

TABLE III.

Levels of Unemployment
('000)

Year	Alternative I	Alternative II
1970	298	298
1975	499	480
1980	748	673
1985	960	817
1990	1158	973

Source: Planning Commission Office, The Employment Problem in Ethiopia, (Addis Ababa: 1972), p. 19 and p. 47.

The estimates of the aggregate unemployment indicate that the magnitudes are slightly better under alternative II.⁴⁰ "....., but the apparent numbers of overt unemployed would still increase to the point of doubling the nominal unemployment rate postulated for the beginning of the period".⁴¹ As can be interpreted from the quotation, the structural shift has not shown significant changes in the volume of unemployment.

Assefa Bekele made similar projections of population and labour force over the period 1968-1983⁴² on the basis of the same data base as the PCO (1968) but with some major adjustments like (1) adjusting the age profile of the base year population data using stable population models; (2) applying the estimated East African age-sex specific participation rates to the Ethiopian population; and (3) assuming three different growth rates of non-agricultural employment - 7 percent as a low rate, 8 percent as a medium rate and 9.1 percent as a high rate. Unlike the PCO assumption of the most likely development pattern (alternative II), Assefa made a pessimistic assumption concerning the share of the non-agricultural labour - 15.4 percent in 1973, 20.1 percent in 1978 and 25.3 percent in 1983 on the basis of his population projection (1.9 percent per annum).

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Under Alternative II, the agricultural growth rate is assumed to be 2.7 %, but which in fact grew at only 2.2 % over the past decade. The rate of employment is assumed to remain constant at 2.0 % which implies a growth of productivity from 0.2 % to 0.7 % over the coming two decades. On the other hand, the non-agricultural sector is assumed to grow at 7 % which grew on the average 8.7 % over 1961-69.

41

PCO, op. cit., p. 47.

42

Assefa Bekele, "Population and Labour Force Projections for Ethiopia, 1968-1983", Ethiopian Journal of Development Research, (Addis Ababa: Institute of Development Research, Vol. 1., No. 1, April, 1974).

Aside from their comparative similarities and differences, the conclusion that we can draw from both findings is that the country has/will have a growing aggregate surplus of manpower. As such, there may not be any basis to worry about manpower shortages, only its utilization in general.

However, as we gather specific information from various sources - the number of vacancies discovered during the 1969/70 manpower survey (See Table A-III in the appendix) and the number of foreign workers who got work permits (See Table A-IV in the appendix) - these are indications that the country faces shortages of manpower, particularly at high and middle levels, which call for the immediate appreciation of the problem. According to these two specific sources, there were 3,027 current vacancies at the time of the manpower survey and an estimated demand for 14,751 additional personnel during the subsequent 2-4 years. There were 2,786 expatriates in the country in 1962 EC (i.e., 1969/70) who had been issued work-permits by the department.⁴³ "Between 80 and 85 percent of these jobs (slightly more in the public sector) are in the professional, managerial and production categories. Educationally, 80-85 percent of the foreign employees have technical, secondary school or university qualifications".⁴⁴

A point of qualification of such quantitative indicators is in order. Such a quantitative presentation of the problem should not conceal the fact that there is a growing underutilization of educated manpower in

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I suspect that these figures exaggerate the actual level of requirements due to the fact that most of the ownership of industries was under non-nationals during that period. They could influence the work-permit criteria to their preferences despite what is stated in the Public Employment Administration Order No. 26 of 1962.

⁴⁴

Education Sector Review, (Task Force 7/Manpower Memo., Addis Ababa: July 8, 1972), p. 11.

Ethiopia. Though there is no documented information on the actual magnitude, such fragmentary reports like 'Inquiry into the causes of unemployment of polytechnic institute graduates'⁴⁵ and the ILO Exploratory Employment policy mission⁴⁶ indicate that the phenomenon is not that of unemployment only but misplacement of the graduates where their talents are inappropriate. The MNCD Inquiry report uncovers the fact that "the Ministry of Education was obliged to employ a growing number of them as teachers for Secondary Schools; for instance, 89% of the graduates in 1974 who specialized in electrical technology, agro-mechanics, textile-technology⁴⁷ and metal-technology took their first employment in teaching". [SIC] The ILO report mission quoting the PCO's report on problems of and programs for school leavers summarizes the situation thus:

"In 1968 out of 937 graduates from training institutions, 182 were employed by the government, 172 by private organizations and the remaining 636 were unemployed. Out of 136 University graduates, 56 were employed by the government, 40 by private organizations and 40 were unemployed. This document also states that the total number of job seekers registering at the MNCD Employment offices between 1956 and 1961 was 84,135. Only 15 percent managed to get employment through the Employment office. Further, layoffs from private organizations in 1968 were 3,326, which was 58 percent higher than in 1967."⁴⁸

A tentative conclusion that we can make at this juncture is that Ethiopia faces a surplus of manpower at an overall as well as in certain specific fields of training, while on the other hand it suffers acute

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Ministry of National Community Development and Social Affairs, Inquiry Into the Causes of Unemployment of Polytechnic Institute Graduates, (Addis Ababa: Mimeo, undated).

⁴⁶

ILO, Report to the Imperial Ethiopian Government of the Exploratory Employment Policy Mission, (Geneva: 1973).

⁴⁷

Ministry of National Community Development and Social Affairs, Inquiry Into the Causes, op. cit., p. 3.

⁴⁸

ILO, op. cit., p. 49.

shortages of manpower in other areas. We will not attempt to assess the causes of such developments since it is not the focus of this paper. However, we believe that the tentative conclusions in the second chapter can be more-or-less applied to the Ethiopian case. In the following section, we will make an overview of the major manpower approaches that have been undertaken in an effort to guide the generation of skilled manpower towards the socio-economic requirements of the country.

III.2 AN OVERVIEW AND MATHEMATICAL INTERPRETATIONS OF THE MANPOWER APPROACHES

There have been to date at least five major forecasts and/or projections⁴⁹ of manpower requirements, specifically high and middle level manpower, in Ethiopia.

The first forecast was made to estimate the manpower requirements necessary to implement the Third Five Year plan (1968/69 - 72/73). The second major assessment of manpower requirements was carried out by the MNCD for the ten-year period between 1961-70 EC, covering the period of the Third and Fourth five-year plans (hereafter referred to AEMR).⁵⁰ The other three projections were presented by the task forces which were involved in the appraisal of the Ethiopian educational sector.* Of these three projections, forecast 1 and forecast 3 were basically built on the same theoretical model - a version of the Correa - Tinbergen - Bos model -

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The word 'projection' seems to be used interchangeably with 'forecasting' in most of the documents, notwithstanding their basic conceptual difference. Projection is conventionally understood as what planners expect may happen in the economy while forecasting refer to what would happen if government deliberately manipulate the economy through its policy.

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Imperial Ethiopian Government, Ministry of National Community Development and Social Affairs, (MNCD), An Assessment of Ethiopia's Manpower Requirements and Resources for Economic Development (AEMR), (Addis Ababa: The Manpower Research and Statistics Section, Nov., 1970)

*

Hereafter referred to ESR Projections.

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but with slight differences in assumptions. Forecast 2 was prepared by the MNCD and it is essentially an updated version of the AEMR cited above.

In order to avoid redundancy in the presentation of the above approaches, we will limit ourselves to and concentrate on two of the above five approaches: Forecast 3 of the ESR projections and the original MNCD report - AEMR. The latter, the AEMR report, is particularly of interest for us to treat in detail in this paper mainly for three reasons. One, it is the only authoritative source available officially for purposes of study. Secondly, it has a relatively wide information base on the process of manpower forecasting. Thirdly, it is based on a relatively disaggregated and detailed technical model - the MRP approach - which makes it technically superior to the other forecasts that have so far been made. In order to proceed from the most crude approach - ESR - Forecast 3 - to the relatively detailed approach - AEMR, we will overview and interpret them in this order.

III.2.1. Education sector review - Forecast 3:

Forecast 3 was prepared by the ESR Directorate. This forecast is based on the assumption that the stock of graduate from senior secondary schools and universities will grow over the years 1968-78 at the same rate as the rate of growth of the 'modern' sectors.

In order to make the demand projection for these types of graduates, the task force made the following assumptions:

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Forecast 1 assumes that the stock of graduate from senior secondary schools and universities will grow over the years 1968-78 at the same rate as the rate of growth of GDP. While Forecast 3 relates the stock of graduates to the growth rate of the modern sector.

- i) they accepted the 1967/68 estimates level of employment as the basis for its projection;
- ii) The great majority of 12th grade graduates of senior secondary and other second-level schools as well as university graduates are and will be employed in the 'modern sectors' and accordingly they will be needed in proportion to the more rapid growth rate of these sectors;
- iii) The annual productivity increases in the total labour force will be in the range of 1.0 to 3.5 percent. But the productivity increase of university graduates was estimated to average 2.0 percent while for high school graduates (excluding the teachers) it would be 1.0 percent.

The projected annual growth rates of the modern sectors are as follows.

<u>YEAR</u>	<u>ANNUAL GROWTH RATE IN PERCENT</u>
1968-74	6.1
1975-79	6.4
1980-84	6.7
1985-89	7.0
1990-94	7.3
1995-2000	7.5

On the basis of the above assumed values of the parameters, the directorate projected the required stocks of second level and university graduates in the labour force over the period 1967-68 through the year 2000. We can infer the basic models they employed to make the projections as shown below:

$$N_t^2 = \frac{1 + v}{1 + p} N_t^2 - k$$

$$N_t^3 = \frac{1 + v}{1 + p} N_t^3 - k$$

where

v = the rate of growth of the modern sector

p = the annual rate of growth of labour productivity of the two level graduates

N_{t-k}^2 = the cumulated stock of the required number of second level graduates in the preceeding k year ($k=1, \dots, n$)

N_t^2 = the cumulated stock of second level graduates needed in the current year

N_{t-k}^3 = the cumulated stock of university graduates needed in the preceeding k year ($k=1, \dots, n$)

N_t^3 = the cumulated stock of university graduates needed in the current year.

The stock of the required graduates grows as a multiple of the constant growth factor $-\left(\frac{1+v}{1+p}\right)$ - which only changes its values when the rate of growth of the modern sector is altered. Productivity rate is assumed to remain on the same level.

The directorate employed another version of the same model to compute the annual additional flow of graduates needed. The additional annual flow of graduates is needed basically to satisfy the incremental manpower needed in the above projected cumulative stock of graduates and to replace the attrition or loss rate of the existing graduates. The following formula was employed to project the annual flow of the two types of graduates.

$$m^2 = \left(\frac{1+v}{1+p} (1+R) - 1 \right)^* N_{t-k}^2$$

$$m^3 = \left(\frac{1+v}{1+p} (1+R) - 1 \right) N_{t-k}^3$$

$$n^2 = \pi m_2$$

- R = annual attrition rate, in percent assumed to be 2.5
- m^2 = annual flow of second level graduates needed
- m^3 = annual flow of university graduates needed
- π = enrollment ratio to the third level education⁵²
- n^2 = annual flow of second level graduates needed for the third level of education

They made a separate projection of the cumulative stock and annual stock of teachers required during the same period following the same formulae.

This aggregative approach skips the process of projecting the occupational composition of the projected demand for the two educational levels of manpower. Its utility, based as it is on some over simplification, remains to be seen in comparison to the MNCD's method of assessment of Ethiopia manpower requirements - AEMR - which we review below.

III.2.2 Overview of the MNCD - AEMR:

The forecasting procedures of the manpower requirements during the period 1968/69 - 77/78 start with the estimate of the stock of

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It is not clear from the available document to state whether a homogeneous enrollment ratio or different ratios are applied to those who graduate from technical schools and pure-academic schools.

*The approximate formula below is derived direct from the text:

$$m^2 = \frac{1+v}{1+p} N_{t-k}^2 - (1-R) N_{t-k}^2 = \left[\frac{1+v}{1+p} - (1-R) \right] N_{t-k}^2$$

$$m^3 = \frac{1+v}{1+p} N_{t-k}^3 - (1-R) N_{t-k}^3 = \left[\frac{1+v}{1+p} - (1-R) \right] N_{t-k}^3$$

skilled manpower at the beginning of the period - 1968-69. The estimated volume of employment is classified by eight major economic sectors.⁵³

Using the 1968 employment data as the base estimates, the MNCD Working staff members (hereafter referred to as 'they') subsequently estimated the level of employment that will be generated during the two five-year plan period - 1968/69 - 1972/73 and 1973/74 - 1977/78. They made the following assumptions for the purpose of estimating the volume of employment:

- i) A 5 percent rate of growth in the Gross Domestic products for the Third five-year plan period (i.e., 1968/69 - 72/73);
- ii) A 6 percent rate of growth in GDP for the period of the Fourth five-year plan period (i.e., 1973/74 - 77/78);
- iii) An overall increase in labour productivity of 1.0 percent per year for the period 1968/69 - 72/73
- iv) An overall increase in labour productivity of 1.5 percent per year for the period 1973/74 - 77/78.

They incorporated these aggregate values of the parameters into the following model to estimate the volume of employment at the end of the two five-year plan periods.

$$L_n = L_0 \frac{(1+v)^n}{(1+p)^n}$$

L_n = Employment in the target year

L_0 = Employment in the base year

v = the rate of growth in GDP

p = the rate of growth in labour productivity

n = the number of years.

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Agriculture, mining and manufacturing and utilities, construction, commerce, transport, storage and communication, and services.

The sectoral distribution of the estimated aggregate employment requires detailed information on the growth rates of labour productivity in each of the economic sectors. Instead of making any estimates, they resorted to international cross-sectoral studies made by the ILO staff⁵⁴ as a basis for distributing the estimated employment into its sectoral levels. The estimated employment and its distribution for the base year as well as for the two five-year plan periods are presented in Table IV.

As is shown in column 5 of the table, they estimated the additional employment that is expected to be generated over the ten-year period. Such derivation can be put in a mathematical form, as follows:

$$L_1 = (L_{1978} - L_{1968}) + W$$

Where

L_1 = the incremental level of employment

L_{1978} = Employment in the terminal year

L_{1968} = Employment in the base year

W = labour force attrition rate
(assumed to be 3.5 percent per year in this report).

The forecasted increase of employment (L_1) is required to meet both the planned growth rates of the economy and to replace the loss of the current active labour force (W). The subsequent step is to

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Y. Sabolo, La Croissance Sectorielle de 7' Emploi, Cahiers De 7' Emploi, (Geneva: ILO, 1969). Sabolo's model is based on multiple regression of the level of per capita income to sectoral employment of 26 countries. It is an estimate of a single-year sectoral employment distribution in these countries during 1960/63. This sample contains no sub-Saharan African countries or countries with current per capita incomes less than 3 times of that of Ethiopia.

TABLE IV.

DISTRIBUTION OF EMPLOYMENT IN 1968, 1973 and 1978
AND THE GROWTH OF EMPLOYMENT, 1968-78

Sector	Employment in 1968 ('000) (2)	Employment in 1973 ('000) (3)	Employment in 1978 ('000) (4)	Forecast Increase of employment 1968-78 ('000) (5)
Agriculture	6358.1	7629.4	9360.7	3002.6
Mining, manufacturing and utilities	409.5	531.4	705.0	295.6
Construction	107.0	141.4	190.2	83.2
Commerce	94.1	121.6	162.3	68.2
Transport, storage and communications	31.9	40.5	56.0	24.1
Services	418.6	543.2	716.0	297.6
<u>Total</u>	7419.2	9007.5	11,190.4	3771.2

Source: Ministry of National Community Development and Social Affairs, AEMR, (Addis Ababa: The Manpower Research and Statistics Section, Nov. 1970), pp. 11-12.

interpret the estimated additional level of employment (L_1) in terms of its occupational composition. The MNCD has undertaken a manpower survey mainly to this effect in 1969/70⁵⁵ (just two years after the Third five-year plan had commenced). The establishment survey, which seems to be based on cluster sampling techniques, covered about 20 percent of the estimated total employment in the

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Ministry of National Community Development and Social Affairs, Survey of the Occupational Pattern of Employment in Ethiopia 1962 Ec, (Addis Ababa: The Manpower Research and Statistics Section, 1971)

economy. The sample excluded the traditional sector, as can be verified from the AEMR report that stated: "These estimates do not of course include all the personnel needed for agricultural development in general as they relate only to mechanized agriculture."⁵⁶

The estimated employment in mechanized agriculture was then 120,000 persons. They designed the questionnaire to extract information on the number of persons currently employed, their occupational composition,⁵⁷ on the current vacancies; and anticipated requirements for additional personnel. The questionnaires were administered in some cases by field interviewers and in other cases by mails backed in most cases by reminder letters. One of the major end-results of this survey was the derivation of industry-occupation matrices.

They applied these industry-occupation matrices to the estimated additional employment in respect to each sector to obtain their occupational breakdowns. By adding up the total employment for each occupational group, the occupational composition of the incremental employment in the terminal year was determined. The following table gives the occupational composition for the base year as well as the estimated additional employment.

In the absence of any educational profile of the labour force as the starting point, the translation of the occupational composition into its educational equivalences is a most hazardous task. They established the occupation-education relationships on the basis

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MNCD, AEMR, op. cit., pp. 21.

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The occupational classification was based on ISOC - 1968 at the 3 digit level.

TABLE V.

EMPLOYMENT IN 1968 AND ADDITIONAL MANPOWER REQUIREMENTS
DURING 1968-78 CLASSIFIED BY MAJOR OCCUPATIONAL GROUPS

Occupational Group	Employment in 1968	Additional Requirement Due to Economic Growth 1968-78	Replacements Due to Retirement, death	Total Additional Requirements	Col. 5 expressed as percentage of Col. 2
(1)	(2)	(3)	(4)	(5)	(6)
/1 Professional, Technical and Related	40,100	30,600	19,400	50,000	124.7
2 Administrative and Managerial	19,000	11,500	8,700	20,000	106.3
3 Clerical and Related	48,800	39,500	24,000	63,500	130.1
4 Sales	58,800	41,900	27,900	69,800	118.7
5 Services	374,600	273,600	179,000	452,000	120.8
6 Agriculture, Animal Husbandry, etc.	119,400	128,700	64,300	193,000	161.6
/9 Production & Related workers, transport equipment operators & labourers	520,400	362,800	245,600	608,400	116.9
TOTAL (excluding agriculture)	1,181,100	888,600	568,900	1,457,500	123.4
Traditional Agriculture ⁵⁸	6,238,100	2,882,600	2,687,800	5,570,400	89.3
GRAND TOTAL	7,419,200	3,771,200	3,256,700 ⁵⁹	7,027,900	94.7

Source: Ministry of National Community Development and Social Affairs, AEMR, (Addis Ababa: The Manpower Research and Statistics Section, Nov. 1970), pp. 19.

⁵⁸

The 'Traditional' agricultural sector was not included in the manpower survey. As such, it is not classified occupationally.

⁵⁹

This figure, which is not included in Table IV, refers to the mathematical notation 'W'.

of discussions with technical officials and others concerned with personnel administration. In the process of building the educational equivalences, they defined most of the occupations' educational requirements with broad criteria and also considered the likely future developments as the general level of education of the people increases. On this basis, they classified the total additional manpower requirements by educational levels.

The whole process of translating the estimated employments by sectors into their occupational compositions and subsequently to educational equivalences could be summarized mathematically.

$$L_k = \sum_i \sum_j \left(\frac{L_{ik}}{L_{ij}} \right) \left(\frac{L_{ij}}{L_j} \right) \left(\frac{L_j}{L} \right) L_1$$

L_k = demand for manpower during 1968-78
with educational level k

j = economic sector

i = occupational category

D_1 = the incremental required manpower

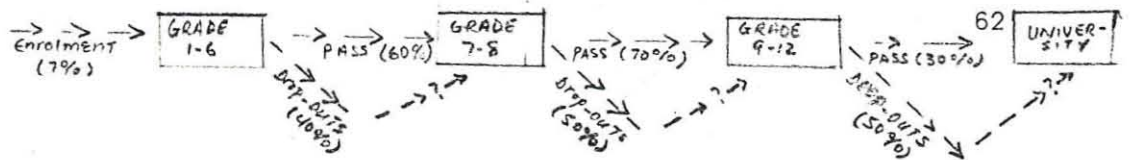
$\frac{L_j}{L}$ = the proportion of total employment
working in each sector j (j=1,...8)

$\frac{L_{ij}}{L_j}$ = the proportion of employment in sector j
working in occupation i (i=1,...9)

$\frac{L_{ik}}{L_i}$ = the proportion of workers in occupation
i with educational level k (k=1,...4)

The other side of the manpower approach is to estimate the output from the various 'skill-and knowledge-generating institutions and compare it with the forecasted manpower by educational level (L_k).

The MNCD staff estimated the likely output of the Ethiopian educational system during the period under consideration. In order to estimate the number of students who would be completing their schooling at each level, they constructed a table that shows the estimated number of students in the first and last grade of each level for each of the years 1968/78. They then applied fixed coefficients of enrollments, drop-outs and promotions to estimate the supply at each level during the ten-year period. The assumed patterns of the educational system can be depicted diagrammatically below:



They further refined the gross estimates of the supply of manpower from the educational system by:

- i) making a separate survey to estimate the supply from the technical and vocational institutions (excluding pre-vocational instruction or training given in general secondary schools including comprehensive schools);
- ii) applying labour force participation rates to each level of graduates;

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The Ethiopian Educational system consists of four stages - 4+2+4+4 (+3/-2): The primary (6 years of schooling); the junior (2 years of schooling after primary schooling); the senior secondary (4 years of schooling after junior secondary); and university (the mode being 4 years of study).

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The output at each level has been calculated as follows:

- a) Primary level- Enrollment in grade 6 minus enrollment in grade 8 two years later summed over the ten-year period;
- b) Junior secondary- Enrollment in grade 8 minus enrollment in grade 12 four years later summed over the ten-year period;
- c) Senior secondary- Enrollment in grade 12 minus those obtain a degree at the national university 5 years later.

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The enrollment and promotion ratios for the university students during 70-88 are assumed to be the same as for 1969/70.

- iii) giving allowance to those nationals who would be available for work after their study abroad.

They finally compared the forecasted manpower requirements by educational levels (L_k) with the estimated supply of manpower by educational levels to present the demand-supply position of the country over the period 1968-78. We have consolidated the three tables in the AEMR report - (Table 10, 11 and 13) to present below the end-result of the AEMR.

TABLE VI.

THE ESTIMATED REQUIREMENTS FOR MANPOWER DURING 1968-78
AS COMPARED TO SUPPLY BY EDUCATIONAL LEVELS.
(Excluding traditional agriculture)

Educational Level (1)	Manpower Requirements (2)	Total Number Leaving the Educational System (3)	Labour Force Participation Rates (4)	Anticipated Manpower Supply (5)	Balance (6)	Adjusted Balance (7)
University	19,300	4710	95	4500	-14,800	-13,000
Senior Secondary	71,700	71,421	85	60,700	-11,000	-7900
Junior Secondary	80,200	244,576	75	183,400	+103,200	--
Primary	177,500	385,500	95	289,100	+111,600	--
Total	348,700	706,206		537,700	+189,600	--
Below Primary ⁶³	1,108,800	--	--	--	--	--
Grand Total	1,457,500	--	--	--	--	--

Source: Ministry of National Development and Social Affairs, AEMR, (Addis Ababa: The Manpower Research and Statistics Section, Nov. 1970), pp. 24-34.

The implication of the table above can be deduced from the last two columns - column 6 and column 7. From the viewpoint of manpower

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Below primary level includes all persons who have not completed 6th grade of primary school and may include some who may not have attended school.

requirements, a serious shortage of manpower may be expected at the university level - 13,000 and senior secondary level - 7,900. In other words, the country has to commit substantial increases in resources - financial and human - to meet the gap that is required to meet the planned growth rates over the ten year.

III.3 SOURCES AND SENSITIVITY OF THE PARAMETERS

The manpower approaches in Ethiopia seem to have two major goals that are interrelated: (1) to serve as guidelines for policy measures in the short-run (2) and to control structural disequilibria in the labour market in the long-run.

The instrumental validity of these approaches is, however, measured by the precision and accuracy of information they transmit to the decision-makers. A decision based on significantly inaccurate information would lead to tremendous costs - economic, social as well as psychological.

A summary table below is presented to indicate the range of estimates of manpower requirements under the five approaches mentioned above.

The comparative figures illustrate that the different methods, albeit their differences in assumptions, indicate a wide range of estimates. If we take for example the overviewed reports, i.e., the ESR-Forecast 3 and the AEMR, the estimated number of required university graduates ranges between 1,500 and 19,300 respectively. The summary table above entails, among other things, a close scrutiny of the results of the different methods before they are used for policy decisions. One of the conventional approaches is the sensitivity analysis of the basic parameters of each method. Limiting

TABLE VII.

FORECASTED REQUIREMENTS FOR ADDITIONAL EDUCATED MANPOWER, 1968-78.

Studies	Junior Secondary	Senior Secondary	Teritiary
AEMR*	80,200	71,700 (excluding teachers)	19,300
ESR-Forecast 3*	9,345		1,504
ESR-Forecast 2	30,600	57,380 (including teachers)	6,880
ESR-Forecast 1	--	28,240 (including teachers)	5,560
64 TFYP		57,800 (1969-73 only)	7,800 (1969-73 only)

Source: ILO, Report to the Imperial Ethiopian Government of the Exploratory Employment Policy Mission, (Geneva: 1973) p. 77.

* Re-viewed in the preceeding section

ourselves to the main focus of this paper, the AEMR report, we will discuss the sources of error and the sensitivity of the parameters.

The AEMR approach contains eight major determinant parameters:

L_0 , v , p , W , D_1 , L_j/x_j , L_{ij}/L_j and L_{ik}/L_i ; employment in the base year (1968), the rate of growth in GDP, the rate of growth in labour productivity, labour force attrition rate, additional labour requirements, sectoral distribution of employment, occupational composition of employed persons in each sector and the proportion of workers in each occupation with different types of education respectively.

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The figures are modified.

The estimates of the base year (1968) employment (L_0) are based on fragmentary sample reports that are pieced together. In the absence of any comprehensive employment survey it would be realistic to accept the data with less than a 100 percent level of confidence.

In regard to the annual growth rate in GDP (v); the AEMR assumes 5 percent during 1968-73 and 6 percent during 1973/74 -1978. Ethiopia has recorded a 4.8 percent rate of growth in the period between 1961-69. If we refer to table III where it shows the records of assumed GDP growth rates with observed growth rates of the selected African countries, we may see the variations around the assumed growth rates. Under these circumstances, it is hardly possible to expect that the country can precisely attain the assumed growth rates. A certain degree of margin around the assumed growth rates is in order.

Regarding the assumption related to the rate of growth in labour productivity (p); the AEMR assumes a 1 percent annual growth rate over the first five years and 1.5 percent thereafter. An assumption of a 5 percent rate of growth in GDP and 1 percent in labour productivity, for example, implies an annual growth rate of employment around 4 percent. If we refer this rate - 4 percent - to the African countries cited in the second chapter (see page 37), it has never been reached. Even in Ethiopia the experienced rate of growth in employment is around 2 percent in the agricultural sector and around 3 percent in the non-agricultural sectors. The ESR report assumes the annual productivity of the total labour force to be in the range of 1.0 to 3.5 percent. The PCO document assumes an aggregate of 3.9 percent per annum in its hypothetical employment maximization model.

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PCO, op. cit., p. 18.

Unless the AEMR assumption of low productivity - 1.0 and 1.5 percent - is based on the understanding that the slow progress of productivity increase in the agricultural sector (it has been less than 1 percent), which constitutes around 85 percent of the labour force, offsets the average output per worker in other sectors, the assumed rates are hardly acceptable. It requires a rigorous analysis of the changes in labour productivity.

The AEMR assumes a 3.5 percent annual labour attrition rate (W). The retirement rate is calculated as the reciprocal of a 40 year average working life to which is added 1 percent for factors other than retirement. The major drawback of this macro estimate is its failure to estimate the attrition rates by specific age-sex classification. It is particularly important to isolate the age-sex cohorts of high and middle level manpower and estimate their respective attrition rates. The ESR projections assume 2.5 percent, having considered that the attrition rate of the young and highly educated segments of the population is less than 3.5 percent. Tanzania used 1.8285 percent as a combined loss rate from death/retirement in estimating the manpower requirements during the second five-year development plan period - 1969/1974.⁶⁶ What all this amounts to is that the 3.5 percent attrition rate assumed in the AEMR report requires further refinement.

As to the sectoral distribution of the estimates additional manpower requirements (L_j), the AEMR applied Y. Sabolo's formula (see page 59): Under his sampling criteria, Ethiopia cannot be a member of his statistical population. Therefore, the relevance and implications of the application of this formula to the Ethiopian case should be further sought and comprehended by manpower planners.

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Tanzania, Tanzanian Second Five-Year Plan for Economic and Social Development, Vol. 4., (Dares Salaam: Government Printers, 1969), p. 10.

The occupational classification (L_{ij}/L_j) of the distributed additional employment by sectors is based on the manpower survey carried out by the MNCD. The manpower survey has to be qualified before it is duly accepted as a basis to derive industry-occupation coefficients. The Agricultural Sector, which is estimated to absorb 3 million of the estimated additional 3.77 million labour force, is excluded from the sample. Second, in the absence of a national standard occupational classification system, it might be possible that employees of different training backgrounds are grouped together under a single occupational title or a group of occupations that has distinct and different job contents are meshed together under a single title. Third, the manpower survey did not consider the qualitative aspects of the employees, i.e., whether the incumbents are placed to jobs that are relevant to their training. A re-visit to the technical procedures of the manpower survey is also in order. The AEMR report assumes that the derived industry-occupation coefficients from the manpower survey remain constant over the forecast period - 1968-78. No allowance has been made for the probable effects in occupational composition if the existing wage/salary structure is adjusted. Occupational mobility is assumed to follow the present pattern which seems implausible. In short, a consideration of some margin of error to the assumed occupational composition is due.

The AEMR report reveals its shortcomings in interpreting the forecasted occupational composition in terms of educational equivalences (L_{ik}). There are no standard educational qualifications for entry into occupations in Ethiopia. Such information on the standard educational requirements is hardly attainable in a country where there is not even a sample basis on which to draw the educational profile of the employed labour force.

The other implicit assumption of the AEMR is that the present educational pattern will be more-or-less the same during the forecast periods. But the current educational system is characterized with uneven distribution of students and high wastage (see the diagram above) of the educated labour force. For example, the 1969/70 study of the Ministry of Education reveals that, of the total number of students in the secondary school system, about 91 percent of the pupils are in general secondary school, 7 percent in technical-vocational schools and 3 percent in primary teacher training⁶⁷. The advancement pattern within the educational system proceeds from 100 percent in grade I to 40 percent in grade VII to 30 percent in grade IX to 6 percent in university. In the midst of such educational disequilibria, the assumption of fixed occupation-education coefficients (L_{ik}/L_i) is hardly acceptable. The other point that is worth considering is the practice of relating employment solely to possession of certificates. This has a built-in tendency to distort the relationship between specific job requirements and educational equivalences. A sensitivity analysis in all these areas has to be done to raise the validity of the AEMR report.

The final important parameters that requires a sensitivity analysis is the labour force participation rates. The AEMR has the estimates of labour force participation rates by educational levels. It does not disaggregate by specific age-sex cohorts. As may be learned from the table below, data on the age-sex specific participation rates is scanty in Ethiopia. In order to present the table on a comparative basis, the writer has assumed an average age-group related to each educational level. This assumption, however, reflects the current age structure of most students in the school

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IBRD, Economic Growth and Prospect in Ethiopia, Education and Training, Vol. IV, (Addis Ababa: June 30, 1971, memo.), p. 10.

TABLE VIII.

PARTICIPATION RATES AS COMPARED FROM THE THREE SEPARATE STUDIES

Age Cohort	Educational Level	AEMR (1968-78) T	PCO		Assefa (1968-73)		
			1967	1980	M	F	T
7-12	Primary	95	--	--	23.9	10.2	17.1
13-14	Junior secondary	75	--	--			
15-18	Senior secondary	85	--	--	78.4	30.9	54.7
19-24	University	95	--	--	91.2	31.5	61.4
10-59 (M)			96.2	90.9			
(F)			10.3	13.4			
(T)			51.8	52.3			

Source: MNCD, AEMR, (Addis Ababa: The Manpower Research and Statistics Section, Nov. 1970), p. 30; PCO, The Employment Problem in Ethiopia, (Addis Ababa: 1972), p. 7; and Assefa Bekele, "Population and Labour Force Projections for Ethiopia," Ethiopian Journal ..., p. 23.

system. The PCO estimates seem to be based on some kind of theoretical extrapolation and the CSO's rural survey data. Assefa assumes that the East African labour force participation rates are the appropriate estimates for Ethiopia. On the whole, the AEMR's estimates stand on the high side. A possible explanation of such a deviation may be attributed to a strong tendency of students who leave the school system to join the labour force. In the absence of any reliable data basis, we have no grounds to estimate the range of the most likely participation rates. However, to avoid or at least minimize the possibility of overestimating the forthcoming supply of active educated labour force, the AEMR estimates should be treated with

maximum caution and understanding of their implications.

In summary, these parameters have independent as well as joint effects on the final results of the model. The joint effects are the results of the interaction process of the parameters within the model. In other words, if a certain parameter is based on unrealistic estimates, its impact is transmitted to the subsequent computations and is compounded in the final results. Therefore, we urge the manpower planners in Ethiopia to undertake an intensive analysis of these possible sources of error in order to improve the technical quality of the approach and present acceptable estimates for decision-makers.

CONCLUSIONS AND RECOMMENDATIONS

The theoretical survey indicates five different but related manpower planning approaches: the Correa-Tinbergen-Bos model, the Mediterranean Regional Project, the Density Ratio approach, the Establishment Survey method and the International Comparison approach. The last two approaches have seldom played an independent role in the manpower planning process.

The Correa-Tinbergen-Bos model is basically set to interpret the implication of a certain planned growth rate of the economy (v) in terms of labour force with two-level education (N^2 , N^3) under the different assumptions of growth paths. The strategic parameter, though aggregate and inflexible, that links the planned growth rate of the economy to its labour force equivalences is the labour-output ratio (v^2 , v^3). The basic six-equation model incorporates both a demand (equation 1 and 6) and a supply (equation 2 and 5) sub-models. The basic model as such demonstrates two distinguishing elements: the capacity to constitute the demand and supply sub-models within one basic model and to interpret the implications of the planned rate of growth in terms of labour force requirements (N^2 , N^3) under different growth paths. The macro model, however, fails to disaggregate the labour force requirements by major sectors, let alone by project level, and to take into account the level of unemployed and the utilization of the employed labour force. Moreover, it neglects the effects of non-economic factors on the demand for education.

The Mediterranean Regional project, unlike the Correa-Tinbergen-Bos model, is set up on two separate and independent models: the requirement model and the supply model. The requirement model is linked to the production function of the economy. It disaggregates the planned rate of

growth of GDP (x) into sectoral output (x_j) and their respective employment levels (L_j). It then forecasts the occupational composition (L_{ij}) and interprets into the educational equivalences (L_{ik}) of the additional employment levels. The supply model is determined exogenously by the flow of trained personnel from the various skill and knowledge imparting institutions. The final results of these two models are compared so as to determine the target that requires policy action. The MRP approach, though seems relatively detailed and an all-inclusive, suffers from major limitations that center around the estimation of changes in labour productivity, forecasting of occupational composition and determination of educational equivalences. The very process of setting the target on the basis of two independent models also ignores the feedback of manpower requirements by the 'training institutions'. In spite of these vivid shortcomings, the MRP approach has gained wide acceptance as a tool to link educational planning to manpower planning in most of the underdeveloped countries.

The relevance of these theoretical approaches for the purpose of educational planning in the underdeveloped countries depends on their scope and technical capacity to deal with the manpower problems of these countries.

The inquiry to the nature of manpower problems in these countries is viewed within the totality of their global development pattern. The development pattern of most of these countries, despite the mushrooming development theories, that explain the causes of underdevelopment and suggest 'appropriate' policy approaches, has demonstrated little relevance to the needs of the majority of the people. The nature of the manpower pattern being a reflection (or the resultant) of the whole imbalanced development pattern is characterized with a growing overt unemployment accompanied

recently with a soaring 'educated' unemployed. Parallel with the global imbalance of development pattern, the indiscriminate expansion of the educational system and the poor performance of the labour market largely account for the emergence of the 'educated' unemployed. As a result, the task of manpower planning in the underdeveloped countries is twofold: (i) the utilization of the unemployed and the underemployed manpower, and (ii) the production of skilled manpower where there is a symptom of such short-fall.

The Ethiopian case shows a remarkable similarity to the generalized picture of the manpower problems of the underdeveloped countries. The country enjoys an aggregate surplus economically active labour force. The educational system plays a major role in facilitating a qualitative transformation of the nature of unemployment in some fields of training. Cases in point are the growing concern for the unemployment and underemployment of secondary school leavers and the appearance of unemployed university graduates in some disciplines. On the other hand, the country still faces severe manpower shortages in some areas of specialization. In short, it faces both a global and structural imbalance between manpower demand and supply. There have been at least five major manpower forecasts that are carried out to serve as policy springboards to curb the unbalanced pattern of manpower generation and to identify the types and size of manpower that the country requires to meet its planned socio-economic needs. But, despite the fact that these forecastings are based, more or less, on the same theoretical frameworks of the manpower planning approaches, the results have shown a remarkable inconsistencies and discrepancies. Differences in regard to the assumptions of the country's future development pattern and the basic parameters of their forecasting models seem to account largely for such divergent estimates.

The nature of the theoretical manpower planning approaches is partial and isolated in the underdeveloped countries. They are production oriented as such have a limited scope to deal with the utilization aspect of manpower. Even in the area of target setting for manpower generation, the syndrome of underdevelopment has aggravated their technical weakness to serve as an effective and reliable tool of educational planning. The derivation of policies on the basis of an independent manpower planning approach without full comprehension of the nature and implications of the manpower problems and due considerations to the country's institutional infrastructure could lead to unintended consequences.

Policy Implications for Ethiopia:

- (i) Re-definition and re-orientation of the society's development objectives (i.e., re-drawing the society's welfare function and re-setting the society's time preference). It is high time that development efforts concentrate on its means and ends, viz., the people. This calls for a clearly designed manpower strategy with its emphasis on:
 - a) the rural development where the bulk of the population lives and derives its livelihood.
 - b) measures designed to influence the output mix and production techniques so as to diversify production and increase labour force participation.
 - c) expansion of physical infrastructures and equitable distribution of social services.
 - d) the mobilization of the masses toward the development efforts of the society.
- (ii) Altering the present inequitable, indiscriminately expanding and ill-suited educational system in line with the re-defined development objectives of the society. This approach entails for;
 - a) re-definition of the socio-economic and political objectives of education.
 - b) re-orientating the educational system to the rural areas and adapting it to.

impart functional and practical knowledge to the people at large.

- c) re-structuring the second and third level education (both quantitatively and qualitatively) in accordance to the manpower requirements of the stated society's objectives.
- iii) The skill and knowledge generation aspect of the educational system remains part of the whole human resources development of the society. As such, manpower planning approaches remain to have a vital role in the manpower planning process. But, the present practice requires a further refinement and re-direction with a major focus on:
- a) assessing the manpower requirements of both the rural and urban development programs.
 - b) improving and strengthening the technical competency of the manpower planning approaches.
 - c) utilization of the employed and the underemployed manpower.
 - d) innovation of manpower techniques that have much relevance to the study of manpower problems of the country.

At a minimum, the practice of manpower planning to be a continuous process and a reliable instrument for making appropriate decision requires a strong, reliable and broad data basis. This entails, among other things, for a deliberate attempt to re-organize and re-direct all research activities in line to the country's development priorities. Not least, manpower planning should be built within the overall development objectives of the country and plan implementation to be an effective means.

APPENDIX

Table A-I. EMPLOYMENT AND UNEMPLOYMENT , 1970-90
('000)

	1970	1975	1980	1985	1990
			<u>Employment</u>		
Agriculture	6511	7122	7774	8508	9296
Industry	584	734	919	1151	1434
Services	533	647	787	957	1164
Total	7628	8503	9480	10,616	11,894
			<u>Levels of Unemployment</u>		
Low	268	421	557	638	688
Medium	298	499	748	960	1158
High	314	561	915	1270	1656

Source: PEO, The Employment Problem in Ethiopia, (Addis Ababa: 1972), p. 19.

Table A-II. EMPLOYMENT PROJECTIONS, 1970-90
('000)

	1970	1975	1980	1985	1990
Agriculture	6511	7189	7937	8763	9675
Industry	584	700	854	1058	1280
Services	533	633	764	438	1124
Total	7628	8522	9555	10,759	12,079
Unemployed	<u>298</u>	<u>480</u>	<u>673</u>	<u>817</u>	<u>973</u>
Labour Force	7926	9002	10,228	11,576	13,052

Source: PCO, The Employment Problem in Ethiopia, (Addis Ababa: 1972), p. 47

Table A-III. NUMBER OF CURRENT VARIANCES IN 1962 (1969/70)

Occupational Group	Current Variances	
	Public Sectors	Private Sectors
Professional and Technical	808	32
Administrative and Managerial	129	2
Clerical and Related	652	16
Sales	1	3
Service	607	25
Agriculture, Animal, etc.	42	--
Production & Related Workers		--
Transport Equipment Operators	<u>391</u>	<u>319</u>
TOTAL	2,630	397

Source: MNCD, AEMR, (Addis Ababa: The Manpower Research and Statistics Section, Nov. 1970), p. 36.

Table A-IV. WORK PERMITS ISSUED TO THE PRIVATE SECTOR

<u>Occupation</u>	<u>1968-69</u>		<u>1969-70</u>		<u>1970-71</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Professional and Technical	2568	38	2292	43	2363	46
Managerial and Administrative	1295	19	891	17	954	19
Clerical and Related	914	4	599	11	398	8
Sales Workers	209	3	182	3	156	3
Agriculture, Forestry, etc.	132	2	94	2	64	1
Services	386	6	240	4	113	2
Production and Related	1242	18	1095	20	1066	21
TOTAL	6746	100	5393	100	5114	100

Source: ILO, Report to the Imperial Ethiopian Government of the Exploratory Employment Policy Mission, (Geneva: 1973), p. 59.

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