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EVALUATION OF MANPOWER TRAINING PROGRAMS: THE INTERLAKE MANPOWER CORPS

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ABSTRACT

This thesis deals with the ex-post economic evaluation of the Interlake Manpower Corps, an institutional training program designed for individuals of Indian and Metis origin in the Province of Manitoba. The porgram started operations in 1967 as part of the FRED Agreement between that province and the Federal Government. The main objective of this thesis is to provide measurements of program success from individual's, government's and society's standpoints.

The thesis commences with a description of the characteristics of trainees enrolled in the program since 1968, in terms of age, education, labour status and racial status. It is shown that, as predicted by models based on the theory of human capital, trainees are less educated and younger than the population in the Interlake region, and their pre-training earnings are lower than the Manitoba provincial average.

The theoretical rationale for government-sponsored manpower training is discussed. The theory of human capital is introduced and the efficiency and distributional implications of these types of programs is examined. A new methodological framework for evaluating the program is presented. This framework consists in the calculation of marginal benefits of an additional week of training, using earnings functions estimated from information about former trainees (the experimental group). The value of weekly allowances are also included as individual benefits. Opportunity costs are defined as the average value of exptected earnings for those individuals without training (the norm group).

It is estimated that the present value of individual benefits, in 1975 dollars, exceeds the present value of individual costs for alternative rates of discount (personal time preference).

From a government's viewpoint, gains/outlay ratios larger than one are obtained. Gains are estimated by simulating the value of transfers savings and additional tax collection induced by the program. Outlay consists in operating costs per capita during 1968-1975. These costs are adjusted in order to consider the fact that some of the projects within the program not only provide training to individuals but also produce a physical output (ladders, park furniture, housing). Consequently, not all government expenditures correspond to training proper. Learning curves estimated by foremen's reports are introduced in order to approximate the proportion of total costs attributable to the training activity.

From a social viewpoint, social earnings functions are estimated for the experimental group in order to calculate productivity gains due to training. These benefits are reduced by mobility costs paid to trainees, by the social opportunity cost of labour and by the value of real resources diverted from other activities to the program. Social net present values are positive but lower than individual net present values.

It is concluded that it is socially and individually worthwhile to continue the program, and that the duration of training projects be extended beyond the 1968-1975 average duration (13 weeks), emphasizing the general aspects of training instead of the specific aspects.

A pattern of interoccupational mobility discovered in the thesis, and not explainable by the human capital framework, is discussed

and some of the possible reasons for its existence are presented. In addition, the issue of racial discrimination in wage determination is briefly examined, with special reference to the evidence gathered from program trainees.

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CHAPTER 1

INTRODUCTION

This study is concerned with the economic effects of the Interlake Manpower Corps (IMC). The IMC is an investment program which is designed to provide on-the-job training to low-income, low-education people, especially of Indian and Metis origin, in the Interlake Area of Manitoba. This program is part of a public investment package in the area, the FRED-Interlake Agreement, financed by the Federal Government of Canada and the Province of Manitoba for the period May 1967 to May 1977.

By January 1976, 1307 different individuals had been registered in the various projects covered by the Manpower Corps since its beginnings in 1968. The total expenditure by the Provincial and Federal Governments up to the fiscal year 1975-1976 was close to 4.8 million dollars. The Provincial share of the total FRED expenditure is 56%, while in the Manpower Corps Program it is 10%. The total estimated cost of the Program for the ten year period is 5.6 million dollars.

The rest of this chapter discusses the nature of the problem which frames the present evaluation, summarizes the objectives of this study and the methodology used in order to achieve them. A brief presentation of the sources of information is made, and followed by an overview of the thesis.

A. Nature of the Problem

Public expenditures in a depressed area provide a higher level of demand in monetary terms to the region, and following Keynesian

implications, a possible cure for the problem of unemployment. These expenditures may also increase the potential capacity of production in the region, creating supply effects sometimes overlooked in the literature. When investments in human beings are included in regional development programs, these supply effects, namely, increases in the productive capacity of the region, are significant.

Demand effects are usually studied in the context of the production structure existing in a region, by simulating the change in the absorption of income by sectors which is created by the initial change in investment in one particular activity.[1] It is assumed that each productive sector output reacts to changes in nominal demand, increasing product and income, and also employment according to some static marginal labour-output ratio. The key issue is that real production might not change at all when money demand rises because supply constraints in some sectors might exist, preventing output from increasing. One of these constraints is an imperfection in the labour market arising from inequality between the structure of the demand for labour and the structure of the supply of labour, together with a wage rigidity produced by non-economic factors. Investments in human beings, such as education and training, might correct this distortion by increasing total monetary demand and by helping to increase real output through elimination of labour market imperfection. The former effect would result with any type of investment, while the latter impact is a characteristic of this

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[1]For a study of this type in the area in which the present study will concentrate, see: Fu-Lai Tung, "A Dynamic Model for Simulating Resource Development Impacts in the Interlake Area of Manitoba," unpublished Ph.D. Dissertation, (Winnipeg: Department of Agricultural Economics, University of Manitoba, 1975).

particular type of investment. This study will not discuss either the demand impact of training programs in the area or the spillover of training benefits to other regions of the country. It will concentrate on the analysis of the effect of training on individuals' earnings and employability, on Government finance, and on the productive capacity of the region. The central hypothesis underlying this study is that manpower training has significant positive supply effects as measured by net social and individual benefits. These positive effects result in an improvement in both economic efficiency and regional labour productivity.

B. Objectives of the Study

Specific objectives of the study are:

(1) To examine and identify the relative importance of the variables that determine the actual levels of earnings of trainees after training.

(2) To analyze the extent to which characteristics of the Manpower Corps Program, such as duration of projects, trainee success in courses, etc., determine earnings differentials among trainees.

(3) To develop a methodology for evaluating program effectiveness taking into consideration not only the characteristics of trainees, but also the timing of projects and the distribution of benefits and costs through time.

(4) To introduce in the evaluation of training programs the differentiation between production costs and human development costs. Usually these two elements are separated in the appraisal of manpower training.

(5) To show the pattern of occupational mobility of trainees and its possible effects on the efficiency of Manpower Corps Program.

(6) To examine the hypothesis that racial discrimination exists in the determination of trainee's wages after training.

In the process of developing these points, the Manpower Corps Program will be described in a manner which has not been attempted before; that is, in terms of the characteristics of the individuals who have attended any project. Three approaches will be taken in studying the economic effects of the Program:

(1) the trainee's point of view, in which benefits received and costs borne by direct participants in the Program are compared;

(2) the Government's point of view, in which a simulation of the effects of the Program on the Government's ledger is made, and finally,

(3) the evaluation of the impact of the Program from a general efficiency standpoint.

Contributions that can be derived from the present study include the following:

(1) Individual trainees increase their earnings and employability after attending any Manpower Corps project. These increases are related to the length of the project and to the level of education prior to training.

(2) Training programs for the disadvantaged can be economically efficient. Consequently, programming and planning of this kind of public investment should employ efficiency criteria for the determination of the level of that investment.

(3) The labour market information system for the Manpower Corps Program should be modified in order to include characteristics of trainees and their occupational mobility prior to training. This inclusion will facilitate the acquisition of reliable information about the individual labour market situation in the absence of training. The main limitations of this thesis are related to the poor quality of information about pre-training earnings.

(4) The separation of operating costs of the Program into production costs and human development costs influences the measure of efficiency of manpower training. Consequently, this separation should be attempted in the evaluation of the effects of the program on the government finance and on the general efficiency of the economy. A detailed methodology devised to consider this dichotomy is not proposed, but considerations based on technical reports from the project supervisors are used to illustrate this dichotomy and its impact on program effects measurements.

C. Methodology and Data

Methodology

The basic method used in this study for assessing the economic impact of the manpower training project is benefit-cost analysis. Its foundations lie in the theory of welfare economics, and although some of its postulates are widely accepted by most economists, some other are still the subject of dispute. Specifically, controversy exists over the separation of efficiency and distributional effects of any investment project, particularly in programs such as training for the disadvantaged

in which equity considerations are usually assigned a high priority.[2]

Some of the proponents for including redistributional effects vis-a-vis efficiency considerations when regarding any public investment are Arthur Maas[3] and Stephen Marglin[4] while Burton Weisbrod[5] feels they should be included especially in manpower training program. The basic tenet of their argument is that efficiency-oriented evaluations are not relevant for public decisions, and that this is the reason why eocnomists have been unable in the past to predict political behaviour and develop normative rules.

The separation of the two effects in this study is the result of two considerations. First, investment under the FRED Agreement, although directed towards backward regions produces monetary leakages to more developed areas due to the nature of the multiple effect.[6] If a correct appraisal of the redistribution of money income is to be done, these

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[2]The non-separability of these two components in the provision of public goods has been demonstrated by M.C. McGuire and H. Aaron, "Efficiency and Equity in the Optional Supply of a Public Good," Review of Economics and Statistics, LI (February, 1969), pp. 31-39.

[3]Arthur Maas, "Benefit-Cost Analysis: Its Relevance to Public Investment Decisions," Quarterly Journal of Economics, 80:208, May 1966.

[4]Stephen A. Marglin, Public Investment Criteria, (Cambridge, Massachusetts: M.I.T. Press, 1967), p. 209.

[5]Burton Weisbrod, "Concepts of Costs and Benefits," in Problems in Public Expenditure Analysis, ed. S.B. Chase, Jr. (Washington: The Brookins Institution, 1968), pp. 257-292; and "Benefits of Manpower Programs: Theoretical and Methodological Issues," in Cost-Benefit Analysis of Manpower Policies, Proceedings of a North American Conference, eds. G. G. Somers and W. D. Wood (Kingston, Ontario: Industrial Relations Centre, 1969).

[6]James A. MacMillan, Chang-Mei Lu and Charles F. Framingham, Manitoba Interlake Area: A Regional Development Evaluation, (Ames: Centre for Agricultural and Rural Development, 1975), pp. 56-57 .

secondary effects should be taken into account. The information available for the Manpower Corps Program, however, is not sufficient to provide a complete measurement of this effect. On the other hand, unless we have a specification of the utility function of the Government or a social welfare function, there is little room for weighing the efficiency and distributional effects of the Program so as to provide a unique index to rank the projects. Ralph E. Smith suggested evaluating the efficiency of the Program for several income groups and explaining differences in rates of return between high-income and low-income groups in terms of the explicit intention of Government to sacrifice efficient allocation of resources in return for a better income distribution.[7] His assumption implies that the Government, in deciding the scale, timing, and the ratio of disadvantaged to total number of trainees accepted in the Program, knows beforehand the rates of returns for both groups for several combinations of the aforementioned elements. Apart from the questionable validity of the assumption that rate of return information is known beforehand, the trade-off cannot be measured where only disadvantaged are receiving training.

The estimation of benefits and costs from an individual viewpoint requires the comparison of earnings and employability of two groups; the norm group, formed by individuals without any previous experience in institutional training programs, and the experimental group, formed by individuals who have previously participated in a Manpower Corps Project. The characteristics of these groups are shown in

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[7]Ralph E. Smith, "An Analysis of the Efficiency and Equity of Manpower Programs," unpublished Ph.D. Dissertation (Washington: Department of Economics, Georgetown University, 1970), pp. 120-121.

Appendix B.

The appropriate comparison between these two groups is on a with-and-without-training basis as it is demonstrated in Chapter 3. However, a variation of a before-after training basis is used here for reasons of limited data.

Regression analysis is used to separate the effect of training from the effect of other variables such as deduction, experience or age on earnings. Opportunity costs of the trainee's participation in the Program are calculated utilizing data from the norm group. Discounting procedures are used to compare benefits and costs for the year 1975.

The impact of the Program on Government finance is estimated by simulating the increase in direct taxes due to higher average wages after training, and the reduction in unemployment payment produced by a higher employment rate induced by training. These gains are compared to the money resources invested in the Program by all levels of Government.

From a social point of view, a benefit function is estimated for the experimental group which determines the increase in productivity associated with additional training. These benefits are reduced by the social opportunity cost of the labour moving to the Program and by the cost of operating the Program. Transfer payments are not included in this analysis, because only real resource costs affect the efficiency of the economy.

Data

Information regarding the 396 trainees in the norm group was obtained from Interlake Manpower Corps Forms A03FBI-526J.[8] These are computer printouts of demographic and economic characteristics of trainees before starting any project based on information recorded in the application forms. Each individual has a different entry in these printouts for every project he has participated in. No information exists in the forms, however, with regard to earnings and employment changes of trainees for the month prior to entrance. Only the labour situation at the time he or she applies is recorded. This lack of historical information limits the comparability between the experimental and norm group. This limitation is partially overcome by using regression analysis.

Data for 116 trainees in the experimental group (8.9% of the 1967-75 total 1307 trainee population) was obtained from questionnaires prepared and distributed by Manpower Corps during the summer of 1976. Questionnaires received by September 1, 1976 formed the sample used in this thesis. (See Appendix B). Information obtained from foreman in training plants and from officials at Manpower Corps in Winnipeg was used in estimating the production cost component of allowances vis-a-vis the training component. The separation of these components is very important in determining the efficiency effect of the Program.

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[8]The norm group earnings and employment characteristics are calculated from data on individuals who applied to the Program in 1967-75 but who had no previous training. Rejections are included.

D. Overview of the Study

Chapter 2 describes the peculiarities of the Manpower Corps Program in terms of the nature of the projects and basic socio-economic characteristics of the trainees who have attended different projects. The program and the characteristics of trainees are described and a review of some studies in the area is presented.

Chapter 3 discusses in detail the theoretical framework of the present evaluation. The human capital approach is introduced and its relevance and shortcomings in relation to training is emphasized. The macroeconomic and microeconomic implications of manpower training are also discussed. The microeconomic analysis is divided into allocative and distributional effects of manpower training. Allocative effects refer to the impact of training on the improvement in the general efficiency of the economy. Distributional effects deal with the change in real private income between groups caused by the training program. The macroeconomic implications of manpower training are analyzed in the context of the trade-off between unemployment and inflation. Finally, a review is done of the results of previous evaluations of training programs in other parts of the world and in the area.

Chapter 4 presents the methodology followed in this study to compare real training benefits and costs from the individual, government and societal viewpoints. A review of critical issues of benefit-cost anlaysis in relation to manpower training is presented. Special reference is made to the particular features of the information available for this study.

In Chapter 5 the evaluation of the Program from an individual viewpoint is made, emphasizing the nature of benefits and costs not only after but also during the project. Chapter 6 presents the evaluation from a Government's viewpoint and Chapter 7 from an economy-wide perspective. In Chapter 8, the principal limitations of the study are discussed. These limitations are of two types; those relating to the data deficiencies and those related to the methodology used. Chapter 9 presents the conclusions of the study and suggestions for further research.

This thesis contains five appendixes. Appendix A shows the characteristics of trainees enrolled in the Program since its creation. Age, education, earnings, racial status and occupational structure are described. Appendix B presents the characteristics of members of the norm and the experimental group used in this study. Statistical tests on differences between these two groups and trainees in general are performed in order to assess the validity of generalizing the sample results to the total trainee population. Appendix C discusses the hypothesis that racial discrimination in wage determination exists. The discussion is based on evidence provided by questionnaires prepared for Carl Wall's practicum.[9] Appendix D shows the pattern of intersectorial mobility of trainees and suggests some possible effects this pattern may have on the program's impact. Appendix E analyzes the dichotomy between production costs and training costs in the case of the Interlake Manpower Corps. Finally, Appendix F presents a model to calculate the

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[9]Carl L. Wall, "The Socio-Economic Evaluation of Training Benefits to Trainees of the Manpower Corps Training Plant--Selkirk," A Practicum submitted to the Natural Resource Institute for the Degree Masters of Natural Resource Management, (Winnipeg: Natural Resource Institute, University of Manitoba, 1974).

optimal duration of training from an individual and from a social perspective based on the findings of this thesis.