AN ECONOMIC EVALUATION OF THE THAI - NEW ZEALAND FEEDER ROAD IN NORTHEAST THAILAND

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Abstract

Transport has been identified as an essential element in a comprehensive regional development programme and economic, social, and political benefits can result from the construction of a road in a developing region. This study investigates the economic impact of a road construction project in Northeast Thailand. The Thai-New Zealand feeder road, a 144 kilometre paved road, was completed in 1971 and links five major towns in two provinces while passing through a region of populated villages. Nearly all households in this region engage in agricultural production. The rice crop is the most important factor affecting the welfare of a household and the quantities of produce sold from other enterprises are small. Purchased inputs, aside from small quantities of fertilizer, are not commonly used.

This study has been undertaken only two years following completion of the road, although the first 36 kilometre section had been completed five years. The collection of data from households in villages adjacent to the road is described and the data obtained is discussed in relation to the characteristics and measurements of subsistence agriculture. Traffic usage of the road was measured in two surveys and a land classification survey was conducted to estimate the agricultural development that has taken place since road construction began.

A large part of the study is devoted to a description of the agricultural enterprises practised in the region, the problems preventing economic development, and the potential for further development following construction of the Thai-New Zealand feeder road. This data has been used to assess the impact of the road at the present time and the likely impact under various conditions which might eventuate in the future.

Methodology for a standard benefit-cost analysis has been used in the evaluation of the road. The three economic criteria, net present value, benefit-cost ratio, and project internal rate of return have been applied to the discounted cost and benefit flows. Together with those items that can not be quantified, these three criteria have been used to evaluate the profitability of the project.

Construction of the Thai-New Zealand feeder road should be regarded as the provision of one input essential for economic development in the region. Other inputs will be necessary before the full benefit of the road can be obtained. The road has already had a significant economic impact and if the potential from the application of improved technology and practices within existing agricultural enterprises can be realised, the road will have an even greater role in the economic development of the region.

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"If I could do only one thing in a region to spur agricultural development, I would build roads. If to this I could add a second, I would build more roads. And if to these I could add a third, I would build still more roads."

A.W. Ashby, quoted in Mosher, A.T. 1966; "Getting Agriculture Moving". Praeger, New York, page 119.

"Down With Cost-Benefit Ratio!!

"It is heartening to note that somehow the experts have come around to accept the fact that the classic method used for the economic evaluation of road projects by aid-giving financial agencies based almost entirely on the cost-benefit ratio is "somewhat inadequate for planning rural roads."

"Whether it is the World Bank or the Asian Development Bank operations, the emphasis has always been on figures flowing out of the computer. The cost-benefit ratio is almost always the decisive factor. And the human factor seems all but insignificant in the minds of the experts.

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"We hope when the meeting of ECAFE beginning tomorrow here is convened, those figure-conscious experts will wake up to the human needs and sentiments to strive to work towards things that are really meaningful to the people.

"After all, the world is for human beings -- and not computers."

Editorial in The Nation Bangkok, May 14, 1972.

"Agricultural growth is not the primary goal of rural people. Instead, for them as for all of us, the primary goal is the quality of life they can enjoy. Some aspects of that quality of life depend on level of family income, others are largely independent of it."

Mosher, A.T. 1969; "Creating a Progressive Rural Structure". Agricultural Development Council, N.Y., page 45.

Chapter One

INTRODUCTION

1.1 The Role of Agriculture in Developing Countries

Examination of the structure of economically advanced countries such as West Germany, England, Denmark, Japan and the United States of America, shows that the agricultural sector of the economy in each has certain common characteristics. (Sitton, 1962) In these countries, the agricultural sector has contributed an increasing output of commodities to the economy in recent years. At the same time the proportion of total manpower resources devoted to agriculture has diminished as productivity per unit of input has increased. The predominant feature of the developing countries however, is the continued presence of a large agricultural sector in which the farming community is frequently preoccupied with subsistence production.

Thornton (1973) suggests that the functions of the agricultural sector in a country at any one time depend upon the relationship between the agricultural sector, the non-agricultural sector and the outside world. This relationship can be described in terms of the products supplied by one to the others; the demand which the people in one may have for both producer and consumer goods from one of the others; and the resources - land, labour, capital, technology and managerial or entrepreneurial talent - that may be transferable between them. Thornton has stressed the following six functions as being particularly important.

(1) Supplying food to consumers in both the agricultural and non-agricultural sectors.

(2) Supplying raw materials to the non-agricultural sector, as food for processing, and in the form of fibres, leather,

timber, charcoal, etc.

(3) Transferring surplus labour to the non-agricultural sector.

(4) Supplying capital funds, through taxes and savings, to the non-agricultural sector.

(5) Providing exports (both food and raw materials) either directly or through processing in the non-agricultural sector, to the outside world.

(6) Acting as a market for non-agricultural products, both for direct consumption and for investment from the non-agricultural sector.

The resources available, the state of international relationships and the stage of economic development are all factors influencing the importance of the agricultural sector in a country or region at any specified time. Low fertility, water scarcity, inaccessibility and low levels of knowledge or skills among the people will operate against an apparent abundance of natural resources in terms of a large land area and a high land/man ratio. The state of international relationships will affect trade policies and overseas investment programmes. The following observations have been noted by various economists writing of the relationship between the agricultural sector and the stage of development.[1]

Kuznets (1966), using both time series data and cross-sectional data showed that successively higher levels of per capita income over a period of time, are associated with an agricultural sector declining in terms of its contribution to the national product and the percentage of the national labour force employed. The changing emphasis to non-agricultural production is likely to be linked with increased opportunity for investment in manufacturing and services outside the agricultural sector.

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1 For further study the reader is referred to books by Higgins (1968), Myint (1965), Southworth and Johnston (1967), and an essay by Thornton (1973), all listed in the bibliography.

Rising per capita incomes are accompanied by changes in the pattern of food and raw material consumption. The quantity of agricultural produce consumed tends to increase and there is a strong preference for quality. As economic development proceeds the internal market for the agricultural producers changes. However, if there is a high proportion of consumers in the agricultural sector, their consumption patterns and preferences will determine production activities in both the agricultural and non-agricultural sectors until substantial progress in economic development is achieved.

Considerable controversy has existed among economists as to the role of industrialisation in economic development and the quantity of surplus labour that exists within the subsistence agricultural sector. It is now recognised that concentrating on industrialisation will not necessarily bring about economic development and a government must have policies and plans for all sectors of the community. Industrial development should accompany agricultural development but because of the nature of the labour supply and its location in the rural areas, priority should be given to expanding those industries handling or processing agricultural produce.

Myint (1965) emphasised the distinction between surplus labour hours and surplus men. The seasonal nature of agricultural production in some countries means that the entire labour force may be engaged for long hours at times during the year. At other times the workload is spread over all those capable of working. If production in the subsistence sector is to be maintained when part of the work force is diverted to alternative employment, there must be incentives for those remaining who must work longer hours.

More recently the rate of population growth and the problems of feeding and employing the rapidly increasing numbers has become a major issue in the developing countries. The problems of employing the larger population are most evident in the cities where people from the rural areas are lured by the

prospect of high wages. Some economists such as Hirschman (1958) and Clark (1967) have argued that population growth is a stimulus to economic development. They suggest that in seeking to resist a decline in living standards, a community will increase in ability to control its environment and organise itself for development.

Thornton (1973) has summarised the current viewpoint of economists as to the importance of agriculture in economic development.

(a) There is a general disenchantment with the notion that concentration on industralisation is an easy way to bring about economic development.

(b) Plans and policies must be built for both the agricultural and non-agricultural sectors at the same time.

(c) There is a need to find solutions to employment, diet and income problems chiefly in the agricultural sector itself.

Given that an agricultural base is the foundation for economic development, how is the agriculture in a developing country to be improved? Mosher (1966) has identified five essential requirements for growth in agricultural productivity. These are summarised as follows:

(1) A constantly changing technology: This is usually the result of formal research leading to the development of farm inputs including new fertilisers, insecticides and weedicides, and equipment to improve techniques of cultivation and husbandry.

(2) Production incentives to the farmer: The farmer must be sure that the improved technology will benefit him. Usually a substantial net increase in income will be required before a farmer will adopt new techniques.

(3) Local availability of supplies and equipment: The farmer must have access to the supplies and equipment

needed to put the new technology into practice. They must be of good quality, available when needed and at a price profitable to use.

(4) Markets for farm products: Farmers must be able to sell their products. This requires a marketing system in which the farmer has confidence, to move the product from producer to consumer.

(5) Transportation: Agriculture cannot be concentrated near its ultimate customers or near existing transport facilities. Rather it must be located in regions where the natural resources favouring agriculture can be found and transportation facilities of one kind or another must be provided to every farm.

Mosher has also observed that whether agriculture is subsistent or commercial, there are several additional activities or services that can accelerate the process of development. Education and training of all sections of the community is one of these. Farmers need to be educated in the benefits from modern agriculture, while government policy makers must know of the agricultural sector in order to plan effectively. Another is the provision of production credit to farmers, allowing the purchase of additional inputs that could increase agricultural output. A third accelerator is the various farmer organisations such as Co-operative movements, farmers clubs and community construction groups. These permit activities to be undertaken that an individual farmer may not be able to achieve through his own efforts.

The fourth recognised accelerator is the improvement or expansion of agricultural land. This means an improvement in the quality of the land already being farmed or expanding the area that is presently under cultivation. Land improvements can be brought about by terracing, levelling, drainage or irrigating existing areas. Expansion of the present land may require the removal of natural forest vegetation, extending irrigation to barren lands, or reclaiming waste lands.

The final accelerator suggested by Mosher, is the construction of a national plan for agricultural development. National planning should ensure that the five essentials for development are present in the best agricultural regions of the country. At the same time the planners should investigate and provide accelerators to development, initially in pilot or demonstration areas. The results can be evaluated and the process extended on a wider basis as resources permit.

Agricultural development is therefore a complex process. The essentials and the accelerators identified above have their effects by changing the facilities available and the conditions under which farmers operate. Throughout this study constant reference will be made to these factors in an effort to establish their combined importance in a developing region.

1.2 Outline of the Study

This study investigates the development, particularly agricultural development, taking place in a region where one of Mosher's five essential elements, transport, has recently been upgraded by a road construction project.

In December 1971 the Thai-New Zealand feeder road, a 144 kilometre sealed highway linking five major townships and numerous villages in two provinces of Northeast Thailand, was officially opened. Previously the only road communication for villagers in this region was via a dusty clay road which was impassable in some places during the wet season months. The people usually only travelled over short distances in carts hauled by cattle or buffalo. There were few motorised vehicles and the operators of vehicles using the route charged high rates for transporting both freight and passengers, to off-set heavy repair expenses.

While the introduction of an improved transportation facility to a region, such as that described above, will bring about improved social conditions, it may also induce economic

development in the region. The role of road transport in economic development is discussed in Chapter Three.

The economic benefits resulting from an improved facility in a developing region largely stem from the agricultural sector. This study is mainly concerned with the agricultural change and the benefits which accrue to farm families practising a subsistence agriculture. Chapter Four outlines the procedure and methodology used by the author in measuring the benefits resulting from the Thai-New Zealand feeder road.

Characteristics of the village population, particularly the agricultural practices, are discussed in Chapter Five. Information for this chapter has been derived from a survey of a number of villagers in the region of the road. Chapter Six reviews the information presented in the previous chapter in relation to measurements of subsistence economies used by both economists and sociologists.

In Chapter Seven an economic evaluation of the Thai-New Zealand feeder road has been undertaken. The expected net benefit of the road project has been calculated according to the standard measures used in project analysis: net present value, benefit-cost ratio and the internal rate of return. A project life of fifteen years was assumed and the data for the analysis was obtained from agricultural and road traffic surveys.

A number of technical missions have visited Northeast Thailand to make recommendations as to the way in which villagers in the region can move from a subsistence agriculture to a commercial agriculture. Chapter Eight discusses the agricultural potential for various enterprises in the villages near the Thai-New Zealand feeder road. The role of the road in an expanded economy is identified and the potential benefits have been calculated.

Finally Chapter Nine provides a summary and conclusions as to the value of the Thai-New Zealand feeder road as an investment to induce economic development in the region.