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THE PROBLEM OF TRANSPORT INVESTMENT IN A SMALL UNDERDEVELOPED COUNTRY WITH LOW POPULATION DENSITY

INTRODUCTION

After the Great Depression, all the industrial nations tried to give importance to the economic development in order to achieve their goals for a better standard of living. The first results came out in the middle 50 S. The underdeveloped countries saw the fruits of economic progress and began their efforts to obtain them. It has become fashionable to declare that the desire and drive for economic development has caught the imagination of people everywhere. Nevertheless, the awareness that economic progress does not need to remain the monopoly of a few nations has been widening rapidly and certainly has penetrated some social groups in practically all countries. Of course, the underdeveloped countries saw only the fruits of economic progress while most of them have little prior knowledge of the road they need to travel to obtain them. The development process, which, according to Hirschman, means "the process of change of one type of economy into some other more advanced type"[1], will cost some changes in their own society. It is in this fashion, rather than "a priori", that they will determine which of their institutions and character trails are backward and must be reformed or given up. The tension of development is, therefore, not so much between known benefits and costs as between the goal and the ignorance about the road to that goal.

The process of development has many components and no one of them is sufficient in itself to bring about the improvement in living conditions that people and nations everywhere are striving to achieve. Better health and education, the discovery and use of resources, greater industrialization, better organization and administration and a willingness to accept new ideas are some of the factors that together foster development and offer the promise of a more satisfying life. But the factor which plays, let us say, one of the most important roles in the effort for economic development, the factor which brings the state to the correct road in order to achieve that goal, is transportation. Of course, we cannot say

1. *A. Hirschman*, The Strategy of Economic Development (New Haven: Yale University Press, 1958), p. 51.

that transport alone is the key to progress[2]. But transportation has special significance because of the pervasive role of mobility in facilitating other objectives[3]. Transport is a necessary ingredient of nearly every aspect of economic and social development. It helps to attain preferred regional distributions of population, industry and incomes by increasing the speed and scope of the transport network. Transport also plays a key role in getting land into production, in marketing agricultural commodities, and in making forest and mineral wealth accessible. Human and material resources are transferred more readily to places where they can be employed most productively. In addition, improved transportation lowers travel time, resulting in savings of labor man-hoursspent in transit, and it permits reductions in inventory, capital, interest, and obsolescence costs. Transportation is one of the two main factors which causes the high degree of specialization of production in the modern world[4]. Transport facilities earn foreign exchange by facilitating exports and tourism, while a second type of development impact resulting from transport investment is the creation of supporting industries to supply materials and equipment for the transport system. These industries in turn may promote and support other economic undertakings. Thus, transport creates internal economies by shifting production possibility functions by altering relative factor costs — for many sectors — thereby fostering external economies for all sectors. Transportation plays, as Fromm says, "a many-faceted role in the pursuit of development objectives"[5].

The need to assess more carefully the contribution of transport to economic growth is suggested by the size of the financial commitment. Among expenditures for national development, transport generally ranks first or second in magnitude. The principal questions to be considered in this study are: What are the national purposes that the transportation system is intended to serve? How can the nation choose the

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2. The mistake that causes the most trouble is the view that transport is a separate sector of the economy. In reality, it is not a sector but a link among sectors.

3. Professors Fair and Williams say, "The relation of transportation to general economic growth was always in a sense reciprocal. Neither could precede the other for any length of time because of the closeness of their mutual dependence". *M. Fair* and *E. Williams*, Economics of Transportation (N. Y.: Harper and Brothers Publishers, 1950), p. 29.

4. *D. Pegrum*, Transportation: Economics and Public Policy (Homewood, Illinois: Richard D. Irwin, Inc., 1968), p. 4.

5. *G. Fromm*, Transport Investment and Economic Development (Washington, D.C.: The Brooking Institution, Transport Research Program, 1965), p. 5.

most suitable project for investment in transportation? What factors need to be taken into account in programing transport improvements? How can the project be financed and what role can be played by foreign assistance programs? In short, what must be done to achieve, as quickly as possible, the minimum standards of transport needed for rising levels of living?

The nature and complexity of transport problems differ widely from place to place and useful solutions are not easily generalized[6]. Some authors classify the nations of the world into groups in order to achieve more useful solutions to transport problems. Though countries are basically divided into developed and underdeveloped, every developed country has its underdeveloped areas, and that much of what is prescribed for poor nations is also relevant to those that seem to be rich. There are some other names of the groups of nations as mobile and immobile (the criterion is the freight mobility index: France = 100), rich and poor countries[7], and countries with low density of population and countries with high density of population. We think that the latter classification is more specific and it is applicable to both developed and underdeveloped countries. According to this, we are able to classify the nations of the world in four categories or groups. First is the group of developed countries with high density of population, as, for example, Italy, Japan, England. Second is the group of developed countries with low density of population. We can say that Canada, U.S.S.R., and the U.S.A. belong to this group of nations. The third category is the group of underdeveloped countries with high density of population. We think that it is easy to classify China, India and Pakistan to this group of nations. Finally we come to the group of nations which are underdeveloped with low density of population as the nations of Latin and South America. The nations which belong to the latter group have all the problems which face the underdeveloped countries and, moreover, the problem of the limited domestic market size. Their markets are not large enough to support industries depending on economies of scale for efficient operation. This fact makes the problem of investment for transportation more complicated.

6. Mr. Lansing remarks, "A brief discussion of current problems of transportation policy in underdeveloped countries, therefore, cannot present a set of solutions to fit all possible circumstances". *J. Lansing*, Transportation and Economic Policy (New York: The Free Press, 1966), p. 151.

7. Mr. Owen says, "The transportation gap between the rich countries and the poor, however, remains". *G. Fromm*, op.cit., p. 69.

We will try to consider the problem of investment for transportation by restricting the problem to the fourth group of nations. In chapter one we will examine the problem of choice among the different transport investment projects. Then in chapter two we will try to examine the factors which determine the choice among the projects for investment in transportation. In chapter three we will see how the transport investment can be financed. Finally, we will attempt to arrive at a conclusion based on our observations.

CHAPTER 1

THE PROBLEM OF CHOICE AMONG THE DIFFERENT TRANSPORT INVESTMENT PROJECTS

As we saw in the Introduction, transportation plays a very important role in the development of a country and the economic and social significance of transportation for the national economy is vital. We also know that the developing countries face the problem of the right reallocation of their limited resources. They have to determine how much of their resources should be dedicated to transport compared to industry, education, health and other urgent requirements[8]. Determining what is really needed includes the identification of immediate and urgent priorities. The demands for transport imposed by further growth and development, and the growth potentials are likely to increase with transport improvements. Everywhere the process of making these judgements is frustrated by lack of data, of trained personnel, and of a lack of understanding in general. On the other hand, there are many examples of a "big push" in transport from more recent history that shed light on what happens when

8. Professor Hirschman writes on this problem, "Development requires the undertaking of a series of projects producing favorable effects on the flow of income, in a wide variety of fields: public administration, education, health, transportation, power, agriculture industry, urban development, etc. The limitation of resources, be they savings available for investment or our 'ability to invest', compels a choice among these projects. In traditional economies, the market performs this function by equating the productivities of the various projects at the margin. It is recognized, however, that in any economy as ubstantial proportion of funds must be devoted to projects (in education, health, some public utilities, etc.) whose output has no readily assigned or fully recoverable market value. Moreover, underdeveloped economies tend to exhibit certain systematic discrepancies between private costs and social costs, and in such cases reliance on the market would lead to misallocation of resources". *A. Hirschman*, op.cit., p. 76.

a country makes an extraordinary commitment of resources for transport improvement. Turkey and Colombia are two of these cases which can be cited as evidence of the problems that can be expected when a nation puts so much into transport and when it puts too little into other things that are also vital to its development[9]. These obstacles increase the chance that plans will be poorly conceived, and that even desirable plans will be poorly implemental. In order to eliminate all these undesirable problems, the developing country has first to estimate how much transport it needs[10] and how much it can afford in the light of other requirements and secondly, the country has to make the correct choice among the different transport investment projects in order to avoid waste of its limited resources. The concept "time", of course, plays a very crucial role. A first approach to making overall estimates of national transport requirements may be based on the relationship between a nation's output and the total volume of goods movement that various levels of economic activity involve[11]. There are some other ways which help the government to estimate the national transport needs. In the process of this paper we will assume that the needs of transportation have been determined and we will step to second requirement which is the right choice among the different transport investment projects in order to satisfy the national transport needs which are required for economic development.

The starting point for the analysis of the question of whether a particular investment should be made is the need to compare the costs of the investment with the benefits or gains. The point of view taken here as a starting point is the point of view of society as a whole. Hence, the gains from the project to any member of society should be taken into account, as should the costs to any member of society. Answers to two

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9. For more details: *J. Morris*, "Recent Problems of Economic Development in Turkey", The Middle East Journal, Vol. 14 (Winter 1960), pp. 1 - 14, U. S. Department of Commerce, "Basic Data on the Economy of Turkey", World Trade Information Service, Part I, No. 55 - 81, and *T. Haefele*, Transport and National Goals (Washington D.C.: The Brookings Institution Transport Research Program, 1969), especially chapter 5 "The Colombian Experience, 1950 - 62", by R. Weisskoff.

10. Mr. Fromm says on this question the following: "in practice the question of 'how much transportation' cannot be answered on the basis of any objective principle. It is easier to cut a rational transportation slice out of the national pie than it is to cut a defense slice or a public education slice". *G. Fromm*, op.cit., p. 29.

11. In less developed countries, ratios between transport and economic activity not only vary among countries but are likely to be moving up or down, depending on the characteristics of the economy and its stage of development.

questions are needed. Are the costs larger than the gains? If so, the project should be abandoned. If, however, the gains exceed the costs, a second question must be answered. How does the excess of gains over costs for this investment compare with the gains for other possible projects? For any proposed investment it is appropriate to ask, what is society giving up for this project? The opportunity cost of an investment is the cost of giving up alternative uses of the resources required. This type of problem is common, for example, in the planning of highway systems. The institutional arrangements are that highway departments may be given fixed budgets. Given a limited budget for the construction of new roads, and a list of highways whose gains exceed their costs, the problem is to decide which ones should be built. The choices which must be made include both choices among entirely separate projects and choices among alternative ways of designing a particular project. Both the estimation of gains and the estimation of costs present difficulties which required discussion[12]. We will consider, first, the estimation of costs.

The calculation of the cost associated with an investment will require both an estimate of the original cost of the facility and an estimate of the costs of operation and maintenance over the life of the facility. Sometimes the amount of capital which is required to start the operation is smaller than the capital which some other projects require. However, its costs of operation and maintenance are higher than the corresponding to the other projects. Or, sometimes, the underdeveloped countries try to establish enterprising transport systems without paying any attention to the prohibited costs of operation and maintenance. The result is to waste their limited national resources without any gain at all. So the government must estimate both original and operation costs. But since future costs must be considered as well as the initial investment, the need arises to combine future and present cost. The concept of "discounting future costs" comes to the scene since investment decisions in transportation frequently involve the consideration of costs for many years in the future. Finally, the government must estimate the cost of restoring the site to its original condition. The project may be of no value to society at the end of the period. Many but not all investments for transportation purposes are sufficiently long lived so that the cost of restoring to site should be ignored; more analytically:

The cost of construction of a new railroad is composed of the cost

12. *D. Pegrum*, op.cit., p. 15 and *G. Fromm*, op.cit., p. 37.

of the land, the cost of substructure, as bridges, stations, auxiliary lines, tunnels, and so on, the cost of construction of the lines and the cost of the equipments. The cost of operation is the expenses which vary directly with the traffic while the cost of maintenance is all the expenses which are necessary in order to keep the whole system in operation. We will see in chapter two that the factor "technology" and the factor "structure of the land" play a vital role in determining the cost of construction.

The cost of construction of a new highway is usually smaller than the cost of construction of a railroad of the same length. It is composed of the cost of the land, the cost of substructure (bridges, crossing bridges), and so on. The cost of maintenance is a very small proportion of the cost of construction. It depends, of course, on the sort of the road, while the cost of operation is almost nothing. Proffessor Pegrum says, "Operations may be started with a very small investment, and expansion may be achieved with very small increments of investment in direct and almost immediate response to the growth in traffic"[13]. The reason of this is that the highways or routes are available to all who wish to use them.

The cost of construction of an air transport system is not as big as the cost of construction of a highway or a railroad. However, it has a high cost of operation and maintenance. The cost of construction is the cost of building the airport which is composed of the cost of the land, the cost of the buildings, the cost of the equipments, especially the cost of the computers and other machines of the tower of air control, and the cost of construction of airfields. The cost of operation is the highest of the other two. The reason is the high level of training which is required for the people who are employed as crew of aeroplanes and as ground staff. The cost of equipment is also high. The cost of maintenance, while is the lowest of the other two, remains higher than the cost of maintenance of the road transport.

The cost of construction of a system of waterways is usually high except some special cases in which it is lower. It depends on the kind of the waterway. If it is navigation the cost is high though sometimes there are some natural harbors. It is composed of the cost of building storehouses, docks, breakwaters, and so on. The cost is lower in the case of a sailing on a river. In this case the cost is composed of the cost of canals, the cost of building docks and the cost of deepening a canal etc. The cost of operation is high too. The same is true for the cost of maintenance. And now

13. *D. Pegrum*, op.cit., p. 187.

we come to the point of examining the benefits which system provides to the society.

There is none the less a considerable area of uncertainty about the net cost savings attributed to improved transport facilities. For example, better roads make possible higher speeds, but tire wear and fuel consumption may increase at higher speeds rather than be reduced. The private sector saves at the expense of the public sector, and returns from vehicle taxes are not likely to recoup the loss to the highway system. The situation may be somewhat different for railways and other transport systems where unified management is responsible for total transport costs. When new railway tracks are laid, the cost can be offset by the ability to move longer and heavier trains, and the net benefit accrues to the railway system. The situation for aviation, however, is comparable to that for road transport. Improvement in airports and other ground facilities contribute to the economy of aircraft operation, but may increase the total cost of air transport. Finally, new harbors will usually help the exports and imports. It may be well to insert a note of caution: There is a limit of capacity for each individual transport system. The cost of an overload traffic is usually prohibited. We can classify the benefits which each system provides to the society in three categories: First are the economic benefits, second the social benefits, and third the benefits from the creation of external economies. The magnitude of the last is restricted by the amount of diseconomies which the transport system creates too. So we can say that railroad system is able to carry heavy freight to long distance with very low fares. This fact will help underdeveloped countries to build their industries with lower cost than if the shipments were carried by trucks. The railroad system also can carry great quantities of raw material with low cost[14]. We think that we are able to characterize the railway system as an economical mass transportation agency. The same is true for the water transport system. It is not true for the air transport. However, air transportation is faster than the other systems while the highway and road transport system is the nimblest in the world. Truck is able to carry quickly light load in every geographic area. In addition, truck takes less time for load and unload than the other transport agencies. The social benefits are more or less the same for all the kinds of

14. A study, made by The Department of Economic and Social Affairs of United Nations, shows that the economies of large-scale movement by trains are reflected in lower ton-kilometre costs with telling effect when distances become great. U. N., Transport Modes and Technologies for Development (New York: U. N., 1970), p. 22.

transport systems. Increasing mobility of population, greater use of medical facilities, more widespread travel and marketing facilities, better use of governmental services, more advantages from urban development are some of the social benefits. Finally, each system creates some external economies and diseconomies. Train and ship, means of transportation which operate under large scale of production, create external economies as well as motors or vehicles and aeroplane. But these also create diseconomies as noise, air pollution, water pollution, soil[15] etc. which are social cost and reduce the benefits. Moreover, as the creation of harbors or airports provides new jobs, which, as a result, increase the income, simultaneously create a lot of social problems. The solution of these problems is a difficult task and the social cost is sometimes greater than the benefits. Before we proceed to the conclusion, we want to say that the examination of the cost of interest, the cost of financing a project of investment, the concept of capital returns and the concept of revenue which each project yields, is postponed until Chapter 3.

The conclusion is that the government, in order to decide which project is better, has to estimate the costs and benefits of each individual transport system. It must not only account the cost of construction but also the cost of operation and maintenance. In addition, the government has to calculate the social cost which the diseconomies will cause. On the other hand, the government has to estimate the benefits. Again, we would like to note that this is not an easy task for the following two reasons. First, because it is difficult to count the social and economic benefits, and second, because the government has sometimes to substract the cost of a diseconomy from the value of a benefit in order to determine the net benefit for the society. Finally we may say that the automobile and the aeroplane are nimbler and faster than the ship and train, the latter being more economical and more useful for volume shipments for long distance[16].

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15. U. N., op.cit., p. 31.

16. Mr. Owen says: "Like the Soviet Union and Japan, less developed countries with high population density and an extensive area are likewise rail oriented. India, Pakistan, and China depend heavily on rail movements, supplemented by river transport. But in most of the developing countries with lower population densities, this pattern does not apply. In these countries reliance is primarily on road transport, with air transport or pipelines sometimes playing a significant role". *G. Fromm*, op.cit., p. 77.

CHAPTER 2

OTHER FACTORS WHICH DETERMINE THE CHOICE AMONG THE PROJECTS

As we saw in the Introduction, transportation may help the nation to achieve the goals of economic development for a better living. However, the government faces a vital problem: the national resources are limited. So it must choose, among others, the most suitable project for investment in transportation. As we saw, the cost benefit analysis is a helpful tool but not the unique. There are some other factors which the government must take into account in order to avoid mistakes and wastages. There are a lot of such factors. There are social factors, political factors, and some others as level of technology, topography or natural obstacles, climatic conditions, national defense, geographical location of the country and so on. In this chapter we will try to examine the importance of them and their contribution to the solution of the crucial problem of choice.

Geographical factors

a. The geographical location of the country is a factor which the government must take into account before choosing the project in which it will invest the limited national resources. An insulating country, either an island country as Australia, Ceylon, New Zealand, Japan, England, etc., or a country with high mountains around it as Austria, Switzerland and so on, must give priority to transport system which helps it for its communications with the rest of the world. So, if the country is an island and exports play an important role in the development of the country, it may give priority to water transport or to air transport. Now, the choice between them depends on the kind of the exporting product. The underdeveloped countries usually export raw material and want to import heavy machines and other equipment which are necessary for their industrialization. Under these conditions the water transport is more preferable than the air transport. If the country has natural obstacles around itself, it may give priority to a project of highway transport or to railway. It does not mean that the government must ignore the air transport. But we will repeat for one more time that the underdeveloped countries with low level of training, low level of technology, and very limited resources, find it difficult to give priority to air transport. The choice between a highway transport system and a railroad system depends on the topography or on the morphology of the ground. In other words, the natural

obstacles will decide the kind of transport system. The choice also depends on the kind of foreign commerce which goes through its area, as in the case of Yugoslavia, and the contribution of its revenue to national income. Anyway, the transportation must help the effort for the economic development of the country by enlarging the size of the domestic markets. Otherwise, the less developed countries are not able to support industries depending on economies of large-scale for efficient operation because the domestic markets are small. Tourism is also something that can help the economic effort of the country for a better living. There is a close affinity between tourism and the geographical location of a country. So the government has to take into account this fact as well.

b. Natural obstacles which the country may have — the combination of unfavorable topography and bad weather — is another factor which government must take into account before taking any decision on the investment projects of transport system. Poor countries generally have to cope with a formidable combination of mountains, excessive heat, vast deserts, untamed rivers, and either too much rain or too little. Here the difficulty of transportation is to supply adequate service over great areas for scattered settlements. As we saw in chapter one, the existence of natural obstacles increases the cost of construction of a highway or railway. Countries that are broken up by mountain ranges have to cope with difficult engineering, high-cost construction, and circuitous routes. The immense barriers thrown up by the Andes, for example, have played a prominent role in the heavy commitment to transport in Colombia. In other countries, such as Brazil, it is enormous land masses that defy efforts to provide adequate transport.

c. Climate conditions is the third geographical factor which the government should examine before taking any decision on the problem of choice of investment. Water transport provides important avenues of commerce in some countries, but often the potential is limited because of silting, the absence of navigation aids, and seasonal interruptions due to lack of water or to storms. We might present, as an example, the harbors of Baltic Sea, and North Sea, which are closed to ships for three or four months during the winter. The icebergs hinder the navigation. Similar problems face the vehicles during the winter when they try to pass through the mountainous segments of the highways. The problem is most important for the air transport, while the train is less influenced by the adverse weather conditions. The conclusion is that the geographic conditions must be taken into account before any decision for transport investment.

The level of technology

Among the factors which must be taken into account by the government before making any decision on transport investment is the level of technology. The technology which is going to be used by the underdeveloped country in order to construct and maintain the system of transportation is an important factor. Poor countries usually are characterized by lack of high level of technology and training. It is a reason which causes a lot of problems for them. The developed countries, of course, use high technology. They spent a long period of time until they get to the present level. The underdeveloped countries can avoid the use of vast amounts of time in acquiring technical knowledge simply by having its experts trained in the technologically advanced countries. But in order to benefit from the fruits which the advanced countries produced they must pay. However, their resources are limited. The problem becomes less difficult when international organizations such as "United Nations" or developed countries such as the United States of America provide foreign aid to underdeveloped countries as technological aid for construction of bridges, dams, streets, roads, highways, railroadsand airports. We can also add that investment decision involves the choice of the economic-technological characteristics of each mode and its adaptability to the types and volume of expected traffic. However, we must note the danger, as Mr. Hayman says, "of an overly energetic pursuit of new technology which could easily lead to unhappy results"[17].

National defense

This is the factor which sometimes determines the project which the government must choose. Other things being nearly equal, some investments may also be preferred because they add significantly to defense and national security. Nevertheless, justification of outlays for productive and transport facilities on logistic or other military grounds should generally be avoided unless they satisfy a definite defense requirement. To do otherwise is to sacrifice economic efficiency for the sake of chauvinism. However, the most of the countries, and especially the underdeveloped countries, take transport investment decisions based on this factor and ignore all the others. In many parts of the world the transport system was deliberately designed by colonial powers to meet

17. *G. Fromm*, op.cit., p. 32.

military requirements[18] and to foster exports. Railways were built with different gauges and without connections. We might present as an example the Greek railroad system which is composed of four railroad systems with different gauges and without connection. The resulting patterns of transport ignored internal growth requirements, promoted overconcentrated growth and congestion in port cities, and left a vast inaccessible hinterland in its original state of immobility. In the U.S.A. the requirements of national defense have been advanced as a major reason for the construction of a system of nationwide, interconnected superhighways. Similarly, the large current expenditures on air transport are based more on military and political considerations than on economic ones. So, it is true that the problem of national defense plays an important role in designing the system of transportation on which the public or society must invest at priority. Nobody, again, doubts that the greater the carrying capacity of the transport facilities available, and the less vulnerable these facilities to interruption, the better the position of the nation in resisting a possible attack. However, when the national resources are limited, the choice should not be based only on the effort to satisfy the national defense.

Social factors

Mr. Fromm says: "Finally, other social factors must be considered. Destruction of scenic vistas or historic landmarks; the bastardization of local culture and customs; the substitution of haste, noise, and pollution of air and stream for nature's serenity are all part of the price that is frequently paid for accelerating the rate of growth and 'raising' the standard of living. Depending on its population density and climatic, geographic, and agricultural characteristics, a nation may not be indifferent to the loss of natural assets and social values"[19]. A new road, a new railroad and generally an improvement in transportation may have a wide influence on the life of the city, villages and towns. We had the opportunity to see some of the social benefits which transportation causes. We will add here that with the economic development of the hinterland, the construction of a new road or highway also causes a

18. Professor Pegrum remarks: "In some countries military considerations were more important than economic ones in designing the system of railroads". *D. Pegrum*, op.cit., p. 16.

19. *G. Fromm*, op.cit., p. 94.

social development. The development takes the form of increasing attendance at schools, greater use of medical facilities, greater use of governmental services and facilities and so on. So, if social development is a policy goal, the underdeveloped country has to take into account also these factors. Incidentally, the train and especially the car serve better the social goals of the country than other means of transportation. However, it is difficult to determine the net improvement of the social levels because, as it was mentioned above, transportation creates some undesirable effects for society.

Political factors

Politics is the factor which almost in all cases determines or chooses the project of transport investment. Professor Pegrum states: "Transport is differentiated from much of the rest of our economic activity because of its immediate connection with the political life of a country"[20]. Mr. Fromm completes: "The transport sector and its planning decisions are probably more closely scrutinized by the public and by politicians than other sectors"[21]. Finally Mr. Haefele says in his conclusion: "This chapter has argued for treating transport policy decisions in a political context. In so doing there is a grave risk that the argument will be misconstrued to condone the abuses of political decision—making common in transport — the road that 'happens' to serve the minister's country home, or the right-of-way which goes through land owned by political hacks. These and many more political abuses occur with regularity in many countries"[22]. It is true that sometimes the limited national resources are spread thinly over a wide geographical area in response to the local interest of the politicians. The result is nothing but a waste of the national resources. All decisions to spend public money are ultimately political decisions and decisions to spend public money on transport seem to get political a little faster than decisions in other fields. So the government finds it impossible to ignore it. However, if the government makes the correct decision of choosing the right project from various other projects, then this should indicate a beginning which is premising.

We tried to examine briefly all the other factors except the cost benefit analysis, which contribute to the solution of the problem of choice. We can say as a conclusion that, while it seems safe to say that the trans-

20. *D. Pegrum*, op.cit., p. 15.
21. *G. Fromm*, op.cit., p. 94.
22. *E. Haefele*, op.cit., p. 192.

portation system has been shaped primarily by economic factors, geographical, and especially political and military developments have played and still play an important role. For this reason, transport investment policy cannot be examined in a purely economic setting. In fact, it can be examined in such a setting considerably less than much of the rest of economic enterprise.

CHAPTER 3

HOW TO FINANCE A TRANSPORT INVESTMENT

The financing of transport is especially important because in many underdeveloped countries transport is the largest component of total investment. In some countries investment in transport has ranged from around 2 per cent to 5 per cent of G.N.P. while in other countries transport has accounted for over 25 per cent of the total public investment. Transport investment plus substantial deficits in operating these facilities has placed a significant burden on national budgets. Currently, there are several cases where over half of large annual deficits in the public budget are directly related to losses in the operation of publicly owned railroads. In practice, the amount of financing for transport investment can be so large that it may severly restrict a government's freedom to allocate funds to other uses. The financing of transport investment may be undertaken by either public sector or by private sector.

Private sector

The private sector avoids to undertake infrastructure investments. The willingness of the private sector to undertake infrastructure investments in the absense of government intervention is dependent on firm's aversion to risk and the expected values and variances of the rates of return. Where, due to large capital requirements and uncertain demand, the risks are high, private corporations may only invest if monopoly control can be exercised, if prices higher than competitive rates can be charged, and if extra-normal profits can be earned. In the underdeveloped countries, however, there is an uncertain demand which in the case of the underdeveloped countries with low density of population, is also small, the risks are high, the government does not want to permit any corporation to obtain any monopoly power especially by controling transportation which is vital factor for its national defense, and economic

development. In addition, the government does not desire high prices because it is against its social goals and its efforts for economic development. Expansion, of course, in the industrial and commercial sectors can largely be left to private initiative within some broad bounds and incentives established by the government. The same is valid in the agricultural sector. However, private sector is generally incapable of undertaking the new infrastructure investment (especially basic transport facilities).

Public sector

Government in one way or another is always called upon to assist in the process of supplying transport facilities. It arises from the fact that governmental powers have to be exercised in order to secure feasible routes, to provide streets and roads where organization under private ownership is not practicable, to develop waterways and harbors, adequate navigation aids, and so forth. In addition to the economic considerations that seem to make government participation in supplying transport unavoidable, adequate transportation is essential to national unity. The centers of government must have continuous and relatively rapid communication with the people and the territories they govern. In the absence of economic inducements that are adequate for private enterprise to supply the necessary transportation, government must fill the gap. Financing these investments and other public expenditures is one of the prime difficulties faced by the government. Government is able to meet financial needs by taxation, by using the product of exports, by foreign aid and finally by loans. In an underdeveloped country and especially in a country with low density of population, an increase of the rate of tax to finance public investments chiefly in transportation, will restrict consumption. Economic development is possible only if people decide to reduce present consumption in order to increase the consumption of the future. However, it depends on the endurance of the people, their philosophical ideas for a better future, and the political power which government has. The underdeveloped countries usually have problems concerning the above problems. In addition, the reduction of the consumption has as a result a further limitation of the already small market. This result will have a bad influence on the development of the industry.

The use of the product of exports for financing transportation is a good official operation. The question is: can the underdeveloped country have a surplus or a net gain from its international trade? The products, which an underdeveloped country usually exports, are either agricultural

products or raw materials which have smaller value than the capital goods which the country imports in order to meet its industrialization needs. So, it is rather impossible to have a positive international trade.

The governments of the less developed countries are hard pressed to meet the financial burdens of transport improvements. Some help is obtained by foreign aid, although this help satisfies only a part of the needs the government looks for. This help may come either from some international organization, such as the United Nations, or from countries allied to them. This is the common way of dealing with the financial problem of transport investment in less developed countries. The only thing that the government has to take into account is the fact that foreign help sometimes entails onerous political obligations and restriction of the national freedom.

Finally, the government may meet the financial needs of transport investment by loans. It may borrow funds either from abroad or from the domestic sources and especially from the savings. The latter way is probably the best way as a solution to the financial problem. However, the tendency of society to save dependson the rate of direct and indirect taxes and the existing ethics. At this point it might be good to insert a note of caution: The monetary authority of the country has to determine the rate of interest in such a way so that to avoid to take funds from the private industries. Otherwise, the result will be the opposite of the desirable, that is of the economic development. Although, as Professor Hirschman says, "foreign capital or aid can have the important function of permitting the country to avoid relative price rises when fundamental reforms and improvements rather than such rises are needed to eliminate the bottlenecks in certain lagging sectors"[23]. The foreign loans are not worth seeking because, in most cases, they entail onerous political and economic repayment obligations, (except the loans from the United Nations).

As a conclusion we can say that the problem of financing the transport investments either for constuction or operation, should be solved by the government. The private sector is unable to undertake the infrastructure investments — especially basic transport facilities —either for construction or operation where the expectation of profits is almost zero. So, the government is called to undertake the burden of financing. Funds from the domestic sources must be preferable than the foreign sources which usually — either loans or aid — cost more than benefit.

CONCLUSION

The revolution in transport is playing a major role in the social and economic revolution all over the world. However, the improvements of transportation need enormous funds while the national resources, especially in less developed countries, are limited. This fact makes the problem of choice important. The government must give priority to one of the projects for transport investment. It has to choose the project that fits best the needs of the country concerning transportation and the most economical as well. There are a lot of factors which the government must take into account in order to pick the best project. Among them there are the cost-benefit analysis. The existing social and political conditions of the country, the natural obstacles, the existing system of administration, and finally, the financial ability of the project. The problem of choice is more difficult for the underdeveloped countries, especially for the countries with low density of population, because they have limited national resources which are not usually enough even for their expenses, they use a low level technology, they lack technical skills, they face a lot of natural obstacles (bad weather, bad morphology of the ground) and, the most important, they are influenced by politics without the cost-benefit analysis being able to help or to prevail over the other factors which are potential more than it. The foreign aid usually helps them. However, sometimes it entails onerous political obligations which restrict the nation's political freedom. Thus these countries face a lot of difficulties. The result usually is waste of limited national resources and failure of transportation to provide an effective contribution to the national effort for economic development. In few cases, of course, the countries achieve to come out of the bottlenecks but it is possible only if the people postpone present consumption, and politicians and people together try to understand and help their government.

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