

SCIENCE AND TECHNOLOGY IN THE PROCESS OF ECONOMIC DEVELOPMENT

SUMMARY

In this thesis, relations between economic development and technical progress, and the characteristics of scientific and technical research and development activities constituting the main source of modern technical progress have been studied and the possibilities of organizing and regulating such activities as a practical solution towards economic development investigated.

This work consists of three chapters. In Chapter One, the interactions between technical progress and socio-economic changes have been studied from the prehistoric societies to the end of Industrial Revolution, dwelling upon crucial transitions. This chapter ends by establishing the importance of embodied technical progress in the classical industrialization process and the ever-growing interrelations between science and technology.

In the first section of Chapter Two, the relations between technical progress and capital, types of technical progress, and the results of some economic research to measure the contribution of technical progress to economic growth have been treated. Further on, inventions and innovations which form the modern technical progress in the narrow sense were considered (The thesis does not cover education and problems of social organization which may be included in technical progress in the broad sense). At the end of Chapter Two, the characteristics of scientific and technical R+D activities forming the source of inventions in industrialized countries were taken up as part of economic activity.

Chapter Three, begins with an analysis of the problems in the transfer of technology which is of vital importance to developing countries without any technological output. It is also tried, while carrying out this research, to make a description of the state of underdevelopment from the technological point of view.

Then, the basic problems of science policy which means organizing and planning of science and technology for defined objectives as well as its meaning and relevance for a developing country have been discussed in the light of observations, findings and results in these three chapters.

The main results obtained were :

(1) As the science policies in developed countries generally have military political and prestige objectives, the concepts, methodologies and mechanisms of implementations of such policies are not relevant for the needs of developing countries because in industrialized countries, the need for technology by the industry is met in the normal process of economic activity and, thus, it is not necessary to formulate a research policy directed to economic development by the state.

(2) However, the developing countries tend to identify themselves with the science policy literature, science policy decision-making processes and organs of the developed countries without considering the abovementioned facts or any critical approach on their part.

(3) In just the same way as there exists no successful case of a science policy that has achieved the realization of economic development, there is no experimentation on a «jumps in development» model anywhere.

(4) If a science policy is to be formulated with the aim of achieving development, this has to be made within the framework of an economic planning mechanism or realized in the economic set up since this is very important for success as the aims and strategies of science policy which are derived from the socio economic objectives and strategies of the plans.

(5) As far as possible, science policy has to be determined in accordance with the recognition of the scientific, technological and sociological development trends all over the world in a very long prespective and must be in line with all the policies and decisions from education to taxation in implementation.

Considering these results, the science policy activities in Turkey have been analyzed from the point of industrialization and, «science policy» decisions made in the mechanisms developed by The Scientific and Technical Research Council of Turkey (TUBİTAK) and State Planning Organisation (SPO) have been criticized in the

last section of Chapter Three. The main reason for the failure of science policy activities as from the First Five Year Development Plan has been due to the fact that the need of technology by the Turkish Industry has been met from foreign economies through transfer of technology and, consequently, no need for national research activities was felt. As a result, the research potential in Turkey could not go beyond «academic and bureaucratic» research activities.

The fact that the industry has not shown any need for national research brings to mind the possibility that the economic decisions taken until today (either within the plans or independently) have not envisaged economic independence or a rapid industrialization by means of domestic technological capabilities. If the Turkish economy were favoured with an independent development process, science policy would have been both rational and productive. This can be termed an «organic science policy» concept.

Thus, it is possible to design and implement a science policy directed to economic development in Turkey within an economic policy envisaging a real development and economic independence. In fact, science policy organs, decision mechanisms as well as the research potential to meet the short-term research demand already exist in Turkey.

On the other hand, in reality, in the field of science policy there are pressing problems in determining the criteria for «choice of techniques», both in the transfer of technology and investment projects. For this reason, to develop an effective mechanism for the control of transfer of technology to Turkey gains importance.

In addition to this, it is essential to create a manpower potential for research and to initiate important research projects having a significance in the social welfare and non-economic fields, i.e. oriented projects in order to maintain an efficient use of these potentialities.