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ABSTRACT

This paper provides new evidence in order to explain the role of irrigation in improving the productivity and sustainability agricultural sector, using data from eight countries of the South-East region Mediterranean during the period 2000-2011. By using panel data, the authors find that irrigation affects agricultural productivity and improve the economic sustainability of the sector through its macroeconomic factors such as surface irrigation, labor in the agricultural sector and the amount of water used in the agricultural sector, and through these institutional factors such as spending on research and development, bilateral assistance and education level. Improving productivity causes the achievement of the economic sustainability of the agricultural sector.

Keywords: Agricultural Productivity, Agricultural Sustainability, Irrigation System, MSEC, Panel Data

1. INTRODUCTION

Currently, it is certain that the tendency of our planet has not been apprehended in a lasting manner for this reason the national and inter- national organisms (WTO) takes a rest to reexamine their long-term politics (O.Bessaoud, 2006).

A large debate is open to the world level in all commissions and organizations united nation bound to the agricultural development to
fix some new objectives in view of a renewable and lasting development. This debate fondant on the works of a member state, try to associate a consensus of a vital importance around a new world politics human, equitable and anxious to protect the environment and to improve the agricultural productivity.

Sliman Bedrani, Giulio Maorgio, Gérard Miciet, (2001) indicated that the question of agriculture and food concentrated in Mediterranean center. Its plays a fundamental role in the realization economic, social and environmental equilibrium of its territories through the creation of labor force to its farming populations, especially during these last revolutionary years where the region to know a political, economic and social crises which employment and food security take major places and must be two important factors for a stability at the MESC.

The MSEC are marked by institutional and economic determinants all the same, in these countries a contribution of agriculture to the economy is more important, but meeting some constraints adults on resources as: the arable land available on the one hand and water on the other hand.

Mustapha Lasram (1992), Sliman Bedrani, Giulio Maorgio, Gérard Miciet, (2001) confirmed that the hydraulic policies evolve of one country to another, according to the natural conditions and means financiers necessary to the mobilization and planning hydro agricultural.

In spite of big efforts expanded in many countries to mobilize the streaming waters or those of the underground sheets, we frequently notice that the water of irrigation is not used in a rational manner. The wasting in some activity sectors, lower rates of use and intensification in the irrigated agricultural perimeters don’t permit to valorize the best available water. Considering the rarity of water in a large part of the Mediterranean region, he agrees to use it of the most rational manner and to search for new resources at the same time in water secondary or non conventional to face the demand constantly increasing.

For this title, the worn-out water treatment and the desalination of water are the ways that permit to increase resources in the water. The more and more elevated costs to mobilize these resources imply a rigorous politics of water economy.

While the question of whether macroeconomic and institutional determinants of irrigation system promote development and economic durability of the agricultural sector has gained considerable attention in academic and policy works, there are little theoretical and empirical studies on the factors of development and economic durability of irrigation system in MESC.

The purpose of this paper is to fill the void in the literature and make an in-depth analysis of the MSEC agricultural sector in order to identify their main factors.

To better understand what induces the irrigation system development in this region, we explored in this paper two macroeconomic and institutional determinants. The reach of our study covered 8 MSEC during the 2000-2011 periods. We employed two different econometric methodologies. Firstly, we use a static panel data analysis under the fixed and random effects specifications.

Our results show that while macroeconomic factors such as labor, irrigated surface, quantity of water used for agricultural are important determinants of economic durability (except farming population) and agricultural productivity development in the MSEC, institutional environment such as spending in R&D, educational level and bilateral external assistance (except multilateral external assistance) are a major factors of economic durability and agricultural productivity development in the MSEC.

Secondly, we use the dynamic panel data analysis (GMM); we estimated our model by two methods: the method of Arellano and Bond (1991) and the method of Blundel and Bond (1998).

Our results show that the same macroeconomic factors such as labor and irrigated surface promote development and economic durability of the agricultural sector, while other factors such as farming population and quantity of water used for agriculture handicap the eco-
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