Chapter 4
Sectoral Production in Greece During 2010–2018:
Some Post-Pandemic Planning Implications

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ABSTRACT

The chapter econometrically estimates Greece's sectoral production in terms of labor and capital inputs from 2010 to 2018 and the (residual) sectoral multifactor productivity element in terms of technology features—the types of labor and capital—used. Everything being equal, based on the findings, projects undertaken to affect the post-pandemic recovery and economic development will yield better outcomes if they are carried out so as to bring more workers and investments in sectors where the two inputs have positive effects; reduce the use labor in sectors where the labor inputs are associated with negative effects or promote worker education accordingly; sell overseas older capital assets associated with negative effects on output or organize assets in ways that are more effective than in the past; and add new, technologically improved assets. The chapter also suggests that investing in certain sectors may be preferable on account of the production coefficients and depreciation rates. Overall, the approach developed may be of interest to analysts and policy makers elsewhere in the world.

INTRODUCTION

The chapter econometrically estimates Greece's production function from 2010 to 2018 on the basis of which it makes a number of planning suggestions. It estimates the capital and labor effects on output across sectors and suggests that post-pandemic economic recovery planning ought to prioritize investment and workforce development and mobility accordingly. It relies on annual sectoral production statistics that run from the time the government took the first austerity measures to cope with the sovereign debt crisis of 2009 (in the wake of the international financial crisis of 2007-2008) to the last year for which data on production inputs and output existed at the time of preparing the chapter. Thus, the chapter captures

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and informs on Greece's *production mechanics* and the new *sectoral economic reality* as shaped through the country's exceptional economic depression, trough, and early, pre-pandemic, recovery period. To the best of the author's knowledge no such, up to date, sectoral analysis of the county's output exists.

Furthermore, by isolating the effects of the various types of primary inputs (i.e., of labor and manmade capital) in the production process, the chapter contributes to the discussion regarding the likely impact of the projects considered in the country's development plan. These projects are bound to contribute to the country's prospects, initially from the demand side via multiplier effects (i.e., while they are being built or developed), and, after that, from the supply side (i.e., via their role as inputs in the production process). In all likelihood they will be completed and commence contributing to the production process at a time that the economy will have returned to its pre-pandemic (say, 2018-19) state of operation. To the extend these projects contribute from the supply side, they may as well be assessed in the context of the sectoral production towards which they contribute. The chapter's findings may help analysts and policy makers identify sectors in which the primary inputs may be more effective. Consequently, the approach developed and described hereinafter may be of interest and use to analysts and policy makers around the world.

The material is organized in six sections: Section 2 describes the data and, through the data, the evolution of output and of the primary inputs involved in the production process across all sectors of economic activity during the period under examination in Greece. Section 3 discusses production function modeling issues and the choices made. Section 4 supplies the empirical findings and considers the planning implications. Section 5 looks jointly into the estimated capital effects on output and capital depreciation, and ranks sectoral investment accordingly; while Section 6 provides the conclusions.

A FEW WORDS ABOUT THE DATA AND PRODUCTION IN GREECE

The annual labor, capital, and output statistics employed hereinafter were collected and compiled by Eurostat, the statistical office of the European Union. The data are quite detailed at the sectoral level,[1] pertain to 62 sectors economic activity (see Table 1), and supply (a) the number of workers employed, (b) the value of the available, physical (manufactured) capital stock (hereinafter, capital), and (c) the real value added in the production process each year, during 2010-2018: i.e., (62 sectors x 9 years =) 558 observations. The initial (2010) and most recent (2018) sectoral input and output values are provided in Table 2, and the evolution of output over 25 years is supplied in Figure 1 in order to provide a context.

The sectoral input and output values suggest that the various sectors of the economy did not move in a uniform fashion. Indeed, they reveal considerable variation across sectors during the post-financial crisis period under examination: In 23 sectors labor, capital, and output decreased. In five sectors labor, capital, and output increased. In seven sectors both inputs (labor, capital) decreased but output increased, presumably due to technological or entrepreneurial or other improvements. In ten sectors labor increased as capital and output decreased. In six sectors capital decreased as labor and output increased. In ten sectors capital increased as labor and output decreased, and in one sector labor decreased as capital and output increased. See Table 3.