Contribution of TFP to economic growth of Dong Thap Province: Current status and scenarios for the period 2021 - 2025

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ARTICLE INFO	ABSTRACT
	The study aims to analyze the contribution of Total Factor Productivity (TFP) in Dong Thap 'province's economic growth using the Cobb-Douglas production function method, based on the data from 2000 - 2020. The study results show that the contribution of capital (ε_K) is 0.3524, the contribution of labor (ε_L) is 0.6476. Dong Thap province's average TFP growth rate in each period of 05 years 2011 - 2015 and 2016 - 2020 is 2.31% per year and 1.93% per year, respectively, and 'TFP's contribution to economic growth is 34.51% and 30.01%, respectively. Based on the status analysis of the period 2011 - 2015 and 2016 - 2020, the study proposes four growth scenarios associated with four productivity orientations for Dong Thap province in 2021 - 2025. This 'study's results are the basis for organizational policies and orientations for socio-economic development, proposing provincial development guidelines and plans to 2025, oriented to 2030.

1. Introduction

Capital-only and labor-based economic growth can lead to short-term economic growth. In line with the early stages of industrialization, the productivity of synthetic factors (TFP) is the foundation for long-term economic growth (Solow, 1956). Improving the TFP is an essential factor contributing to promoting sustainable economic growth, helping localities have an overall view of the quality of growth and sustainable economic development policies. Depending on each 'industry's actual situation, sector, and locality, the suitable combination of the change in width and depth and growth in the center is the main direction. Gradually move from relying on increasing the number of production inputs depending on increased productivity, labor quality, scientific and technological application, and innovation.

There is a lot of research on the growth rate and the proportion of 'TFP's contribution to countries' economic growth, geographies, and financial sectors. In particular, definitive studies on TFP such as Ascari and Cosmo (2005), Cardarelli and Lusinyan (2015), Chand, Kumar, and Kumar (2012), Isaksson (2007), Nachega and Fontaine (2006), etc. The authors estimated 'TFP's contribution to economic growth and research and development activities in local and sectoral economic development countries. In Vietnam, studies on TFP are typical as Arapova (2015), Vu (2019) on 'Vietnam's economy through development indicators, and the impact of integration; Tran (2010) on the speed and quality of economic growth in Vietnam; T. H. Dang and Vo (2011) researching the case of Can Tho City; D. N. Dang and Le (2015) estimated that TFP of Khanh Hoa province, Do and Nguyen (2017) researched 'TFP's contribution to the economic growth of

Kien Giang province. However, most of the above studies only give current TFP estimates. They have not yet developed future productivity growth scenarios for localities to have the right strategic plans, creating a sustainable step for long-term economic growth.

Vietnam is known as a developing country with quite good average GDP growth in the last 20 years. However, Vietnam's growth model still follows the horizontal development trend, still relies on capital factors (mainly FDI) and low-skilled labor. In the world, the trend of renewing knowledge, applying advanced science and technology is taking place firmly, and therefore, the horizontal growth model is no longer appropriate. In order to maintain the current economic growth rate, the Vietnamese economy needs to shift to a model of in-depth development. At this time, TFP becomes more and more critical in the economic development strategy of Vietnam in general and the provinces in the country in particular. Dong Thap province is a locality that is making rapid progress in economic development, so the calculation of TFP helps financial managers see more clearly the economic growth situation of the province in the past period. There were times when there were economic development policies in-depth to catch up with the changes of the country and the world.

Dong Thap is a province with advantages in border economic development, the region's socio-economic situation has achieved many significant achievements in recent years. The average economic growth rate in the period 2016 - 2020 is 6.44% per year - the financial structure shifts positively. The infrastructure system is interested in investment (Dong Thap's Provincial Bureau of Statistics, 2021). However, at present, the resources and favorable factors and strengths of the province have not been exploited, used effectively; economic restructuring, especially in agriculture, industry, and services, is still slow. Industries with high scientific and technological content and consulting services, technology transfer eddy out.

To have breakthrough orientations in some sectors and sectors of the province. In the future, Dong Thap needs to have an overall picture of productivity, directly connect productivity indicators with economic growth indicators, and identify productivity growth targets associated with the 'province's financial growth targets for the period 2021 - 2025. This study aims to estimate the growth rate and the proportion of 'TFP's contribution to the economic growth of Dong Thap province in the period of 2011 - 2015 and 2016 - 2020. Besides, this study also develops different productivity growth scenarios of the region from 2021 to 2025, contributing to the management and macro-orientation of socio-economic development. This research also supports providing the scientific basis for making policies, development plans, and practical solutions to guide and run the socio-economic development process of the province to 2025, oriented to 2030.

2. Theoretical basis

2.1. Total Factor Productivity (TFP)

TFP (Total Factor Productivity) is an essential target for evaluating productivity, quality of growth, the contribution of technological factors, and efficiency of the economy at the national level (Le & Nguyen, 2006; T. Nguyen, Nguyen, & Nguyen, 2012; Pham & Nguyen, 2012), as well as provincial/city level (N. V. Nguyen & Tran, 2006; P. V. Nguyen et al., 2000; Tang, 2005; Tran, 2010). Le and Nguyen (2006) mentioned that TFP shows the contribution of technological progress and the legal framework, law enforcement, the effectiveness of administrative apparatus activities, and part of human capital. Tran (2010) said that TFP depends on two factors: technological and technical advances, efficiency using capital and labor inputs. In Viet Nam, the Vietnam Productivity Centre (2020) with a productivity approach reflects the

contribution of invisible factors such as knowledge, experience, labor skills, goods - services, quality of investment capital, mainly the quality of technological equipment, management skills. Its impact is not as direct as part productivity but through the transformation of tangible factors, especially labor and capital.

In general, in this study, TFP is considered a target reflecting the production results brought about by improving capital use and labor efficiency thanks to technological innovation, production integration, management improvement, and labor qualification improvement. Growth of TFP change in production factors that differ from traditional input manufacturing factors measuring by researchers (capital, labor), for example, technological advances, changes in management methods (legal framework, law enforcement, operational efficiency of the administrative apparatus, progress in corporate governance skills, etc.) and improvement of human capital (education, health, working attitude ... of the employee). Accordingly, we can divide the production result into 03 parts: the part generated by capital, labor, and total factor productivity. Thus, production growth does not need to increase delivery or increase wealth. Still, the production results per output may be more fantastic by optimizing labor resources and capital, improving technological processes, and improving management processes.

2.2. Method of estimating Total Factor Productivity (TFP)

TFP reflects the quality of growth and the sustainable development of the economy, which is the basis for analyzing each 'industry's macroeconomic efficiency, each locality, each country. According to Park (2012), the majority of TFP measurement methods assume a neoclassical production function for the economy as follows:

$$Y = AF(K, L) \tag{1}$$

Get logs and micro-segments on both sides over time we get:

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \varepsilon_K \frac{\Delta K}{K} + \varepsilon_L \frac{\Delta L}{L} \tag{2}$$

Where: $\frac{\Delta Y}{Y}, \frac{\Delta K}{K}, \frac{\Delta L}{L}, \frac{\Delta A}{A}$ corresponding to the output growth rate (Output, often used as GDP or VA); capital; labour; and total factor productivity (TFP). Two parameters, ε_K and ε_L elasticities of output by capital and labour, in turn. Thus, formula (2) can be shortened as follows:

$$g_Y = g_{TFP} + \varepsilon_K g_K + \varepsilon_L g_L \tag{3}$$

Where: g_Y is the growth rate of GDP, g_{TFP} is the rate of increase in total factor productivity, g_K is the rate of capital increase, and g_L. is the rate of increase in labor. When the production function is Cobb-Douglas, the rate of increase in total factor productivity is calculated simply by the formula (4):

$$g_{TFP} = g_Y - \varepsilon_K g_K - \varepsilon_L g_L \tag{4}$$

TFP is calculated according to the formula (4), which is also the Solow residue. Estimating the TFP usually uses two main methods: growth accounting and regression-based regression, also known as growth regression.

2.2.1. Growth accounting

The simple method of accounting for growth uses the available data on output (GDP), input (capital, labor), and the elasticity of GDP according to input factors to calculate the contribution of TFP to economic growth. However, applying this method is that the elasticity

factor of the output according to each input element is not available. To address this, economists impose the assumption that the competitive labor market and the constant returns to scale imply that the elastic coefficient of labor GDP is equal to the proportion of remuneration in GDP. The elasticity of GDP by capital is approximately equal to one minus the proportion of labor remuneration in GDP (equal to 1- ε_L) (T. Nguyen et al., 2012; P. V. Nguyen et al., 2000; Park, 2012). Parameters are the elasticity of GDP by labor which is approximately equal to the proportion of labor remuneration per GDP taken from information about the indicators of the National Account System (Table I/O), or also someone assumes ε_L = 0.60 (Tran, 2010; Park, 2012), or assuming they range from 0.55 to 0.70 in OECD economies (Park, 2012).

2.2.2. The regression-based regression

Using a growth recall model is another approach to calculating TFP at the macro level. At that time, the output growth rate was considered a dependent variable; independent variables were capital and labor growth rate (Meeusen & Broeck, 1977). Technological efficiency is often present in exponential time trends, where according to which technological progress is the movement of production functions over time at a reasonable speed. The standard production function used in a logarithm is used as a logarithm as follows:

$$\ln Y_t = c + \varepsilon_K \ln K_t + \varepsilon_L \ln L_t + U_t \tag{5}$$

In particular, U_t is random interference, Y_t, K_t, L_t is the output, capital reserves and labor in year t. When running OLS revoicing, we achieve the estimated value of the resembles. ε_K and ε_L are the proportion of factors of capital and labour inputs. This method overcomes the rigorous assumption of the form of function, allowing for greater flexibility in using different types of functions, such as Cobb-Douglas or the general form of a production function. This paper does not impose a competitive labor market, nor does it require data on the proportion of remuneration per GDP, and can calculate other inputs easily. Also, the revoicing method can be used with time series metrics or cross-figures. However, this method also has some data glitches and difficulties related to the volume economy method and requires a long-time chain.

Currently, the census data of Dong Thap Provincial Statistics Office on the income of employees (salary, mixed-income, other production tax (card tax, natural resources tax, etc.) only from 2001 to 2010 (only even year). Assuming $\varepsilon_K + \varepsilon_L = 1$. This method is also carried out in the studies of authors Do and Nguyen (2017), D. N. Dang and Le (2015), Le and Nguyen (2006).

2.3. Method of estimating capital (K)

There are two main methods for calculating Capital in year t. The first method is to calculate the volume of production capital through investigations directly. The second method is to calculate Capital using the continuous inventory method (PIM: The perpetual inventory method). In PIM techniques, Nehru and Dhareshwar (1993) proposed the use of proportional depreciation as the most favorable in calculations because it is, says, approaching other methods of depreciation and simple in calculations. According to this method, Capital at the time of t is calculated as follows:

$$K_t = (1 - \varphi)^t K_o + \sum_{i=0}^{t-1} I_{t-i} (1 - \varphi)^i \tag{6}$$

Where: φ is the depreciation rate. The above formula is equivalent to the following formula:

$$K_t = (1 - \varphi)K_{t-1} + I_t \tag{7}$$

$$K_{t-1} = (K_t - I_t)/(1 - \varphi) \tag{8}$$

K_0 is Capital at the beginning we choose to calculate. If you get K_0 and φ, it is easy to calculate the figures in K-t. with t is the moment we want to calculate.

The initial capital stock (K_0): This method was proposed by Harberger (1988) on the assumption that if the capital ratio (The Capital - Output ratio) was not changed in each period, the growth rate of capital was equal to the growth rate of output in this period. Thus, words have the following equation:

$$K_0 = \frac{I_0}{(g + \varphi)} \tag{9}$$

φ is the rate of depreciation, and g is the average investment growth rate of the period before the calculation of K_0. With the existing data series of Dong Thap province in the period of 2001 - 2020, the study will estimate capital reserves (Kt) according to previous studies by authors D. N. Dang and Le (2015), Do and Nguyen (2017), Le and Nguyen (2006). In particular, the author will choose one year as the root and estimate the capital reserves. Then proceed to estimate the previous 'years' capital reserves and after the year selected as the root.

3. Data and methods

3.1. Data

The study uses second-level data from the Statistical Year and Statistics Department of Dong Thap province from 2001 through 2020, such as GRDP comparative price 2010, GRDP current price, the number of working workers, Fixed asset investment capital compared 2010, current price. For data of the period before 2010, it will be converted according to Circular 02/2012/TT-BKHĐT of the Ministry of Planning and Investment (2012): Regulations in 2010 as the original year instead of the original year 1994 to calculate statistical indicators according to comparative prices.

3.2. Calculation process

3.2.1. Estimate of capital (K)

Capital estimates (K) are made using the continuous inventory method. The initial capital reserve (K_0) is determined at the time of initial calculation. Currently, Dong Thap's time chain is from 2001 - 2020, the proposed base capital (K_0) placed in the center (2010 is the original year) is calculated according to the formula (9), with g being the average GRDP growth rate in Dong Thap province in the period before the calculation of, φ is the rate of deduction, it was the fixed asset investment capital at the comparative price in 2010. After calculating capital in the base year (in 2010), the author applies formulas (7) and (8) to calculate capital reserves for other years.

3.2.2. Estimated rate of depreciation (φ)

The depreciation rate is the depreciation of the entire 'economy's fixed assets compared to the full price of fixed assets of the entire economy each year. Some authors have assumed a depreciation rate for other economies of 0.06 (Corrado, Hulten, & Sichel, 2009) or sensitivity analysis to consider the depreciation rate fluctuation to Kt. In Vietnam, the Ministry of Finance gives a depreciation rate of 5%, later the depreciation time is shorter, so the depreciation rate increases. Paper is based on the guidance of the Circular of the Ministry of Finance on the depreciation period of each asset type and the I/O table with data on the production value of products considered as fixed assets for production. Thus, we get depreciation rate figures. Based on actual research in the factory, many devices have run out of depreciation but are still in use; therefore, the actual depreciation period is usually more extended than the theoretical average;

the proposed depreciation rates are as follows: From 2000 2000 100 years ago, depreciation 5%; From 2001 to 2005, depreciation was 5.5%; From 2006 to 2010, depreciation was 6%; From 2011 to 2020, depreciation 6.5%; From 2021 to 2025, depreciation is 7.0%.

3.2.3. Estimate of capital and labour contribution (ε_K and ε_L)

Assuming a yield that is not changed by scale when receiving a proportion of remuneration on the GRDP of localities, the authors calculated the elasticity of output by the capital by minus the proportion of labor remuneration on GRDP (1-ε_L). The capital and labor contribution weight are estimated based on the Cobb-Douglas production function using the smallest squared method (OLS – Ordinary Least Squares) by Equation (5). The author chooses the time series for the period 2000 - 2020 and is unified in how variables are measured over time to ensure the volume economy 'model's assumptions. Estimates show that the capital contribution weight (ε_K) is 0.3524. The contribution to labor (ε_L) is 0.6476 used to estimate the growth rate and contribute TFP to Dong Thap 'province's economic growth.

3.2.4. Estimates of contributions of Capital, Labor, TFP to economic growth

When the depreciation rate (φ), the contribution ratio of capital ε_K) and labor ε_L, the economic growth rate (g_{GRDP}), the growth rate of capital (g_K), the growth rate of labor (g_L) over the years, each stage, the team applied the formula (4) to calculate the TFP growth rate for each period or stage. Thus, TFP calculated from this study includes the contribution of factors other than the number of employees (L) and the size of capital (K) (such as technology, the management level, public service, administrative policies, skills, and attitudes of employees in enterprises, etc.).

The formula (4) also shows that the GRDP (g_{GRDP}%) growth rate contributed by labor is $\varepsilon_L g_L$%, contributed by the capital of $\varepsilon_L g_L$%, and contributed by synthetic factors (TFP) is g_{TFP}%. If we consider from the perspective of the proportion of contribution to growth, we calculate the contribution of labor, capital, TFP to economic growth according to the following formulas:

The contribution of Labor, Capital, and TFP growth to GRDP growth:

$$dg_L = \frac{\varepsilon_L g_L}{g_{GRDP}} \tag{10}$$

$$dg_K = \frac{\varepsilon_K g_K}{g_{GRDP}} \tag{11}$$

$$dg_{TFP} = \frac{g_{TFP}}{g_{GRDP}} \tag{12}$$

4. Research results and discussions

4.1. Results of analysis of the status of TFP in Dong Thap province

4.1.1. Current state of labour productivity

Labor Productivity (LP) measures the efficiency of labor use of the economy, characterized by the close relationship between an output and labor indicators to produce it. Productivity is one of the critical factors in impacting competitiveness, especially in global competition, the development of science and technology, and 'today's knowledge economy. In this study, Dong Thap 'province's labor productivity is calculated based on provincial statistics on GRDP and the number of workers aged 15 years and older working in the economy. Table 1 shows the calculation of the labor productivity of Dong Thap province in 2011 - 2020.

Table 1

Status of labour productivity in Dong Thap province

Year	GRDP current price (mil. VND)	GRDP constant 2010 (mil. VND)	Labour (person)	LP current price (mil. VND /person)	LP constant 2010 (mil. VND /person)	g_{LP} (%)
2010	30,287.236	30,287.236	949,590	31.90	31.90	14.02
2011	41,703.140	33,296.394	971,177	42.94	34.28	7.49
2012	44,026.577	35,410.208	976,011	45.11	36.28	5.82
2013	48,316.026	37,407.443	979,314	49.34	38.20	5.28
2014	53,471.989	39,502.988	992,312	53.89	39.81	4.22
2015	57,208.361	41,886.951	1,004.347	56.96	41.71	4.76
2016	62,221.079	44,227.237	1,016.781	61.19	43.50	4.30
2017	68,288.574	46,898.232	1,036.381	65.89	45.25	4.03
2018	75,875.880	50,237.579	1,050.688	72.22	47.81	5.66
2019	80,703.950	53,485.850	1,078.692	74.82	49.58	3.70
2020	87,283.141	57,231.416	1,094.872	79.72	52.27	5.42
Stage						
2011 - 2015						5.51
2016 - 2020						4.62

Source: Author's calculations from the Statistical yearbook (2021)

The labor productivity of Dong Thap province since 2010 has improved significantly. Annual productivity increased compared to the previous year, with an average increase in 2011 - 2015 of about 5.51% per year and the period 2016 - 2020 of about 4.62%. In 2020, Dong Thap 'province's labor productivity reached VND 79.72 million/labor (actual price) and reached VND 52.57 million/labor (comparative price in 2010), up 5.42% compared to 2019. This data is a positive trend of the province in recent years in improving labor productivity. The increase in labor productivity has tremendous significance for 'society's development. It is the driving force for all 'countries' socio-economic development and is essential in decisions at the micro and macro level.

4.1.2. Status of use of investment capital

The ICOR coefficient is a synthetic economic target reflecting how much additional capital is needed to increase by 01 GRDP. The ICOR coefficient varies depending on the socio-economic situation in each period, depending on the investment structure and capital use efficiency. If the ICOR coefficient is low, it proves that the investment is highly effective and vice versa. However, according to the law of decreasing margins as the economy grows, ICOR

will increase, i.e., to maintain the same growth rate needs a higher proportion of investment capital than GRDP. Therefore, when analyzing the efficiency of investment capital, attention must be paid to the characteristics of the time lag of the investment capital, i.e., the capital put into practice must be after a certain period to produce production results.

Table 2

Status of investment capital in Dong Thap province

Year	GRDP current price (mil. VND)	GRDP constant 2010 (mil. VND)	Investment capital current price (mil. VND)	Investment capital constant 2010 (mil. VND)	ICOR (times)
2010	30,287.236	30,287.236	7,299.346	7,299.346	1.77
2011	41,703.140	33,296.394	7,553.209	6,430.707	2.14
2012	44,026.577	35,410.208	8,555.671	7,173.435	3.39
2013	48,316.026	37,407.443	8,653.272	7,275.470	3.64
2014	53,471.989	39,502.988	11,304.100	9,073.000	4.33
2015	57,208.361	41,886.951	12,677.836	10,076.970	4.23
2016	62,221.079	44,227.237	14,596.457	11,697.754	5.00
2017	68,288.574	46,898.232	16,670.744	12,128.939	4.54
2018	75,875.880	50,237.579	16,457.482	13,508.192	4.05
2019	80,703.950	53,485.850	20,687.497	13,591.539	4.18
2020	87,283.141	57,231.416	23,382.391	14,648.711	3.91
Stage					
2011 - 2015					3.59
2016 - 2020					3.97

Source: Author's calculations from the Statistical yearbook (2021)

According to the data, to create 01 GRDP, it must spend about 03 - 04 VND of investment capital in 2010 - 2015. Between 2011 and 2015, the average ICOR coefficient of Dong Thap is 3.59. That is, to create 01 GRDP, it needs 3.59 VND of investment capital. In the period 2016 - 2020, the ICOR coefficient is 3.97. In general, the ICOR coefficient of Dong Thap province has increased unevenly over the years and tends to decrease from 2010, 10 years later. This data is a sign that the efficiency of using the 'province's investment capital is increasing.

4.1.3. 'TFP's growth and contributions

Table 3 shows that TFP growth in Dong Thap province is relatively stable in both 2001 - 2015 and 2016 - 2020, with an average growth rate of 2.31% per year and 1.93% per year, respectively. The trend shows that TFP is steadily increasing. Considering three factors that affect GRDP growth, the growth rate of capital, labor, and TFP, which has the highest growth rate with an average growth rate in the period of 2011 - 2015 is 10.91%, 2016 - 2020 is 9.59% (capital increase but the growth rate tends to decrease). The growth rate of labor in 2011 - 2015 is 1.13%, 2016 - 2020 is 1.74% (labor increases, but the growth rate tends to increase slightly). Thus, in terms of trends, fixed capital and labor all tend to increase slowly, while TFP tends to increase rapidly in recent years.

Table 3

TFP's growth rate and contribution to Dong 'Thap's economic growth (%)

Year	g_{GRDP}	g_K	g_L	g_{TFP}	dg_K	dg_L	dg_{TFP}
2010	15.80	13.49	1.56	10.03	30.10	6.38	63.52
2011	9.94	10.62	2.27	4.72	37.68	14.82	47.50
2012	6.35	8.04	0.50	3.19	44.66	5.08	50.27
2013	5.64	7.83	0.34	2.66	48.90	3.89	47.21
2014	5.60	12.90	1.33	0.20	81.15	15.34	3.51
2015	6.03	12.60	1.21	0.81	73.60	13.01	13.39
2016	5.59	12.59	1.24	0.35	79.38	14.35	6.27
2017	6.04	10.81	1.93	0.98	63.07	20.67	16.26
2018	7.12	9.22	1.38	2.98	45.63	12.56	41.82
2019	6.47	8.15	2.67	1.87	44.40	26.69	28.90
2020	7.00	7.29	1.50	3.46	36.67	13.87	49.46
Stage							
2011-2015	6.70	10.38	1.13	2.31	54.59	10.90	34.51
2016-2020	6.44	9.59	1.74	1.93	52.48	17.50	30.01

Source: Author's calculations from the Statistical yearbook (2021)

TFP's contribution to GRDP growth in 2020 will be around 49.46%, a rapid increase from previous years. 'TFP's contribution to GRDP growth for the whole period of 2016 - 2020 will be about 30.01%, slightly reduced compared to 2011 - 2015. This data is due to lower economic growth rates in 2016 - 2020 than in 2011 - 2015. However, the general trend shows that the contribution of TFP to Dong Thap 'province's economic growth is increasing. The input factors are capital and labor are being used more effectively in creating output results. That is a positive change of the economy towards focusing on the quality of growth, such as improving labor quality, capital quality, applying for technical and technological advances, and focusing resources on higher economic efficiency areas.

4.2. TFP Growth Scenarios in Dong Thap Province

Based on the status analysis for the period 2011 - 2015 and 2016 - 2020, the study proposes four growth scenarios (g_{GRDP}) associated with four productivity orientations (g_{TFP}, dg_{TFP}) for Dong Thap province in the period of 2021 - 2025, namely: non-growth, low growth, medium growth, and high growth. Besides, with each growth plan, the analysis is carried out with four scenarios with the change of labor growth indicators g_L, capital reserve growth (g_K), the contribution of capital (ε_K), and labor (ε_L). The plans are based on assessing the conformity with the 'province's views and development goals set in the general development conditions of the region and the whole country to assess the ability to achieve according to different levels of impact from the external context. Besides, the simulation of other 'indicators' change is based on the average fluctuation of that target in the past. The calculation results show that the average difference in labor growth rate and capital reserves between 2001 - 2020 is 0.68% and 2.32%, respectively.

4.2.1. Options: Constant economic growth rate

Economic growth in the period 2021 - 2025 remained the same and held at 6.44%. With the original scenario, keep the labour growth rate g_L, capital growth (g_K), contribution of capital (ε_K) and labour (ε_L). 'TFP's growth rate remained at 1.93%, and 'TFP's contribution to economic growth was 30.01%. Scenario 1 assumes that the 'economy's capital reserves increased by 11.91%, and the remaining indicators remained the same. Capital reserve growth, but the growth rate is still 6.44%; this showed that the ineffective use of capital led to a decrease in TFP growth and contributions of 1.12% and 17.32%, respectively. Scenario 2, with the assumption of attracting the 'economy's workforce, increased by 2.42%, and the remaining targets remained the same. Labor growth, but the growth rate is still 6.44%; this shows that ineffective employment and reduced labor productivity result in TFP growth and contributions reaching only 1.49% and 23.18%, respectively. However, the level of growth and TFP contribution in scenario two decreased slightly compared to Scenario 1.

Scenario 3 assumes the increasing use of capital reserves in the economy and the contribution of increased capital. At that time, the growth rate and capital contribution reached 11.91% and 40.24%, respectively. Economic growth remained the same, resulting in a relatively low TFP contribution compared to the original scenario; like Scenario 4, the increasing employment of workers in the economy, labor contribution increases. The growth rate and contribution of labor reached 2.42% and 69.76%, respectively. The level of growth and contribution of TFP to growth decreased slightly compared to the original scenario.

Table 4

TFP growth scenarios in Dong Thap province for the period 2021 - 2025 (%)

Indicators	Original scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4
g_L	1.74	1.74	2.42	1.74	2.42
g_K	9.59	11.91	9.59	11.91	9.59
ε_K	35.24	35.24	35.24	40.24	30.24
$\varepsilon_L = 1 - \varepsilon_K$	64.76	64.76	64.76	59.76	69.76
(i) Constant economic growth rate: $g_{GRDP} = 6.44$					
g_{TFP} (i)	1.93	1.12	1.49	0.61	1.85
dg_{TFP} (i)	30.01	17.32	23.18	9.43	28.75
(ii) Low economic growth rate: $g_{GRDP} = 6.50$					
g_{TFP} (ii)	1.99	1.17	1.55	0.67	1.91
dg_{TFP} (ii)	30.64	18.07	23.87	10.24	29.39
(iii) Medium economic growth rate: $g_{GRDP} = 7.00$					
g_{TFP} (iii)	2.49	1.67	2.05	1.17	2.41
dg_{TFP} (iii)	35.60	23.92	29.31	16.65	34.43
g_{TFP} (iii) - g_{TFP} (ii)	0.50	0.50	0.50	0.50	0.50

Indicators	Original scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4
dg_{TFP} (iii) - dg_{TFP} (ii)	4.95	5.85	5.44	6.41	5.04
(iv) High economic growth rate: $g_{GRDP} = 7.50$					
g_{TFP} (iv)	2.99	2.17	2.55	1.67	2.91
dg_{TFP} (iv)	39.89	28.99	34.02	22.21	38.80
g_{TFP} (iv) - g_{TFP} (iii)	0.50	0.50	0.50	0.50	0.50
dg_{TFP} (iv) - dg_{TFP} (iii)	4.29	5.07	4.71	5.56	4.37

Source: Author's calculations from the Statistical yearbook (2021)

4.2.2. *Low, medium and high growth rate*

The low, medium, and high growth rate with the economic growth rate in 2021 - 2025 is more positive than 6.5%, 7.0%, and 7.5%, respectively, corresponding to the five scenarios, it is easy to see that the difference in TFP growth in each option is equal to the economic growth difference between options. Specifically: g_{TFP} (iii) - g_{TFP} (ii) = g_{GRDP} (iii) - g_{GRDP} (ii) = 0.5%; g_{TFP} (iv) - g_{TFP} (iii) = g_{GRDP} (iv) - g_{GRDP} (iii) = 0.5%. From a specific perspective, each scenario and only the growth plan changes. At that time, increased economic growth will lead to an increased level of TFP contribution; but this level of contribution tends to increase slowly. Specifically illustrated with the original script: dg_{TFP} (iii) - dg_{TFP} (ii) = 4.95%; dg_{TFP} (iv) - dg_{TFP} (iii) = 4.29%. This result shows that the increased economic growth rate and the retention of resources will increase TFP growth and contribution. In the long term, without improving labor and capital reserves, the TFP contribution to economic growth will slowly increase.

5. Policy conclusions and implications

5.1. *Conclusions*

Dong Thap 'province's economic growth using the Cobb-Douglas production function method based on the data series for the period 2001 - 2020. The results of the study show that the contribution of capital (ε_K) is 0.3524, the contribution of labour (ε_L) is 0.6476; the average TFP growth rate of Dong Thap province in each period of 5 years 2011 - 2015 and 2016 - 2020 is 2.31% per year and 1.93% per year, respectively; 'TFP's contribution to economic growth was 34.51% and 30.01%, respectively. Based on the status analysis of the period 2011 - 2015 and 2016 - 2020, the study proposes four growth scenarios associated with four productivity orientations for Dong Thap province in the period of 2021 - 2025, namely: non-change growth, low growth, average growth, and high growth.

5.2. *Policy implications*

To further improve the growth rate and contribution ratio of TFP, it is necessary to study to accelerate the economic restructuring towards increasing the proportion of economic sectors with TFP, the efficiency of capital and high labor productivity, and the internal economic restructuring with more effective sectors. Localities in general and Dong Thap province always promote economic growth next year higher than the previous year. Therefore, the non-change growth plan is less feasible in practice. For the other three options, the average growth plan is the most feasible. To ensure economic growth from 2021 to 2025 with an average growth rate of 7% per year, the provincial government needs to attract better investment, calling for investment in

industries that exploit the advantages of its high-tech agriculture. In invisible general, this problem increases capital reserves and increases labor productivity, indirectly increasing the contribution of labor to economic growth. Currently, Dong 'Thap's provincial government is considered a "dynamic and creative" government. The province also has many models of agricultural economic development that are considered typical of the whole country. Therefore, attracting investment capital in high-tech agricultural development is entirely appropriate and very feasible. Specifically, to achieve the average economic growth plan or higher, the provincial government should focus on attracting investment capital of enterprises in high-tech agriculture, producing organic products, and exporting these products to regional and world markets. Besides, it is necessary to continue the policy of strongly encouraging education development - training, science-technology, increasing investment, applying science and technology in management, and improving human resources quality.

TFP analysis is not new research in Vietnam, but this study has improved collecting, processing, and verifying data sources. This paper plays a significant role because it serves the TFP calculation method following Dong Thap 'province's annual statistics. Also, the study has proposed different productivity growth scenarios to provide practical orientations, running the socio-economic development process of the province to 2025, oriented to 2030.

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