

# Labor Productivity Growth and Its Contribution to the GRDP of Thai Nguyen Province, Vietnam

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## ABSTRACT

*This research focuses on analyzing the trajectory of labor productivity growth and its consequential impact on Thai Nguyen Province's Gross Regional Domestic Product (GRDP) between 2017 and 2022. By employing statistical methodologies and descriptive statistics sourced from the Statistical Office of Thai Nguyen Province, this study illuminates the dynamic nature of labor productivity within the province. Over this period, there was a consistent fluctuation in productivity levels, reflecting an overall upward trend. Notably, the average productivity growth rate stood at a substantial 12.61%, showcasing the province's evolving economic landscape. Remarkably, 2021 emerged as the year with the most significant productivity surge, juxtaposed against the comparatively sluggish growth witnessed in 2020. Additionally, this investigation firmly establishes labor productivity as a predominant driver of GRDP growth in Thai Nguyen Province, surpassing the influence exerted by capital and labor inputs. These findings underscore the paramount importance of labor productivity as the linchpin of economic progress within the province, signifying its pivotal role in shaping the region's economic trajectory compared to other contributing factors.*

## KEYWORDS

*productivity; labor productivity; growth; GRDP; Thai Nguyen Province*

## INTRODUCTION

Economic growth rates and the transition from agriculture to other sectors have shown signs of slowing down, resulting in a low per capita income (Vu Minh Khuong, 2016). Productivity growth used to be the primary factor driving Vietnam's economic growth in the early years of reform, but it has gradually declined in the past decade, accompanied by a decrease in the growth rate of the labor force (Nguyen Duc Thanh and Ohno Kenichi, 2018). Rather than improving the labor force to sustain achievements, capital investment has become the primary source of economic growth in the upcoming phase. However, as noted by Bodewig and Magnusson (2014), this model is not sustainable or suitable for Vietnam to ensure the maintenance of high growth rates. Moreover, while Vietnam's labor force continues to grow, the scale of the youthful workforce is diminishing. This signifies that Vietnam cannot rely on labor scale for success as it did in previous stages; instead, the focus should shift toward enhancing the productivity of its workforce (Patriana, S. F, 2022 and; Bodewig and Magnusson, 2014; ILO, 2015).

In recent years, Thai Nguyen has achieved significant milestones in its socio-economic development, consistently maintaining a relatively high growth rate. During the period 2010-2022, the average Gross Regional Domestic Product (GRDP) growth rate at constant

prices exceeded 10%. The highest GRDP growth rate was recorded in 2015, reaching 33.21% (Statistical Office of Thai Nguyen Province, 2020). The per capita income in Thai Nguyen has significantly increased from 1,750 thousand Vietnamese dong per month in 2010 to 6,958 thousand Vietnamese dong per month in 2019, considerably surpassing the national average (4,295 thousand Vietnamese dong per month in 2019) (Thu Thuong, 2020). Prior to Samsung's presence in 2013, Thai Nguyen was known for its low growth rate, low investment resources, a sparse enterprise base, low budget revenue, negligible contribution to exports and imports, and insignificant role of Foreign Direct Investment (FDI). However, presently, the scale and structure of Thai Nguyen's economy have transformed in nearly every significant aspect: economic growth, investment attraction, industrial production, imports and exports, budget revenue, job creation, and particularly, Thai Nguyen's position in the national economy and its international image (Vu Thanh Tu Anh et al., 2020). Despite considerable strides, recent times have unveiled inherent weaknesses in the province's economy, specifically, the GRDP growth rate showing signs of deceleration, low-quality growth lacking sustainability, and the province's economic efficiency and competitiveness remaining modest. Indicators such as economic growth, industrial production, investment, and imports and exports in Thai Nguyen also heavily rely on the FDI sector. Hence, sustaining and enhancing labor productivity in Thai Nguyen emerges as a critical issue requiring attention, as productivity escalation stands as the pathway toward ensuring stable and sustainable economic growth.

## LITERATURE REVIEW

Related to the issue of labor productivity at the national level, studies consistently indicate that Vietnam's labor productivity remains relatively low compared to countries in the region and Asia. Of particular concern is Vietnam's labor productivity growth, which significantly lags behind direct competitive counterparts in production and export of goods such as China, Thailand, India, and others. In 2006, Vietnam's labor productivity was only half that of China's and one-third of ASEAN countries (Phan Diep, 2009). The Asian Productivity Organization (APO) reports in 2010, 2009, and 2008 compared labor productivity in several Asian countries, highlighting Vietnam's position among the lowest within ASEAN and the broader Asian region (in 2010, even lower than Laos, only higher than Cambodia and Myanmar). Nguyen Anh Bac (2014) noted that Vietnam's annual average labor productivity growth from 2007 to 2013 was merely 3.9%, significantly lower than China's 8.5% and India's 6%. Furthermore, qualitative assessments regarding Vietnam's labor productivity concerning labor structure and skills during 2007-2013 have been made. However, these evaluations mainly cover the national labor productivity and lack specific comparisons between sectors and trends in labor shifts.

Studies by Te and Dong (2013) evaluate the impact of economic structural changes on labor productivity, focusing on the influence of economic structural shifts on labor structure in three sectors: industry, agriculture, and services. They used elasticity coefficients to measure the shifting degrees in specific periods but did not account for how labor shifts alter labor productivity within those sectors. Another study by Nguyen Thi Dong (2013) assesses the relationship between labor productivity growth and national competitiveness from 2005 to 2012. This study highlights that Vietnam's labor productivity growth primarily results from shifts from agriculture to industry and services. However, sluggish labor productivity growth in these two areas has led to a declining national competitiveness. Hence, to enhance labor productivity, Vietnam needs educational innovations, enhanced organizational discipline, production collaboration, regarding enterprises as the drivers of innovative activities, knowledge, and technology.

In Marco Breu and colleagues' research (2011) on Vietnam's sustainable growth, labor productivity emerges as a challenge that needs improvement if Vietnam aims to maintain a high economic growth rate. Specifically, to sustain the targeted growth rate of around 7-8% annually until 2020 set by the Government, Vietnam needs to increase labor productivity growth by more than 1.5 times compared to the 2005-2010 period.

Besides labor productivity, productivity is also measured through capital productivity and Total Factor Productivity (TFP). The choice of productivity indicators varies depending on specific cases and data conditions. Sargent and Rodriguer (2001) suggest that Total Factor Productivity (TFP) is suitable for examining long-term productivity trends in the economy. Conversely, according to Nguyen and Kenichi (2018), when examining short and medium-term scenarios, especially with doubts about the growth process or unreliable capital stock data, labor productivity becomes a more appropriate indicator to use. Syverson (2010) defines productivity as efficiency in production, represented by the output gained from a certain input. Therefore, it is often expressed as the ratio of output to input. There are several methods to measure productivity, with labor productivity being one of the most commonly used criteria. Hence, labor productivity measures the extent to which the workforce contributes value to the economy or enterprise (Koch and McGrath, 1996).

Molnar and Chalaux (2015) divide Total Factor Productivity growth into sectoral labor productivity, comprising three effects: (1) intra-sectoral effect; (2) shift effect; and (3) cross effect or interaction effect. Their analysis shows that the service sector significantly contributes to overall labor productivity growth in emerging East Asian countries, both in enhancing labor productivity within this region and redistributing labor to the service sector. Similarly, Melchor-Ferrer (2020) analyzes structural changes in labor productivity in regions of Spain and Portugal from 2000 to 2015, considering business sectors' contributions and spatial distribution. Growth-share analysis was used to determine the components of overall productivity growth and identify the roles of different sectors. Asada (2020) applied this method to examine the impact of sectoral labor productivity growth on overall labor productivity growth in emerging East Asian countries and highlighted sectors' contributions to overall labor productivity growth.

## **THEORETICAL FRAMEWORK**

### **Concept**

Productivity serves as a crucial metric reflecting an economy's efficiency. It can be measured at various levels: the macroeconomic level, sectoral level, organizational level, enterprise level, or for individual persons. According to Greenlaw et al. (2018), labor productivity represents the value each worker generates per unit of their input. As per the Organization for Economic Co-operation and Development (OECD), "labor productivity is the efficiency of labor in combining input factors to generate added value over a specific period." Specifically, labor productivity is gauged by the ratio of total value added to the amount of labor input utilized.

### **Classification of Labor Productivity**

Labor productivity is commonly categorized into two types: individual labor productivity and social labor productivity. Individual labor productivity is measured by the quantity of completed products within a specific timeframe. Key determinants of individual labor productivity include work skills, work attitude, responsibility, tools, and working conditions. Social labor productivity is an indicator reflecting the work efficiency of the

workforce. Social labor productivity is often measured by the total domestic product per average labor during a reference period, usually within a year.

### **Role of Enhancing Labor Productivity**

For businesses, increasing labor productivity generates higher profits and opens investment opportunities for expanding production. For workers, increased labor productivity leads to higher wages and better working conditions. In the long term, enhancing labor productivity is significantly meaningful for creating employment opportunities for workers. For the government, increased labor productivity helps boost tax revenue, creates conditions for accumulation, expands production development, and enhances the welfare of the people. Conversely, economic growth and development also create factors that promote increased labor productivity. These include reallocating resources, economic structural shifts, focusing on high-productivity sectors, technological innovation, machinery, and equipment, resulting in a higher overall average labor productivity and faster growth.

In the context of international integration and fierce competition, labor productivity is the decisive factor determining the economic competitiveness of both the economy and individual businesses. Elevating labor productivity is a survival imperative for all developing countries, including Vietnam, as it correlates with improving the quality of growth, ensuring rapid and sustainable development, escaping the middle-income trap, and catching up with other regional nations.

### **RESEARCH METHODS**

To gain a comprehensive and accurate understanding of the current situation, as well as to predict trends and propose suitable solutions, this study relied on secondary data collected. These selected figures were chosen and provided based on the specific objectives of the research to serve the purpose of analysis and evaluation. Secondary data comprised information gathered from various sources, such as previous studies, statistical reports, data from the General Statistics Office of Vietnam, and the statistical office of Thai Nguyen province. The use of this data aimed to provide an accurate starting point for the analysis and forecasting process. Employing methods to analyze secondary data, this study aimed to identify trends and relationships among different factors. Thus, by comprehending the current reality, the research could offer forecasts and propose more specific solutions to address the researched issue.

Utilizing secondary data not only established transparency and credibility in the study but also provided reliable information to identify and propose more effective solutions for the specific issue under investigation. For measuring labor productivity according to Syverson (2011), various inputs can be chosen, such as the number of employees, working hours, or certain criteria reflecting labor quality adjustments (regular wages are often used in this latter role, based on the notion that wages reflect the marginal product of labor when not equalizing units). In this study, value-added serves as the measure for output, and the number of workers is the measure for input to calculate labor productivity.

$$\text{Labor productivity} = \frac{\text{Output value}}{\text{Labor quantity}}$$

The rate of growth in labor productivity is the ratio between the increase in labor productivity ( $\Delta p$ ) and the initial level of productivity ( $P_o$ ).

$$I_p = \frac{\Delta p}{P_o}$$

## RESULTS AND DISCUSSION

### *Labor Productivity in Thai Nguyen Province at Current Prices*

Labor productivity in Thai Nguyen Province during the period 2017-2022 at current prices shows a consistent upward trend over the years (Table 1). Labor productivity in Thai Nguyen Province categorized by economic sectors during the 2017-2022 period at current prices indicates that productivity in the Industrial and Construction sector reached the highest level, whereas the productivity in the Agriculture, Forestry, and Aquaculture sector remained the lowest among the three sectors contributing to the total GRDP of Thai Nguyen Province: Agriculture, Forestry, and Aquaculture; Industry and Construction; Services and net taxes on products.

**Table 1.** Labor Productivity in Thai Nguyen Province by Economic Sector during 2017-2022 at Current Prices

*Unit: Billion Vietnamese Dong*

Year	Total GRDP			Agriculture, Forestry and Aquaculture			Industry and Construction			Services and net taxes on products		
	Value	Labor Quantity	Labor Productivity	Value	Labor Quantity	Labor Productivity	Value	Labor Quantity	Labor Productivity	Value	Labor Quantity	Labor Productivity
2017	85,464.0	752,957	0.114	9,890.4	337,342	0.029	48,242.6	226,408	0.213	27,331.0	189,208	0.144
2018	98,518.2	760,743	0.130	10,690.0	310,971	0.034	56,380.2	234,927	0.240	31,448.0	214,845	0.146
2019	107,820.0	766,388	0.141	11,060.0	303,173	0.036	62,530.0	255,932	0.244	34,230.0	207,283	0.165
2020	116,008.2	757,957	0.153	13,391.0	293,367	0.046	67,284.7	261,565	0.257	35,332.4	203,025	0.174
2021	125,808.0	590,136	0.213	13,595.4	117,681	0.116	73,898.3	256,286	0.288	38,314.3	216,169	0.177
2022	141,482.34	601,999	0.235	14,318.92	108,464	0.132	83,123.73	261,103	0.318	38,401.05	232,432	0.165
<b>Ave rage</b>			<b>0.160</b>			<b>0.050</b>			<b>0.262</b>			<b>0.161</b>

*Source: Statistical Yearbook of Thai Nguyen*

Regarding the overall labor productivity of Thai Nguyen province, in 2017, the total workforce of the province was 752,957 people, with labor productivity at 0.114 billion dong per person. Over the period from 2017 to 2019, both the number of workers and labor productivity showed an increasing trend. In 2019, the highest number of workers was recorded at 766,388 people, with labor productivity reaching 0.141 billion dong per person. Moving into 2020 - 2021, the province's labor force tended to decrease. In 2020, the workforce numbered 757,957 people, decreasing further to 590,136 people in 2021. However, despite the declining labor force, the total GRDP continued to increase. Consequently, labor productivity in 2021 reached a significantly high level compared to previous years, hitting 0.213 billion dong per person.

During the 2017 - 2022 period, across the three key sectors contributing to Thai Nguyen's GRDP, labor productivity in the Agriculture, Forestry, and Aquaculture sector reached the lowest, averaging 0.050 billion dong per worker. Meanwhile, the Industrial and Construction sector had the highest labor productivity, averaging 0.262 billion dong per worker. Notably, all three sectors experienced a consistent upward trend in labor productivity over the years.

From 2017 to 2020, the Agriculture, Forestry, and Aquaculture sector employed the largest workforce among the sectors; however, its production value was substantially lower compared to the Industrial and Construction sector and the Service and Tax sectors.

Throughout this period, the labor productivity in the Agriculture, Forestry, and Aquaculture sector remained very low, ranging from 0.029 billion dong per person. Despite this, the workforce in this sector exhibited a declining trend from 337,342 people in 2017 to 293,367 people in 2020, dropping sharply to 117,681 people in 2021. This substantial reduction in the workforce alongside increased production led to the sector's labor productivity reaching 0.116 billion dong per person in 2021. Although the productivity increased significantly during 2017 - 2020, it remained significantly lower compared to the other sectors (0.288 billion dong per person in the Industrial and Construction sector and 0.177 billion dong per person in the Service and Tax sector by 2021).

In the Industrial and Construction sector, there was a general increase in production value, workforce, and labor productivity from 2017 to 2021. In 2017, the workforce in this sector was 226,408 people, with labor productivity at 0.213 billion dong per person. By 2021, the workforce increased to 256,286 people, and labor productivity rose to 0.288 billion dong per person, marking the highest workforce and labor productivity within the economic sectors contributing to Thai Nguyen's GRDP. In 2021, the production value in the Industrial and Construction sector was about five times higher than that of the Agriculture, Forestry, and Aquaculture sector and approximately twice as high as the Service and Tax sector. While the number of workers in the Industrial and Construction sector was 2.17 times that of the Agriculture, Forestry, and Aquaculture sector and 1.18 times that of the Service and Tax sector, the labor productivity was 2.5 times and 1.6 times higher, respectively.

Over the 2017 - 2021 period, the Service and Tax sector showed consistent growth in production value, workforce, and labor productivity. In 2017, the production value in this sector was 27,331 billion dong, employing 189,208 workers with labor productivity at 0.144 billion dong per person. By 2021, the production value rose to 38,314.3 billion dong, and the number of workers increased to 216,169, while labor productivity reached 0.177 billion dong per person. In 2021, this was the only sector that recorded an increase in the number of workers, while both the total provincial workforce and the number of workers in the Agriculture, Forestry, and Aquaculture sector and the Industrial and Construction sector experienced declines compared to 2020.

Analyzing the labor productivity data in Thai Nguyen province and the productivity within its main economic sectors contributing to the provincial GRDP, it is evident that the trend has been an increase in labor productivity across all economic sectors and a decline in the number of workers in the Agriculture, Forestry, and Aquaculture sector. This could be attributed to the significantly lower labor productivity in this sector compared to others. Thai Nguyen province, located in the midland mountainous area of Northern Vietnam, lacks advantages in exploiting Agriculture, Forestry, and Aquaculture, indicating the sound strategic direction taken by the provincial authorities in the 2021 - 2030 economic and social development strategy to reduce the proportion of Agriculture, Forestry, and Aquaculture and focus on developing the Industrial and Construction, and Service and Tax sectors.

### ***Labor Productivity of Thai Nguyen Province in Comparative Prices***

The labor productivity of Thai Nguyen province categorized by economic sectors in the 2017-2022 period, adjusted to comparative prices of 2010, demonstrated an increasing trend, rising from 0.087 billion dong per person in 2017 to 0.158 billion dong per person in 2022 (Table 2). The labor productivity of Thai Nguyen province, segmented by economic sectors in the 2017-2022 period, adjusted to 2010 comparative prices. Remarkably, the rate

of increase in labor productivity was at its lowest in 2020, reaching 5.88%. However, it sharply escalated to 37.04% in 2021.

Considering comparative prices, although the labor productivity of the Agriculture, Forestry, and Aquaculture sector was the lowest among the three contributing sectors to Thai Nguyen province's GRDP, during the research period, this sector experienced the highest growth rate in labor productivity. It fluctuated between 7.69% to 14.29%, even reaching an impressive increase of 157.14% in 2021. Meanwhile, the growth rate of labor productivity in the Service and Tax sector dipped to negative values in 2018 and 2021. The Industrial and Construction sector exhibited slow growth in labor productivity from 2019 to 2020; however, in 2021, it regained momentum with a 9.45% increase in labor productivity.

**Table 2.** Labor productivity of Thai Nguyen province by economic sector for the period 2017-2022 according to prices compared to the year 2010.

*Unit: Billion Vietnamese Dong*

Years	Total GRDP				Agriculture, Forestry and Aquaculture				Industry and Construction				Services and net taxes on products			
	Value	Labor Quantity	Labor Productivity	The rate of increase in labor productivity	Value	Labor Quantity	Labor Productivity	The rate of increase in labor productivity	Value	Labor Quantity	Labor Productivity	The rate of increase in labor productivity	Value	Labor Quantity	Labor Productivity	The rate of increase in labor productivity
2017	65,249.2	752,957	0.087		7,231.2	337,342	0.021		39,886.2	226,408	0.176		18,131.8	189,208	0.096	
2018	72,064.2	760,743	0.095	9.20	7,531.3	310,971	0.024	14.29	45,159.2	234,927	0.192	9.09	19,373.7	214,845	0.090	-6.25
2019	78,549.2	766,388	0.102	7.37	7,793.4	303,173	0.026	8.33	50,099.6	255,932	0.196	2.08	20,656.2	207,283	0.100	11.11
2020	81,883.0	757,957	0.108	5.88	8,116.7	293,367	0.028	7.69	52,484.3	261,565	0.201	2.55	21,281.9	203,025	0.105	5.00
2021	87,216.6	590,136	0.148	37.04	8,461.1	117,681	0.072	157.14	56,262.2	256,286	0.220	9.45	22,493.3	216,169	0.104	-0.95
2022	94,833.32	601,999	0.158	6.59	8,818.97	108,464	0.081	13.09	61,746.64	261,103	0.236	7.72	24,267.71	232,432	0.104	0.34
				<b>12.61</b>				<b>31.09</b>				<b>6.09</b>				<b>1.69</b>

Source: Statistical Yearbook of Thai Nguyen

Based on data from Table 3, during the period 2017 to 2022, labor productivity in Thai Nguyen province demonstrated an increasing trend, albeit with a decreasing rate of increase. The overall labor productivity increased from 0.114 billion VND per person in 2017 to 0.235 billion VND per person in 2022, with an average labor productivity during this period reaching 0.164 billion VND per year. The rate of increase in labor productivity in comparison to the baseline year of 2010 for Thai Nguyen province was 12.99% in 2017. Following a decline in subsequent years (2018-2020), the province achieved an impressively high rate of 36.84% in 2021. However, this rate dropped to 6.59% in 2022. Notably, the years 2019 to 2020, affected by the COVID-19 pandemic and negative impacts domestically and internationally, witnessed a considerably slower increase in labor productivity in Thai Nguyen compared to the pre-pandemic period (with rates of 7.37% and 5.88% in 2019 and 2020 respectively, in contrast to 12.99% in 2017). In 2021, thanks to resolute and flexible measures, both labor productivity and its rate of increase in Thai Nguyen province showed positive outcomes. Nevertheless, as of 2022, these indicators have exhibited a slower increase due to inflationary pressures and adverse effects stemming from the Russia-Ukraine military conflict.

In comparison to the national average, the labor productivity in Thai Nguyen province in 2022 exceeded by 47 million VND per worker. However, compared to some other regions, the labor productivity in Thai Nguyen remained average. When compared to larger provinces like Quang Ninh and Hanoi, Thai Nguyen's labor productivity is notably lower. In 2022, Quang Ninh's labor productivity was estimated at 406.6 million VND per worker, significantly higher than Thai Nguyen's at 171.6 million VND per worker. Additionally, Hanoi's labor productivity reached 291.3 million VND per worker, surpassing Thai Nguyen by approximately 56.3 million VND per worker. When considering the closest economic output value, Thai Nguyen lags behind Bac Giang in terms of labor productivity by 77.2 million VND per worker, indicating that the quality of labor and labor productivity play a pivotal role in enhancing the economic growth quality of Thai Nguyen.

**Table 3.** Summary of Labor Productivity and Rate of Labor Productivity Increase in Thai Nguyen Province, 2017-2022

Years	Labor productivity measured at current prices (Billion VND/worker/year)							The rate of increase in labor productivity measured at constant prices (%)						
	The whole province	Agriculture	Industry and Construction	Service and Commerce	State-Owned Sector	Non-State Sector	FDI	The whole province	Agriculture	Industry and Construction	Service and Commerce	State-Owned Sector	Non-State Sector	FDI
2017	0.114	0.029	0.213	0.144	0.221	0.065	0.267							
2018	0.130	0.034	0.240	0.146	0.243	0.073	0.299	9.20	14.29	9.09	-6.25	6.48	9.09	8.22
2019	0.141	0.036	0.244	0.165	0.268	0.079	0.340	7.37	8.33	2.08	11.11	6.87	7.69	13.57
2020	0.153	0.046	0.257	0.174	0.317	0.084	0.384	5.88	7.69	2.55	5.00	8.58	5.98	8.59
2021	0.213	0.123	0.288	0.169	0.385	0.127	0.494	36.84	156.78	9.22	-0.90	24.89	37.75	35.48
2022	0.235	0.132	0.318	0.165	0.289	0.150	0.521	6.59	13.09	7.72	0.34	-32.03	12.49	-1.07
<b>Average</b>	<b>0.164</b>	<b>0.067</b>	<b>0.260</b>	<b>0.161</b>	<b>0.287</b>	<b>0.096</b>	<b>0.384</b>	<b>12.61</b>	<b>31.09</b>	<b>6.09</b>	<b>1.69</b>	<b>0.96</b>	<b>14.04</b>	<b>12.33</b>

Source: Calculations by the author based on statistical year books

During the period 2017 - 2022, in terms of current price, the Industrial and Construction sector of Thai Nguyen province exhibited the highest labor productivity, averaging at 0.260 billion VND per person, followed by the Service and Commerce sector with an average productivity of 0.161 billion VND per person. The Agricultural sector, however, recorded the lowest average productivity at 0.067 billion VND per person. Yet, upon considering the rate of labor productivity growth in terms of comparison, the Agricultural sector emerged with the highest growth rate. Throughout the 2017-2022 period, the Agricultural sector experienced an average annual growth rate of labor productivity at 31.09%, notably hitting a peak of 156.78% in 2021, far surpassing previous years and the productivity growth rates of other sectors contributing to the GRDP of Thai Nguyen province.

The Industrial and Construction sector also demonstrated noteworthy figures, with labor productivity growth rates of 9.09% in 2018 and 9.22% in 2021. However, due to various adverse macroeconomic factors, the productivity growth rates decreased to 2.08% in 2019 and 2.55% in 2020. Nonetheless, in 2021, the productivity growth rate in this sector surged back to over 9%, achieving an average growth rate of 6.09% per annum over the six-year period from 2017-2022. The Service and Commerce sector ranked second in terms of contributing to the GRDP when evaluated at current prices. Still, its labor productivity growth rate experienced fluctuations, occasionally dipping into negative figures (notably in 2018 at -6.25% and 2021 at -0.95%). Consequently, the six-year average productivity growth rate in this sector amounted to 1.69% per annum, the lowest among the three



sectors of agriculture, industry, and services. Considering labor productivity based on the current prices and the growth rate of labor productivity in comparison to the economic components, the State sector contributed the lowest to production value and labor quantity when compared to other sectors. Nevertheless, labor productivity within the State sector remained stable and exhibited a rising trend over the years during the research period. Labor productivity in the State sector increased from 0.221 billion VND per person in 2017 to 0.385 billion VND per person in 2021, averaging 0.287 billion VND per person over the six years, higher than that of the Non-State sector.

Regarding the labor productivity growth rate in the State sector, the rate remained relatively moderate but consistent over the years. The growth rates in 2018 and 2019 were 6.48% and 6.87%, respectively, the lowest among the three sectors compared to the Non-State and Foreign Direct Investment (FDI) sectors. However, in 2020, despite negative macroeconomic fluctuations, the growth rate in the State sector increased by 8.59% compared to 2019, while the growth rates in the Non-State and FDI sectors decreased. Similarly, in 2021, the State sector also achieved a commendable growth rate of 24.89%. However, in 2022, the growth rate plummeted sharply to -32.03%, resulting in an average growth rate of only 0.96% per annum over the six-year period.

From 2017 to 2021, the Non-State sector had the lowest labor productivity based on current prices among the three sectors (State, Non-State, and FDI). The six-year average labor productivity in this sector was 0.096 billion VND per person. However, there were signs of improvement and growth within this sector, especially in 2021, with a remarkable increase in productivity from 0.084 billion VND per person in 2020 to 0.127 billion VND per person in 2021. This increase marked a significant growth rate of 37.75%, the highest compared to the other sectors and the years between 2017-2020.

In terms of the growth rate of labor productivity in comparison, the Non-State sector experienced a growth rate of 9.09% in 2018, the highest among the sectors, but witnessed a declining trend in subsequent years, especially in 2020, where the growth rate dropped to 5.98% - the lowest within the sector. This indicates the substantial impact of negative macroeconomic factors due to the COVID-19 pandemic on the Non-State sector's productivity. However, in 2021, the sector rebounded and achieved an impressive annual average growth rate of 14.04%, significantly surpassing the State sector's growth rate.

From 2017 to 2021, in Thai Nguyen, the FDI sector recorded the highest labor productivity among the three sectors and showed a consistent upward trend over the years. Throughout this period, the average labor productivity of the FDI sector reached 0.384 billion VND per person, surpassing the State sector's productivity of 0.287 billion VND per person and being four times higher than the Non-State sector's productivity. In 2017, labor productivity in the FDI sector was 0.267 billion VND per person, increasing to 0.494 billion VND per person in 2021, nearly doubling in five years.

However, concerning the growth rate of labor productivity in comparison, the FDI sector displayed fluctuations, indicating instability in its productivity growth. The growth rates were 8.22% in 2018, escalating to 13.57% in 2019, but decreasing to 8.59% in 2020. Despite this, in 2021, the FDI sector achieved an exceptional growth rate of 35.48%. Overall, from 2017-2022, the average growth rate of labor productivity in the FDI sector was 12.33% per annum, emphasizing the impact of macroeconomic fluctuations on the labor productivity and growth rates across all sectors and economic divisions in Thai Nguyen province.

### **Contribution of Labor Productivity to the Economic Growth of Thai Nguyen Province**

Considering the proportion of contribution by capital, labor, and labor productivity to the economic growth rate of Thai Nguyen province during the 2017-2022 period, we observe that labor productivity consistently holds a significant share in the GRDP growth rate of the province.

**Table 4.** Contribution Proportion of Capital, Labor, and Labor Productivity to the Economic Growth Rate of Thai Nguyen Province (2017-2022)

Years	GRDP growth rate %	Contribution ratio to GRDP growth of		
		Capital investment	Labor	Labor productivity
2017	12.75	44.11	0.53	55.36
2018	10.44	-82.15	3.68	178.47
2019	9.00	-35.84	2.90	132.94
2020	4.24	101.43	-12.76	11.33
2021	6.51	35.95	-137.79	201.85
2022	8.59	-5.86	9.04	96.82
<b>Average</b>	<b>7.74</b>	<b>9.607</b>	<b>-22.401</b>	<b>112.795</b>

*Source: Statistical Yearbook of Thai Nguyen*

In the entire study period, only in 2020 did the contribution share of labor productivity stand at 11.33%, ranking second after the contribution share of investment capital. In other years, labor productivity consistently had the highest contribution share among factors contributing to the growth of Thai Nguyen province's GRDP. 2020 was also the year with the lowest economic growth rate recorded at 4.24%. Among the contributing factors, labor productivity has frequently been the highest contributor to the GRDP growth rate, followed by investment capital, while labor has been the lowest. In 2021, labor productivity made the largest contribution to the province's economic growth, with a contribution share reaching 201.85%. However, by 2022, this figure decreased to 96.82% due to the adverse impact of the COVID-19 pandemic.

In contrast to labor productivity, the labor factor had a relatively small contribution share to economic growth. Throughout the 2017-2022 period, the labor contribution share reached a modest 9.04%, even lower than the lowest labor productivity contribution share recorded in 2020 at 11.33%. This indicates that the contribution of labor to the economic growth rate of Thai Nguyen province remains more limited compared to investment capital and labor productivity. During the 2017-2022 period, 2017 witnessed the highest GRDP growth rate at 12.75%, with both investment capital and labor productivity contributing fairly balanced proportions, standing at 44.11% and 55.36% respectively. These two factors contributed over 99% to the province's economic growth rate. In the subsequent years from 2017 to 2019, the GRDP growth rate tended to decrease from 12.75% to 9.00%, while the contribution share of investment capital decreased. Conversely, the contribution share of labor and labor productivity tended to increase. During these years, the contribution share of labor productivity was exceptionally high, notably in 2018, reaching 178.47%. 2020 marked the lowest economic growth rate within the entire research period at 4.24%. It was also the only year where the contribution share of investment capital was higher than that of labor productivity in the structure contributing to the GRDP growth rate of Thai Nguyen province.

In the years 2021-2022, the economy of Thai Nguyen showed signs of gradual recovery post the COVID-19 pandemic. The economic growth rate had indications of a slow but steady increase, demonstrating the significant role of labor productivity in contributing to GRDP growth.

## CONCLUSION

Enhancing labor productivity plays an undeniable role in every economy. It is not only a measure of labor efficiency but also a core factor determining the sustainable development of a specific nation or region. Labor productivity encompasses more than just increasing the quantity of products or services that workers provide within a specific timeframe. It involves optimizing resources, refining work processes, workforce training, and leveraging modern technology to enhance work efficiency. As labor productivity increases, it not only impacts output but also elevates the quality of products and services. This can spur competition, create more job opportunities, increase incomes for workers, and improve community livelihoods. Especially in the context of globalization and intense competition, enhancing labor productivity is not only a goal for individual nations but also a requirement to sustainably address global economic challenges. Thus, the awareness and investment in augmenting labor productivity are not only important but also pivotal in determining the success and development of every nation, region, or enterprise. Despite Vietnam being among the countries with the lowest labor productivity in the region, recent years have seen significant improvements. This momentum not only drives productivity growth but also propels economic growth for Vietnamese provinces and cities. Specifically for Thai Nguyen province, research results indicate an upward trend in labor productivity during the period from 2017 to 2022, with an average productivity growth rate of 12.61%. The enhancement of labor productivity in the province signifies not only progress but also profoundly influences overall economic growth. When labor productivity rises, it signifies not just a statistical figure but also an indicator of the potential to enhance the efficiency of the labor force across all economic sectors. The rise in labor productivity often accompanies a series of other positive factors. Firstly, it demonstrates an improvement in skills, qualifications, and the quality of the labor force. Training, skill improvement, and the application of new technologies contribute to increased creativity and efficiency at work. Additionally, as labor productivity increases, the production process becomes more efficient. This can lead to reduced production costs, heightened competitiveness, and opportunities for expanding production scale. This increase simultaneously generates growth resources for the overall economy of Thai Nguyen province. Furthermore, the role of increased labor productivity in driving economic growth cannot be overlooked. It not only offers opportunities for production and service growth but also fosters sustainable development, improving the quality of life and advancing the socio-economic conditions within the community.

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