

## Economic Structure Transformation and Changes in the Proportion of Labor in East Java Province in 1998 – 2018

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### Abstract

Transformation of economic structure is not only act as a sector dominance contributing to Gross Regional Domestic Product, but also acts as the dominance of labor sector absorption. In 1994, the dominance of primary sector in contributing East Java's Gross Regional Domestic Product is already replaced by secondary sector and later by tertiary sector in 2004. The labor sector absorption is still dominated by agricultural sector until now. This research was aimed to describe the patterns of Transformation of economic structure and changes in the proportion of labor in East Java Province from 1998 to 2018, as well as analyzed the effect of each variables. By using factor analysis for latent variables first, the quantitative result based on path analysis has proved that economic growth and income per capita has a direct effect to the Transformation of economic structure. The increase of economic growth and income per capita has lead to the decrease in agricultural (primary sector) and industrial (secondary sector) proportion in contributing East Java's GRDP which is followed by the increase proportion in trade, hotel and restaurant (tertiary sector). The Transformation of economic structure has a direct effect to change the proportion of labor, whereas the economic growth and income per capita have indirect effect to that. During this process, the agricultural labor absorption decreased very slowly while industrial labor absorption increased slowly, as well as the trade, hotels and restaurants. The results also showed that the changes in the proportion of labor has direct effect to income per capita along with the domination of high productivity sector such as trade, hotels and restaurants which leads the economic growth.

### Keywords

Transformation of economic structure; changes of the labor proportion; economic growth; income per capita

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## 1. INTRODUCTION

Changes or transformations in a country's economic structure are closely related to economic development in that country because basically one of the main dimensions of development is economic change or transformation (Todaro, 1999). According to Weiss in Tambunan (2001), economic development in a long-term period, following the growth of national income, will bring a fundamental change in the economic structure, from a traditional economy with agriculture as the main sector to a



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dynamic modern sector as the main engine of economic growth.

In transforming the economic structure, there is a main theory, namely the H.B. Chenery Theory (Patterns of Development). In his theory, Chenery focuses on structural changes in the stages of the economic change process in a country that is undergoing a transformation from traditional agriculture to the industrial sector as the main engine of economic growth (Tambunan, 2001). The pattern of economic structural shifts that occur in the development process of developing countries before becoming countries that can be said to be advanced in terms of the economy generally occur from the original agrarian to the modern sector or there is a transformation from the primary sector to the non-primary sector (secondary and tertiary).

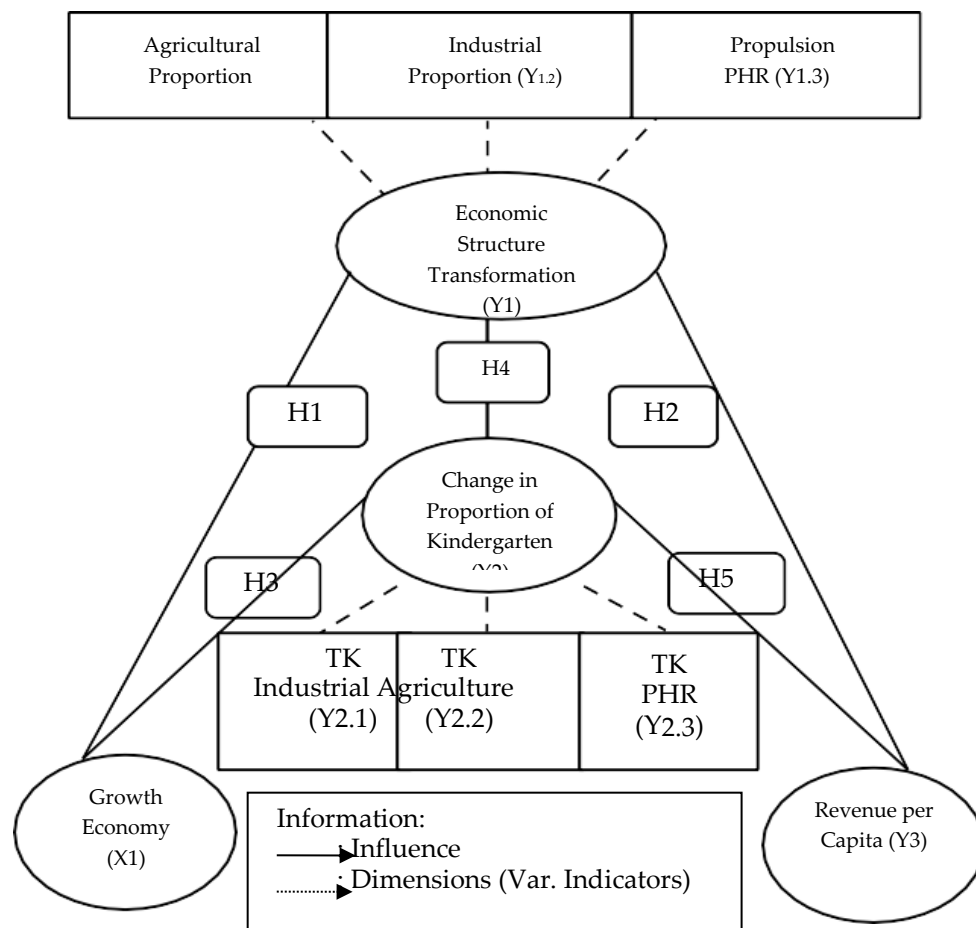
East Java as part of a developing country like Indonesia, in the course of its economic development until now, is also inseparable from the process of economic structural transformation. The role of the primary sector (with the largest contributor to agriculture) which in 1983 was very dominant in the formation of the Gross Regional Domestic Product (GDP) of 37.53% has been slowly replaced by the secondary sector (with the largest contributor to the processing industry) and tertiary (with the largest contributor to trade, hotels and restaurants) since the early 1990s. The momentum of economic structural change in East Java is actually in line with Chenery's theory, but the transformation pattern of East Java tends to move too quickly from one sector to another when compared to the pattern of economic structural transformation in developing countries. The dominance of the secondary sector (industry) that has occurred since 1993 is not sustainable. The secondary sector has been replaced by the tertiary sector (trade, hotels and restaurants) since 2004. The relatively rapid transformation of the economic structure, which is approximately in just 10 years (1993-2004) from the dominance of the primary sector to the secondary and then to tertiary, is feared to be a picture of the vulnerability of the East Java economy from uncertain conditions.

On the other hand, the process of economic structural transformation according to Fisher (1939) supported by Clark (1949) is actually not only shown from the declining proportion of the primary sector which is replaced by the secondary and tertiary sectors in the formation of GDP or GDP but also focuses on the use of production factors, one of which is labor (Ketut, 2001). In the case of East Java, the transformation of the economic structure through changes in the proportion of sectoral output does not seem to be balanced with changes in labor absorption that are in line with sectoral performance in producing output. The absorption of labor in the high-productivity sector has been slow in recent years where most of the workforce is still in the agricultural sector which is the sector with the lowest productivity.

## 2. METHODS

This study aims to prove and analyze the causal relationship between exogenous variables and endogenous variables consisting of latent variables formed by several indicators and observation variables both directly and indirectly using the path analysis technique with SPSS version 17.0 which was previously preceded by descriptive analysis and factor analysis.

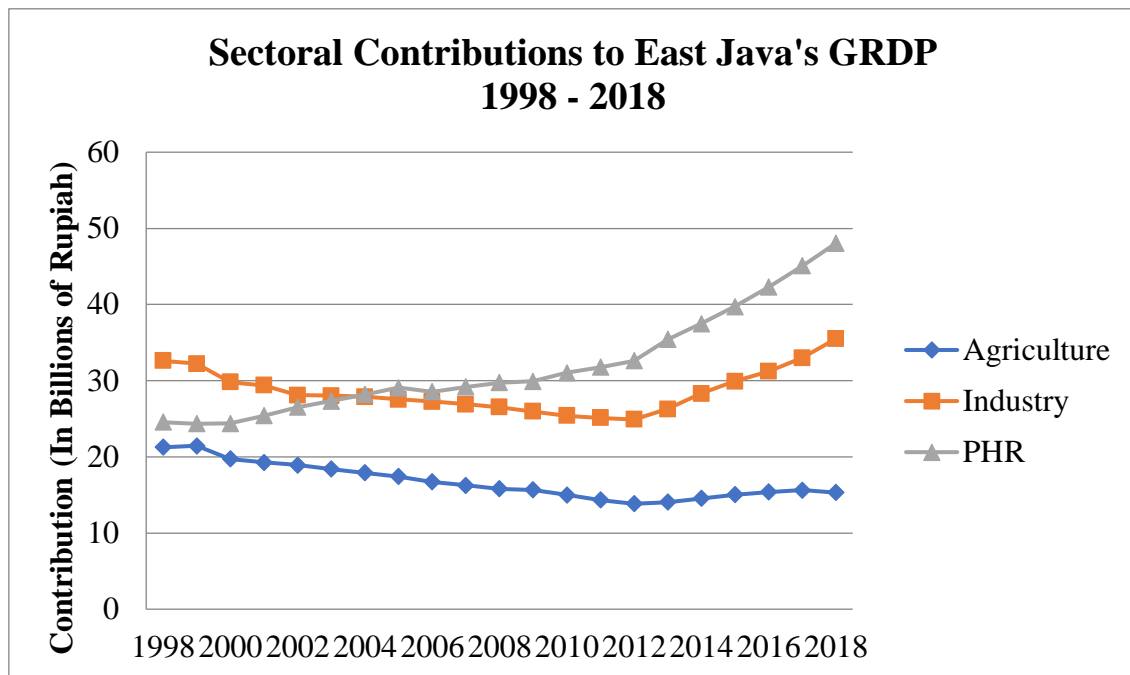
The conceptual framework of this study is as follows:



## 3. FINDINGS AND DISCUSSION

### Descriptive Analysis

Along with East Java's economic growth which has recovered by showing a positive trend since being hit sharply during the 1998 crisis at -16.12 and the per capita income of the community continues to increase, the transformation of East Java's economic structure has been relatively fast from the dominance of the agricultural sector then the industrial sector in the early 1990s and then the PHR sector in the early 2000s. The contribution of the PHR sector shows an increasing trend followed by the industrial sector, while agriculture continues to show a downward trend.



Source : BPS, East Java in Numbers

In addition to running relatively quickly, East Java's transformation is also running unevenly when viewed from the comparison between sectoral contributions in the formation of GDP and the ability of each sector to absorb labor. The dominance of the PHR sector in the formation of GDP is not balanced by the sector's ability to absorb labor. The workforce was still concentrated in the agricultural sector until 2018 although the numbers showed a downward trend since the beginning of the study. Meanwhile, on the other hand, the contribution of the agricultural sector to the formation of GDP is far below the industrial sector and PHR. The Industrial Sector, which had dominated the formation of East Java's GDP in the 2000s, has also not been able to absorb the maximum workforce when viewed from the smaller number of workers compared to the PHR and Agriculture sectors. The trend of increasing the contribution of the industrial sector and PHR which has been quite significant since 2010 is not necessarily followed by an increase in the number of workers in the two sectors which has been relatively stagnant since the early 2000s. Data in 2018 shows that the concentration of labor absorption is still in the agricultural sector (33.57%). The PHR sector, which has a greater contribution to the formation of GDP, is only able to absorb 25.72%, even the industrial sector is only around 16.89%

**Table of Proportion of Labor in the Agriculture, Industry and Trade Sectors to the Total Labor Force 1998 – 2018**

Year	Agriculture	Industry	Trade
1998	47.09	11.97	17.99
1999	46.18	12.51	18.80
2000	45.02	13.46	20.21
2001	48.18	12.62	18.27
2002	47.18	12.84	18.16
2003	49.06	12.12	17.90
2004	46.81	12.52	18.29
2005	44.02	13.74	19.27
2006	42.53	14.59	18.80
2007	44.75	13.11	19.83
2008	43.65	12.78	20.00
2009	42.93	12.36	20.37
2010	42.46	13.28	20.26
2011	39.70	14.07	20.63
2012	39.16	14.86	20.09
2013	37.69	14.44	21.17
2014	36.92	14.44	20.81
2015	36.01	14.03	21.28
2016	35.45	14.34	20.76
2017	34.13	15.69	23.65
2018	33.57	16.89	25.72

Source : BPS, East Java in Numbers (Data Processed)

### **Fisher-Clark Building Model**

Fisher (1939) proposed a theory about the pattern of shifting economic structure that focuses on changes in production and the use of production factors with the development of an economy. Fisher's hypothesis is known as the "Three Stages of Economic Development" where the three stages are pre-industrial, industrial and post-industrial and divides the economy into three sectors, namely primary, secondary and tertiary sectors. In the final stages of economic development, consumer demand for services will increase. The results of Fisher's research are supported by a study of statistical data by Clark (1949). In his article *"The Conditions of Economic Progress"*, Clark argues that consumer demand for manufactured goods will stagnate and consumer demand will shift to the service sector as well as labor.

The movement of labor from one sector to another is not only caused by a decrease in consumer demand for manufactured goods, another factor that is no less important is the difference in productivity of each sector. The second research is often known as *the Fisher-Clark Model of Development*.

### **Arthur Lewis's Development Theory (*Two Sector Surplus Labor*)**

Arthur Lewis's Development Theory (1959) is also called migration theory, which is a theory about the occurrence of a two-sector labor surplus that focuses on the occurrence of structural *transformation* in an economy that was initially subsistence and is known as the *Lewis Two Sector Model's* economy. According to Arthur Lewis, a backward economy is assumed to consist of two sectors, namely: first, the traditional sector (subsistence rural) which has an excess of labor so that real wages or income levels in agriculture/rural areas become very low. Second, the modern sector, characterized by a high level of productivity so that the real wage level or income is high and becomes a shelter for surplus labor in the agricultural sector by transferring labor little by little from the subsistence economy.

### **Teori Fei-Ranis**

Fei-Ranis Theory (1961). Fei-Ranis stated that developing countries have the following characteristics; Excess labor, natural resources have not been properly cultivated, most of the population is engaged in the agricultural sector, many unemployed and high population growth rate. In the Fei-Ranis model, the concept related to the transfer of labor from the agricultural sector to the industrial sector is divided into three stages of transfer based on *marginal physical product* and wages that are considered constant and exogenous.

### **Teori Patterns of Development Chenery**

The *patterns-of-development* theory proposed by Chenery defines economic transformation from traditional to a change in the economy related to the composition of labor absorption, production, trade, and other factors that are needed continuously to increase income and social welfare through increasing per capita income where each economy will undergo different transformations. In general, the transformation that occurs in developing countries is the transformation from the agricultural sector to the industrial sector. (Chenery, 1986).

In general, the factors that encourage changes in the economic structure of a country include: first, the nature of human beings in their consumption activities, in accordance with *Engels' Law*, namely when income increases, the elasticity of demand caused by changes in income (*income elasticity of demand*) for the consumption of foodstuffs is low while the demand for non-food ingredients is the opposite. Second, technological changes that are constantly taking place.

Changes in the economic structure occur due to changes in a number of factors, which according to the source can be distinguished from factors from the *demand* side and *the supply side*. In terms of *demand*, the most dominant factors are changes in domestic demand and government intervention. On the supply side, important factors include shifts in comparative advantage, changes or advances in technology, improvements in education or quality of human resources, discoveries of new materials for production, and the accumulation of capital goods. The factors from the *demand* side and *the supply* side above are internal factors, while external factors include technological advances (for Indonesia, technological advances are *given*), changes in the global trade structure.

### Factor Analysis

The results of the feasibility test of the model show that to transform the Economic Structure (Y1) and the Change of Labor Proportion (Y2) factor analysis is feasible. As for the loading factor values for the two variables are as follows:

**Table of Loading Factor Values**

	Component
	1
Transformation of Economic Structure (Y1) - Agriculture	.996
Economic Structure Transformation (Y1) - Industry	.982
Economic Structure Transformation (Y1) - PHR	-.984
Change in Labor Proportion (Y2) - Agriculture	-.975
Change in Labor Proportion (Y2) - Industry	.847
Change in Labor Proportion (Y3) - PHR	.862

Based on the table, it can be seen that the Agriculture sector has the largest contribution in measuring both Economic Structure Transformation (Y1) and Changes in Labor Proportion (Y2) although in different directions. Then the second is the PHR sector and finally the Industrial sector.

### Path Analysis

The testing of the research hypothesis shows the following results:

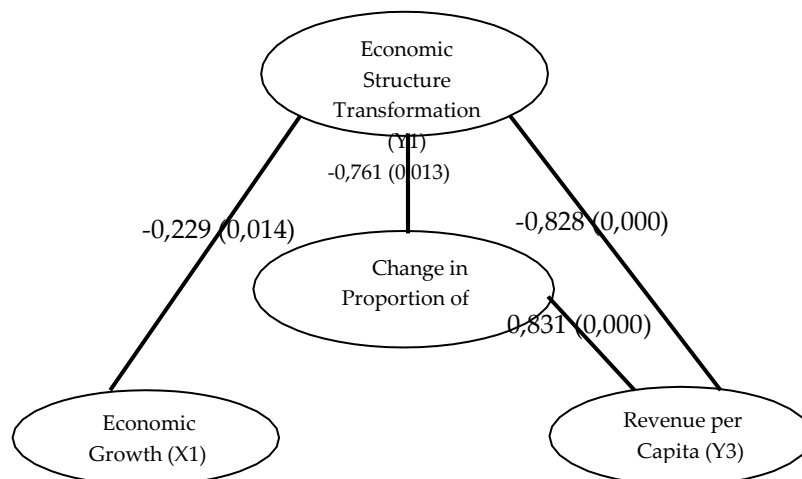
**Direct Influence Table (Direct Effect)**

Influence of Variables	Koef.	t hitung	Sig.	Ket.
X1 thd Y1	-0,229	2,863	0,014	Significant
Y3 thd Y1	-0,828	10,361	0,000	Significant
X1 thd Y2	-0,008	0,032	0,975	Insignificant
Y1 thd Y2	-0,761	2,971	0,013	Significant
Y2 thd Y3	0,831	5,392	0,000	Significant

**Table of Indirect Influence (Indirect Effect)**

Influence of Variables	Koef.	Ket.
X1—Y1—Y2	0,174	Real impact
Y1—Y2—Y3	-0,632	No real effect
Y3—Y1—Y2	0,630	Real impact

As for the validity of the model, the total determination coefficient and the theory *trimming rule* are used. The total determination coefficient obtained is 0.999 (99.9%) while according to the rules of *theory trimming*, the path diagram is obtained as follows.



### Economic Growth Affects Economic Structure Transformation and Changes in Labor Proportion

Economic growth directly has a negative effect on the transformation of the economic structure, which means that an increase in Economic Growth will definitely reduce the process of economic structural transformation. In the meaning of this relationship, it needs to be interpreted as an increase



in economic growth that will affect or be followed by a decrease in the performance of the agricultural and industrial sectors, but on the contrary, the PHR sector actually increases. This shows that the higher East Java's economic growth, the more important the role of the PHR sector in the formation of GDP.

Economic growth also has an indirect positive influence on changes in the proportion of labor force through the transformation of the economic structure. This means that increasing economic growth will be able to encourage a change in the labor structure from the dominance of the agricultural sector as a provider of jobs to other sectors, including the industrial sector and PHR through the transformation of the economic structure.

The negative influence of economic growth on the performance of the agricultural sector is inseparable from the transfer of land functions, especially from agricultural land to non-agricultural land, limited access to credit, low added value of products and most of the workforce is unskilled labor with low levels of education. Furthermore, the negative influence of economic growth on the performance of the industrial sector in general can be due to the fact that the industrial or manufacturing sector has not fully recovered from the 1997 crisis and was hit again by the 2008 crisis. Problems outside the economy such as legal uncertainty and bureaucratic complexity that can make production costs higher are also one of the drivers for many companies – companies that are easily displaced or *footloose industries* relocate their production bases to other countries such as China, India and Vietnam. In addition, the manufacturing sector is also experiencing a condition where the types of export products are limited and highly dependent on imported raw materials which can then limit the growth potential of the manufacturing sector (World Bank, 2011).

On the other hand, although the PHR sector was also hit by the 1997 economic crisis, this sector was able to recover quickly. This is because the barrier to entry is relatively low, and requires relatively less capital compared to manufacturing (World Bank, 2011). Over the past decade, high demand factors due to high population concentration, better infrastructure facilities, and better access to financial resources have also been factors driving PHR's performance, especially in urban areas.

### **Economic Structural Transformation Affects Changes in Labor Proportion**

The transformation of the economic structure directly has a negative effect on the change in the proportion of the workforce, which means that the process of transforming the economic structure will definitely reduce the process of changing the proportion of the workforce. This relationship has the meaning of a transformation of the economic structure, which in this case is marked by a decrease in the proportion of the agricultural and industrial sectors along with an increase in the proportion of the PHR sector to GDP, which will be followed by a decrease in the absorption of labor in the agricultural sector on the one hand and an increase in the absorption of labor in the industrial sector and PHR on

the other.

In the case of East Java, the condition of the labor structure is still dominated by the agricultural sector (39%) even though the proportion of agriculture to GDP is much smaller (14%) compared to the industrial sector (25%), let alone PHR (33%). The above conditions cause a large number of structural unemployment, namely unemployment caused by changes in the economic structure, namely conditions where job seekers are unable to adjust to the required skills (Borjas, 2000), (Simanjuntak, 1998). In terms of the industrial sector, many labor-intensive manufacturing producers have moved their factories and production bases to low-cost producing countries, especially because lower labor costs such as China, India, and Vietnam are one of the causes of the slow absorption of labor by this sector.

On the other hand, although the tertiary sector (services), especially PHR, dominates the GDP with a proportion of 33%, the ability of this sector to absorb labor is also still slow when compared to the increase in its share in GDP. Basically, the service sector (PHR) is mostly *knowledge/human capital intensive* so it does not require a lot of labor and even this sector is able to escape from the rigidity of the labor market (Basri, 2009).

#### **Per capita income affects the transformation of economic structure and changes in the proportion of labor force**

Per capita income directly has a negative effect on the transformation of the economic structure, which means that an increase in per capita income will definitely reduce the process of economic structural transformation. What is meant by Income per Capita can reduce the transformation of the economic structure is interpreted as an increase in Income per Capita that will affect or be followed by a decrease in the performance of the agricultural and industrial sectors, but on the contrary, the PHR sector actually increases. This relationship is theoretically in line with Engels' Law which states that the higher the income of the community, the higher the proportion of income used to consume non-food (industrial) and service ingredients (PHR). However, in East Java, although consumption for non-food ingredients has increased, only the PHR sector has increased, while the industry shows conditions that are not in line with the Engels Law where the increase in demand for non-agricultural products (non-food), especially manufactured products in East Java, is not balanced by the increase in industrial sector output, as seen from the decrease in the share of the industrial sector. This condition indicates that East Java imports a lot. Meanwhile, the increase in the performance of the PHR sector is in line with the increase in revenue due to the increase in the distribution of goods both from outside the region (imported) and domestic (produced within the East Java region) carried out by business actors in the PHR sector in East Java.

Per capita income also indirectly has a positive effect on changes in the proportion of labor force through the transformation of the economic structure. This means that the increase in per capita income will certainly increase the change in the proportion of labor force from the dominance of the agricultural sector as a provider of employment to other sectors, including the industrial sector and PHR in line with the transformation of the economic structure which is characterized by a decrease in the proportion of the agricultural and industrial sectors accompanied by an increase in the PHR sector in GDP. This condition is not only caused by the declining consumer demand for manufactured goods, but another factor that is no less important is the difference in productivity of each sector as in the Fisher-Clark economic development model.

#### **Changes in the Proportion of Labor Force Affect Per Capita Income**

Changes in the proportion of labor directly have a positive effect on per capita income, which means that the process of changing the proportion of labor will definitely increase per capita income. This means that the increase in the number of workers in the industrial sector and PHR in line with the decrease in the agricultural sector workforce will increase the per capita income of the community. This is because the process of transferring labor from sectors with low productivity (agriculture) to sectors with high labor productivity (industry and PHR) has an impact on increasing wages in accordance with Arthur Lewis's Development *Theory (Two Sector Surplus Labor)* and Fei – Ranis.

#### **4. CONCLUSION**

The transformation of East Java's economic structure went relatively quickly from the dominance of the agricultural sector to the industrial sector in the early 1990s and then dominated by the PHR sector in the early 2000s. The transformation process is running relatively quickly, making the process run unbalanced where the sector that dominates the formation of GDP has not been able to dominate the absorption of labor.

The transformation of East Java's economic structure is in the pattern of Agriculture-Industry-PHR (Pt-I-Pd) which is interpreted as a process of decreasing the proportion of the agricultural and industrial sectors and increasing the proportion of the PHR sector in the formation of GDP. In the research period (1998 – 2018), the transformation of East Java's economic structure was directly influenced by economic growth and per capita income. Along with economic growth and an increase in per capita income, the process of economic structural transformation occurred in East Java.

In contrast to the pattern of economic structural transformation, the change in the proportion of East Java's workforce is very slow where in the research period (1998-2018) it is still dominated by the agricultural sector. The change in the proportion of East Java's workforce is interpreted as a process of

decreasing the proportion of labor in the agricultural sector and increasing the proportion of labor in the industrial sector and PHR to the overall number of workers. The change in the proportion of East Java's workforce is directly influenced by the transformation of the economic structure that occurs in East Java and is indirectly influenced by economic growth and per capita income. Along with the transformation of the economic structure influenced by economic growth and increasing per capita income of the community, the proportion of the workforce has also changed.

On the other hand, changes in the proportion of East Java's workforce directly affect per capita income. Along with the change in the proportion of labor in East Java, the per capita income of the people of East Java has increased.

The East Java government needs to have a special strategy to improve the performance of sectors that contribute mainly to economic growth (leading sectors), namely the trade, hotel and restaurant, industry and agriculture sectors. The improvement in performance is not only shown through an increase in output along with economic growth but also performance in terms of increasing the ability to absorb labor so that the economic growth that occurs is more inclusive for the population. Synergy between sectors with the leading sector as a development locomotive is also needed so that East Java is able to maximize economic potential from upstream to downstream. It is hoped that by doing so, changes in the economic structure in East Java Province can run in harmony and balance and sustainable.

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