Do the rate of profit and organic composition in Central Java Industry increase in the long run? A test of heterodox political economy perspective

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Abstract

The purpose of this paper is to investigate empirically in relating to the falling of profit rate theory, considered as heterodox political economy, can explain the performance of industry in Central Java, Indonesia. Principle of long wave is employed for examining the pattern of profit rate and organic composition in industrial sector. The results generate two aspects: 1) The profit rate of industrial sector is declining in the long run, but 2) the organic composition instead of increasing, decreases and stagnation. The pattern of organic composition is due to the technical change and income distribution change. These factors are promoted by the neoliberal capitalist policies that promoted by New Order government in Indonesia during 1970s–1990s. For recommendation, this paper suggests heterodox political economy to be an alternative perspective for criticizing negative impacts of neoliberal policies.

Keywords: rate of profit, organic composition of capital, heterodox political economy

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1. Introduction

This article aims to investigate the structural change of industrial performance in Central Java. The starting point of this research is conviction the theoretical debate has not settled in the matter. This theory continues to inspire the process of structural crises in many countries. Furthermore, in these situations, only the empirical test can lead the progress for this topic.

The structural changes of industrial performance in Central Java are investigated through the falling of profit rate theory. According to Marx (1885), the falling of profit rate theory is linked to three aspects under capitalist development. First, this theory is associated with the downswing of capitalist development in the long term. Second, the long term of capitalist development includes several business cycles with the various patterns of profit rate. Third, the various patterns of profit rate are influenced by the performance of industrial sector.

Mandel (1980) states the falling rate of profit shows the exhaustion of main factors in industrial sector for sustaining upswing. The falling rate of profit is a nature phenomenon of macroeconomic. This phenomenon can indicate macroeconomic crisis as productivity in real sectors have less output for supporting domestic and export capacities.

Mohun (2003) states that the phenomena of falling profit rate can occur in the national and sub-national level. This process captures some different patterns between national and sub-national level. Even though national and sub-national level experiences the differences of profit rate, they have a general tendency of falling pattern in the long run.

Furthermore, Tavani (2007) concerns to the time series method for investigating profit rate in the national and sub-national level. Historical pattern in line with time series method is a useful tool to differentiate between national and sub-national patterns. Specifically, historical pattern of profit rate in the sub-national level tend to be more heterogeneous than national.

In this paper, the profit rate of industrial performance in Central Java are examined whether the exhaustion of main factors occur. Historical pattern between national and sub-national levels are examined to see the differences and some possible factors that may influence its process. The pattern of profit rate may generate the pattern of economic performance in this province. The general pattern of economic performance may identify what main factors in industrial sectors experience downward capacity.

2. Methodological Issue

The original concept of the falling rate of profit (FPR) concerns in three aspects. First, profit rate experiences downward in the long term. Marx (1885) suggests the performance of capitalist development undergoes downswing in the long term as profit rate experiences declining position. Second, the tendency of FPR is associated with the organic composition of
capital which experiences to fall in the long term. Third, FPR indicates economic crisis in the long term in line with the falling rate of profit, especially industrial sector.

This study attempts to describe the relationship between capital and profit rate. As found in studies by Marx (1885), Reati (1986), Lianos (1992), Glyn (1997), Tavani (2007) and Edvinsson (2010), in the concept of heterodox political economy, profit rate is defined as the ratio of profit to capital stock that is invested in the production process. In line with simple logic, profit is expressed as a flow variable that explains differences between output level and cost. Capital, on the other hand, is the total stock of physical and financial resources invested in the production process. More specifically, in *Capital Volume III*, profit rate is defined as the ratio between surplus value (s) and total stock capital (c + v). Expressed mathematically, this is:

\[
r = \frac{s}{c + v} = \frac{s}{v} \frac{c}{c + v};
\]

where
- \( r \) = Profit rate
- \( s \) = Surplus value
- \( c \) = Constant capital
- \( v \) = Variable capital

Equation (1) provides an explanation for Marx’s argument that profit rate is a value that is transformed from a surplus value of capital. Furthermore, profit rate is also a value for measuring the change in surplus value when capital changes through the production process (e.g., changes in labour). Drawing from Tavani (2007), ratio \( \frac{v}{c + v} = \frac{1-k}{k} \) where \( k \) is composition of capital while \( \frac{c}{v} = \frac{1}{k} \). In line with this standpoint, political economics concern to the relationship between capital and its price. Mathematically, Marx reveals s (surplus value) which is influenced by cost where it relates to price. Hence, the relationship between cost and price is a circular capital mechanism.

### 3. Circular Capital Mechanism, Profit Rate and Time Period

Marx believes that capital needs time in order to create its circularity. Therefore, the *turnover time* variable is included in this equation as an adjustment process for measuring profit rate (Marx 1884; Reati; 1997; Tavani 2007). This study explains the *turnover time* variable through a mathematical equation. Several assumptions are used to provide this equation:

- **a.** Capital is presented through labour (L) with wages as price.
- **b.** In line with point (a), cost is defined by wL.
c. In line with points (a) and (b), surplus value can then be expressed as \( Y - wL \), where \( Y \) is net-output.

d. Capital mechanism (C) experiences a circular process through time period (T); these variables can then produce stock capital (K) accumulation, then \( K = (c + v)T \).

Thus, the profit rate equation (with time period) can be expressed mathematically, as follows:

\[
r = \frac{s}{K} = \frac{Y - wL}{(c + v)T}
\]  \hspace{1cm} (2)

\[
r = \frac{Y - wL}{(c + v)T} = \frac{s}{v + s} \frac{v + s}{(c + v)T}
\]  \hspace{1cm} (3)

Following from Equation (3), several aspects can be understood through a circular capital mechanism through time:

1. Value added production per period when it uses labour force as capital is expressed as

\[
V_L = \frac{(v+s)}{l} \quad \text{when} \quad \left( \frac{v+s}{c+v} \right) \quad \text{with production accumulative through time.}
\]

2. Based on Point 1, if any capital, constant and variable, is linked with price, then production value added per labour is

\[
V_L = \frac{p(v+s)}{wl}.
\]

3. Based on Point 2, the ratio between wages and value added production per labour can be defined as

\[
R_w = \frac{w}{V_L} = \frac{wl}{(v+s)}.
\]

4. The ratio between wages and value added production per labour is needed to measure the contribution of labour to profit rate based on wage\(^1\).

5. In line with Point 4, despite the ratio between wage and value added labour, \( R_k \) as the ratio between output \( Y \) and stock capital \( K \) is also needed to investigate profit rate. Concerning the time period, \( R_k \) is divided into two types: \( R_k \) (before full capacity of labour) and \( R_{ki} \) (after full capacity of labour); then \( X = \frac{R_k}{R_{ki}} \) is used as the adjustment factor for the time period.

6. Based on Points 4 and 5, profit rate including time can be expressed as

\[
r = (1 - R_w)R_{ki}X.
\]

---

\(^1\) Wage as “market price of labour” is still a debatable discourse among Marxist economists. For instance, Karl Polanyi (1944) notes fictitious commodities that separated three types of capital, including money, labour and land, from the free market.
4. Empirical Testing of Profit Rate and Organic Composition in Central Java Industry

After constructing these hypotheses, this study investigates the profit rate performance of industrial sector in Central Java. First, this study scrutinizes the pattern of capacity utilization. Capacity utilization is investigated in two ways, through the materialized composition of capital and through the value composition of capital. The materialized composition of capital defines the ratio between stock capital and output, whereas the value composition of capital measures the ratio stock of capital to production-wages per labour. As displayed in Figure 1, the ratio between stock capital and output was 118.567 per cent during period of 1951-1955 – period of 2011-2013. This fact reveals that the capacity for utilization of constant/physical capital in work properly. On the other hand, had a 101.464 per cent ratio of capital stock to production-wage per labour which could indicate that capital exceeded labour in the process of industrial sector. Regarding political economy perspective, capacity utilization performances seems to capture the characteristic of capitalist unit.

Figure1: Intensity-Capital Stock Capital in Central Java industry during period of 1951-1955 – period of 2011-2013

Source: Data is calculated from Indonesian Statistical Board-Central Java Province (1970-2013)

The second test is linked with the productivity of industrial sector. Figure 2a and 2b show that productivity nearly dropped 23.62 per cent during period of 1951-1955 – period of 2011-2013. Compared with the productivity of human capital, real wages per hour for labour moved up 10.74 per cent in the same period. This fact was surprising since the characteristics of capitalist development were not present. As is seen in political economics, productivity of industrial sector in capitalist development has a tendency to rise over real wages for labour.
The third test observes the pattern of the profit rate. As displayed in Figure 3, the profit rate in industrial sector decreased 59.46 per cent during period of 1951-1955 – period of 2011-2013. Compared to Figure 1, capacity utilization experienced an upswing pattern in the same period. In this respect, while capacity utilization had a upswing pattern, the falling rate of profit occurred through the increasing of capital stock relative to output and production-wages per labour. Thus, even though the profit rate fluctuated, it expressed a decreasing pattern during this period.
5. Does FPR theory work properly in Central Java industry?

Figures 1 through 4 display the basic empirical results of a heterodox political economy analysis of structural tendency regarding capitalist development. In this case, the characteristics of capitalist development were observed in Central Java industry during period of 1951-1955 – period of 2011-2013. The patterns of stock capital ratio, productivity and profit rate were analogous to the characteristics of capitalist development based on FPR theory.

Returning to discussion of capitalist development in Indonesia, these results contributed some relevant interpretations. Generally, capitalist development in Indonesia was promoted by New Order era of 1970s–1990s as it is concerned with technical or technological change for any production. In this respect, technology was a prominent aspect for supporting industrial sector. However, as noted in the previous section, the profit rate experienced a downswing pattern when the ratio of stock capital experienced an upswing pattern. The results in the case of Central Java industry are similar to FPR theory in regard to how a declining of profit rate as capital stock exceeds real wages of labour.

The patterns of FPR are also partially investigated by organic composition in industrial sector. Capital stocks had highest upswing during 1976-1980 as Indonesia experienced high rate of GDP growth in New Order era. Increasing capital inflow in line with foreign direct investment generally promotes an upswing of capital stocks in industrial sector. The impact of oil boom stimulates government revenue for supporting capital accumulation.
At the mature of New Order era of 1991-1995, capital stocks experienced a decreasing pattern. Overcapacity in financial sector reduced capital accumulation in industrial sector. Financial sector had misleading function as it has minimum contribution for promoting industrial sector. Increasing speculative activities (e.g. stock markets) in financial sectors stimulating a massive declining investment in industrial sector as capital accumulation did not work properly.

Nevertheless, there were anomalous characteristics of capitalist development through New Order era in Indonesia. Glyn (1997) and Tavanni (2007) suggest that productivity tend to exceed real wages of labour in capitalist development. In this case, industrial sector in Central Java had a declining pattern when real wages of labour slightly increased during period of 1951-1955 to period of 2011-2013. The downswing pattern in industrial sector was stimulated by overcapacity of financial sector in Indonesia. During 1980s–1990s, financial sector influenced the declining capital accumulation industrial sector. While capital accumulation could not promote investment and innovation, productivity experienced a downswing pattern.

Drawing from these discussions, capitalist development in Indonesian New Order increased in line with the dominant of neoliberal institution. As O’Hara (2006), neoliberal institution promoted greater privatization, lower taxation and reduced government expenditure in the mid of 1970s. In this respect, privatization began takes a place in Indonesian industrial sector, especially Central Java during 1980s as government tended to reduce expenditure. Foreign direct investment promoted capital accumulation in line with lower taxation.

On the other hand, the dominant of neoliberal institutionally generated declining profit rate and organic composition from New Order era of 1970s-1990s to period of 2000s. This process displayed the contradiction of neoliberal institution. Privatization stimulated the rising of financial sector to provide industrial capacity. The misleading of financial sector caused high speculative activities for reducing capital accumulation. Lower investment had little positive impacts to generate high productivity and profit.

6. Concluding Remarks

Concluding remarks and limitations regarding FPR theory for Central Java industry are summarized in Table 1 below:
Table 1: Summarizing of this study

<table>
<thead>
<tr>
<th>No</th>
<th>Aspects</th>
<th>General Identification</th>
<th>Identification in this study</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The falling of profit rate theory (FPR)</td>
<td>FPR theory is applied to investigate capitalist development at the global, regional and national levels</td>
<td>FPR theory is employed to observe capitalist development in Central Java industry</td>
<td>Conclusion-contribution</td>
</tr>
<tr>
<td>2.</td>
<td>Characteristics of capitalist development (profit rate)</td>
<td>The falling of profit rate in capitalist development occurs in the long run</td>
<td>In the case of Central Java industry, profit rate experienced a downswing pattern in the long run</td>
<td>Conclusion-contribution</td>
</tr>
<tr>
<td>3.</td>
<td>Characteristics of capitalist development (organic composition: e.g. capital stocks, productivity and real wages)</td>
<td>Capital stocks experienced an increasing pattern. Productivity exceeded real wages in the long run</td>
<td>Capital stocks experienced an increasing pattern. Real wages tend to over productivity in the long run</td>
<td>Conclusion-contribution</td>
</tr>
</tbody>
</table>
| 4. | Contradiction of capitalist development      | Financial sector versus industrial sector (New Order era in Indonesia of 1970s-1990s)     | Privatization, reducing government expenditure and lower tax high foreign direct investment, dominant financial sector and global factory stimulate speculative capital (stock market)
reducing capital accumulation low investment and innovation decreasing patterns in profit rate and productivity | Conclusion-contribution                  |

References


