

Multiple Equilibria of Corruption and Biased Technological Progress: State Capture and Rent-Seeking in Thailand Underdevelopment

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Abstract

This article analyzes the ongoing problem of corruption's impact on capital accumulation in Thailand. Economic growth resulting from capital accumulation is influenced by corruption in the form of state capture and rent-seeking, which affect the pattern of technological progress. Growth and income distribution in a well-functioning economy are expected to feature neutral technological progress, enhancing efficiency in both capital and labor at the same rate. Neutral technological progress provides balanced returns on production for both sides and positively impacts the overall system. However, empirical evidence suggests that Thailand's capital accumulation exhibits characteristics of biased technological progress, leading to a decrease in capital/output ratio, the profit rate, and the divergence between wage and labor productivity, and resulting in an imbalanced distribution of income between capital and labor. Capital accumulates in a manner aligned with cumulative causation and low growth, hampering the development of labor and

capital productivity. Corruption of rent-seeking and state-capture in Thailand creates extreme inequality and undermines stability in both the market and politics. This study provides a deep analysis of Thailand's path of capital accumulation that is characterized by biased technological progress in the context of corruption.

Keywords: corruption, growth and distribution, biased technological progress.

1. Introduction: The Two Faces of Corruption

Corruption's role in capital accumulation affects the pattern of technological progress and income distribution. Corruption manifests in various forms, ranging from seeking personal gains to extortion and the misuse of public assets for individual benefit. In the process of corruption, there is often involvement from both public officials and private entities, where the latter may provide payments to the former to gain special privileges or services. The economic development aspect of corruption has been studied extensively. However, there is no consensus on the exact impact of corruption on economic growth. Some argue that corruption can stimulate economic growth, while others contend that it diminishes the potential for economic growth. The impact of corruption on economic growth remains a subject of debate with differing perspectives (Bardhan, 1997). This paper aims to investigate the consequences of corruption on Thai economic growth and distribution, focusing on capital accumulation with a particular emphasis on biased technological progress. Corruption, especially in the form of state capture and rent-seeking, plays a role in shaping the characteristics of the pattern of productive technology. State power and political class actors have a complicated relationship, and each Southeast Asian country has their own specific circumstances (Lim & Stern, 2002). This paper builds on the early works on corruption in Thailand from the Thai Political Economy Group to the growth and distribution literature.

In Thailand, corruption is seen as endemic and rooted in Thai tradition and the social system. Corruption spreads throughout every part of society in business, state administration, democratic politics, and the informal sector (Pasuk et al., 1998; Pasuk & Sungsidh, 1999; Pasuk et al., 2002). The connection between state and business on capital accumulation and corruption in Thailand is well known (Suehiro, 1992; Hewison, 1997). Thai business is dominated by large family-owned corporations. The Thai state has a history of protection and providing privileges for businesses and upper social class. It can be described as an ideology of elitism that

is prevalent in the history of Thailand. There were numerous policy attempts from various government administrations both from democratic elections and military juntas (Jaruwat, 2013). Corruption was recognized and deemed intolerable. However, top-down corruption policies were implemented ineffectively for decades. Consequently, many international corruption measurement indices rank Thailand in the lower tier. Alternative approaches have been proposed, such as behavioral, law and economics, and good governance (Thanee & Torplus, 2023), and there is a social movement in popular media (Sarinee, 2021; 2022).

However, according to economic literature, corruption may help promote economic growth when viewed from the perspective of developing economies with strong regulations but inefficient government. In such societies, where corruption is widespread, it can facilitate the transition to economic development. This perspective sees corruption as a “grease in the wheel,” a term introduced by scholars like Leff (1964) and Huntington (1968). In developing countries, government bureaucracies are often inefficient, burdened with numerous complex regulations. This inefficiency results in high transaction costs for private enterprises. Various activities require navigating multiple bureaucratic hurdles and take considerable time. As a result, the government frequently fails to provide efficient essential services. For instance, in developing countries, the state often struggles to obtain foreign currency reserves sufficient to meet private sector demands, and it may lag in issuing investment licenses. These services are crucial for economic development, and thus, the private sector may need to pay bribes to expedite access to them.

Corruption can stimulate economic growth in several ways. Lui (1985) argues that paying bribes can increase the efficiency of government service distribution. Those with high demands or high opportunity costs from dealing with public services may be willing to pay a premium for quicker access. Consequently, civil servants may prioritize and expedite the services of those offering the highest bribes.

In this manner, the public sector can efficiently allocate services based on the level of demand from service users. Beck and Maher (1986) and Lien (1986) suggest that the process of negotiation between public officials and private individuals can lead to the most efficient outcomes. Through these negotiations, public officials may grant contracts to the private sector.

Public officials often favor private actors who offer the highest bribes, creating a system where low-cost producers often secure these contracts and earn profits while still having to bribe state officials. Historically, Theobald (1990) points out that corruption contributed to the growth of the middle class in the United States between 1860 and 1880, a period of significant corruption. Corruption allowed wealth accumulation and the emergence of successful entrepreneurs. Wraith and Simpkins (1963) argue that before the 17th century, England experienced violent power struggles. However, between 1660 and 1668, the society established a system of patronage, corruption, and co-optation to prevent conflicts and violence. This laid the foundation for economic stability. In summary, some scholars argue that corruption can promote economic growth, especially in developing economies with inefficient government systems. Corruption can help streamline public service distribution, encourage efficiency, and allocate resources to those who value them most. Additionally, it can facilitate wealth accumulation and the growth of the middle class. However, it is important to note that corruption is generally seen as detrimental in terms of good governance, ethics, and long-term economic development.

The context or circumstances that promote the growth of corruption, such as building a middle class and creating a stable society, have been argued in economics and political science. On the other hand, some studies suggest that corruption reduces the potential for economic growth. This perspective considers corruption as a “sand in the wheel” of economic efficiency. Mauro (1995) conducted a study using data on the Corruption Perception Index and economic growth data in various

countries, finding a negative relationship between these variables. In other words, corruption reduces investment and the rate of economic growth. According to this research, a one-unit change in the corruption index results in a 3% change in the rate of economic growth as a percentage of the Gross Domestic Product (GDP). This group of studies challenges the notion that bribes may improve the efficiency of government systems and suggests that the actual mechanism of corruption could be the opposite, where public officials might be motivated to slow down their work to extract more bribes. Recent studies of the same methodology (Beyaert et al., 2023; Trabelsi, 2024) have inconclusive results depending on the conditions and circumstances of corruption in each economy.

Myrdal (1968) pointed out that in India, the government system did not work faster when bribes were paid. Instead, officials intentionally worked slowly to make private individuals pay higher bribes for the services they needed. Furthermore, the queuing mechanism of civil servants can differ in complexity and efficiency, and agreeing on bribes might increase the complexity, especially when new private actors are involved who need services from the government and are willing to pay higher bribes. In addition to the argument that corruption may not improve the efficiency of government mechanisms, Meon and Sekkat (2015) suggested that corruption could harm economic growth because it generates transaction costs. This means that private individuals who need to interact with the government have to allocate resources to pay officials for basic services. Bardhan (1997) stated that corruption and bribery systems distort incentives for private investment, and Wei (1997) likened corruption to taxation, which introduces uncertainty in the costs of doing business and reduces the incentive for foreign investors to enter the market. In a similar vein, Murphy et al. (1993) argued that in a system with open opportunities for corruption, public officials might be motivated to create economic rent, such as licenses that reduce competition in certain industries. This, in turn, might lead to rent-seeking behavior by private individuals who need those licenses,

further contributing to economic inefficiency and potentially harming innovation and technology. So, the discussed studies and perspectives highlight the negative impact of corruption on economic growth and suggest that it may not improve the efficiency of government mechanisms.

Furthermore, Murphy et al. (1993) and Rosen (1981) explain that, typically, individuals choose professions that offer the highest returns based on their abilities. Those with high potential (Superstars) in each field will receive higher rewards than the general population for engaging in activities they excel at. When individuals with high abilities make decisions about which activities to pursue, they contribute to innovation and technology development in their respective fields, leading to higher economic potential in those sectors.

However, if the state intervenes by imposing regulations and creating economic rent-seeking mechanisms in a particular sector, several consequences arise. 1) Increased Innovation Costs: When the government requires licenses and imposes regulatory barriers on innovation, innovators face challenges, both in terms of financial costs (licensing fees) and the time required to obtain necessary government services. This can reduce motivation for innovation. 2) Rent-Seeking Behavior: When profits from activities related to high economic rents exceed profits from regular business operations, there is a tendency for innovators to shift from innovation-oriented work to rent-seeking activities. This shift in investment can lead to a decrease in innovation.

These two phenomena together imply that the rent-seeking system diverts investment away from innovation and technology development, leading to a lack of innovation or technological advancement that would otherwise benefit the economy. Regarding the views of North (1990), Knack and Keefer (1995), and Justesen (2008), they suggest that corruption leads to the state's inability to protect property rights and enforce contracts. As a result, government officials may not fulfill their duties, law enforcement agencies may not uphold the law, and the legal system may

not provide fair judgments. These issues erode the protection of property rights and contract enforcement, increasing the risks associated with conducting business. The lack of protection discourages private sector investment.

Tanzi and Davoodi (1997) further assert that corruption can lead to policy decisions that prioritize large and complex government projects. Even though the state may invest more in such projects, efficiency may decrease. This is because governments tend to invest in projects that may not significantly contribute to economic growth. Gupta et al. (2001) point out that corruption tends to lead to increased military-related investment, while Mauro (1997) emphasizes that sectors related to education and public health have low corruption and provide little room for rent-seeking. As a result, corruption can lead to a shift in government spending away from education and healthcare toward other projects with higher economic rents. Furthermore, corruption also leads to the outflow of resources intended for societal and economic development to individuals' private pockets, as observed by Bakare (2011) in the case of Nigeria. Resources meant for public projects are often diverted to personal accounts, and individuals involved in corrupt practices often transfer the proceeds abroad, which depletes resources available for social and economic development.

In this view, corruption is seen as an impediment to economic growth through:

- 1) Increasing Transaction Costs: Corruption leads to higher transaction costs, resulting in reduced investment.
- 2) Diminishing Incentives for Innovation: Corruption reduces the motivation for innovation.
- 3) Weakening Protection of Property Rights and Contracts: Corruption weakens the enforcement of property rights and contracts, leading to a lack of effective protection.
- 4) Distorted Government Investment: Corruption can distort government investment, diverting resources to projects that may not significantly contribute to economic growth.

In an overview, corruption can be observed at both the subnational level in terms of “state capture” and “rent-seeking” behavior in economics. The concept of

“state capture” has recently gained prominence, as the World Bank (Hellman et al., 2000) began using this term in 2000 during the economic and political transition in the former Soviet Union. While “rent-seeking” has been a fundamental economic theory for a long time, primarily rooted in pre-classical economic value theory, most economists now use it to explain situations where excessive profits are generated outside the competitive market. At the subnational level, corruption can extend to the national level.

“State capture” refers to a systemic form of corruption where interest groups gain power to influence government policies to benefit their own interests. This includes passing regulations that prevent competition, promoting rent-seeking, and pushing the government to procure in sectors they produce. This policy capture process leads to the rapid accumulation of wealth and power by interest groups or those who can capture the state (Rose-Ackerman, 2013). Furthermore, the concept of “regulatory capture” is another form of state capture, where regulation is consistently tilted away from public interest and toward the benefit of a particular industry, often influenced by the intent and actions of that industry (Carpenter & Moss, 2014). Regulatory capture can be divided into two forms: “strong capture,” where the regulation has been consistently tilted away from the public interest to the extent that the harm caused by the captured regulation exceeds the public benefits, and “weak capture,” where the regulation remains available for use but has effects tilted away from the public interest to benefit a specific interest group. (Carpenter & Moss, 2014)

Although state capture is often considered a form of corruption, it differs significantly from traditional corruption. In general corruption, interest groups pay money (bribes) to influence policies or enforce the law to their benefit for a limited time. In state capture, interest groups have the power to design laws or push for policies from the outset to benefit their interest groups, and this continues until the policy or law is repealed, which can be challenging. (Rose-Ackerman, 2013).

In summary, corruption in economics can manifest both at the local level as state capture and at the national level. State capture represents a systemic form of corruption where interest groups shape policies and laws to serve their interests, while regulatory capture represents the distortion of regulation away from the public interest, often in favor of a specific industry. These phenomena have profound implications for economic growth and governance.

The capture of state power is considered an act of corruption and a complex coup, leading to severe economic inequality. When the state is seized, economic benefits become concentrated in the hands of the wealthy, as they have the power to control economic policies to favor their industries or businesses. This further enriches the already wealthy individuals, while the poor are denied the benefits they should receive. This economic impact exacerbates income inequality, making the rich richer and the poor even poorer.

If a state capture occurs, it becomes challenging to reverse or rectify due to several reasons: 1) The negative effects of a state takeover, while significant, are distributed across the entire population, resulting in limited public motivation for change. 2) State seizure typically follows legal and regulatory processes, making it difficult to hold those responsible accountable. 3) State seizures lead to mutual benefits for businesses and government officials, creating a tighter grip over time. 4) Reforms to reduce state power often require political mechanisms, which are challenging to implement because powerful state officials benefit from the existing system.

While seeking economic rent refers to compensation higher than the normal level, based on market competition, it can result from various causes, primarily rooted in the limited availability of resources, whether natural or intentionally created. The concept of economic rent has its origins in the theory of economic rent developed by David Ricardo, which states that land rent is a return for using land, which landowners receive as a windfall. Economic rent is akin to the economic

surplus that landowners receive without any effort. In the Thai cultural context, it may be similar to the idiom “working on someone else’s back.”

The corruption of state capture and rent-seeking is divided into two main schools of thought: the neoclassical economics approach and the political economy approach. The neoclassical economics approach views the pursuit of economic rent or earning profits above the normal level as unproductive and harmful to the economy. Proponents argue that seeking economic rent leads to transaction costs, reduced social welfare, diminished well-being for the population, high transaction costs, inflation, or inefficient resource allocation, hampering economic growth. Neoclassical economists often believe that government intervention cannot rectify this situation because all actors, whether politicians, civil servants, or the public, seek to obtain economic rent or privileges from the state in various forms. The important proposition of this school is that a good government is one with the least intervention and open opportunities for various interest groups to compete in a wide-open political market, pushing for policy changes (Pasuk, 2005).

The political economy approach proposed that certain Asian countries, despite experiencing high levels of rent-seeking, also achieve significant economic growth. This was evident in countries like South Korea, Malaysia, and Thailand in the 1970s. Khan argued that rent-seeking is not limited to rent originating from cronyism but also encompasses other types of rent that can have positive effects on the economy. These may include rents from innovation, competent management, regulatory capture, or the strategic transfer of resources, such as the state transferring resources to itself and investing them efficiently. Even rents acquired without any effort, like subsidies or the appropriation of public assets, can be beneficial for economic development as they serve as sources of income that individuals can use for capital accumulation. The exclusive focus on the negative aspects of economic rent, according to Khan, can lead to a narrow view of the opportunities for economic development that can arise from such corruptions (Khan & Jomo, 2000).

This section discusses the literature on corruption and growth. Corruption is seen as necessary for development in some views. On the other hand, corruption can cause underdevelopment and become an impediment to growth. We have multiple equilibria cases from the effects of corruption on growth and distribution. The paper argues for corruption of the lower equilibria in Thailand. The next section discusses growth and distribution identity for our purpose, discussing the types of technological progress and bias in capital accumulation.

2. Growth and Distribution, Technology, and Measurement

We show the potential effects of state capture and rent-seeking in Thailand through the growth and distribution identity. The relation between economic growth and the distribution of income is first looked at through macroeconomic accounting. We begin with the output-income identity, which states that income is distributed between wage and profit:

$$Y = wL + rK \quad (1)$$

where Y is income or output, w is the wage rate, L is the amount of labor, r is the profit rate, and K is the amount of capital.

Following the classical economists and Sraffa (1956), modern economic growth and distribution theories posit that the wage rate and the profit rate have an inverse relation. This is also known as the real wage-profit rate schedule (Foley & Michl, 1998), or the factor price frontier (Samuelson, 1962; Marglin, 1984). The relation is shown in equation (2).

$$r = \frac{Y}{K} \left(1 - w \frac{L}{Y} \right) \quad (2)$$

To determine the distribution of income, the first task is to find the wage rate and the profit rate in each period. Equation (1.2) highlights the trade-off between the wage rate and the profit rate. Similarly, if we divide equation (1) by output (Y), we have

the distribution of income between the wage share $\left(\frac{wL}{Y}\right)$ and the profit share $\left(\frac{rK}{Y}\right)$: $1 = \frac{wL}{Y} + \frac{rK}{Y}$. The wage share is the ratio of the wage bill (the wage rate multiplied by the amount of labor) over output. The profit share is a ratio of profits, or the profit rate multiplied by the amount of capital, and output $\left(\frac{rK}{Y}\right)$. The wage share and the profit share always sum up to 1. If the wage share increases, the profit share will decrease by the same percentage points.

With capital accumulation, it is necessary to discuss the stability of growth. The fundamental theory of economic growth begins with the Harrod-Domar problem, which poses the challenge that, in order to achieve stability in an economic system, continuous economic growth is necessary to maintain full employment. Economic growth must follow a stable natural law, where there is no unemployment and no conflict between capital and labor. However, there is no guarantee that the economic system will remain this way in the long run. The question that arises is how we can determine that economic growth, which depends on capital accumulation and technological changes in a stable equilibrium. Excessive investment may lead to overheated economic growth, while insufficient investment may cause the economy to contract. This concept illustrates the factors that determine the income growth rate from capital and labor. It suggests that achieving long-term equilibrium will result from changes in income distribution, which are external factors such as political conflicts, protests on the streets, and calls for democracy.

The Harrod-Domar problem is at the center of discussions concerning the stability of an economy with full employment in this market-based economic system. Robinson (1960; 1962) expanded upon this problem, shifting the focus to capital accumulation and technological development while emphasizing the issue of income distribution. When the rate of profit is separated from the condition of long-term full employment, it no longer affects the pattern of technological development and income distribution. Similarly, improving technology to be more efficient

depends on the decisions made by capitalists. The theory suggests that there will be neutral technological progress that benefits both labor and capital.

Under the influence of this Keynesian economics perspective, there has been a significant debate in the mid-20th century known as the Cambridge Capital Theory Controversy. One side, led by scholars such as Joan Robinson, Sir Roy Harrod, and Piero Sraffa, held different views compared to the other side, led by Paul Samuelson from the United States. This debate was centered around the measurement of capital, and the result of this controversy led to the distinction between two types of technological progress: Hicks-neutral technical change and Harrod-neutral technical progress. Even though they agreed on the idea of neutral technological progress and Kaldor's stylized facts, Hicks-neutral technical change explained that the last unit of labor and the last unit of capital will increase in proportion to each other. On the other hand, Harrod-neutral technical progress explained this through innovation coupled with a constant interest rate and the capital-output ratio.

Hicks-neutral technical change is a concept introduced by Hicks in 1932, which is based on the idea of the elasticity of substitution and is rooted in neoclassical theories of marginal productivity, distribution, and value. It posits that if the elasticity of substitution is equal to one, an increase in capital accumulation will proportionally increase the marginal productivity of both capital and labor. In this sense, the elasticity of substitution can be used to analyze the proportional change in the ratio of capital to labor per unit change in the marginal cost of production. In summary, the Hicksian view of technology is characterized as neutral technological progress, with the condition of maintaining full employment in the long run.

This concept can be applied in the theory of cumulative technological regression and has seen various periods in history where capital accumulation led to undesirable technological changes. These changes were characterized by increasing inequality and unjust outcomes, representing technological regression. Prominent

classical economists such as Adam Smith, David Ricardo, and Karl Marx have warned about the potential consequences of capital accumulation, leading to large firms dominating the market and using their power to harm income distribution. Ultimately, this could lead to a falling rate of profit, resulting in a crisis.

In the modern era, economists have attempted to formulate a theory known as “biased technological progress theory,” which explains the growth and income distribution in the era of neoclassical economics. The work of modern Marxists (Shaikh, 1987; Dumenil & Levy, 1995; Foley, 1999; Michl, 1999) aims to provide an explanation for the phenomenon where the share of capital factors increases while the rate of profit declines due to technological development that leads to a higher share of capital but lower profit per unit of capital. This outcome results from production sector preferences skewed toward investing more in capital than in labor. As a consequence, the capital factor’s proportion in production increases, even though the production from an additional unit of capital decreases. This implies that producers must invest more in high-capital factors to achieve an additional unit of output, leading to a decrease in average profits. This type of scenario is referred to as “Marx-biased technological progress.” As a result of declining profits from investments in capital factors, labor demands higher wages. Biased technological progress ultimately leads to increased labor costs but higher proportions of capital factors used in production, which results in a higher share of capital but lower profits. This happens because the increase in the proportion of capital factors in production occurs at a higher rate than the rate of profit decline.

When comparing developments based on neoclassical theory while adhering to a technology-neutral perspective, capital accumulation can occur with an elasticity of substitution that is less than one (Chirinko, 2008; Leon-Ledema & Satchi, 2015). In the long run, businesses tend to develop technology, focusing on capital-intensive technologies. They invest more in technology development for capital factors, even though capital becomes less efficient and requires

substitution to reduce labor use. This technological development trend results in the characteristics of a neoclassical system where labor and capital shares remain the same and the profit rate stays constant, but the capital-output ratio increases. Consequently, this leads to income distribution becoming skewed toward capital rather than labor.

However, for the critiques of both Marxist and neoclassical circles, when compared to the circumstances of the modern era, Piketty's work (2014) indicates that as time progresses and capital continues to expand, income inequality tends to follow the path of capital. This phenomenon is underpinned by mechanisms in the market-based economy, meaning that whenever the rate of return on capital (profit from business) is higher than the economic growth rate, income inequality increases. This relationship can be described in a simple equation: $r > g$. When examining the history of global capital, this phenomenon is influenced by two main natural factors: the trend of a higher profit rate than economic growth and the increasing capital-to-labor ratio.

However, there are periods when income inequality declines, and the economic growth rate increases. According to Piketty (2014), this phenomenon can be explained by the assumption that human capital increases. Specifically, in the early 20th century, when the capital-to-labor ratio increased to a certain extent, external shocks such as both world wars and pandemics had an impact. This influenced income distribution by increasing human capital through the diffusion of knowledge, which was achieved through education and skill development. When the rate of return on capital increased in tandem with economic growth, income inequality decreased. Nevertheless, when examining the long-term history of capital accumulation, this phenomenon appears to be temporary and specific to the historical context of capital accumulation. When capital reaches its limit, typically in advanced technological countries, the economic growth rate gradually increases to a point where it can no longer rise. This is due to the law of

diminishing returns and external factors in the 1970s, such as stagflation, which led to economic policy changes like taxation and monetary policies. These changes initiated a shift towards higher capital-to-labor ratios, resulting in income distribution becoming skewed once again (Piketty). Capital accumulation reversed back into a model similar to Marx's, where benefits are shared with capital, and profits from businesses are more significant than labor income.

Biased technological progress then leads to an increased capital accumulation tendency, and in the long term, the capital-to-labor ratio has an increasing trend, pushing the economy toward a biased technological progress that deviates from the theory of neutral technological progress (Nukulkit, 2019). Nonetheless, the debate on global growth and income distribution theory is not settled, but it can be argued that the phenomenon of technological regress mentioned in the works of Marx and the elasticity of substitution less than one may indicate a form of core capitalism that contradicts the theory of uniform growth and income distribution.

In the next section, we show biased technological progress through 3 variables: the capital-output ratio, the profit rate, and the divergence between wage and labor productivity. According to equation (1) of growth and distribution accounting identity, $Y = wL + rK$ output equals wage and labor plus profit and capital. Manipulating the equation yields the 3 variables that we need to measure the type of technological progress from capital accumulation.

First, the profit rate (r) shows the percentage of returns on capital that the capitalist received. Noted that the profit rate is not equal to the rate of growth, since the profit rate also depends on the conflict in the distribution of income between capital and labor. If capital oppresses labor, the rate of profit can be higher than the rate of growth. In the case of a low growth rate, the profit rate is likely to decrease following the growth rate. However, this might create a conflict in the distribution of income, where the capitalist retains the profit rate by withholding wage productivity, resulting in Marx's crisis.

Second, the capital-output ratio is shown by capital over output ($\frac{K}{Y}$), which indicates the amount of capital (K) that is needed to produce an output (Y). The capital-output ratio is a standard measurement in growth and distribution literature, showing the efficiency of capital input or investment, existing machines, and knowledge in production. If the capital-output ratio increases or decreases, the economic production faces biased technological progress of lower capital efficiency and vice versa. If the capital-output ratio stays constant, the technological progress is neutral, in which the neutral technological progress is a stable equilibrium of balanced growth.

Third, the wage rate (w) and labor productivity ($\frac{Y}{L}$) show the supposed payment of wage according to the productivity of labor input. It shows the degree of conflict in the distribution of income. If the wage rate follows the labor productivity, the workers receive payment according to their productivity. If the wage rate falls behind the labor productivity, the distribution of income will shift toward the capital share. This shows a conflict between capital and labor, in which capital gains an upper hand. The same applies in the case that the wage rate is higher than the labor productivity. Biased technological progress plays an important role here, since it decreases the capital-output ratio and possibly the growth rate. To maintain the profit rate, capitalists need to pay workers less than their labor productivity, causing conflict in the distribution of income.

The next section illustrates the accumulation of biased technological progress in Thailand, which is characterized by (1) a decrease in the profit rate, (2) an increasing capital-output ratio, indicating less capital efficiency and shifting income distribution toward capital, and (3) a divergence between wage and labor productivity. The paper argues that corruption of state capture and rent-seeking put Thailand in a lower equilibria of biased technological progress underdevelopment. We source the data from Penn World Table, a comprehensive data source matching the growth and distribution accounting, which also provides standardized data

comparable to other countries in the world. For wage and labor productivity, we source data from the Bank of Thailand. The data provides the wage cost index and the labor productivity index in detail by sector, in which the two indices prove consistent for comparing the payment of wages to the supposed returns from labor productivity.

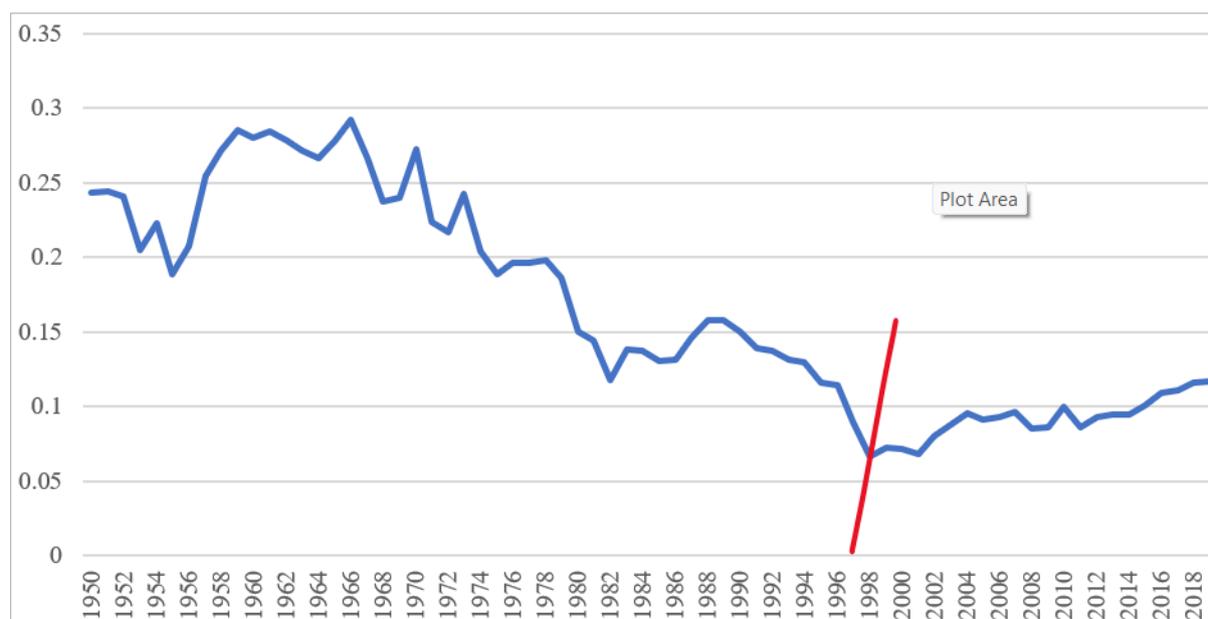
3. Capital Accumulation and Underdevelopment Pattern in Thailand

Since the economic crisis of the 1997 Asian financial crisis, the Thai economy has experienced low growth rates and never recovered. This section presents data on the accumulation of biased technological progress in Thailand using the specific indicators mentioned earlier, i.e., profit rate (see Appendix), capital/output ratio, and wage and labor productivity.

For the profit rate, as seen in equation (2) of growth and distribution, studies by Basu et al. (2022) and Marquetti et al. (2021) have calculated the global net profit rates for a total of 170 economies from 1950 to 2019 (Figure 1). One of these economies is Thailand. They used the formula that calculates the net profit rate net profit rate (r^N) as the capital share in GDP by multiplying the labor share in GDP by the output-capital ratio ($\frac{Y}{K}$). The output-capital ratio is calculated as the GDP (Y) divided by the total capital stock (K), minus the depreciation rate of the capital stock (D_K). Importantly, all these variables are expressed in nominal terms at current prices. This equation allows for the calculation of net profit rates based on the relationship between capital, labor, and economic output for Thailand and other countries, providing insights into the dynamics of the Thai economy and how it compares to global trends in biased technological progress.

$$r^N = \left[(1 - \text{labor share in GDP}) * \left(\frac{Y}{K} \right) \right] - D_K \quad (3)$$

Figure 1. Thailand rate of profit (r) 1950–2019



Source: Extended Penn World Table 7.0 | Unit: Ratio.

When using data from the Extended Penn World Table 7.0 (EPWT 7.0) for these calculations, we can refer to version 7 to ensure consistency and compatibility with other studies (Basu et al., 2022; Marquetti et al., 2021). It is evident that the changes in the profit rate of the Thai economic system are declining. However, when delving into specific time periods, the profit rate of the Thai economic system is observed to fluctuate over different decades. For example, between the mid-1950s and the mid-1960s, it had an upward trend. Then, between the 1970s and the early 1980s, it exhibited a downward trend. Afterward, the profit rate increased during a short period before declining again between the late 1980s and the late 1990s, which coincided with the Asian financial crisis in 1997. From the early 2000s to the late 2010s, although the profit rate exhibited a general upward trend, it fluctuated within a narrow range compared to the changes in the profit rate during the preceding decade.

When using historical economic context to explain the changes in the profit rate of the Thai economic system, we find that during the period when the profit rate increased between the mid-1950s and the mid-1960s, it coincided with the promotion of import-substitution industries. These industries absorbed a significant amount of labor transitioning from the agricultural sector, effectively creating an

“army of reserve labor,” as per Marx’s definition, which contributed to a labor force surplus and limited the upward adjustment of wage rates.

During this period, the demand for labor in the industrial sector, combined with the oil shock, led to a reduction in the profit rate in the 1970s and the early 1980s. Subsequently, the expansion into new sectors such as steel, petrochemicals, and automobiles, which received protectionist policies, contributed to a short-term increase in the profit rate. However, the liberalization policies introduced in the 1990s increased competition, leading to a decline in profit rates, reaching their lowest point during the 1997 Asian financial crisis. While there was a subsequent period of economic recovery from 2003 to 2004, the lack of structural change in the production base and resistance to innovative technologies restrained significant increases in the profit rate.

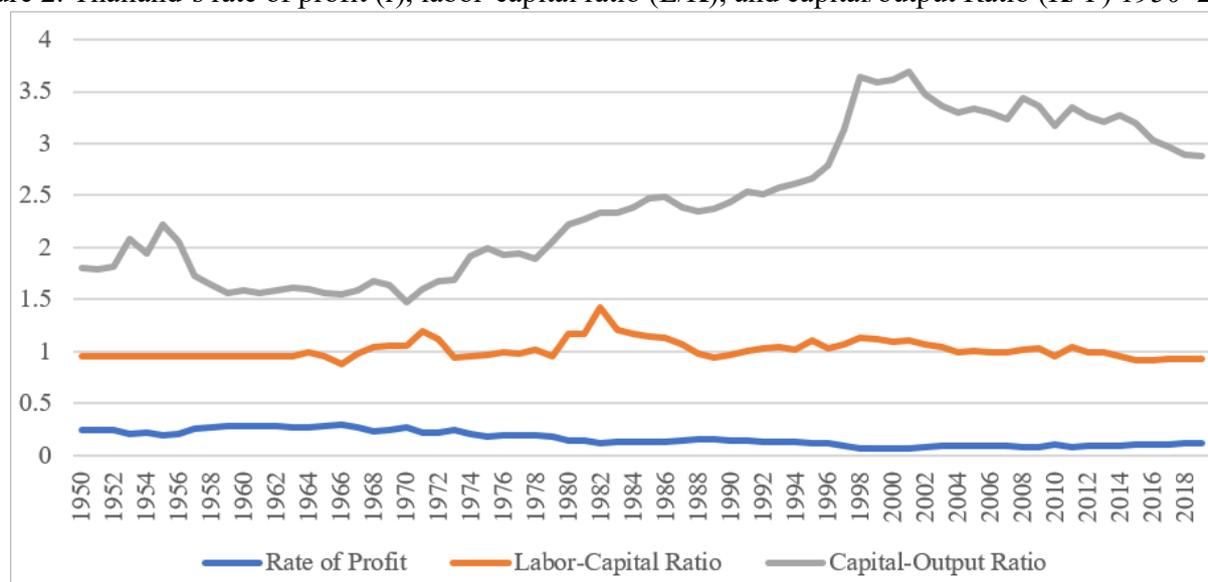
In a broader perspective, we can interpret the changes in the profit rate as a result of structural changes in the economy. During the early years from 1950, Thailand accumulated capital, leading to a consistently falling rate of profits, aligning with Marx’s theory of the falling rate of profits. Rapid capital accumulation and changing technology toward more capital-intensive production resulted in high growth rates but a consistent decline in the profit rate over several decades. The economic structure began changing after 1997, with low profit rates, low economic growth, and skewed income distribution, indicating an economy in which capital accumulation was declining. Even though Thailand was still a developing country, capital efficiency was decreasing, and capital accumulation was characterized by retrogression. In this analysis, we can conclude that the Elasticity of Substitution between Capital and Labor exhibited a retrogressive characteristic.

In this context, if we delve deeper into the reasons for changes in the profit rate, it can be divided into two factors. One is the share of capital in GDP, and the other is the output-capital ratio. In the case of Thailand, the share of capital in national production has fluctuated within a narrow range, and the output-capital ratio

has changed in alignment with changes in the profit rate. A similar trend is not unique to Thailand but can also be observed in Indonesia, Malaysia, and the Philippines. Initially, it can be inferred that the profit rate is primarily determined by the efficiency of capital factors in production rather than changes in labor factors in the economic system.

This suggests that changes in the efficiency of capital factors are related to the embedded technological development in the capital factors. Going back to the proposition of biased technological progress, the assumption is that biased technological progress will manifest in the form of a higher capital-output ratio. Considering the chart, the share of capital factors used in production in Thailand increased significantly before gradually decreasing until 2000, before continuing to decline. It can be inferred that the Thai economy has faced a situation of biased technological progress in a way that the efficiency of capital has significantly decreased from 1970 to 2002.

Figure 2. Thailand's rate of profit (r), labor-capital ratio (L/K), and capital/output Ratio (K/Y) 1950–2019



Source: Calculated from Extended Penn World Table 7.0 | Unit: Ratio.

Figure 2 above delves into the evolution of the Thai economy, focusing on the profit rate, the labor-capital ratio, and the capital-to-output ratio. The labor-capital

ratio remained relatively stable from 1950 to 2019, with minor changes in the division between labor and capital. However, the capital-to-output ratio increased significantly. The increasing accumulation of capital over time expanded production horizontally, but there was still a significant reliance on labor-intensive production. This suggests that labor-intensive production continued, and there wasn't a strong emphasis on technology-driven production.

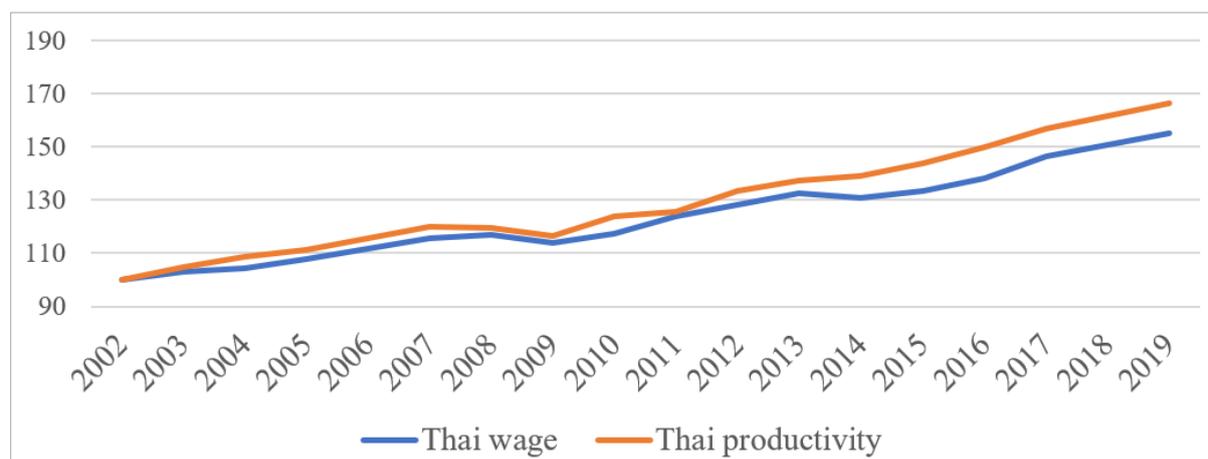
The rise in capital in Thailand was accompanied by a greater influx of labor into the production system, but technology did not strongly augment the labor force. Before the economic crisis, the profit rate decreased, followed by an increase in the capital ratio, indicating a pattern of biased technological progress in a Marxian sense. However, after the economic crisis in 1997, a trend of stable profit rates reemerged at a time when the capital-to-output ratio showed a declining trend. This pattern suggests that the elasticity of substitution between labor and capital was less than one.

For the analysis of the efficiency and wage direction in considering wage levels and labor productivity in Thailand, this paper will utilize the Wage Cost Index and Labor Productivity Index calculated by the Bank of Thailand. The Wage Cost Index is constructed based on data from the Labor Force Survey conducted by the National Statistical Office. It reflects changes in wage price levels and labor service in each production sector. Importantly, it does not reflect the impacts resulting from changes in the number of workers, hours worked, or other labor market dynamics. This index is calculated by comparing price levels that have changed from a base year.

The Wage Cost Index covers various components of labor costs, including wages, overtime pay, bonuses, and other monetary benefits, as well as non-monetary benefits. On the other hand, the Labor Productivity Index is used to measure labor productivity per hour worked (Figure 3). It is calculated based on the proportion of GDP at constant prices per hour worked. The data on GDP at constant prices are

prepared by the National Economic and Social Development Council. Data on the Labor Force Survey, which includes information on the labor force, is collected by the National Statistical Office.

Figure 3. Thai wage and labor productivity 2002–2019



Source: Bank of Thailand.

When considering the data from the Wage Cost Index and Labor Productivity Index from 2002 to 2023, using 2002 as the base year, it is observed that, in general, the Wage Cost Index has been growing faster than labor productivity, with some minor variations. Starting from 2002, the Labor Productivity Index showed faster growth compared to the Wage Cost Index, up until around 2007, after which the Labor Productivity Index growth began to slow down. However, when examining the data of the Wage Cost Index and Labor Productivity Index from 2013 to 2023, using 2013 as the base year, a different pattern of change in wage levels and labor productivity is evident. It is observed that after 2013, labor productivity has been growing faster than wage levels, and this trend continues.

From the Wage Cost Index and Labor Productivity Index data spanning from 2002 to 2023, it can be interpreted that if left to market mechanisms, wage growth in the Thai economic system would not keep up with the growth of labor productivity. From 2002 until before 2012, labor productivity grew slightly faster than wages. However, in 2012, the Thai government implemented a policy to increase the minimum wage significantly, resulting in an increase of up to 60% of

the previous minimum wage. This led to a rapid increase in the Wage Cost Index from 2012 onward, outpacing labor productivity. However, when considering wage and labor productivity growth from 2013 onward, using 2013 as the base year, it is evident that labor productivity has continued to grow faster than wage levels.

These observations provide some evidence contradicting the neutral technological progress of capital accumulation. It is essential to note that capital accumulation in Thailand has a technologically regressive characteristic. This information can be used as a starting point for a systematic analysis of state capture and economic rent-seeking behaviors.

4. Conclusion: Multiple Equilibria of Corruption in the Case of Thailand

This paper attempts to link corruption to the underdevelopment of Thailand. The empirical observations in the last section show biased technological progress in Thailand's underdevelopment. Capital accumulation in Thailand involves state administration, democratic politics, and the informal sector. The political relation between the state and political class actors on capital accumulation is well known (Suehiro, 1992; Chris & Pasuk, 1995). Economic development literature sees corruption as a natural process and sometimes necessary in dealing with political class actors along the path of capital accumulation. However, corruption in Thailand proves to be an impediment to growth and development, in contrast to "grease in the wheel." The paper shows this through: 1) the falling and stagnant rate of profits, 2) the rising capital/output ratio, and 3) the divergence between wage and labor productivity.

In growth and distribution analysis, this pattern of capital accumulation shows biased technological progress that shifts the distribution of income toward capital instead of labor. In the case of Thailand, biased technological

progress and low growth contribute to underdevelopment. It is an undesirable outcome, which the paper points out as possibly due to corruption. Corruption can lead to multiple equilibria to growth and development (Murphy et al., 1993; Mauro, 2004). Economic activities that attract corruption have an increasing returns aspect intrinsic to their production. Corruption comes in the form of rent-seeking that is allowed by poorly protective property rights. There can be two equilibria, where corruption leads to good development outcomes and bad development outcomes. This can also be described in terms of a game between political actors, namely the citizens and the politicians. The fewer the number of political elites, the more likely a good equilibrium exists.

In classical political economy, particularly Marxist, the capital accumulation pattern of biased technological progress is a natural outcome of capitalism (Shaikh, 1987; Dumenil & Levy, 1995; Foley, 1999; Michl, 1999). Capitalists compete for profits in a real competition that results in a bad outcome. This paper aims to add to the idea of corruption, particularly in the big picture of rent-seeking and state capture, which represents real competition of capitalism. In real competition, capitalists corrupt and obtain state power for profit by capturing the state. The process impedes productive activities and results in biased technological progress. There is no mechanism or transparency to control this variety of corrupted capitalism that leads to exploitation, low growth, and underdevelopment.

In context, Thailand falls into the lower equilibrium of corruption represented by biased technological progress. In addition to Acemoglu and Robinson (2008, 2010), our paper propounds that institutions have a more dynamic role in selecting the type of technological progress of the whole system. The Thai economy is known for extreme wealth and income inequality. Thailand has a complex economic system, social institutions, and history, with the Thai economy defined by, e.g., monopolistic production, informal

economy, military, corruption, and gender roles. Elitism is the predominant ideology controlling the Thai rules of law and social institutions and pervades the country's democratic processes and constitution.

State capture and rent-seeking are common practices and are normalized. The government allows monopolistic production and grants exclusive rights to certain groups of people. Most big businesses rely on central government contracts and projects and feed on subsidies, land, and natural resource grants. As a result, Thai corporations have no need to innovate. Capital accumulation spreads to decreasing returns production, benefiting only a small group of people. Thai corporations rely on borrowed technologies, increasing the capital-output ratio and creating a biased technological progress.

Corruption of human nature and morals is an ongoing debate in Thai society, in which economic corruption is a part. Most attempts to tackle corruption in Thailand focus on the micro level, e.g., education, governance transparency, and checks and balances in institutions. In the authors' opinion, the causality and roots of the problem lie in the ideology and worldview prevailing in the system. Hence, our policy recommendation is to strengthen democratic processes, embrace pluralistic debate from different perspectives, and allow for spontaneous change of the rule of law and social institutions. To put it into perspective, Thai agencies for governance of checks and balances, e.g., the Trade Competition Commission of Thailand and the National Broadcasting and Telecommunication Commission, fail and cannot function due to the institutional structure of state capture. Thailand, thus, needs structural institutional change supported by collective social movements.

Acknowledgements

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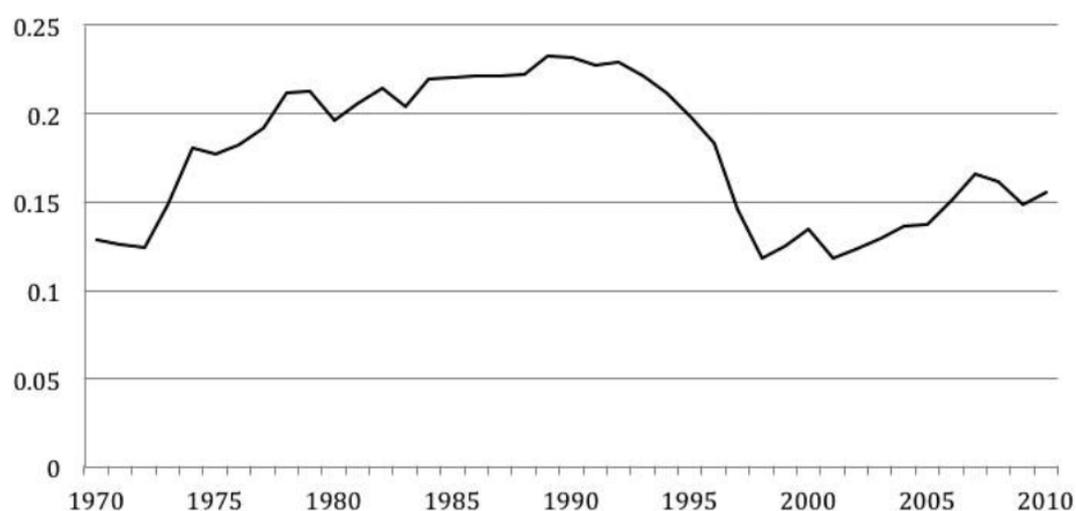
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Appendix: Literature on the Thai Rate of Profits

Phumma (2014) used Weisskopf's approach in the determination of the rate of profit in Thailand's Non-farm Sector. He defines "Total Output" (Y) as GDP minus provision for consumption of fixed capital, "Net Profit" (Π) as combinations of private savings, income from real estate, private direct tax, private transfers, and unincorporated profits, minus interest from household debt, and imputed rent, "Wages" (W) as from Total Output minus of profit, and "Capital Stock" (K) as private capital stock minus of capital stock of real estate, rents, and other business activities. Using an econometric estimation from primary data of National Income, Gross Domestic Product, Capital Stock, and Price Indices, the result from a calculation done via this approach is shown below.

The Non-farm Profit Rate in Thailand from 1970 to 2010



Source: Phumma (2014)

Meanwhile, Duménil and Lévy (1993) have defined profit rate (r) as a ratio of "a measure of profit" (Π), which is expressed as a difference between output and costs ($Y - W$) measured in price terms, to "a measure of capital" (K), which is a stock of investment in the certain time and evaluated at their current cost. They also mention that "profit rate" is different from "share of profit," which is a fraction between profit and total income, and "profit margin," which is a fraction between profit and costs.

As a result, the basic formula by Duménil and Lévy can be written as the following equation:

$$r = \frac{\Pi}{K} = \frac{Y - W}{K}$$

To make the calculation “more practical” for real-world calculation, Duménil and Lévy suggested that aggregate profit (Π) can be derived as “aggregate output” (Y), resembling the Net National Product (NNP) that is equal to Gross National Product (GNP) being subtracted with the depreciation of fixed capital, then being subtracted by “aggregate costs” (W) which are composed of total compensation of labor or a sum of wages and additional contributions to labor, a difference between interests being paid and earned by firms, and tax paid by firms including indirect business taxes and corporate profit taxes. Meanwhile, the aggregate capital stock (K) is derived by the combination of capital stock in terms of land, fixed capital, inventories, and financial assets, which can be used both in terms of gross or net capital stock.

Following these recommendations, the equation can be derived as

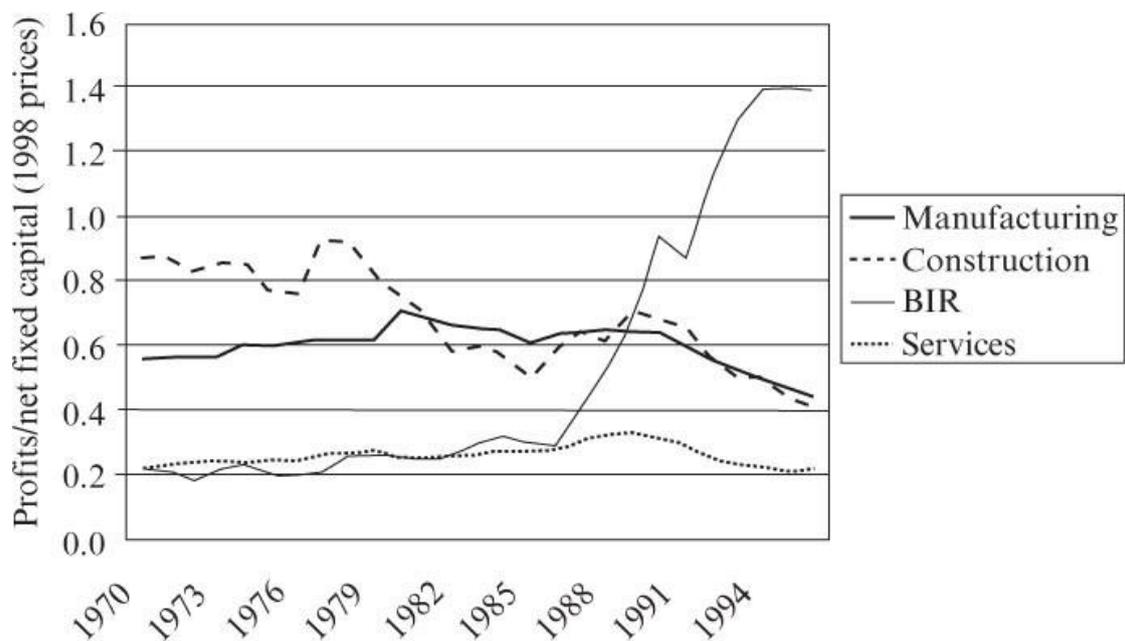
$$r = \frac{NNP - (Total\ Compensation + Net\ Corporate\ Interest + Net\ Corporate\ Tax)}{Net\ Land + Net\ Fixed\ Capital + Net\ Inventories + Net\ Financial\ Assets}$$

Meanwhile, the basic formula can further be derived as a multiplier between the productivity of capital (P_K), which itself is a fraction of output (Y) and capital (K), and share of profit (π), which itself can be derived as an inverse of a fraction between unit real wage rate (w) and the productivity of labor (P_L). The final form of the equation by Duménil and Lévy can be written in the form of equations as

$$r = \frac{\Pi}{K} = \frac{Y - W}{K} = P_K \left(1 - \frac{w}{P_L}\right) = P_K \cdot \pi$$

Glassman (2001) used the aforementioned technique in the calculation of the rate of profit by sector, using a number from the *National Accounts* and *Capital Stock of Thailand* provided by NESDB. The results are shown below.

The Rate of Profit of Thailand from 1970 to 1996



Source: Glassman (2001)