



A Look Into the Association Between the Asian Financial Crisis and the Per Capita GDP Growth Slowdown in Thailand

Jianhan Zhang

Shandong Experimental High School, Jinan, Shandong, China, 250000
Email: 13370589521@163.com

Abstract

Based on a framework stemming from previous literature and the neoclassical growth model, this paper examines how the Asian financial crisis might be associated with Thailand's per capita GDP growth slowdown after the crisis. The paper first looks into the probable effect of the crisis on Thailand's pre-crisis, capital-driven growth pattern. Then, the paper studies whether the crisis disrupted Thailand's transition to a TFP-oriented growth pattern, which is believed to be essential for middle-income countries like Thailand to sustain their growth. It is found that while the Asian financial crisis possibly slowed the capital accumulation in Thailand, it did not seem to affect the country's transition to the TFP-led growth. Thailand's reduction in per capita GDP growth is likely to be a result of crisis-induced capital growth slowdown and inherently TFP growth sluggishness.

Keywords—*Asian financial crisis; economic growth; capital accumulation; total factor productivity; Thailand*

1. INTRODUCTION

During the latter half of the 1980s and the former half of the 1990s, the southeast Asian economy Thailand enjoyed rapid per capita GDP growth. According to data from the World Bank, Thailand's average per capita GDP growth from 1986 to 1995 was 7.8 percent, while the world per capita GDP growth for the period averaged only 1.2358 percent [6][7]. What was even more notable was that the country's per capita GDP growth remained above 7 percent for a consecutive nine years starting from 1987 [7]. In hope that it would proceed to high-income economies like the previous four "Asian dragons", critics even classified Thailand into the "Asian tigers". However, the Asian financial crisis that began in 1997 seemed to have stopped the country's rapid growth forever, with its average per capita GDP growth from 2000 to 2019 being a mere 3.4 percent [7]. Today, Thailand is still classified by the World Bank as a middle-income country [8].

Given the comparison above, one may intuitively suspect that the Asian financial crisis can be at least part of the reason for the economic growth slowdown in Thailand, but this is likely a blind spot of research. Existing literature has paid abundant attention to the

cause of and policy implications from the Asian financial crisis. There is also ample research on the reasons underlying the sluggish post-crisis economic growth and suggestions to accelerate the growth. Nevertheless, little heed was given to the relationship between the crisis and Thailand's slow economic growth.

This paper examines the effect of the Asian financial crisis on the per capita GDP growth in Thailand to bridge the aforementioned research gap. Section two reviews economic theories and previous literatures to establish an analytical framework for this paper. In section three, relevant data are analyzed under the framework to assess which aspect of Thailand's growth may be impacted by the crisis. Section four further interprets the results of the data analysis in section three. Finally, a conclusion of the whole paper is provided in section five.

By examining the relationship between the Asian financial crisis and the slow per capita GDP growth in Thailand, this paper may shed new light on the potential aftermath of financial crises. Besides, this paper may offer a basis for potential remedies to the undesirable results of the crises.

2. LITERATURE REVIEW

The sustained high economic growth in the late 20th century of East Asian economies, including Thailand, attracted a large number of researchers to investigate its underlying reasons. The results of many of the studies, though varying slightly, agree that Thailand's growth before the crisis was powered by capital accumulation. Young finds that the sustained high growth can be explained by factor accumulation and sectoral reallocation of resources [11]. Krugman argues that the growth is input-driven and thereby susceptible to diminishing returns [3]. Stiglitz attributes east Asia's high growth to a combination of high savings rate and human capital accumulation, a stable and market-oriented environment, and active government interventions [5]. Contrary to the capital accumulation notion above, some economists suggest that the east Asian high growth is owed to productivity gains. In response to this, Page concludes with empirical data that factor accumulation, rather than productivity gain, played a major role in the growth of low- and middle-income east Asian economies [4]. Similarly, Collins, Bosworth, and Rodrik state that high savings and investment, which may be propelled by government policies, played a major role in east Asian growth, while the role of education, total factor productivity (TFP), and technological diffusion were not as spectacular [1].

Nevertheless, as east Asian economies like Thailand experienced sluggish growth following the crisis, research on the solution to the growth slowdown prevailed. Tran Van Tho argues that it is necessary for middle-income countries to shift to more innovative, skill-intensive industries to maintain growth, which means the growth in those countries should be increasingly TFP-oriented [9]. Similarly, Wilson points out that middle-income countries should base their growth on high productivity, instead of on cheap labor and capital, to realize their transition to the high-income status [10]. Furthermore, Hu et al. find that human capital accumulation (which tends to move in tandem with the TFP) is rewarding for economic growth and the avoidance of the "middle-income trap" [2]. Considering these research results, it is reasonable to suppose that transition to TFP-oriented growth can be a remedy to the slow growth.

As far as the review goes, it becomes clear that the middle-income state is likely a threshold of an economy's development, where the economy must alter its development strategy to achieve further growth. This is in line with a "turning point" model of economic growth proposed by Tran Van Tho, who studied the problem of the "middle-income trap" in ASEAN countries. In his paper, Tran Van Tho argues that the middle-income state is a turning point for an economy advancing to the high-income state from an underdeveloped status. While input-driven growth is

sufficient for underdeveloped economies to reach the middle-income state, transition to a more skill-intensive growth pattern is necessary for sustained growth through the "turning point" and toward the high-income state [9].

Considering that Thailand is currently stuck in the middle-income state, the above analysis can be applicable to analyzing Thailand's economic growth. This paper thereby hypothesizes that the crisis contributes to Thailand's growth slowdown in two ways: that it flooded the country's original, capital-driven growth pattern, and that it weakened the country's potential to transition to the new, TFP-oriented growth pattern. The rest of the paper will examine the validity of the two hypotheses with empirical evidence and provide an interpretation of the result of the examination.

3. THE NEOCLASSICAL GROWTH MODEL

The analysis in this paper is rooted in the neoclassical growth model. This section will outline the features of the model that are related to this paper's analysis.

3.1. The Production Function

The production function gives how many goods and services an economy can produce with a given amount of resources in the long run, assuming that there is neither the public sector nor international trade.

Assume the production function is in Cobb-Douglas form,

$$Y = AK^{\alpha}L^{\beta}$$

where Y represents output, A represents total factor productivity (TFP, a measure of the overall efficiency of an economy's production), K represents the amount of physical capital, L represents the amount of labor, and α and β are designated the importance of capital and labor inputs in determining output, respectively.

Assume constant returns to scale, the formula for per capita output (per capita real GDP) is derived by dividing output, the amount of capital, and the amount of labor all by the amount of labor,

$$y = Ak^{\alpha}$$

where y represents per capita output, A represents TFP, k represents per capita capital, and α is designated the importance of capital input in determining output.

From the formula, it can be told that the higher the TFP, the amount of capital, or the amount of labor, the higher the total output. However, in terms of per capita output, the amount of labor makes no difference. Instead, per capita output is determined by the TFP and per capita capital.

3.2. Growth Accounting

Growth accounting is a method to attribute economic growth to the TFP, the amount of capital, and the amount of labor.

To derive the formula for growth accounting, take the derivative of the aforementioned Cobb-Douglas production function with respect to time and manipulate the resulting function. The final form gives,

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + \beta \frac{\Delta L}{L}$$

In the above formula, the growth of the output is attributed to the growth of TFP, of the amount of capital, and of the amount of labor. The same manipulation can be applied to the aforementioned formula for per capita output, which gives,

$$\frac{\Delta y}{y} = \frac{\Delta A}{A} + \alpha \frac{\Delta k}{k}$$

In the above formula, the growth of the output is attributed to the growth of TFP and of per capita capital.

In this paper, growth accounting will be employed to attribute GDP growth to the growth of TFP, the amount of capital, and the amount of labor. This paper will also take advantage of the growth accounting for per capita output to attribute per capita GDP growth to the growth of TFP and of per capita capital.

4. DATA ANALYSIS

4.1. The Crisis and Thailand's Pre-Crisis Growth Pattern

Since Thailand's pre-crisis growth pattern has been defined as driven by capital accumulation, this section will first examine Thailand's rate of capital accumulation. Besides, this section takes a further look at the country's investment level and capital depreciation because the neoclassical growth model suggests that investment "creates" capital and depreciation "destroys" capital.

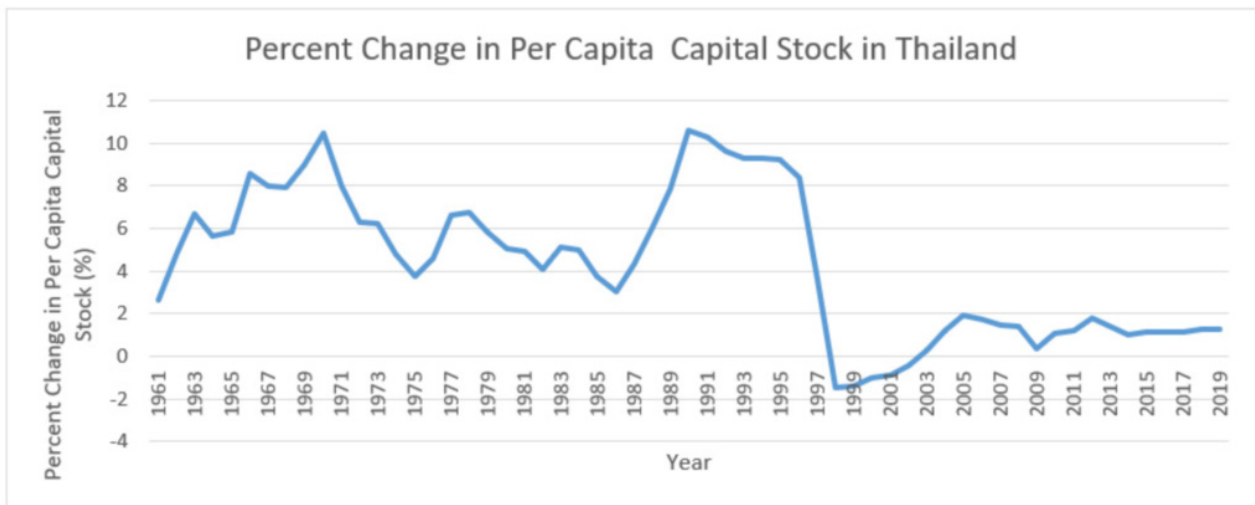


Figure 1. Percentage Change in Per Capita Capital Stock in Thailand

Percent change in per capita capital stock is a direct measure of capital accumulation. As shown in Figure 1., before the crisis, the percent change in per capita capital stock mostly fluctuated between 4 and 10 percent, with the figure maintaining a sustained high level at about 10 percent from 1990 to 1996. However, the figure dropped

to negative during the crisis and remained at less than 2 percent after it rebounded from its trough. The sharp contrast between the pre- and post-crisis levels suggests that the crisis probably slowed Thailand's capital accumulation in the long term.

Source: Author's calculation based on data from the Penn World Table, version 10.0.

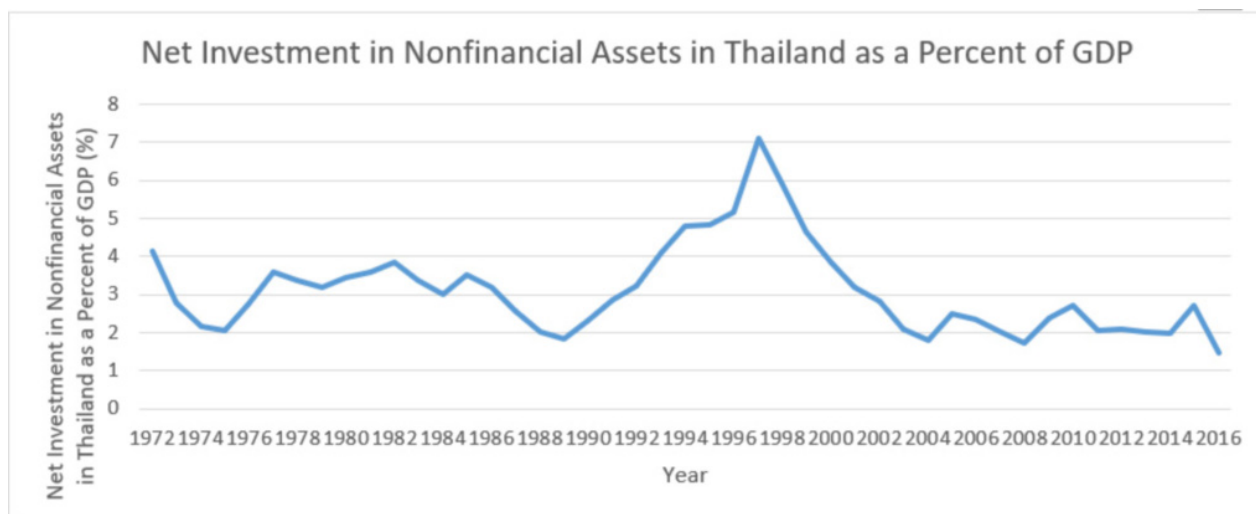


Figure 2. Net Investment in Nonfinancial Assets in Thailand as a Percent of GDP

The investment level is examined using net investment in nonfinancial assets as a percent of GDP. As in Figure 2., the indicator remained at around 3 percent on most occasions in the 1970s and the 1980s. After a marginal decrease in the late 1980s, the figure

soared until 1997, when it peaked at over 7 percent. Nevertheless, with the beginning of the crisis, the figure declined steadily until it stayed at about 2 percent. It is likely that the level of investment is reduced as a result of the crisis.

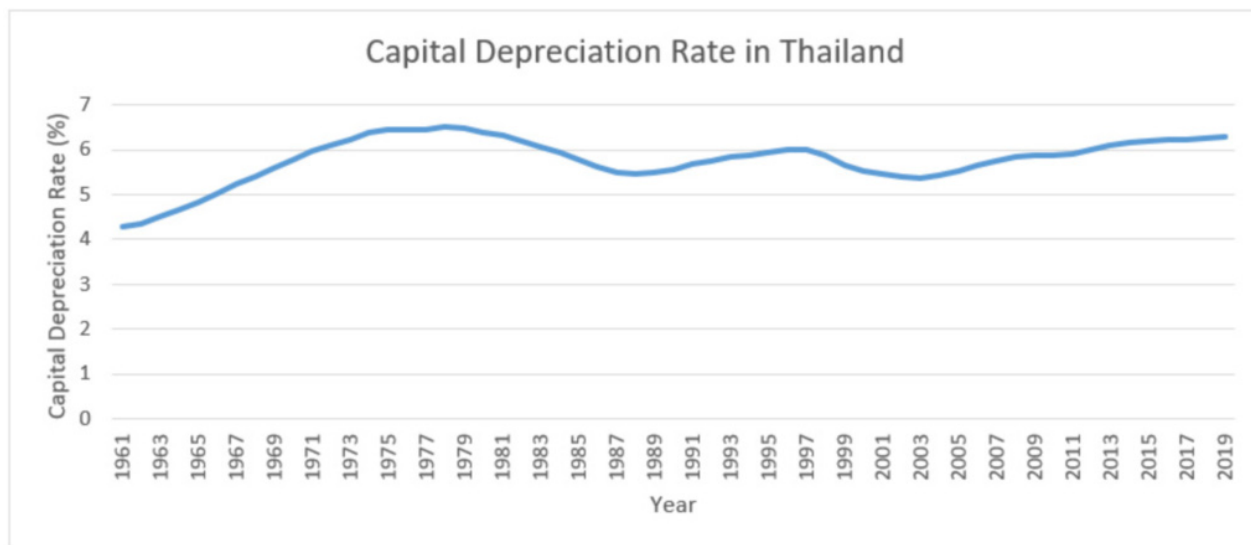


Figure 3. Capital Depreciation Rate in Thailand

Source: Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), "The Next Generation of the Penn World Table" American Economic Review, 105(10), 3150-3182, available for download at www.ggd.net/pwt

Finally, Figure 3. shows a relatively stable depreciation rate in Thailand, which remained at around 6 percent both before and after the crisis. The failure to see a sharp contrast in pre- and post-crisis depreciation rates suggests that the crisis was not likely to have impacted the capital depreciation of the country.

4.2. The Crisis and the New Growth Pattern

In order to assess whether the crisis impeded Thailand's route towards a TFP-oriented growth, this section starts by examining the weight of the TFP in the country's economic growth. Besides, this section will look at the growth of TFP in Thailand and how it compares with other economies.

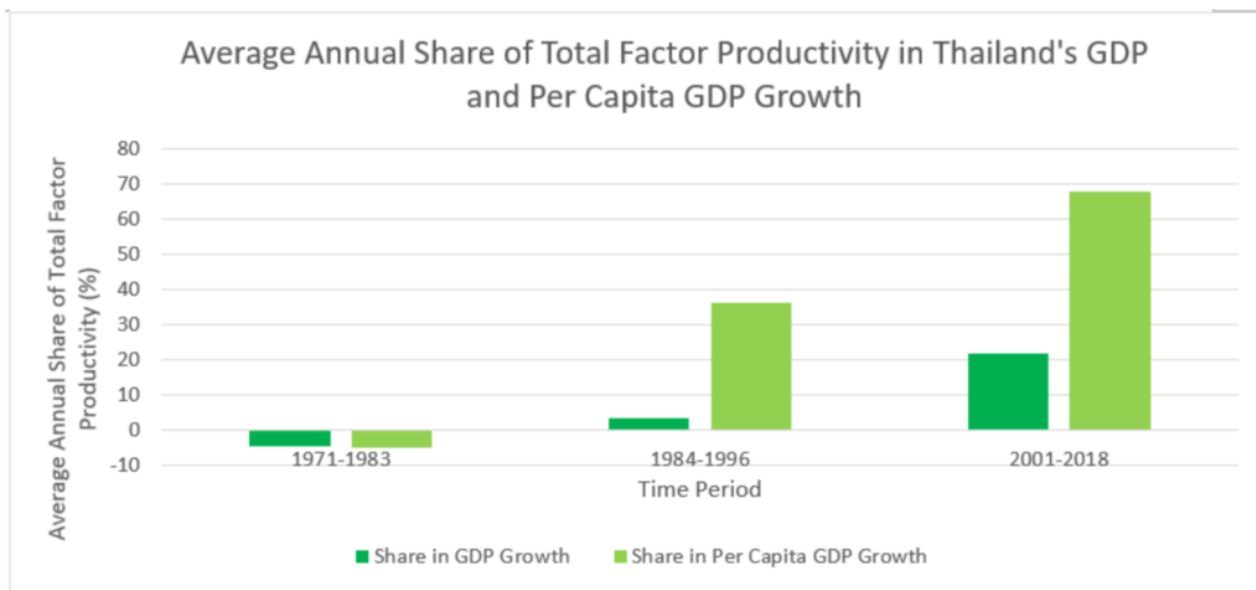


Figure 4. Average Annual Share of Total Factor Productivity in Thailand’s GDP and Per Capita GDP Growth

Source: Author’s calculation based on data from the Asian Productivity Organization, APO Productivity Database 2020.

The weight of the TFP in Thailand’s economic growth is represented in this section by the shares of the TFP in the country’s GDP and per capita GDP growth, which are calculated with growth accounting. A higher share of TFP indicates a greater portion of growth attributed to the TFP, and, therefore, the greater importance of the TFP in growth. Figure 4. shows that

before the crisis, the share of TFP generally increased in the growth of both GDP and per capita GDP as time progressed. What is notable is that this trend was sustained after the crisis, which means that the crisis did not seem to hurdle Thailand’s transition to TFP-oriented growth.

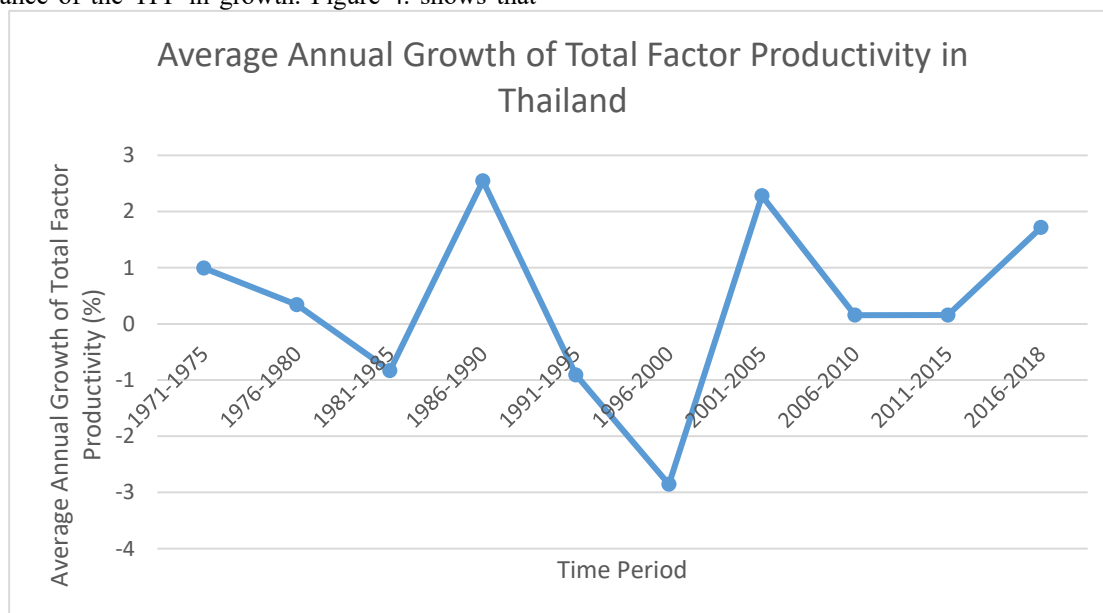


Figure 5. Average Annual Growth of Total Factor Productivity in Thailand

Source: Asian Productivity Organization, APO Productivity Database 2020.

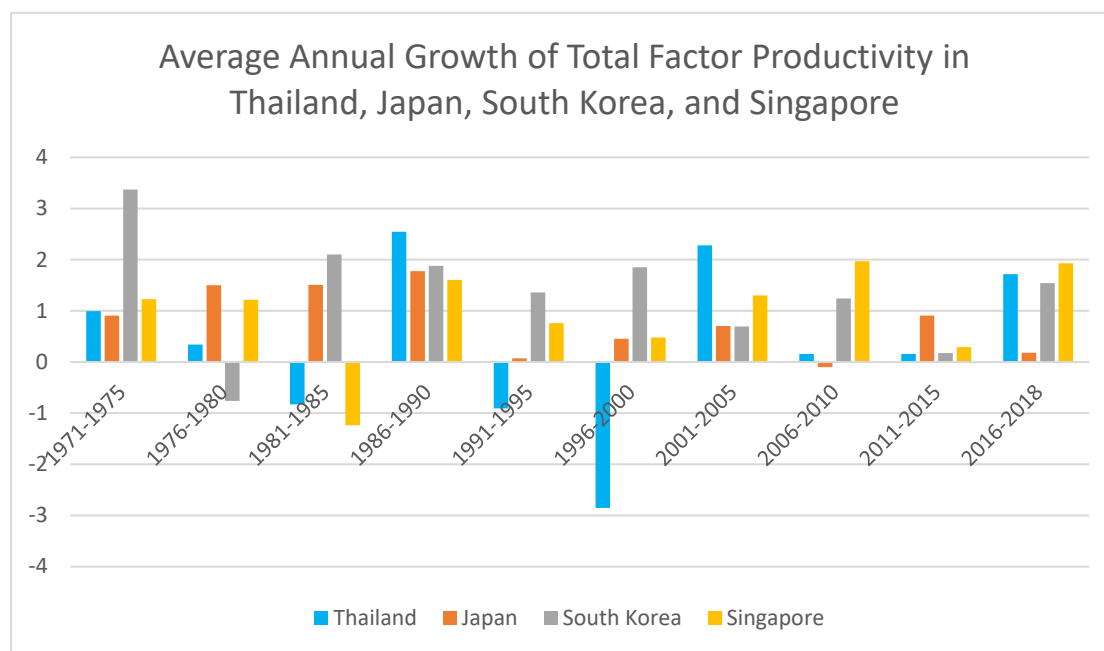


Figure 6. Average Annual Growth of Total Factor Productivity in Thailand, Japan, South Korea, and Singapore

Source: Author's calculation based on data from the Asian Productivity Organization, APO Productivity Database 2020.

Figure 5. demonstrates the annual growth rate for the TFP in Thailand in 10 time periods. As shown, although the growth dropped dramatically during the crisis (the period of 1996-2000), it had a robust rebound at the beginning of the new century. After the rebound, the growth remained at approximately the same level as it was before the crisis, which suggests that there is little likely long-term impact on the crisis on Thailand's TFP growth.

However, despite its stability, Thailand's TFP growth is low compared to other, more developed economies. As in Figure 6., Thailand's TFP growth is notably lower than all other three economies in more than half of the time periods examined. Nevertheless, there is no evidence from the figure that the crisis put Thailand's TFP growth at a disadvantage.

5. DISCUSSION OF THE RESULTS

The analysis from section 4.1. suggests that there is the possibility that the Asian financial crisis ended Thailand's capital-driven growth pattern: the growth of the country's per capita capital stock slowed significantly after the crisis. Further investigation suggests that the crisis might do this by reducing investment, as the ratio of net investment in nonfinancial assets to GDP plummeted after the crisis.

Despite its possible impact on capital accumulation, the result of section 4.2. shows that there is no evidence that the crisis retarded Thailand's transition to the new, TFP-oriented growth pattern, as the shares of TFP in Thailand's GDP and per capita GDP growth continued to rise after the crisis, and TFP growth was not slowed in the long term following the crisis. However, the sluggish

TFP growth, though it is unlikely to be caused by the crisis, does spark concern about whether it can power Thailand's growth as they become increasingly dominant.

Combining the discussions above, there emerges a possible explanation pertaining to the connection between the Asian financial crisis and Thailand's growth slowdown. The essence of the explanation lies in the sluggish TFP growth of the country. Before the crisis, the problem with low TFP growth was veiled by rapid capital accumulation, which drove the spectacular growth. As the crisis slowed the pace of capital growth, economic growth increasingly relied on the growth of TFP. However, although its share in economic growth rose, the TFP growth remained at a low level. The slowed capital accumulation and sluggish TFP growth together contributed to Thailand's growth slowdown.

6. CONCLUSION

Based on previous literature and the neoclassical growth model, this paper explores how the per capita GDP growth slowdown in Thailand after the Asian financial crisis might be associated with the crisis. By examining empirical data, this paper found that while the crisis possibly damaged Thailand's capital-driven growth pattern, under which the country realized rapid growth before the crisis, it does not seem to impact the country's transition to the TFP-oriented growth pattern, which is believed to be the essential way for middle-income countries to advance to the high-income level. Besides, this paper walked one step further to propose a hypothesis that the growth slowdown is a result of a crisis-induced capital accumulation slowdown as well as the sluggish TFP growth.

Still, there are problems remaining. First of all, although this paper discovered correlations between the crisis and changes in some indicators and based its analysis upon them, it cannot confirm the existence of a cause-and-effect relationship, which might affect the reliability of the analysis. It can be helpful to further investigate the correlations with stricter statistical methods. Besides, this paper mentioned that the crisis might impact some indicators, but it does not elaborate on how the crisis affected the indicators. In this case, further research on the channels through which the crisis influence the indicators is needed.

ACKNOWLEDGEMENT

First of all, I would like to thank my professor and assistant teacher. Their teaching and advice enabled me to successfully come up with my analytical framework and complete my research.

Also, I would like to give credit to my writing adviser. Without her suggestions on academic writing, I would not have been able to compose a coherent paper.

Finally, I am grateful to my parents, who offered me the opportunity to explore the field of economics. If there were not their support, I would not have gained adequate knowledge to finish my research.

REFERENCES

- [1] Collins, Susan M., et al. "Economic Growth in East Asia: Accumulation versus Assimilation." *Brookings Papers on Economic Activity*, vol. 1996, no. 2, 1996, p. 135., doi:10.2307/2534621. JSTOR, <https://www.jstor.org/stable/2534621>.
- [2] Hu, Yunfang, et al. "Flying or Trapped?" NBER Working Paper 27278, 2020, doi:10.3386/w27278.
- [3] Krugman, Paul. "The Myth of Asia's Miracle." *Foreign Affairs*, vol. 73, no. 6, 1994, p. 62., doi:10.2307/20046929.
- [4] Page, John. "The East Asian Miracle: Four Lessons for Development Policy." *NBER Macroeconomics Annual*, vol. 9, 1994, pp. 219–269., doi:10.1086/654251.
- [5] Stiglitz, J. E. "Some Lessons from the East Asian Miracle." *The World Bank Research Observer*, vol. 11, no. 2, 1996, pp. 151–177., doi:10.1093/wbro/11.2.151. JSTOR, <https://www.jstor.org/stable/3986429>.
- [6] The World Bank. "GDP per Capita Growth (Annual %)." *Data*, data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG. Accessed 18 July 2021.
- [7] The World Bank. "GDP per Capita Growth (Annual %) - Thailand." *Data*, data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG?locations=TH. Accessed 18 July 2021.
- [8] The World Bank. "The World Bank In Thailand." *World Bank*, <https://www.worldbank.org/en/country/thailand/overview>. Accessed 18 July 2021.
- [9] Tho, Tran Van. "The Middle-Income Trap: Issues for Members of the Association of Southeast Asian Nations." *ADB Working Paper 421*, 2013, <http://www.adbi.org/working-paper/2013/05/16/5667.middle.income.trap.issues.asean/>.
- [10] Wilson, William T. "Beating the Middle-Income Trap in Southeast Asia." *The Heritage Foundation*, no.156, 27 August 2014.
- [11] Young, Alwyn. "Lessons from the East Asian NICs: A Contrarian View." 1993, doi:10.3386/w4482.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

