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The Structure of Financial Systems in Key ASEAN Countries: Focusing on Thailand, Malaysia, and Indonesia

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Abstract

To understand the structure of financial systems in ASEAN countries, we study changes that have occurred in the three channels of financing, namely bank credit, stock markets, and bond markets, over the 30 years since the Asian Financial Crisis in 1997, focusing on financial systems in Thailand, Malaysia, and Indonesia. We first examine their balance of payments, and point out that since the crisis, while foreign investment has reached a level comparable to inward investment with steady trade surplus in goods, the deficit in the primary income balance has expanded, and this may be causing domestic savings to flow out to foreign investment, with higher-yielding domestic investment opportunities being missed. Then we study three financing channels. We find that the recovery in bank credit since the crisis has been slow, and in its recovery phase, banks have retreated from lending to the manufacturing sector and are increasing lending to the consumer sector. Firms' dependence on debt and bank credit has always been small, but it has fallen further since the 2010s. Stock markets are growing smoothly, with market capitalization and the number of listed companies expanding, but the inclusiveness of the markets is still somewhat low. In bond markets, the outstanding amount of corporate bonds as a percentage of GDP has not changed significantly, and the financing needs are concentrated in the financial sector, the construction and real estate sector, and the consumer finance sector. Based on these findings, we conduct an empirical analysis of firms' funding behavior using corporate financial data, discovering the following points: substitutability between

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In this paper, figures and tables are placed after the text on pp. 25-47.

debt/bank credit and firms' own funds (cash holdings); strong demand for debt/bank credit for capital investment; and a declining trend in the debt-to-asset ratios and bank borrowing to assets ratios. We also reveal that there was no substitutability between corporate bond financing and firms' own funds (cash holdings), suggesting that the quality of financing needs is different between the two, and that firms' issuance behavior of corporate bonds is based on their need for long-term funds. There is a strong functional bias in each of the three above-mentioned funding channels, and the channels' role of linking domestic savings to domestic investment may not be functioning adequately. This is considered to be an underlying cause leading to excessive foreign investment, which is not necessarily highly profitable. In order to further develop ASEAN's financial system, it is important to identify the demand for funds that is in line with the development of and changes in the industrial structure.

Keywords: ASEAN; financial systems; financing.

1. Introduction

Given the rapid developments in the international situation today, the strengthening of ties with the ASEAN economies has become an increasingly important policy issue for Japan. An expansion of funds flow between Japan and these economies is a policy topic that could be envisioned as part of Japan's efforts to become a "leading asset management center." The objective of this paper is to examine and identify common characteristics of the financial systems of key ASEAN countries to provide basic information in considering expansion of funds flow.

The key ASEAN countries we have in mind are the following six countries: Thailand, Malaysia, Indonesia, the Philippines, Singapore, and Vietnam. Identifying the common characteristics from a bird's-eye comparison of countries is not easy. This paper focuses on three countries, namely Thailand, Malaysia, and Indonesia, and observe developments in the medium term, specifically from the 1990s to the 2020s, based on findings of previous studies by one of the authors on Thailand and Malaysia.

It goes without saying that the Asian Financial Crisis in 1997 prompted global interest in the financial structures of ASEAN countries, leading to the launch of various policy initiatives. In policy discussions on financial reform at the time and onward, it was commonly understood that ASEAN countries were excessively dependent on bank credit and that they needed to overcome this problem.[1] To this end, the World Bank's initiatives taken immediately after the crisis sought ways to revitalize capital markets through reforms in securities markets and corporate governance system. Since 2000, policy measures have been implemented to foster bond markets under the Asian Bond Market Initiative (ABMI) based on the "Asian Financial Cooperation" framework led by Japan in the ASEAN Plus Three scheme ("ASEAN+3").

In this paper, we first point out that this kind of policy recognition may not necessarily reflect ASEAN financial systems accurately. As pointed out by the prior study (Mieno 2015), which we refer to as the benchmark of this paper, commercial banks' function of providing long-term finance has been weak in ASEAN countries, in other words, the intermediary function vis-à-vis the manufacturing sectors that drive industrialization was weak, and hence firms did not depend much on the channel of bank credit for financing, relying greatly on their internal reserves (self-finance). This is easily noticed by observing each country's statistics on the financial sector (financial-sector level data) and individual firms' financial statements (firm-level micro data), and taking into account the region's historical developments of financial systems. As for the stock market, the number of companies listed on the stock exchange was limited, and participation in the market was largely a matter of choice. The starting point for understanding this issue should be that firms in ASEAN countries rely so much on their internal funds, namely self-finance, and depend less on the overall external financing channels consisting of bank credit and securities markets. It is not merely that firms were overly dependent on bank credit relative to securities markets.[2]

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[1] For example, World Bank (1998).

[2] Cleassens et al. (1999), which is a background paper of World Bank (1998), is an example of policy research in the 1990s

From this perspective, Mieno (2015) and Mieno (2020) observed what changes had occurred in the financial systems of Thailand and Malaysia from after the financial crisis to around 2010. They found the following characteristics.

i. Bank credit has been recovering but at a slower pace, recovering only to the level of 1990s at the end of the 2000s. In the meantime, the trend of banks retreating from lending to the industrial and manufacturing sectors is observed.
ii. As for equity financing, the recovery in market capitalization is remarkable, but it remains low in terms of the number of firms participating in the stock market.
iii. In bond financing, the size of corporate bond markets varied widely from country to country, and has not changed significantly since then, except in Thailand, despite the implementation of policy by countries to foster corporate bond markets. There is also strong sectoral bias in industries issuing corporate bonds.
iv. In general, there has been no significant change in firms' strong dependence on self-financing as their funding channels.
v. The fact that foreign companies had a strong presence in the region relates to the low level of firms' participation in securities markets and the strong dependence on self-financing for funding, as its industrialization has been led by foreign direct investment.

This paper (i) expands the timeframe of the above observations to the 2020s, (ii) increases the number of countries for comparative observation to three by including Indonesia, (iii) examines the relationship between economic structures and funds flow (capital outflow, in particular) with the emergence of current account surplus and domestic savings surplus in the 2010s, and (iv) examines how the other countries (Singapore, the Philippines, and Vietnam) are positioned among the three countries.

The structure of the paper is as follows. In Section 2, we examine the macroeconomic situation of selected ASEAN countries, such as growth rates and capital flows, and changes to date. Section 3 is the main part of this paper, discussing characteristics of the financial systems and funds flows within the economies of Thailand, Malaysia, and Indonesia. Section 4 conducts an empirical study of corporate financing using financial data of listed companies in the three countries, based on the discussion in Section 3. Section 5 identifies policy issues based on discussions in the prior sections. Section 6 is the conclusion.

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that pointed out the high dependence on debt financing by firms in East Asian countries at the time of the financial crisis. These policy research calculated and pointed out exceptionally high debt-to-asset ratios (or leverage ratios) of ASEAN countries compared to prior studies. See Mieno (2015, ch. 1) for consideration of the reasons for the calculation of high debt-to asset ratios (or leverage ratios) in ASEAN countries.

2. Economic Growth Rates and Capital Flows

2.1 Growth Structure

To find out the common economic structure of Thailand, Malaysia, and Indonesia, we first present an overview of the three countries' basic economic data. As shown in Figure 1, ASEAN economies are diverse. Looking at GDP per capita of the six countries in 2023, putting aside Singapore that has an extremely high figure even compared to developed countries, that of Malaysia is approximately USD 12,100, Thailand is USD 7,200, and Indonesia, the Philippines, and Vietnam are between USD 3,700–4,900. As for growth rates since 1990, Figure 2 shows that Thailand, Malaysia, and Indonesia followed fairly similar developments. After a severe plunge in growth rates during the Asian Financial Crisis in 1997, shrinking by around 10%, growth rates rebounded to around 5% in the 2000s and has remained on a growth trajectory except for a slight contraction during the global recession in 2008 and a more than 5% contraction during the Covid-19 in 2020–2021. There are, of course, differences between countries, such as Indonesia was less affected by the global recession and Thailand has been growing at a slower pace relative to its peers in the 2020s. Turning to the other three countries, while the Philippines was less affected by the Asian Financial Crisis, it had a smaller growth rate than the three countries Thailand, Malaysia, and Indonesia in the 1990s and 2000s and the downturn due to Covid-19 was marked.[3] Vietnam has maintained higher growth rates than the three countries as it was only moderately affected by the three shocks from the financial crisis, global recession, and Covid-19. We can say that its high growth rate is attributable to the fact that the industrialization process started late. Singapore has been growing fairly strongly despite high GDP per capita, but fluctuations due to the three shocks were notable. Singapore has very few commonalities with other economies.

Figure 3 shows the changes in the sectoral shares of value added in each country since 1970. Up until the 2000s, the three countries–Thailand, Malaysia, and Indonesia–had economic structures where growth was driven by industrialization (i.e., development of the manufacturing sector), but have been shifting from such structures in the 2000s. The share of the industrial and manufacturing sectors peaked in the mid-2000s in Malaysia and at around 2010 in Thailand and Indonesia. In Malaysia and Thailand, it is clear that the service sector is replacing those sectors as the driver of economies, while in Indonesia other industrial sectors such as mining and construction are increasing the shares. In contrast, industrialization is still the driver of economic growth in Vietnam, and Singapore had left the industrialization phase in the 1980s. The Philippines is unique because the period in which its manufacturing sector shows rapid growth has not been observed clearly, and the weight of the service sector in the economy has been growing consistently from as early as the mid-1970s through the 2020s.[4]

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[3] A large part of the Philippines' current account balance comes from earnings from workers abroad, included in both the primary income balance (receipt of wages domestically) and the secondary income balance (remittances), so the impact of the Covid-19 pandemic seems to have been more severe as the economy relies heavily on overseas labor.

[4] It is considered that the growth of the outsourcing industry partly accounts for the growth of the service sector, but the service sector as a whole has been growing remarkably since the 2010s. This is a distinct feature of the Philippines among ASEAN countries. It would be worthwhile to examine its economic structure.

2.2 Capital flows and current account balance

(1) Changes in capital flows: from capital inflow to capital outflow

Next, we examine the trends in capital flows of Thailand, Malaysia, and Indonesia. Figure 4 shows trends in their balances of financial accounts and current accounts. Regarding the balance of payments, we examine financial accounts on a gross basis, that is, we consider capital inflow into a country from overseas and capital outflow (investment) by residents of that country to the rest of the world separately. The current account balance is examined on a net basis.

Changes common to all three countries are observed in their balance of payments after the Asian Financial Crisis in 1997. At the time of the crisis, it is easy to imagine that debt capital, which had been flowing into the countries until then, had suddenly switched to an outflow. Capital inflow from direct investment to the ASEAN countries by foreign countries has in fact trended upward in the same period. The balance in the trade of goods turned surplus in 1997, and the surplus continued throughout the 2000s. An adjustment in debts of the financial sector and the corporate sector after the crisis had caused temporary economic confusion, but in the meantime, this prompted export-driven industrialization led by the manufacturing sector, as competitiveness in exports had improved due to the deterioration of currencies and the inflow of direct investment had increased in anticipation of stronger exports.

Achieving trade surplus and maintaining steady current account surplus marks a historic turning point for the ASEAN economies. Trade surplus, or current account surplus driven by trade surplus, would bring about domestic savings surplus and stable foreign reserves, enabling the economies to overcome their dependence on foreign capital flow and macroeconomic vulnerabilities associated with it. This trend has continued and deepened in the 2010s despite some fluctuations.

Looking at the graphs for each country, capital outflow trended to expand in Thailand and Malaysia, and capital outflow is exceeding capital inflow for some items. In Thailand, capital outflow due to direct foreign investment has surpassed the capital inflow since around 2011. In Malaysia, investment in foreign stocks has surpassed the inward investment since as early as around 2005. In Indonesia, inward investment in bonds, particularly government bonds, is significant given that much of its fiscal deficit is financed using funds from abroad, but excluding this, capital outflow is reaching a level comparable (70–80%) to capital inflow.[5]

(2) New challenges for the current account: low profitability of foreign investment

We can observe different developments since the 2010s and the emergence of new challenges on the current account balance. In Thailand and Malaysia, trade surplus and current account surplus became steady in the 2000s, due to stronger export competitiveness owing to the depreciation of currencies, and the resultant

[5] Indonesia is unique in that capital outflow in the item “others (bank credit, etc.)” is large. This may indicate active deposit and margin transactions with Singapore, a hub for financial services, owing to the Chinese network.

cumulation of export manufacturing industries. As shown by the graphs, the trade balance maintained stable surplus in the 2010s. On the other hand, deficit in the primary income account, which is dominated by dividend payments and interest payments, has continued to widen in the 2010s. Reflecting these developments, the current account balances seem to have been declining or have peaked out. In Malaysia and Indonesia, the discrepancy between the trade balance and the current account balance has been distinct since the early 2010s, and this trend is clear. In Indonesia, the current account has been in deficit since around 2010 and has been widening. In Thailand, the improvement in the current account balance had been supported greatly by the surplus in service balance,[6] which was driven by the travel industry, but current account deteriorated during the Covid-19 pandemic (2020–2023).

What does the increasing deficit in the primary income balance and the consequent deterioration of the current account balance imply? In the financial account, foreign investment has been increasing, so receipt of interest payments and dividends from abroad should also be increasing. The deficit in the primary income balance suggests that (interest and dividend) payments on domestic investment are very large and that they exceed the income balance received on foreign investment. In other words, while ASEAN countries have not yet reached a phase where they can earn sufficient returns from their foreign investment, foreign countries are earning higher returns on domestic investment, with large part of that earnings flowing out of the countries as payment on foreign investment, including direct investment by firms. This suggests that inefficient foreign investment is depriving domestic savings of profit opportunities, which should have been realized through domestic flow of funds.

In the macroeconomy, in the situation where domestic investment continued with capital inflow from abroad, a large part of domestic savings has flowed out as foreign investment. There seems to be an issue of "inefficiency of investment" here. Why is such "excessive" foreign investment being made?

3. Financial Systems and Domestic Funds Flow

3.1 Trends in bank credit, bond financing, and equity markets

Our working hypothesis is that at the core of this problem lies in the structure of the domestic financial systems. In this section, we examine each aspect of the domestic financial systems and the flow of funds.

Figure 5 summarizes the trends in the size of three external financing channels, which are bank credit, bond financing (corporate bond markets), and stock markets, in the three countries after the Asian Financial Crisis. Data is shown as a percentage of GDP. In all three countries, it took substantial time for bank credit to recover from the crisis, recovering to levels close to those in the 1990s at last in the 2010s. In Thailand and Indonesia, stock market capitalization rose throughout the 2000s and 2010s, indicating that equity financing has become active. An increase in bond financing is notable in Thailand, and a moderate growth is observed in Indonesia. In Malaysia, both bond financing and equity financing changed little.

[6] For example, service account in 2018 was a surplus of USD 22,534 million, of which travel balance accounted for USD 44,282 million. Transportation and other items in service account were in deficit, equivalent to the difference.

Economies recovered from the Asian Financial Crisis as early as the mid-2000s, and increased the macroeconomic stability through steady trade surplus and domestic savings surplus. They weathered the global recession of the late 2000s, volatile resource prices in the 2010s, and the Covid-19 crisis of the early 2020s. Against the background of the economic growth, the size of the financial markets itself has also been expanding. It is often pointed out that financial systems in these economies have become active at around the same time given the robust economic recovery and expansion on an absolute scale. However, examining the three countries by the relative size of the economy as the share of GDP, we cannot observe a recovery in financial systems that exceeds the economic growth, except for some exceptions such as a boom in the stock market. It would be reasonable to say that financial systems regained stability slowly driven by the recovery in the economy, rather than the rapid recovery in financial systems helped the real economy recover.

3.2 Bank Credit

(1) Share of bank lending by industry

Figure 6 shows an overview of trends in the share of commercial bank credit to major industries. We can see some common trends among the three countries. First, it is clear that banks retreated from or levelled their lending to the manufacturing sector since the 2000s. In Thailand and Indonesia, lending to the manufacturing sector accounted for around 30 percent of total lending in the early 2000s, but this share has continued to decline to just over 10% by the 2020s. In Malaysia, due to the lack of data for the first half of the 2000s, it is not clear whether banks retreated from lending to the manufacturing sector, but lending has remained at an extremely low level of less than 10% since 2006.

Second, the share of lending to the consumer sector is high in each country. In Thailand, the lending share to the consumer sector has risen significantly since the 2000s, and lending to the financial sector, which is thought to be related to personal consumption, surged in the 2010s. In Indonesia, the share of lending to the consumer sector has been high in the early 2000s at around 25%, jumping to around 30% in the late 2000s. In Malaysia, the loan share to the consumer sector has been extremely high, increasing slightly throughout the 2000s, and is staying at over 50% of commercial bank credit since the 2010s.[7]

Third, in Indonesia, the share of lending to the construction, real estate, and mining sectors has increased slightly. The trend also applies to the Philippines and Singapore, although graphs for these countries are omitted here.

(2) Insulation of manufacturing sector from bank credit

As seen in the previous section, the value added ratio of the manufacturing industry in the three countries peaked out between the 2000s and 2010s, and entered a phase of gradual decline. They followed the

[7] Note that in Figure 6 the scale on the vertical axis is doubled for Malaysia.

industrialization process where they established production bases for export manufacturers by receiving direct investment, and supported a part of the supply chain formed by multinational enterprises, thereby leading economic growth. The process of industrialization is continuing to develop. In the meantime, the service industry and the consumer sector have grown significantly in each country, and transition from economic structures that depend solely on export manufacturing sector has taken place gradually. Is banks' movement to retreat from lending to the manufacturing sector align with this gradual transition in industrial structure?

Figure 7 shows the time-series developments in (i) the share of manufacturing value added in GDP and (ii) the share of lending to manufacturing sectors by commercial banks for each of the three countries. It shows that in Thailand and Indonesia, the decline in the share of bank credit to the manufacturing sector has been more rapid than the decline in the share of manufacturing sector in the real economy. Mieno (2015) observed the same indicators for Thailand and Malaysia on a longer timeframe starting from 1960s (see reference figure 1). According to the chart, the share of lending to the manufacturing industry in bank credit showed steady growth until the middle of 1990s in both countries in line with the growing weight of the manufacturing industry in the real economy. This suggests that the sharp decline in bank credit to the manufacturing sector was a transition that took place in late 1990s. In Malaysia, looking at developments since 2006, the share of bank credit to manufacturing has been extremely low and has always been below the share of manufacturing sector in the real economy.[8]

It can be said that the "insulation" of the manufacturing industry and commercial banks has progressed since the 2000s, and it accelerated in the 2010s. In the process of recovery from the Asian Financial Crisis, the recovery of commercial bank credit has been slower than that of the real economy. In the process, commercial banks retreated from lending to the manufacturing sector, which had led the economic growth, and have rapidly increased lending to the consumption-related sector.

3.3 Corporate financing

Next, we examine the characteristics of funding channels, including bank credit, from the perspective of corporate financing. Figure 8 is a chart drawn based on data from Rajan and Zingales (1995), which discussed capital structure through average ratios of debt to assets of major listed companies in selected developed countries, adding the same data for listed companies of Thailand and Malaysia (as of 2002). Data is somewhat outdated, but we can grasp the features of selected countries. Rajan and Zingales (1995) find that, based on the comparison of ratios of debt to assets, financial systems of developed countries can be classified into Anglo-American type in which securities markets function well (average ratios are around 55%) and Continental-Europe type where commercial bank credit plays a key role (ratios in the 70% range). They regard ratios of liabilities to total assets and capital ratios as an approximation or proxy for bank

[8] Although it is not shown here, even in Vietnam where the manufacturing industry continues to grow, the share of bank credit to manufacturing has been declining.

finance and equity finance, respectively.

Looking at the same figures for listed companies in Thailand, the average debt-to-asset ratio is 56.5%, which is almost the same level as the US and the UK, the Anglo-American type. Furthermore, the ratio for listed companies in Malaysia is extremely low at 39.6%. In developed economies, a high equity ratio is understood as vigorous activity in equity financing, but in emerging economies, this interpretation may be difficult to make. It is natural to assume that a high equity ratio indicates a high degree of dependence on equity including retained earnings. The level of debt in Thailand and Malaysia remains at levels equal to or below those of firms in the Anglo-American countries. On the other hand, a large part of firms' capital consists of retained earnings, elements of internal financing. There are no evidences of excessive reliance on debt or bank credit. Rather, we should be concerned with the fact that they rely so much on "internal finance" compared to "external finance" including debt.

Figure 9 expands data on average debt level for the same listed companies, extending the timeframe to 2010 onward and adding ratios of bank credit and of bond financing, which are components of debt, to observe time-series developments. We also calculated the ratios for Indonesia. The debt-to-asset ratio was about 50% for Thailand and Indonesia and less than 40% for Malaysia at around 2010, which were fairly unchanged from the levels in 2002 shown in Figure 8. In addition, ratios trended downward continuously throughout the 2010s. Furthermore, the bank loan ratio is extremely low at around 20% in Thailand and Indonesia and around 10% in Malaysia. For all three countries, the ratios of bond financing to debt are at negligible levels.[9]

3.4 Stock Market

(1) Trends in market capitalization and number of listed companies

Stock markets in ASEAN countries have continued to grow over the past 30 years. Figure 10 shows changes in the number of listed companies and their market capitalization since 1990 for six countries (from 2008 for Vietnam). In Thailand, Malaysia and Indonesia, market capitalization shrunk temporarily during the financial crisis in the late 1990s, but has increased significantly for the past 30 years. In Thailand and Indonesia, market capitalization increased sharply in the 2010s. In Malaysia, it increased steadily in the 2000s and then stayed at around MYR 1.5 billion in the 2010s. As we saw in Figure 5, this increase exceeded the growth of the overall economy, and unlike bank credit, the stock market as a whole has been growing robustly. Trends in market cap are similar for Singapore, Vietnam, and the Philippines. However, it has been declining since mid-2010s in Singapore and the Philippines, and Vietnam and Thailand seem to have been affected greatly by the Covid-19 crisis since 2020.

In considering the function of ASEAN stock markets as a funding channel, we would like to focus on the issue of market inclusiveness, i.e., the degree of corporate participation in organized capital markets. As we can see from the graphs in Figure 10, the market capitalization of ASEAN countries

[9] The problem of sample bias due to changes in the number of listed firms or sampling losses is considered in Section 4.

increased in the first half of the 1990s before the Asian Financial Crisis, but in reality, corporate participation in the stock markets was fairly limited. In the 2000s, when ASEAN economies were recovering from the financial crisis, stock prices and the market capitalization increased significantly, but the number of new listings was small. In Thailand and Indonesia, the number of listed companies increased only slightly, and in Malaysia it decreased slightly after peaking at around 2005–2006.

In some countries, however, the number of listed companies began to increase significantly in the 2010s. The number of listed companies increased sharply and market inclusion progressed in Thailand and Indonesia. Although not as notable as these two countries, listed companies also increased in Vietnam and the Philippines. Malaysia, on the other hand, the number of listed companies peaked in mid-2000s and started declining. Since the 2010s, the number of listed companies has been fairly flat, with little change. The situation is similar in Singapore, where the number of listed companies started declining after peaking in 2010. In these two countries, the participation of firms in securities markets has progressed, and so their markets have practically become mature and saturated.

(2) Inclusiveness of the stock market

It is difficult to determine to what extent an increase in the number of listed companies demonstrates the inclusiveness of a stock market, a channel of financing. How many unlisted companies are distributed in the top layer of major companies in key ASEAN economies? Table 1 shows the share of listed companies in major companies (excluding those in the financial sector) by total assets in four countries, which is a reproduction of survey results in 2005 from Mieno (2015 ch. 4). In Thailand, for example, the number of listed companies was 415 at that time, and of the top 400 companies in terms of total assets (this includes firms not listed), there were 152 listed companies (248 unlisted), accounting for 38.0% of top companies. In the Philippines and Indonesia this share is 17.8% and 41.0% respectively. Malaysia has a high share of listed companies in top key firms (81.0%), showing exceptionally high level of inclusiveness. Looking at the top 1,000 companies, the share of listed companies in the four countries are 24.5%, 9.8%, 21.9%, and 64.7%, in the above order of country.

When conducting the above survey in 2005, we gathered information on unlisted companies through trial and error, checking the rules for corporate registration in each country first then obtaining database of registered materials. The situation was different depending on countries. For information on Thailand, we purchased corporate data from a local data vendor with exclusive sales rights, and in other countries, we collected and converted data through commissioning contract with local offices of international accounting firms. In the past 20 years, the accumulation and commercial use of databases of corporate information have expanded dramatically, and it is said that financial information of major unlisted companies in emerging countries can now be obtained through global data vendors. In this research, we try to create a data set by obtaining corporate attributes and financial information from ORBIS, the financial database provided by Moody's for both listed and unlisted companies. At present, however, the financial

information available is limited to listed companies, and in the next section, we perform a simple estimation analysis using this data set.

In this section, we examine the extent to which lists of unlisted companies can be collected from the ORBIS database based on basic information about company attributes (such as company name and total assets). Based on the total assets in 2023, we attempted to collect information on unlisted companies whose total assets were larger than firms in the lower range of top 75% of listed companies in the ranking of total assets. In Thailand, in the sample of 695 listed companies, the total assets of a firm in the bottom line of the top 75% of listed companies (ranking 521st from top) are USD 40,115,000, and financial data is available for 4,967 unlisted companies with assets larger than this level, having sufficient coverage for survey. Similarly, in Malaysia, we obtain information on 5,503 unlisted companies with total assets of over USD 29,895,000, which is the level of assets equivalent to the bottom line of the top 75% firms (735th from the top) of a sample of 980 listed companies. However, for Indonesia, data on only seven unlisted companies with total assets of more than USD 20,476,000 were available, out of firms that have larger assets than the said value, which was the asset size of a firm in the bottom of top 75% (605th from the top) in the sample of 806 listed companies. We learnt that data on unlisted companies was hardly available in this database.

Table 2 summarizes information on unlisted companies together with that on listed companies in the same format as Table 1. In Thailand, we find little difference between the 2005 survey and the 2023 figures. Despite having been compiled for different time periods from different data sources, they appear to be remarkably close, indicating that the information is reliable and that trends are stable.

For Malaysia, the results were considerably different from those of the 2005 survey. Based on this ORBIS database for 2023, the ratio of the number of listed companies is 32.8% for the top 400 companies, which is almost the same as that of Thailand. Malaysia's stock market has not shrunk in the past 20 years, so if the above share is correct, it implies that unlisted companies have emerged rapidly. Given the recent increase in the number of so-called "Government Linked Companies" (GLCs) in Malaysia, we cannot completely deny the possibility that this reflects the actual change, but we should also keep in mind that this could be due to the sample bias owing to the low coverage of the ORBIS database.[10] In our future work, we intend to conduct a comparison of individual companies. However, it should be noted that, with the current ORBIS database, comparison of all major companies is difficult for many countries.

(3) Low inclusiveness and the foreign-led industrialization process

What are the factors behind the low tendency for listing by major companies? One possibility is in

[10] At the time of the 2005 survey, a local data vendor in Thailand with an exclusive agreement to digitize and sell registry records for the Department of Commerce Registry had contracted with a global data vendor (at that time, Bureau van Dijk) to provide data for what is now ORBIS. This may explain the strong consistency between the two periods in Thailand. In Malaysia, we confirmed that there was a system for the reference of materials at the Registry Office, but we were not able to check the comprehensiveness of data collection work of the outsourced local accounting firm.

connection with the industrialization process, which continued from the late 1980s to the 2000s with the growth of export manufacturing industries driven by direct investment. In Thailand and other ASEAN countries, foreign companies account for a large share of the major companies in the production sector. Reference Figure 2 is a reproduction of the analysis of Mieno (2015, p. 120, Figure 4.1) examining corporate structure in Thailand in 2005. As shown in Table 1, companies are arranged in order of the size of assets from the top, and this is then arranged based on (i) companies listed or unlisted and (ii) the share of investment by foreign capital (foreigners' equity). This figure shows that, as in Table 1, approximately two-thirds of the top 400 companies are unlisted. In fact, companies with foreign capital of 10% or more account for 31.8% (127 companies), and most of them remain unlisted. Foreign subsidiaries at the bottom of the graph (foreign capital of 95% or more) and joint companies (foreign capital of 50% or more) constitute a large part of unlisted companies. We can imagine that these joint companies have secured funding through internal financing with their foreign parent companies and financing channels with certain foreign commercial banks, and are therefore reluctant to finance through local securities markets. We consider that reasons behind low listing in ASEAN countries are partly due to this corporate ownership structure, which reflects the industrialization process of the economy.

An important question is whether this trend has continued even after the 2010s when the element of the industrialization process began to change. We would like to consider this issue in our future work, although it will not be easy to identify the major shareholders of unlisted companies and their nationalities from databases such as ORBIS and to overcome the sample bias problem caused by the low coverage of unlisted companies.

3.5 Bond Market

(1) Types of growth in corporate bond markets

Figure 11 summarizes trends in the ratio of bond outstanding to GDP for six countries, as compiled from the ADB's *AsianBondsOnline* database. In many countries, government bonds and central bank bonds account for a substantial share of total fixed income, so a sizable portion of bonds markets are decided reflecting the fiscal and monetary policy environment. Below, we focus on corporate bonds, which are companies' funding channels. Looking at developments since the inception of the ABMI in 2001, the amount outstanding of corporate bonds varied at the start, and over the past 25 years an uptrend in the amount outstanding cannot be observed clearly, except for a few countries. The three countries, namely Thailand, Malaysia, and Indonesia, show different trends, so we categorize bonds markets based on trends in these countries.

The first group is Thailand, where the market was small in the early stage but has grown notably since 2000. The ratio of corporate bonds outstanding to GDP has increased from around 8% in 2005 to 25% in 2023. Such a robust and clear growth can only be seen in Thailand.

The second group is a market that has been small at the beginning and has remained at that level

to date. Indonesia is a typical example with corporate bonds outstanding at 2–3% of GDP over the period. The Philippines has seen a slight increase since mid-2010s, growing from 1% in 2005 to around 8% in 2019, but the size of the corporate bond market itself is still very small. Vietnam had corporate bond outstanding of around 1% to GDP in 2005, growing rapidly in the 2020s, but its size is 8% in 2022, close to that of the Philippines.

The third group is Malaysia, which already had a sizable corporate bond market at the time the ABMI initiative began to foster bond markets, and which has maintained that level since then. The corporate bond market was already between 30% and 40% of GDP in the first half of the 2000s and has maintained that level for the past 25 years. It has started growing slightly since the late 2010s, and reached around 52% in 2023. Singapore is also in this group, as it had corporate bond outstanding of nearly 30% of GDP in the early 2000s, and this level has not changed significantly.

(2) Economic development and the size of corporate bond markets

Initially, the focus of ABMI initiative for fostering bond markets was placed on diversifying funding channels through corporate bonds markets in place of bank credit. Regarding the development of corporate bond markets, it is considered that the growth of markets depends on the level of protection that creditors are ensured (La Porta et al., 2000), or the growth of markets is achieved as the economy matures (Boot and Thakor, 1997; Demirguc-Hunt and Levine, 1999). We examine where ASEAN countries stand in terms of corporate bond balance through international comparison and time-series comparison.

Figure 12-(1) shows the time-series changes in the outstanding amount of corporate bonds in Thailand, Malaysia, Indonesia, and the Philippines. The amount outstanding of corporate bonds (as a percentage of GDP) is plotted on the vertical axis, and GDP per capita is plotted on the horizontal axis. Reflecting economic growth during the period, the growth on the horizontal side is large, but as we saw before, we cannot observe a trend where the size of corporate bond markets grows in line with economic development, except for Thailand. Figure 12-(2) plots the same graph as an international comparison including developed countries as of 2011. On a global basis, the association between the level of economic development and the size of corporate bond holdings is extremely weak. It is evident that Malaysia is placed fairly high also in the international comparison.[11]

(3) Concentration of demand for bond financing

In order to find out about issuers of corporate bonds issued in the market, we collect micro-level data on the amount outstanding of corporate bonds for calculation and sort issuers by industry. The amount outstanding is calculated by aggregating flow values of issuance data collected from databases of bond organizations of each country and Bloomberg, with consideration of the issuance amount and maturity

[11] Note that Figure 12 is the World Bank's project-based figure, which is significantly different from the ADB's *AsianBondsOnline* in Figure 11.

terms. It may be subject to some error due to factors such as early redemption, but they are applicable as approximation.

As evident from Figure 13, there is a concentration in the types of companies that choose to raise funds through corporate bonds. First, surprisingly, issuance by commercial banks and other financial companies is high. The share of corporate bonds issued by both types of financial companies in 2020 was 49.5% in Malaysia, 50.1% in Indonesia, about half of the total outstanding, and 21.6% in Thailand. For commercial banks alone, the outstanding was 19.7%, 26.4% and 13.7% in Malaysia, Indonesia and Thailand, respectively. This trend has been steady since around 2010. Other financial companies include consumer credit companies and consumer finance companies, which suggests that bond financing is meeting the demand for funds for consumer finance. Meanwhile, the strong issuance of corporate bonds by commercial banks suggests that the banks use bond markets as a source of long-term funds. This means that the bond market channel is complementary rather than alternative to the bank credit channel.

Second, the amount outstanding of bonds issued by the service industry and construction/real estate industry is large. Together they account for 49.6%, 43.5% and 35.2% of total bond issuance in Thailand, Malaysia and Indonesia, respectively, in 2020. In Malaysia, the construction industry and the real estate industry account for 32.2%, which is by far the largest share. Overall, it seems bond financing is meeting the financing needs related to the infrastructure industry, although a closer look at the service sector breakdown is needed.

Third, the use of bond financing by manufacturing industry is quite limited. In Malaysia in particular, it accounts for only 2.4% of the total outstanding, a negligible level.

From the above observations, it can be said that bond financing has not fulfilled its function to substitute for bank credit channels in the region widely, which was expected in 2001 at the start of regional initiative to foster bond markets. In particular, the supply of funds to the manufacturing sector, which has been the driver of growth after the Asian Financial Crisis, is limited. On the other hand, bond financing has increased its presence as supplementary funding sources for the financial sector, including commercial banks. We think that the use of bond financing by commercial banks and financial institutions is leading to the expansion of credit to the consumer finance sector through funds raised by issuance. In addition, it plays a certain role in meeting financing needs for infrastructure investment, and given the nature of bond financing that it provides long-term funds, it may be suitable for meeting the industry's financing needs. In Thailand, where the growth of the bond market is notable, the share of the financial sector is relatively small, while the share of the manufacturing sector is fairly large at 19.9%. This trend has been strengthening recently. It may be possible to say that only Thailand has shown development in of bond market that it can substitute, to a certain extent, for the bank credit channel, amid an increase in its size as evident from the growth relative to GDP.

In order to develop the corporate bond market, it is important to consider the division of roles between equity finance and bank credit, exploring the nature of funds demand suitable for bond financing.

It is also important to be aware of the fact that a large part of financing needs lies in the financial sector, including commercial banks.[12]

4. Analysis of Funding Structure Using Corporate Financial Data

In this study, apart from the macro financial data and aggregate data on commercial banks and securities markets used in our previous observations, we collect and organize micro financial data for listed companies in the three countries. We have already used the data partially, but in this section, we use the data to conduct a simple empirical analysis of firms' funding structures, and examine its consistency with the trends identified above.

The data set used for this empirical study covers the period from 2010 to 2024 for all available non-financial listed companies included in ORBIS, a database provided by Moody's. Available information is company attributes and financial statements (balance sheets, profit and loss statements). Given that there are substantial deficiencies in financial statements and available information on company attributes is limited, the estimates are preliminary and do not cover all of the observations and issues in the preceding sections. This section focuses primarily on the following issues.

First is the substitutability of debt finance with internal finance (self-financing). Traditional agency theory of financial transactions defines that firms use cash as the first source of funds for financing. This is because, unlike Morigiani-Miller's theorem, firms' cash holdings incur the least capital cost in actual financial transactions due to the presence of information asymmetry in the principal-agent relationship, and therefore firms select cash. If the demand for funds is similar, companies that have ample funds at hand will use them first, and thus will be less dependent on bank borrowing. On the other hand, if no such tendency is found, it indicates that the quality of demand for funds is different.

Second is the association with the feature of industries. From the observations in the previous sections, we find that bank credit has retreated from lending to the manufacturing sector, and that bond financing has been used actively by the financial sector with service sector and construction/real estate sector following it. We check whether these findings can be supported empirically.

Third, we examine the low debt-to-asset ratios and low ratios of bank borrowing to total assets and/or their declining trends observed in the previous section. Figure 9 shows that for the three countries, the level of debt-to-asset ratios is low compared to other countries and has been on a downtrend since the 2010s, and that the share of bonds in debt is very low. Data used for this figure were calculated using the data set used in the analysis in this section in advance. As noted earlier, since the averages were calculated

[12] In an observation of corporate bond issuance in Thailand in the 2000s, we calculated outstanding amount of bonds for all issuers based on individual data in the annual report of the Thai Bond Association, and found that most of the private issuers were listed companies. We found that state-owned companies were also active in bond issuance. It was not clear from the comparison with the published statistics whether bonds issued by state-owned companies were classified as government bonds/public bonds or corporate bonds (Mieno 2015 ch. 7). In order to understand where the demand for corporate bond financing by private companies lies, a detailed examination of the corporate structure and statistical classification of each country is necessary.

by simply aggregating the unbalanced panel data on a yearly basis, we cannot exclude the possibility of sample bias. We confirm prediction values calculated from parameters estimated by regression analysis and their reliability.

Fourth is determinants of corporate bond financing behavior. Regarding this, we examine demand for which functions of corporate bonds motivate firms to select bond issuance by observing substitution and complementary relation of bond financing with other assets including bank credit based on methods used by Fukuda (2003), in addition to considering the substitutability with internal financing and the feature of industries/technology and financing needs.

4.1 Debt and Bank Borrowing Determinants

(1) Estimation formula

The following estimation is made based on the standard decision model for the capital structure (financing) of a firm.[13]

$$y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 T + \mu$$

For the dependent variable y, two types are assumed: debt and bank borrowing. Both figures are ratios to total assets. X_1 is the control variable, X_2 is the main variable to be observed, such as internal sources and features of industries/technology, and T is the time trend. Explanatory variables are as follows. See also Reference Table 1 for further details.

Total assets (log): proxy variable for the size of firms
Retained earnings: proxy variable for cash; retained earnings/total assets
Industry dummy: Industry-specific characteristics
Capital intensity: differences between the features of technology/firms and financing needs; fixed assets/total assets
Time: timeframe (annual, starting at 2010)

Non-debt tax shield (tax savings by having debt) and profit fluctuation rates (risk factors) are well known as control variables for determinants of capital structure. Since it is difficult to create these variables at this stage, total assets (company size, logarithmic values) alone are applied as control variables.

Retained earnings, which is calculated as the value of retained earnings (an item in capital account) divided by total assets, is an indicator that measures substitution with debt. The industry dummies

[13] For determining the capital structure of a firm, which is the same as the funding structure of a firm, there are many theories and empirical models based on agency theory and the pecking order hypothesis. Mieno (2006) and Sudo (2003) are examples of such theories and empirical models applied to empirical research on ASEAN countries. See also Mieno (2015 ch. 3, 4).

are classified into mining, manufacturing, construction and real estate, transportation and storage, and information and communication from the three-digit group of the International Standard Industrial Classification. Manufacturing is divided into Manufacturing A, which is related to the light industry, and Manufacturing B, which is the heavy industry. A total of six types of industry dummies are used for observation. Furthermore, we introduce a proxy variable for capital intensity in order to capture the difference in demand for funds as well, which reflects differences in the technological characteristics of industries and companies. Finally, annual trends are introduced to capture changes over time.

(2) Estimated results

The estimation results are shown in Table 3 (debt-to-asset ratios) and Table 4 (ratios of bank borrowing to assets). For estimation, a random effects model is adopted given that data used is unbalanced panel data and we aim to observe trends over time.

The estimation results are all stable except for the industry dummy variable. Cases of debt and bank borrowing showed similar results. First, "total assets" were positively significant for debt and bank loans in most cases. However, they were negatively significant for debt in Indonesia.

Retained earnings are negatively significant in Thailand and Malaysia, confirming the strong substitutability of debt finance to internal funds. In other words, it shows that companies with ample funds on hand depend on their own funds when financing rather than on debt financing. This point was confirmed in Mieno (2015) for Thailand and Malaysia in the 2000s, and the basic structure has not changed in this respect. Regarding Indonesia, the figures are negatively significant for debt but not for bank credit.

No specific trends common to countries are detected from the results of the industry dummies. With regard to manufacturing industries, ratios of debt and bank borrowing to assets tend to be high for manufacturing industry A (light industry) in Indonesia, while in Malaysia, some of the results were both positively and negatively significant but are hard to grasp the trend. We find no significance for Thailand. For other industries, in Thailand, there is positive significance for transportation and storage industries for bank loans, and in Malaysia, construction and real estate industries show high significance to debt-to-asset ratios.

Regarding capital intensity, both the debt ratio and the bank borrowing ratio are significant in all countries, and we observe that demand for debt finance including bank credit, in other words external finance, is large in highly capital-intensive companies and industries. This suggests that companies with large demand for capital investment are making more active use of external finance as well as their own funds (internal finance).

Finally, regarding a time trend, a clear downward trend has been observed in both the debt-to-asset ratios and ratios of bank borrowing to assets since 2010. We examine this point in the next part.

4.2 Average level of debt ratio and bank borrowing ratio

Figure 9 in the previous section shows the debt-to-asset ratios of listed companies in Thailand, Malaysia, and Indonesia, aggregated from the same data sources used in this section. Here, we use samples by selecting firms for which missing data is less than three years from the 15-year sample, and calculate annual averages. The coverage of samples is fairly high for Thailand at 93.9%, with 9,969 samples out of 10,618 valid samples, and Malaysia at 86.7%, with 10,971 samples out of 12,647 valid samples. Indonesia, however, has a very low coverage of 60.3%, with 5,121 samples out of 8,490 valid samples. We had concerns that differences in the coverage of samples by country and/or by year may have caused bias in calculating averages. In this section, therefore, we attempt to estimate the average ratios of debt and bank borrowing to assets by inserting the average of the explanatory variables into the estimation results.

We calculate each country's debt-to-asset ratio and bank borrowing ratio based on the estimates with industry dummies, interpolating only the variables for which coefficients are significant. Separately, we also calculate annual estimates that take into account the effect of time trends on an annual basis, based on the calculation in which the time trend term is set at zero.

The results of the calculation are drawn as Figure 14. Taking a look at 2020 as an example, the debt-to-asset ratio is 41.8%, 39.0%, and 44.8% for Thailand, Malaysia, and Indonesia, respectively, while the ratio of bank loans to assets was 13.0%, 6.2%, and 17.7%, respectively. The simple average figures in Figure 9 are reproduced almost in the same manner by the graphs. The estimation results of the time trend clearly show the declining trend of debt ratio and the bank borrowing ratio after 2010. When this time trend effect is taken into account and the results are compared with the plot of the simple average value, a linear and reasonable approximation is obtained, and we can see that the time trend is captured fairly accurately. A sample bias we were concerned was not a big problem. We can confirm with high accuracy that the three countries' debt-to-asset ratios are low by international comparison and that ratios are on a long-term declining trend since 2010.

4.3 Determinants of Bond Issuance

(1) Characteristics of bond financing and the method of estimation

As seen in Figure 9, from the corporate side, the share of bond financing in the breakdown of liability is extremely small in all countries. Taking 2020 as an example, among the liability items, the average ratio of "bonds (debenture)" to total assets is 2.49% in Thailand, 0.19% in Malaysia, and 1.73% in Indonesia, according to the calculation from the dataset. In addition, of all firms, the number of firms that had the amount outstanding of bonds (balance above zero) are only 15.2% (116 firms out of 765), 1.38% (13/942), and 7.41% (58/783), respectively, in the same year. As shown in Figure 13 in the previous section, the largest issuer of bonds is the financial sector, and so it may be natural that the amount outstanding of bonds is small in the sample of non-financial companies. But despite this, what are the attributes and motivations of companies that access the bond market channel to raise funds? We observe this point in this section.

Applying an estimation model that is basically the same as that for the debt ratio and bank borrowing ratio, we first examine the association in relation to substitutability and industrial characteristics of retained earnings.

With regard to bond financing, we also focus on another important issue. There are two major differences in characteristics of bond financing and bank credit. First is the difference in capital cost (cost of procuring funds) due to differences in the costs associated with provision of information and enforcement. Issuance of bonds incurs a higher cost of capital than bank borrowing due to agency costs, especially for companies with high debt-to-asset ratios (heavy reliance on borrowed capital), reflecting the higher agency costs. Companies that have access to bond financing are limited in this respect. The second is the long-term nature of the funds. For companies that operate long-term projects, if they can secure long-term funds through issuance of bonds, they can avoid the risk of liquidating projects that can materialize by rolling over of short-term bank credit. In particular, companies with high debt-to-asset ratios (heavy reliance on borrowed capital) and for which high asymmetric information exists with creditors on the evaluation of long-term projects, the likelihood of projects being liquidated before the end of the terms is high, and therefore they have a stronger incentive to secure long-term funds.

Regarding the demand for long-term funds in Japan, Fukuda (2003) summarized the difference in functions between long-term bank loans and bonds according to the above logic.[14] Applying this theory, Mieno (2015, ch. 6) conducted an empirical study on the function of bonds, seeing that long-term liabilities are limited almost solely to corporate bonds in the case of ASEAN countries, because commercial banks' maturity transformation function is weak and most bank borrowings are on a short term. The study found that the bond ratio was positively correlated with the debt-to-asset ratio (as an explanatory variable), and that demand for bond financing was strongly related to the long-term characteristics of corporate bonds. In this paper, we follow this prior study and observe the correlation with the debt-to-asset ratios for Thailand, Malaysia, and Indonesia for the period between 2010 and 2024.

In the estimation, we apply the Tobit model because the corporate bond ratio, which is an explained variable, includes many non-positive values in the sample.

(2) Results of estimation

The estimation results are shown in Table 5. Total assets are significant in all countries, indicating a strong correlation between firm size and corporate bond issuance. The relation with retained earnings is different between Thailand, Malaysia and Indonesia. It was not significant in Thailand and Malaysia, which means that the relation between "funding through bond financing" and "the use of internal funds = internal finance" is weak. Conversely, it is positively significant in Indonesia. In Indonesia, as Table 4 shows, there is no significant correlation between banks' borrowing and retained earnings, while there is a positive correlation

[14] See Mieno (2015, ch. 7) for a summary of theoretical framework of Fukuda (2003) and a more detailed explanation of its application in the context of issuance of corporate bonds by ASEAN countries.

between banks' borrowing and corporate bond ratio. These results indicate that retained earnings and corporate bonds are complementary. This result may be interpreted as that companies with abundant funds are also making investment by funds obtained through corporate bonds.

We find that capital intensity is negatively correlated in most cases, contrary to the results for debt and bank borrowing. Bond financing is actively conducted by industries and companies with rather low capital intensity, and so the issuance of corporate bonds is not for the demand for funds stemming from large-scale capital investment, such as equipment industries. The industry dummies show no clear trend, but bond issuance by type A manufacturing industry (light industry) is not active in Thailand and Malaysia, while issuance by construction and real estate sectors are relatively active in Thailand and Indonesia. Construction and real estate are not very capital-intensive sectors, but firms in these sectors need large-scale working capital continuously to keep their projects going, and this seems to be consistent with a negative value for the capital-intensity parameter.

The time trend is positively significant in Thailand and negatively significant in Indonesia, and it is not significant in Malaysia though it has a negative sign. In the previous section, we confirmed that corporate bond balance has changed little after the market has matured at an early stage in Malaysia, and the bond market in Indonesia has been sluggish for a long time, while the corporate bond balance has been growing steadily in Thailand. Our estimates calculated at the firm level support these points.

We obtain an interesting result regarding the relationship between bond issuance and the debt-to-asset ratio. In all three countries, there is a clear positive correlation between the bond ratio and the debt ratio. This is contrary to the conclusion from the analysis of bond issuance in Japan in the 1990s by Fukuda (2003). It can be interpreted that issuance behavior of firms in Thailand, Malaysia, and Indonesia is influenced by demand for long-term funds, rather than constraints on funding costs. As for the fact that constraints on capital cost is low, it may be because the agency problem has not materialized given that the average debt-to-asset ratios are low in the first place. We can comprehend that in such a situation, firms that need to secure long-term funds have incentives to replace their external finance consisting of short-term debt with bonds. This result is the same as Mieno (2015, ch. 6), who estimated Thailand and Malaysia in the 2000s using a similar model. For these two countries, the structure of financing has not changed significantly since the 2000s.

These empirical analyses, though still preliminary, support some of the observations on the overall financial systems conducted in the previous sections. First, in all three countries, the debt-to-asset ratios of listed companies were below 50 percent, ratios of bank borrowing to assets were low at levels below 20 percent, and so we confirm that firms were highly dependent on self-financing. Further, we also confirm that both the debt-to-asset ratios and the ratios of bank borrowing to assets have been declining continuously since the 2010s. It is clear that external finance such as bank credit is substitutable with internal funds and is used to cover the amount that internal funds are short of. We also confirm that debt financing is active in industries and companies with high capital intensity. However, sufficient evidence is

not found regarding a clear link with certain industries, such as bank credit retreating from the manufacturing industry. Bond financing is generally weak, but there is no alternative relationship between bond issuance and self-financing. On the other hand, there is a supplementary relationship with the debt ratio, which suggests that companies with demand for long-term funds are choosing bond financing as a funding source. In addition, bond financing is active by industries and firms that are less capital intensive, and rather than for capital investment, it seems industries that need long-term and large-scale working capital such as construction and real estate are more active in bond financing.

5. Summary of Discussion and Clarification of Issues

5.1 Structure of domestic financial flows

We would like to summarize observations and issues considered. The following facts are identified regarding ASEAN countries' financial systems and domestic flow of funds focusing on Thailand, Malaysia, and Indonesia. Bank credit has been recovering moderately since mid-2010s, but that to the manufacturing sector has declined or has been sluggish, while bank credit to the consumer sector and the financial sector related to consumers is increasing rapidly. Bank credit toward the construction and real estate sector are increasing. Commercial banks have tended to move away from the industrialization process driven by the manufacturing industry, and it seems they are seeking their own growth path.

Equity finance, on the other hand, has been expanding in the 2010s after slowing in the 2000s. However, the extent of inclusiveness (i.e., listing of companies and participation in stock exchanges) of stock markets, the place of firms' funding source, still appears to be inadequate except for Malaysia (and possibly Singapore). This is an issue to be improved in the future, and ways to grasp the situation in more detail and with more accuracy need to be sought.

Corporate bond financing has seen robust growth in Thailand, and it has developed at an early stage in Malaysia (and Singapore), but has long been weak in Indonesia (and the Philippines). In considering the development of bond financing, it is important to note that there is a concentration of finance to certain industries and technologies with affinity to the function of bond financing channels, such as financial sector, construction and real estate sector, and part of the service sector. Based on this fact, we need to examine the relationship between the economic path of industrial development and the demand for funds.

Overall, "internal finance," namely companies' own funds, still accounts for a large proportion of financing relative to "external finance," which is bank credit, equity finance, and bond financing combined. In other words, the circulation of funds through "external finance" is yet to be activated fully. This point warrants continued attention.

5.2 Capital outflows and investment inefficiency

In Section 2, we observed the structure of the balance of payments of the three countries on a macro basis,

and confirmed following developments over time. Their trade balances turned to a surplus in the 2000s, which brought steady national savings surpluses, and under this environment foreign investment by domestic entities has reached a level comparable to investment from abroad (inward investment). At present, both inward and outward movements of capital flows are active. Meanwhile, we pointed out that the structural deficit in the primary income balance implies that, compared to what foreign capital received on domestic (inward) investment, domestic entities received less return on foreign investment. In short, the investment efficiency of the latter is lower than that of the former on the whole, and this is a quite strange situation. Domestic savings do not head for domestic investment opportunities but go to foreign investment instead, despite sufficiently high returns from domestic investment opportunities (hence inward investment continues to flow in) and lower information asymmetry for domestic investment relative to foreign investment, and as a result earning less profits.

This capital flow structure can be associated with the structure of the domestic financial system examined closely in sections 3 and 4, particularly to the inactivity in external financing. It appears that none of the three funding channels that should serve to connect domestic savings to investment in domestic earning opportunities have functioned sufficiently. We think that potential for higher growth rates are being missed due to the lack of fund allocation because of the inefficiency in financial systems.

6. Conclusion

In this paper, bearing in mind the possibility of funds flow between the ASEAN economies and Japan's domestic savings, we seek to gain basic understanding of financial systems in ASEAN countries. We first outline the features of the balance of payments of Thailand, Malaysia, and Indonesia, and then examine the characteristics of their domestic financial systems and flow of funds. Through collecting and organizing micro-level data on bonds and corporate financial data together with aggregate data on the financial sector, and examining the data from different angles, we identify issues for discussion. Much of our observation extends from the analysis of financial systems in Thailand and Malaysia in the 2000s by Mieno (2015), and we confirm that there have been no major changes in the basic structure of these systems since the 2010s.

In this paper, our analysis is limited to the three countries, because clarification of issues and location of data was conducted at the same time. Many challenges remain. For future work, our priority is to extend the same observations to Singapore, Vietnam and the Philippines and explore the generalization of ASEAN economies. In addition, for the original three countries (i.e., Thailand, Malaysia, and Indonesia), we will examine the coverage of micro data collected, especially by studying bond data closely, integrating the observation and analysis of unlisted companies, refining empirical analysis, and expanding the analysis to investment function estimation.

To accomplish the main objective of this research project, based on the basic understanding of ASEAN financial systems, we will explore discussion on the policy implications of efforts in "Asian

Financial Cooperation," such as the Asian Bond Market Initiative (ABMI) and how Japan can be involved in the flow of Japan's domestic savings with the ASEAN economies. We will expand these discussions as we deepen the basic research on the ASEAN financial system.

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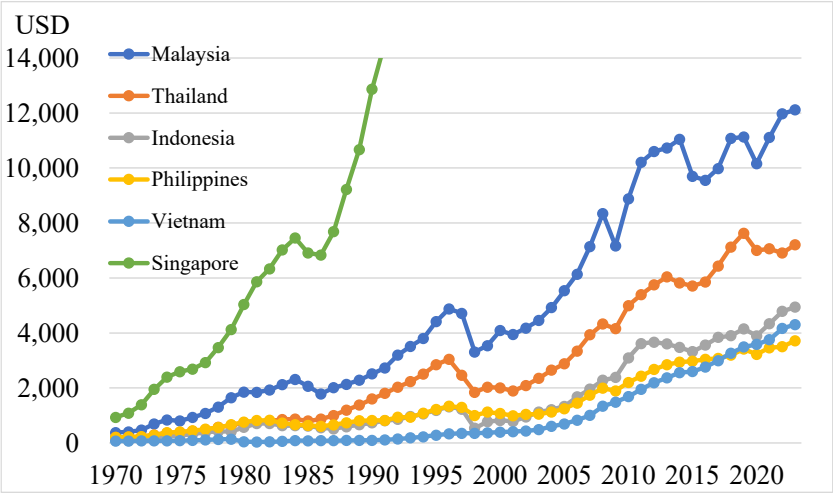


Figure 1: GDP per capita

Source: United Nations Conference on Trade and Development (UNCTAD)

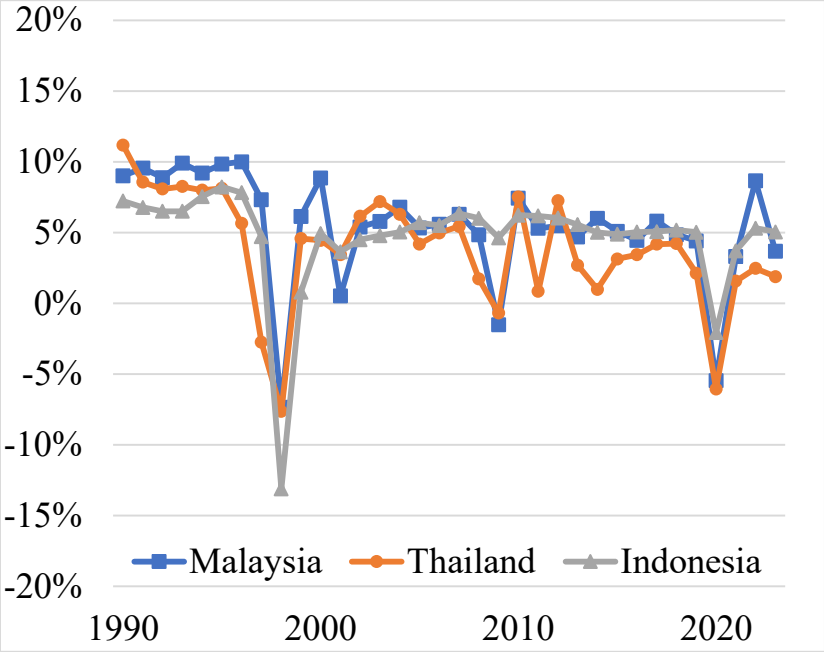


Figure 2-1: Trend of GDP growth rate (Thailand, Malaysia, Indonesia)

Source: World Development Indicators, World Bank

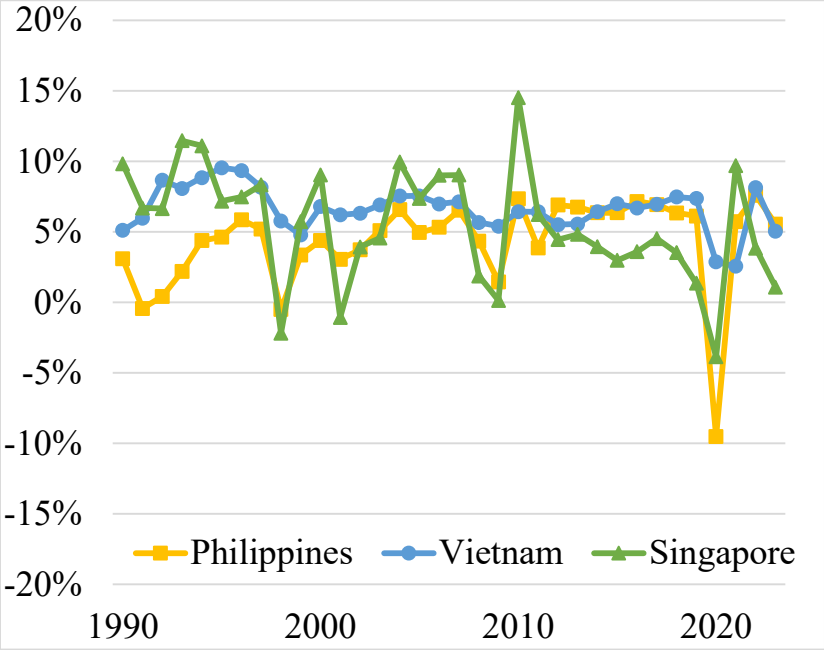


Figure 2-2: GDP Growth Trend (the Philippines, Vietnam, Singapore)

Source: World Development Indicators, World Bank

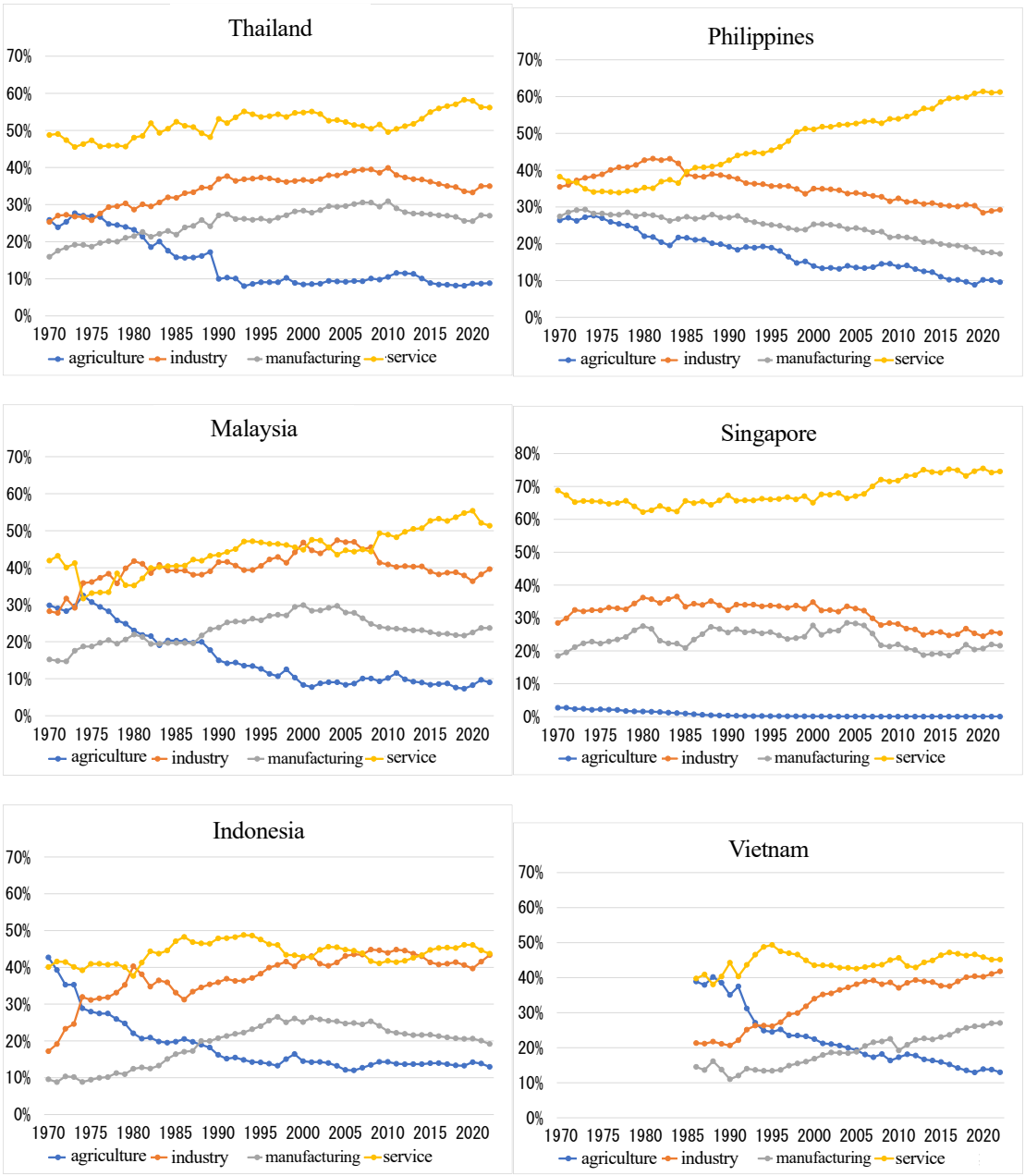


Figure 3: Industrial structure of each country

Source: United Nations Conference on Trade and Development (UNCTAD)

Thailand

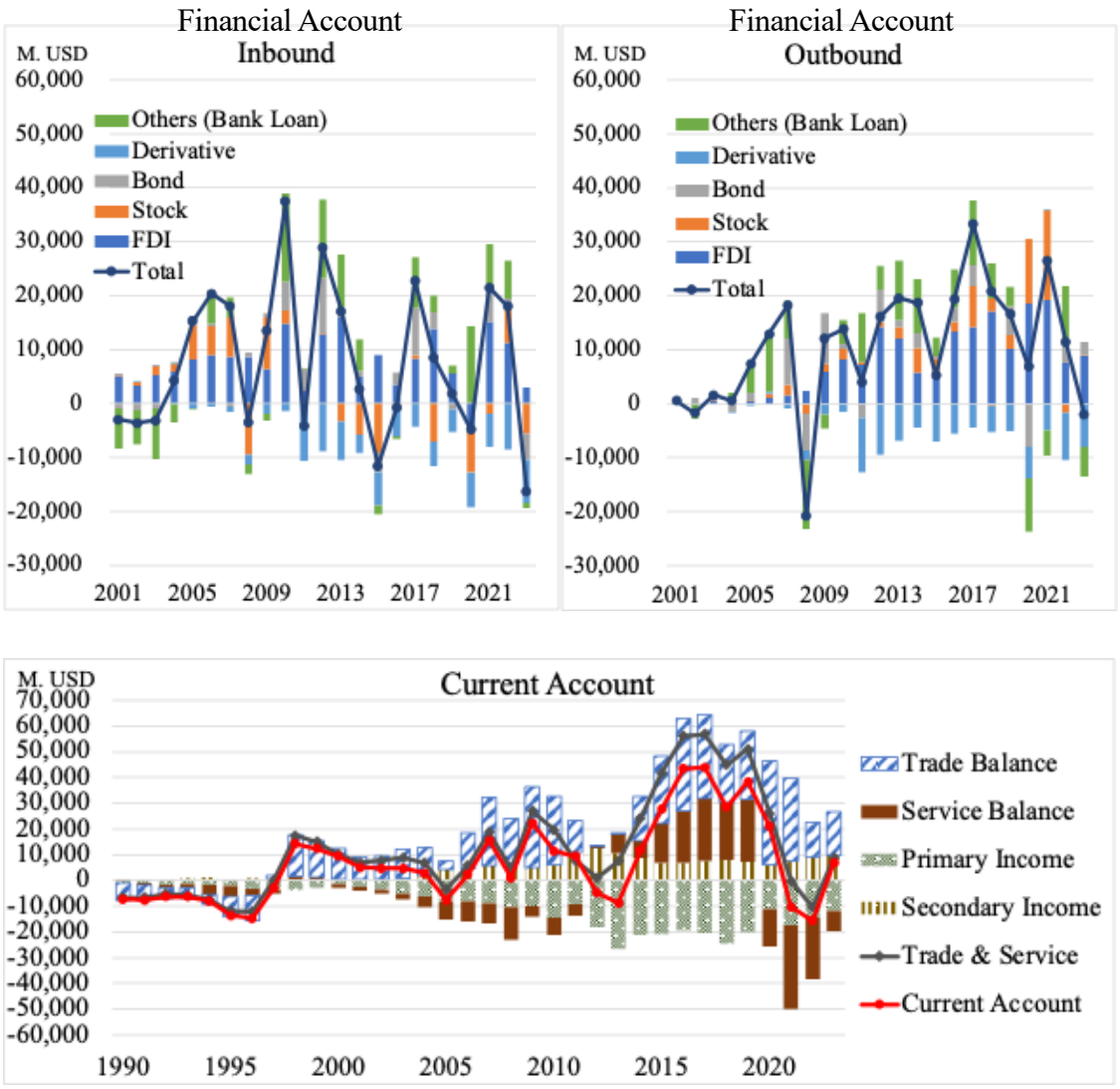


Figure 4-1: Developments in the balance of payments: gross financial balance (upper charts) and net current account balance (lower chart)

Source: Balance of Payment Statistics, IMF

Malaysia

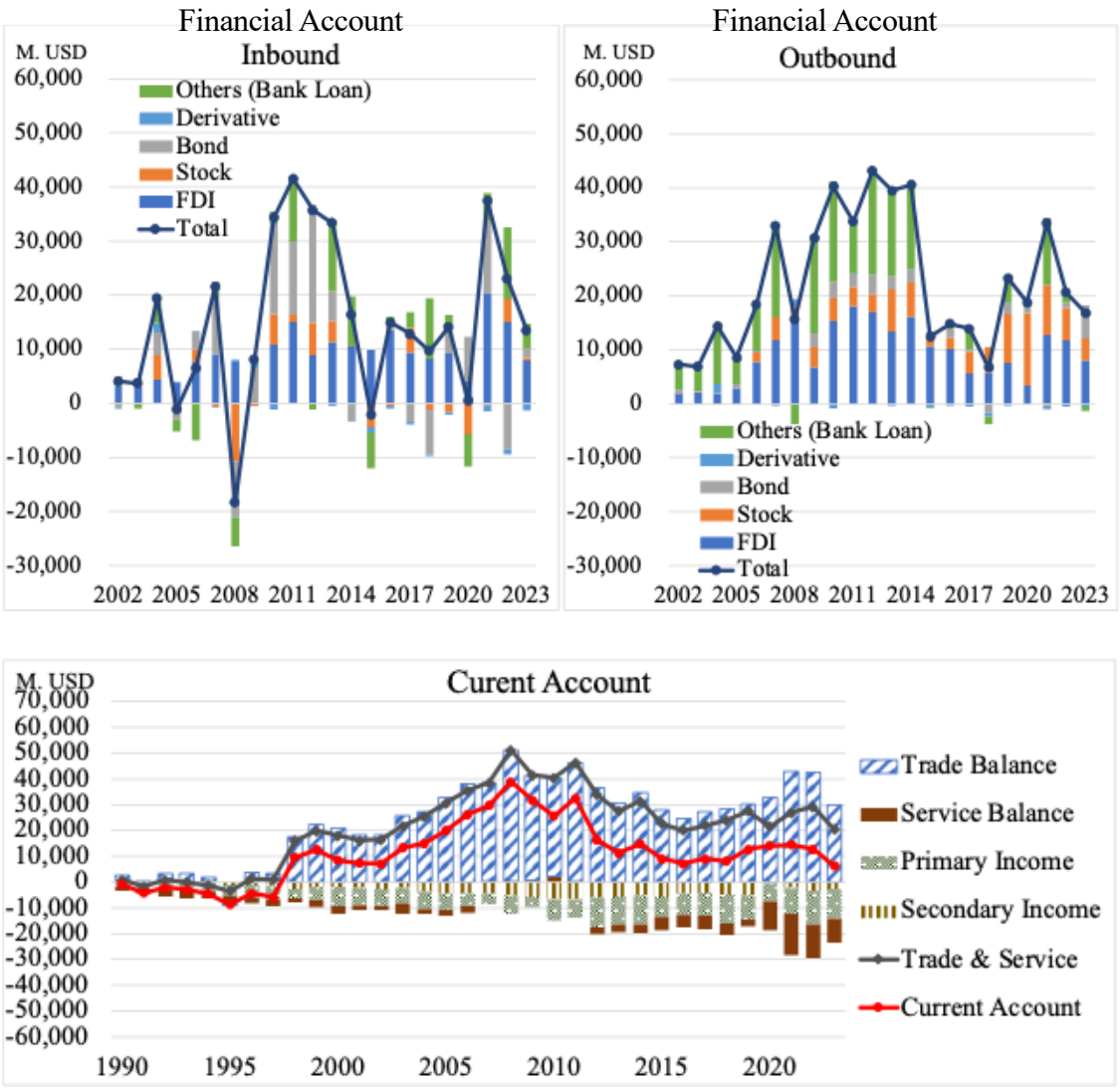


Figure 4-2: Developments in the balance of payments: gross financial balance (upper charts) and net current account balance (lower chart)

Source: Balance of Payment Statistics, IMF

Indonesia

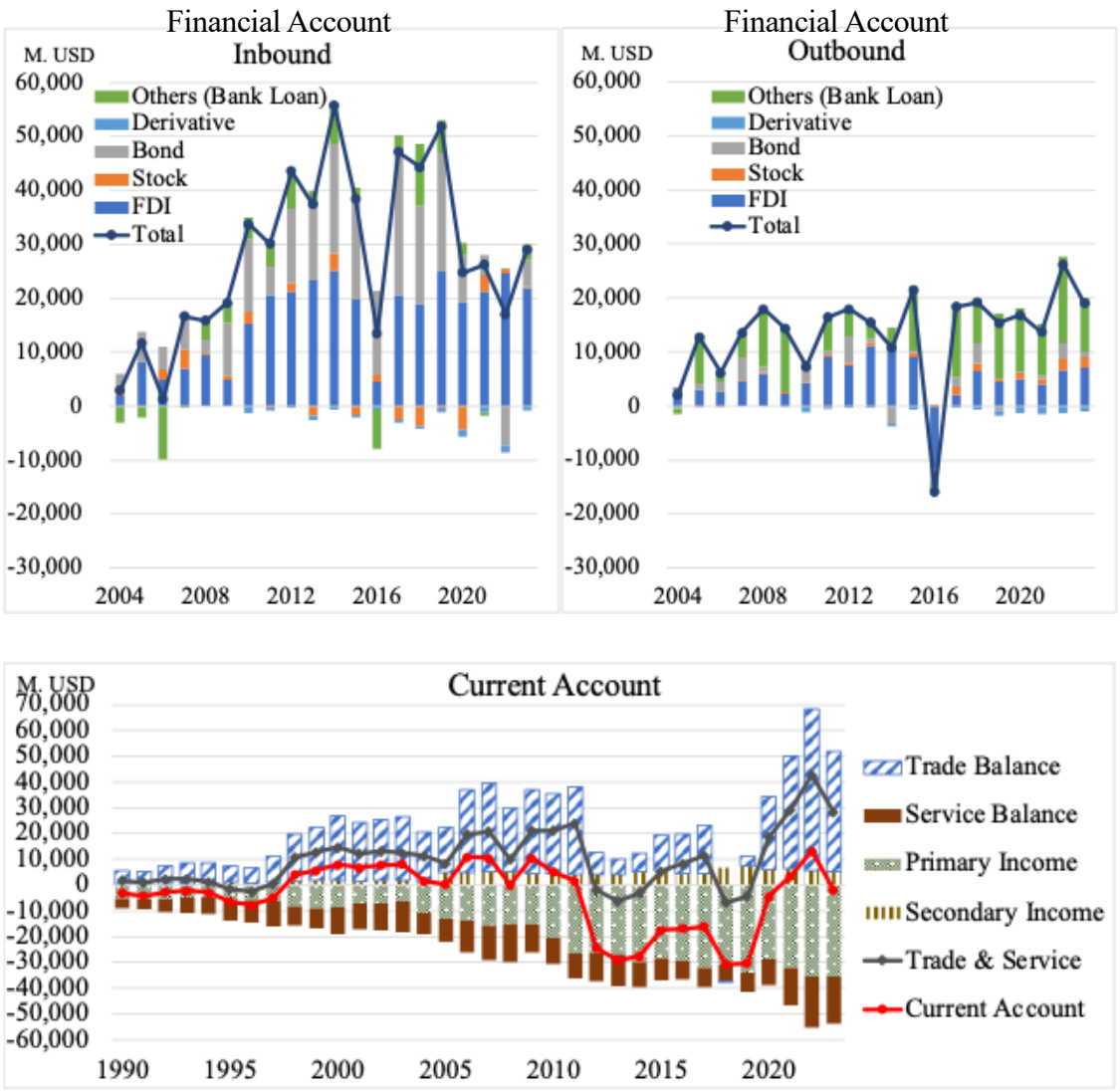


Figure 4-3: Developments in the balance of payments: gross financial balance (upper charts) and net current account balance (lower chart)

Source: Balance of Payment Statistics, IMF

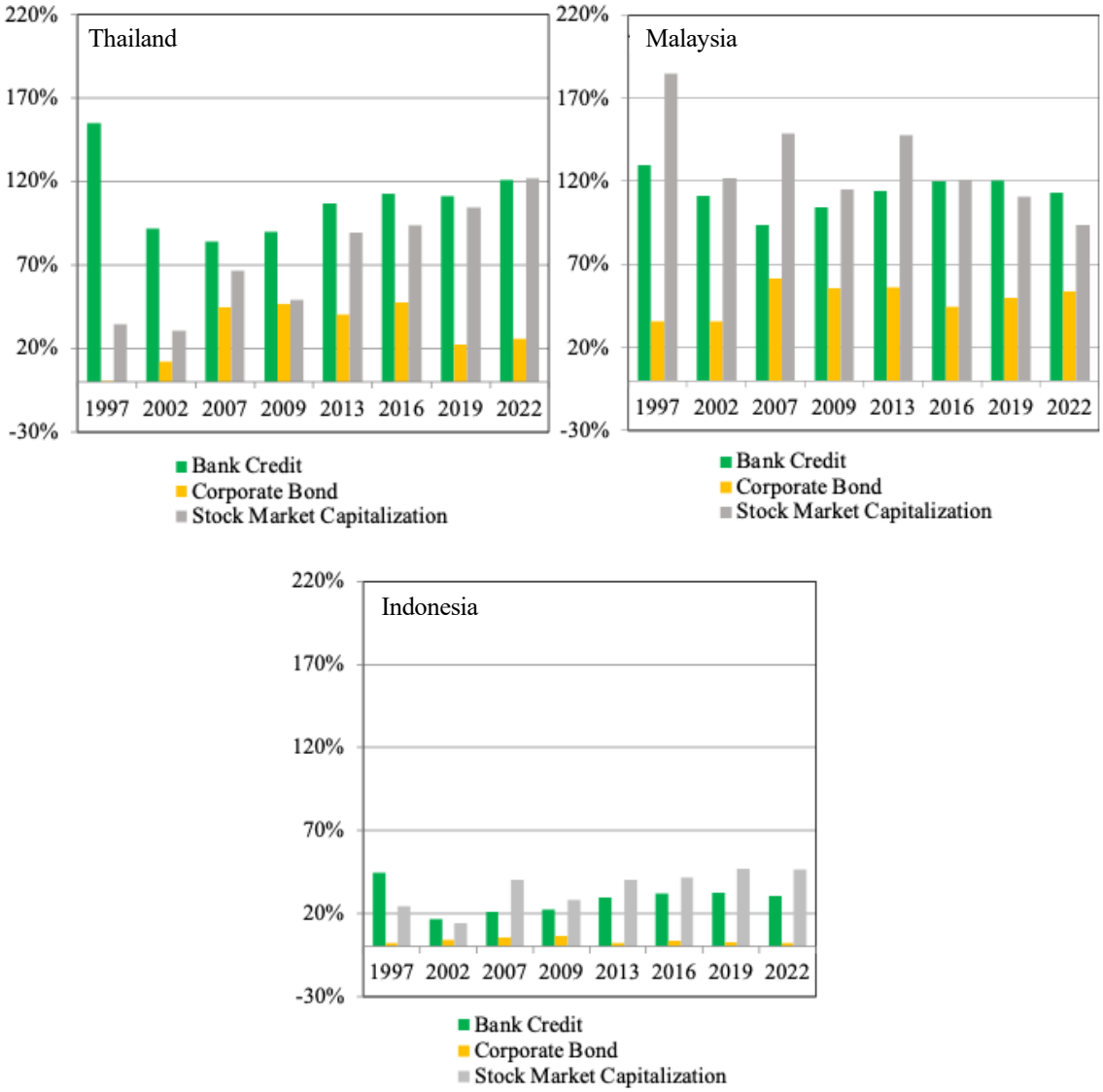
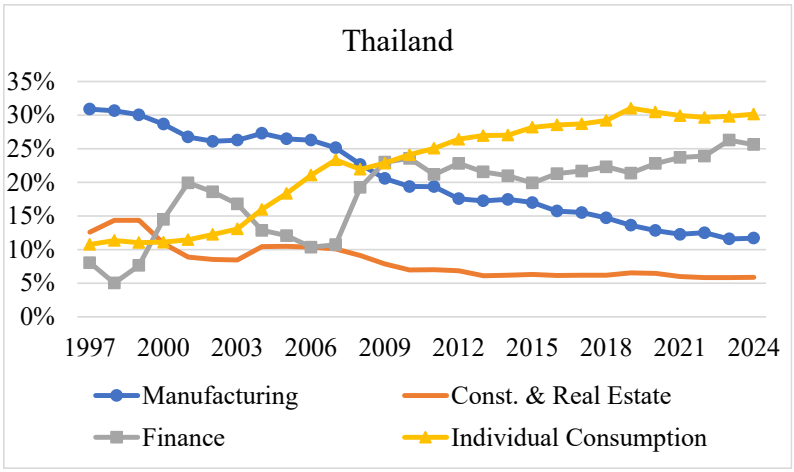
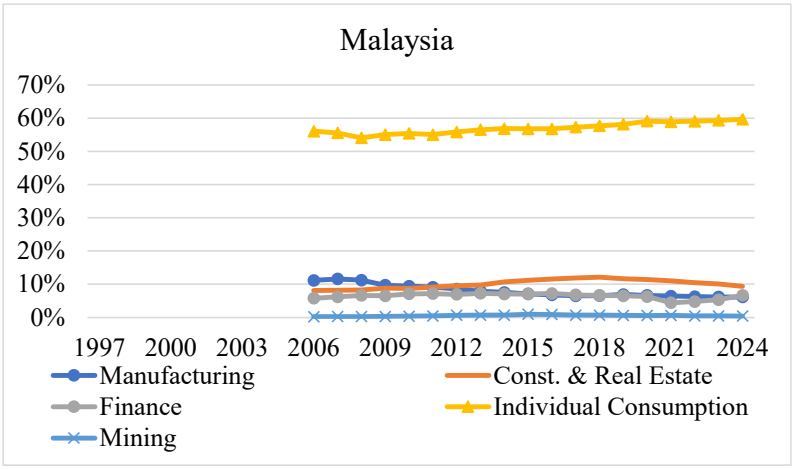


Figure 5: Changes in bank credit, corporate bond balance, and market capitalization

Source: Financial Development and Structure Dataset (1997-2016) and latest version 2018, World Bank; *AsianBondsOnline,* Asian Development Bank; World Development Indicators, World Bank.

Note: Vertical axis is ratio of credit balance, bond balance, and market capitalization as a percentage of GDP





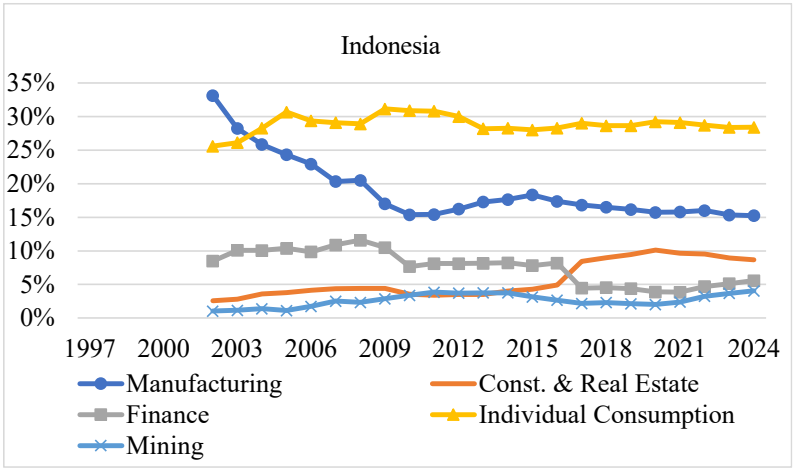


Figure 6: Changes in the weight of commercial bank credit by sector

Source: Bank of Thailand, Bank Negara Malaysia, Bank Indonesia.

Note: The vertical axis for Malaysia is 70%, twice that of Thailand and Indonesia.

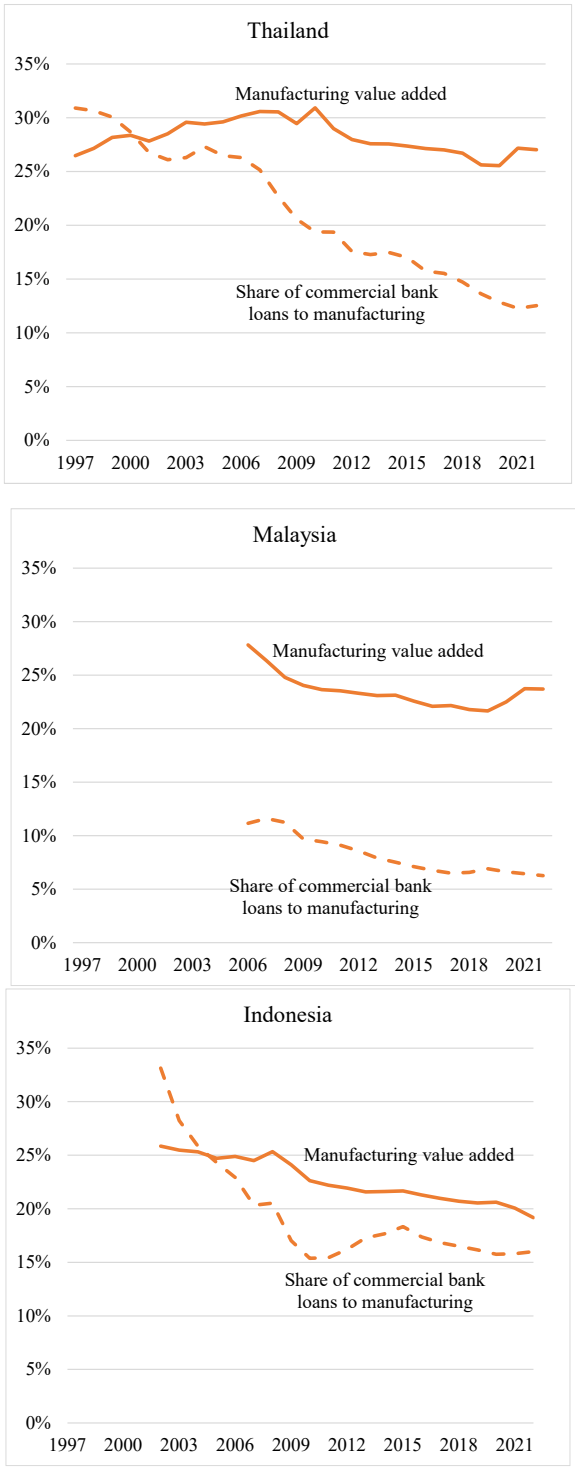


Figure 7: Comparison between the manufacturing sector's share of GDP and the share of commercial bank credit to manufacturing sector

Source: Same as Figure 3 and Figure 6.

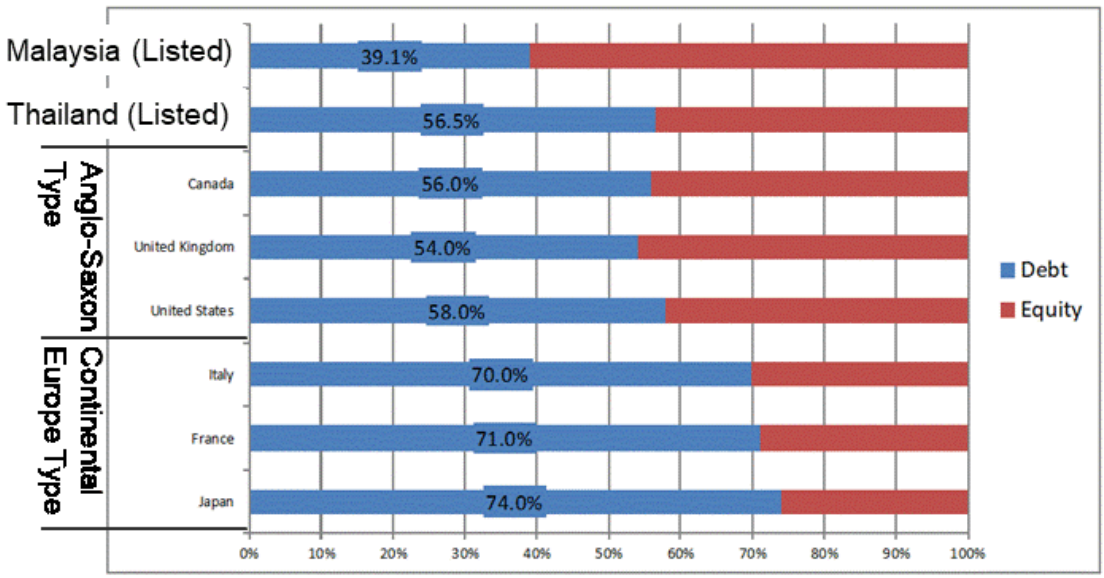
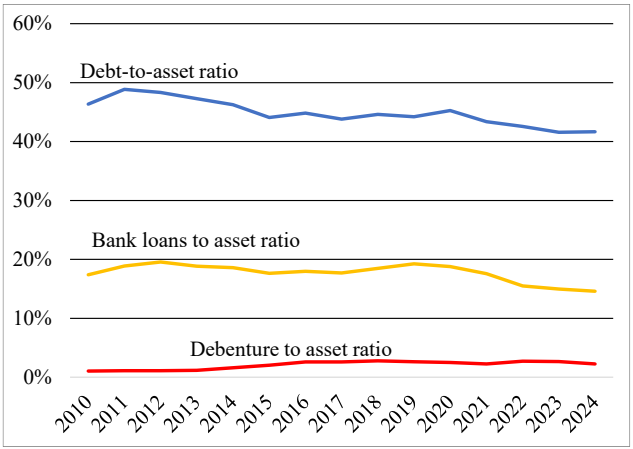


Figure 8: International comparison of debt-to-asset ratios: comparison between developed countries and Thailand and Malaysia

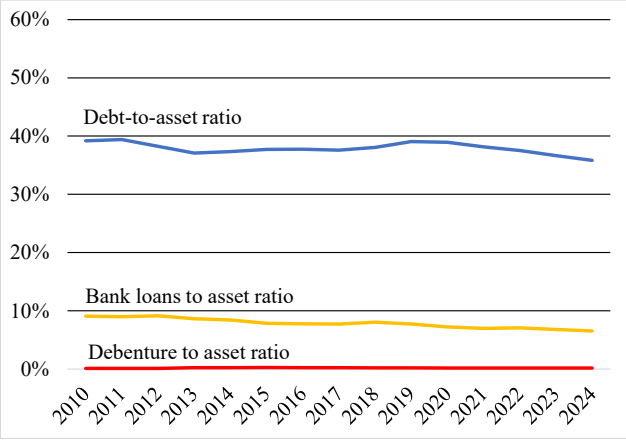
Source: Rajan and Zingales (1995) for the six developed countries. Figures for Malaysia and Thailand are authors' calculations based on the respective stock exchanges (as of 2002).

Thailand



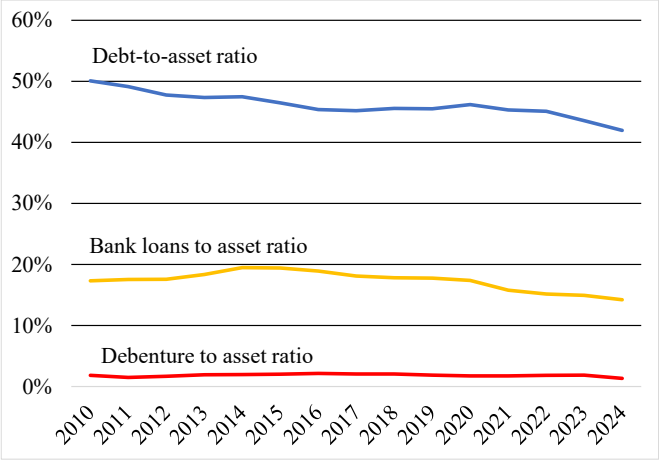
Source: ORBIS (Moody's). Annual average of 678 non-financial firms with data loss of three years or less in the 15-year sample from 2010 to 2024.

Malaysia



Source: ORBIS (Moody's). Annual average of 761 non-financial firms with data loss of three years or less in the 15-year sample from 2010 to 2024.

Indonesia



Source: ORBIS (Moody's). Annual average of 353 non-financial firms with data loss of three years or less in the 15-year sample from 2010 to 2024.

Figure 9: Developments in debt-to-asset ratios since 2010

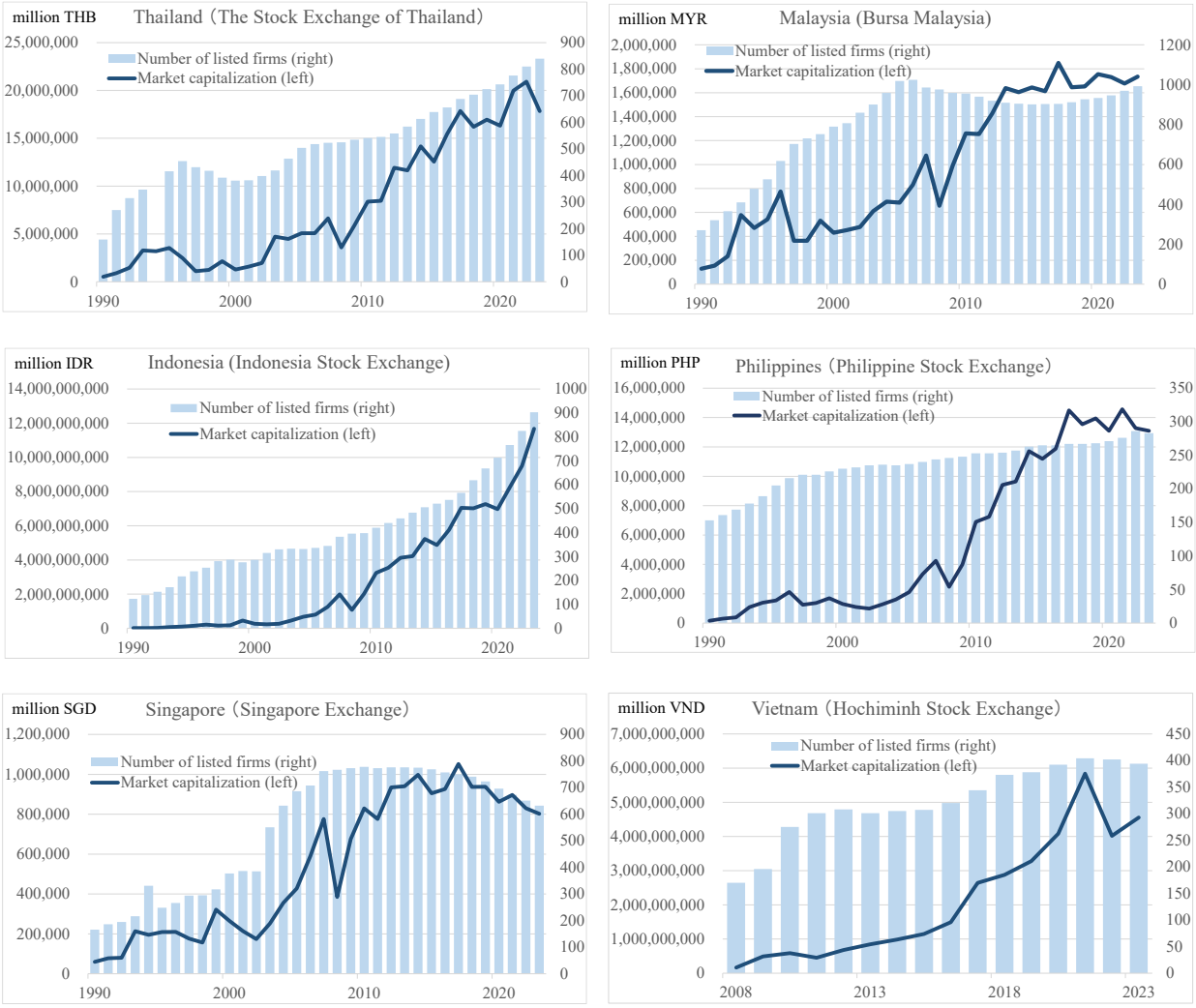


Figure 10: Trends in stock markets in each country

Source: World Federation of Exchanges

Table 1: Share of listed firms in top firms with large total assets (2005 survey)

	Number of listed firms	Total asset ranking				
		Top 100	Top 400	Top 600	Top 800	Top 1000
Thailand	415	52.0%	33.8%	29.3%	26.4%	24.5%
Malaysia	848	92.0%	81.0%	74.2%	68.9%	64.7%
Indonesia	219	58.0%	41.0%	31.5%	26.0%	21.9%
Philippines	105	31.0%	17.8%	14.3%	11.6%	9.8%

Source: Calculated based on a survey conducted with the Japan Bank for International Cooperation from 2006 to 2007. Original data is from business registration information of each country.

Note: Financial institutions are not included in the number of listed companies.

Table 2: Share of listed firms in top firms with large total assets (2023 survey for this research)

	Number of sample listed firms	Total asset ranking				
		Top 100	Top 400	Top 600	Top 800	Top 1000
Thailand	695 (695)	48.0%	33.3%	28.2%	26.0%	29.3%
Malaysia	980 (1012)	43.0%	32.8%	30.5%	28.6%	26.6%
Indonesia	806 (849)	n.a	n.a	n.a	n.a	n.a

Source: ORBIS (Moody's).

Note: Number of sample listed firms is the number of listed companies included in the ORBIS database (excluding financial institutions). Figures in parentheses show the number of companies for which information on total assets is missing.

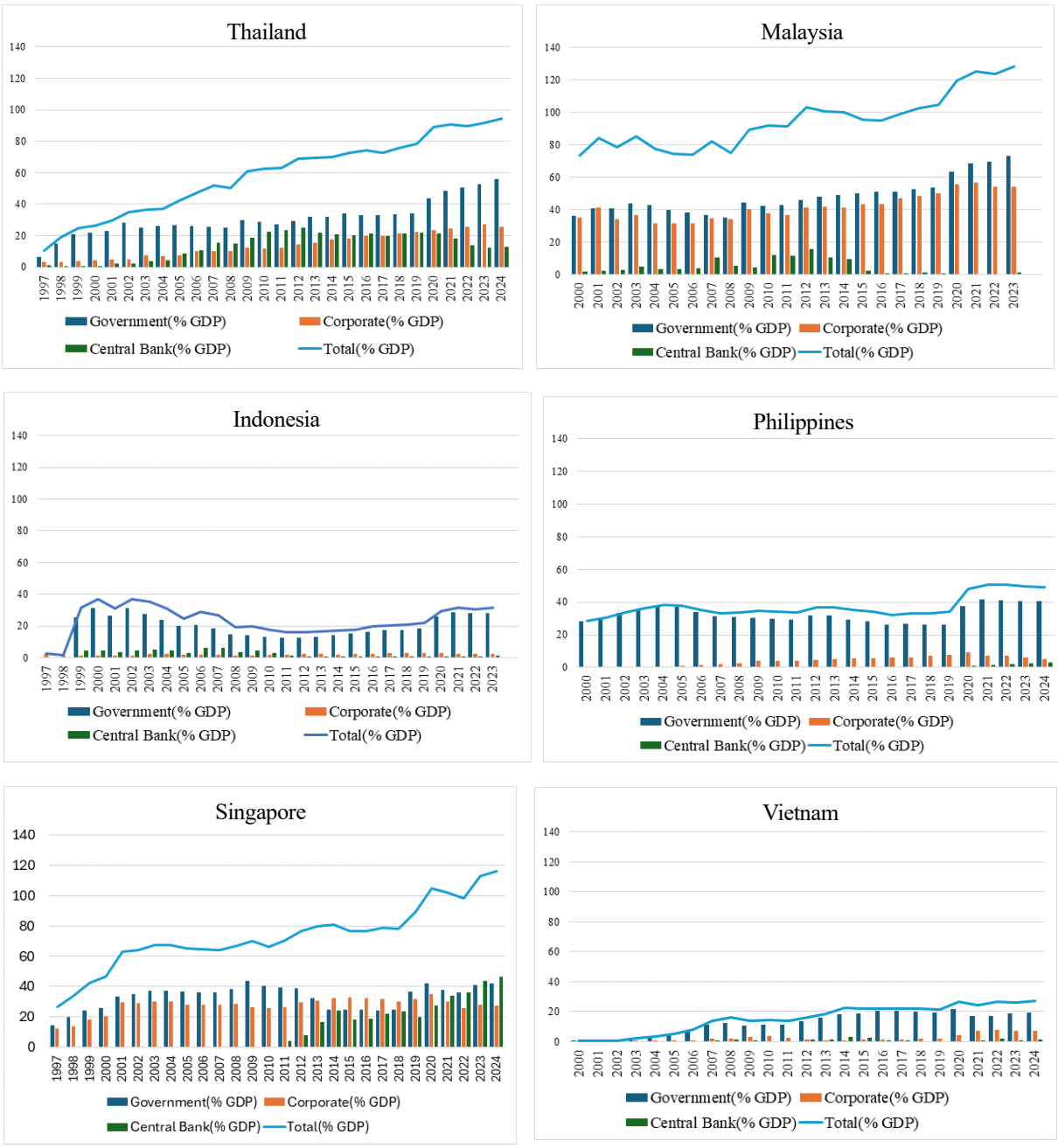
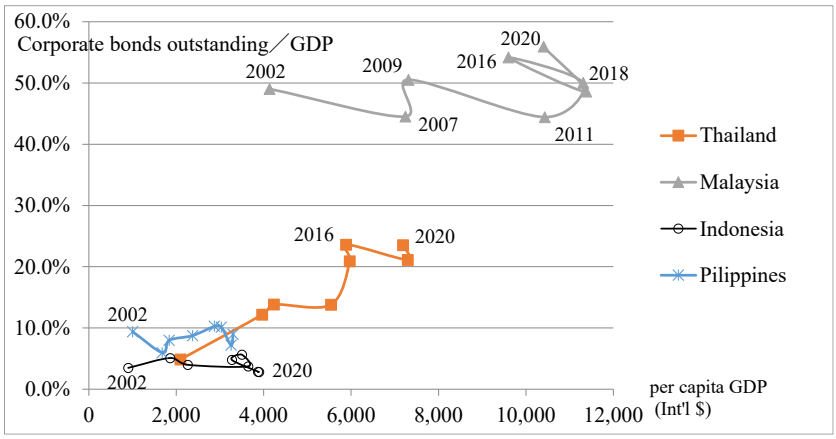


Figure 11: Trends in bond balance (as a percentage of GDP, corporate bonds issued in local currency)

Source: *AsianBondsOnline*, Asian Development Bank, https://AsianBondsOnline.adb.org/ for Thailand, Malaysia, Indonesia, Philippines and Singapore; CEIC database for nominal GDP for Vietnam; exchange rates are from Bloomberg, LP.

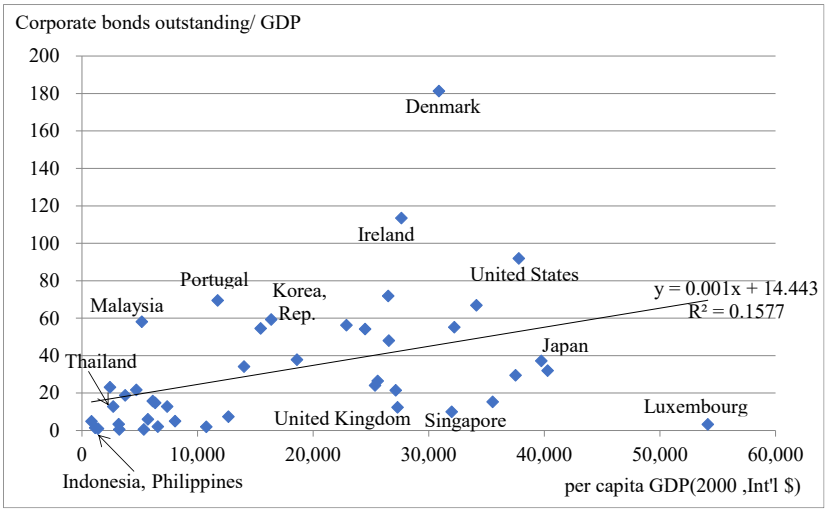
Note: For Vietnam, bonds issued by state enterprises are classified as government bonds.

(1) Thailand, Malaysia, Indonesia, Philippines



Source: *AsianBondsOnline*, Asian Development Bank and World Development Indicator, World Bank.

(2) International comparison (as of 2011)



Source: Financial Development and Structure Dataset, World Bank

Figure 12: Economic development and bond market growth

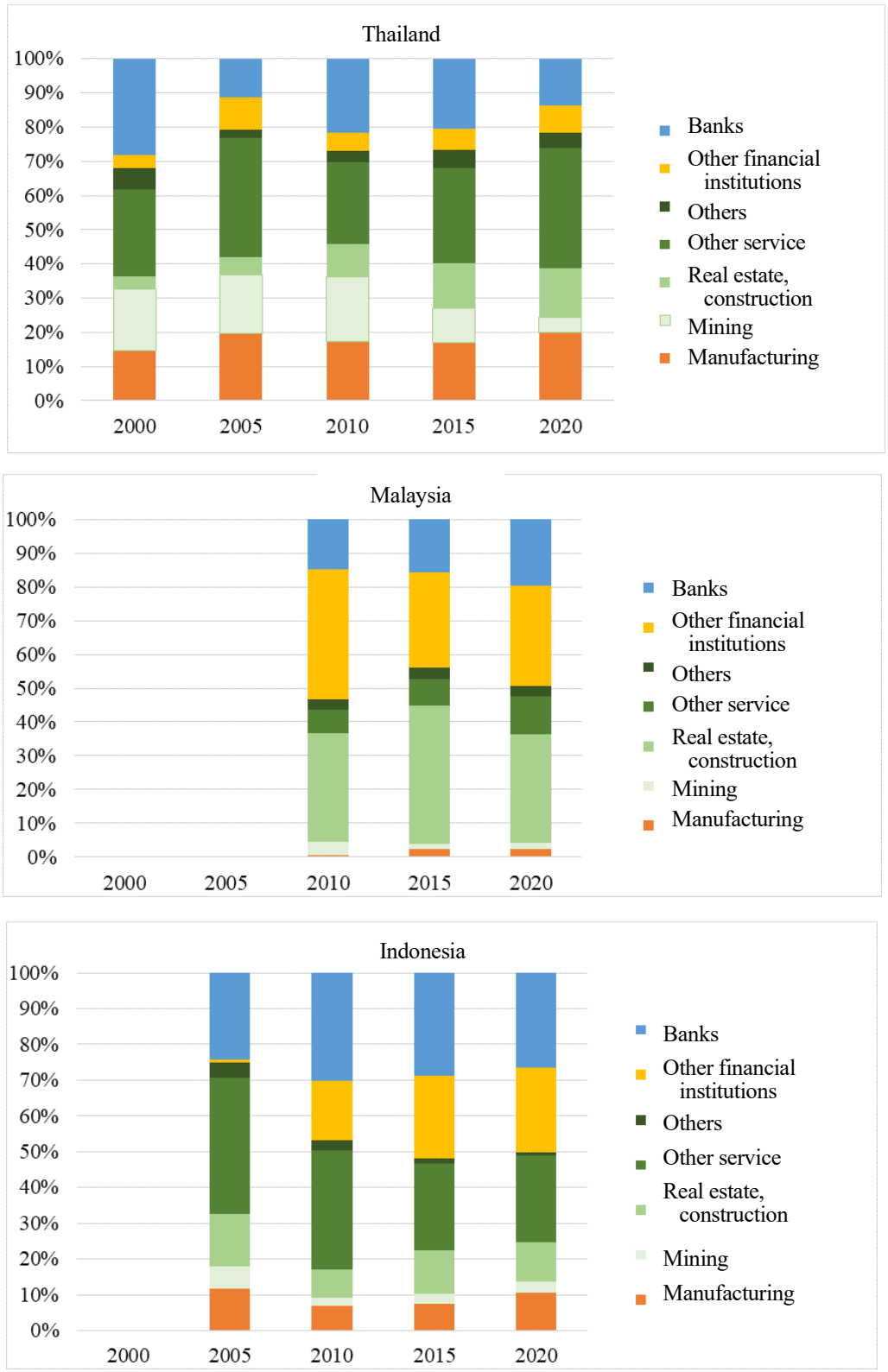


Figure 13: Amount outstanding of corporate bonds by sector (Thailand, Malaysia, Indonesia)

Source: Estimates based on Bond + Sukuk Information Exchange, Thai Bond Market Association, P.T. Penilai Harga Efek Indonesia and other databases, Bloomberg, issuers' websites, etc.

Table 3: Estimation Results (Ratios of Debt to Assets)

Debt to assets ratio

	Random Effect Model					
	Thailand		Malaysia		Indonesia	
	1	2	3	4	5	6
Total Assets (Log Value)	0.026***	0.026***	0.031***	0.03***	-0.004*	-0.005**
	(13.170)	(13.040)	(16.940)	(16.150)	-(1.770)	-(2.060)
Retained Earnings	-0.093***	-0.093***	-0.054***	-0.054***	-0.022***	-0.022***
	-(23.210)	-(23.210)	-(18.910)	-(18.680)	-(7.130)	-(7.130)
Capital Intensity	0.163***	0.163***	0.126***	0.133***	0.118***	0.12***
	(14.050)	(14.020)	(13.210)	(13.790)	(9.550)	(9.450)
Mining Dummy		0.068		0.062*		0.045*
		(1.490)		(1.740)		(1.800)
Manufacturing A (Light Industry) Dummy		0.014		-0.03*		0.049**
		(0.690)		-(1.850)		(2.370)
Manufacturing B (Heavy Industry) Dummy		0.017		-0.012		0.014
		(1.070)		-(0.970)		(0.750)
Construction & Real Estate Dummy		-0.001		0.082***		0.015
		-(0.060)		(5.060)		(0.710)
Transportation & Warehousing Dummy		0.042		0.035		-0.024
		(1.510)		(1.480)		-(1.150)
Telecommunications & Information Dummy		0.026		0.000		0.036
		(0.740)		(0.020)		(1.230)
Annual Trend	-0.008***	-0.008***	-0.003***	-0.003***	-0.007***	-0.007***
	-(21.930)	-(21.870)	-(13.730)	-(13.550)	-(16.850)	-(16.730)
Constant Term	0.173***	0.164***	0.044**	0.051**	0.536***	0.529***
	(7.770)	(6.990)	(2.140)	(2.330)	(21.590)	(20.370)
Number of observation	9969	9969	12647	12647	8451	8451
Number of groups	699	699	1009	1009	840	840
Wald chi2	1123.59	1128.57	849.84	899.38	452.34	465.34
R-sq: within	0.1065	0.1065	0.0662	0.0662	0.0537	0.0540
between	0.0541	0.0605	0.0492	0.0814	0.0267	0.0370
overall	0.0719	0.0760	0.0846	0.1048	0.0354	0.0412
sigma_u	0.1625	0.1624	0.1465	0.1455	0.1718	0.1714
sigma_e	0.1296	0.1296	0.1114	0.1114	0.1403	0.1403
rho	0.6114	0.6112	0.6337	0.6306	0.5998	0.5988

(Note 1) Values in parentheses indicate z-statistics.

(Note 2) ***, *, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Estimation Results (Ratios of Bank Borrowing to Assets)

Bank borrowing to assets ratio

	Random Effect Model					
	Thailand		Malaysia		Indonesia	
	1	2	3	4	5	6
Total Assets (Log Value)	0.032***	0.031***	0.012***	0.012***	0.019***	0.019***
	(19.410)	(19.280)	(12.930)	(12.960)	(11.650)	(11.660)
Retained Earnings	-0.031**	-0.032***	-0.010***	-0.011***	0.001	0.001
	-(9.370)	-(9.380)	-(7.030)	-(7.160)	(0.440)	(0.540)
Capital Intensity	0.15***	0.15***	0.056***	0.055***	0.138***	0.134***
	(15.690)	(15.620)	(11.360)	(11.200)	(14.700)	(13.960)
Mining Dummy		0.009		-0.014		-0.030
		(0.250)		-(0.740)		-(1.640)
Manufacturing A (Light Industry) Dummy		0.016		0.008		0.058***
		(1.000)		(0.920)		(3.750)
Manufacturing B (Heavy Industry) Dummy		0.016		0.018***		0.016
		(1.310)		(2.830)		(1.120)
Construction & Real Estate Dummy		0.005		0.007		0.020
		(0.330)		(0.830)		(1.280)
Transportation & Warehousing Dummy		0.051**		-0.012		0.048***
		(2.420)		-(0.940)		(2.980)
Telecommunications & Information Dummy		0.030		-0.019*		0.022
		(1.140)		-(1.800)		(1.010)
Annual Trend	-0.006***	-0.006***	-0.002***	-0.002***	-0.003***	-0.003***
	-(18.340)	-(18.280)	-(16.170)	-(16.200)	-(8.600)	-(8.510)
Constant Term	-0.182***	-0.191***	-0.055***	-0.061***	-0.091***	-0.108***
	-(10.130)	-(10.140)	-(5.130)	-(5.420)	-(4.820)	-(5.490)
Number of observation	9969	9969	12647	12647	8451	8451
Number of groups	699	699	1009	1009	840	840
Wald chi2	811.30	818.79	523.49	543.32	414.88	445.51
R-sq: within	0.0747	0.0747	0.0423	0.0423	0.0365	0.0367
between	0.1138	0.1238	0.0314	0.0465	0.1313	0.1579
overall	0.0922	0.0981	0.0345	0.0463	0.0925	0.1129
sigma_u	0.1219	0.1215	0.0774	0.0767	0.1307	0.1291
sigma_e	0.1090	0.1090	0.0574	0.0574	0.1075	0.1075
rho	0.5558	0.5542	0.6452	0.6411	0.5966	0.5905

(Note 1) Values in parentheses indicate z-statistics.
(Note 2) ***, *, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

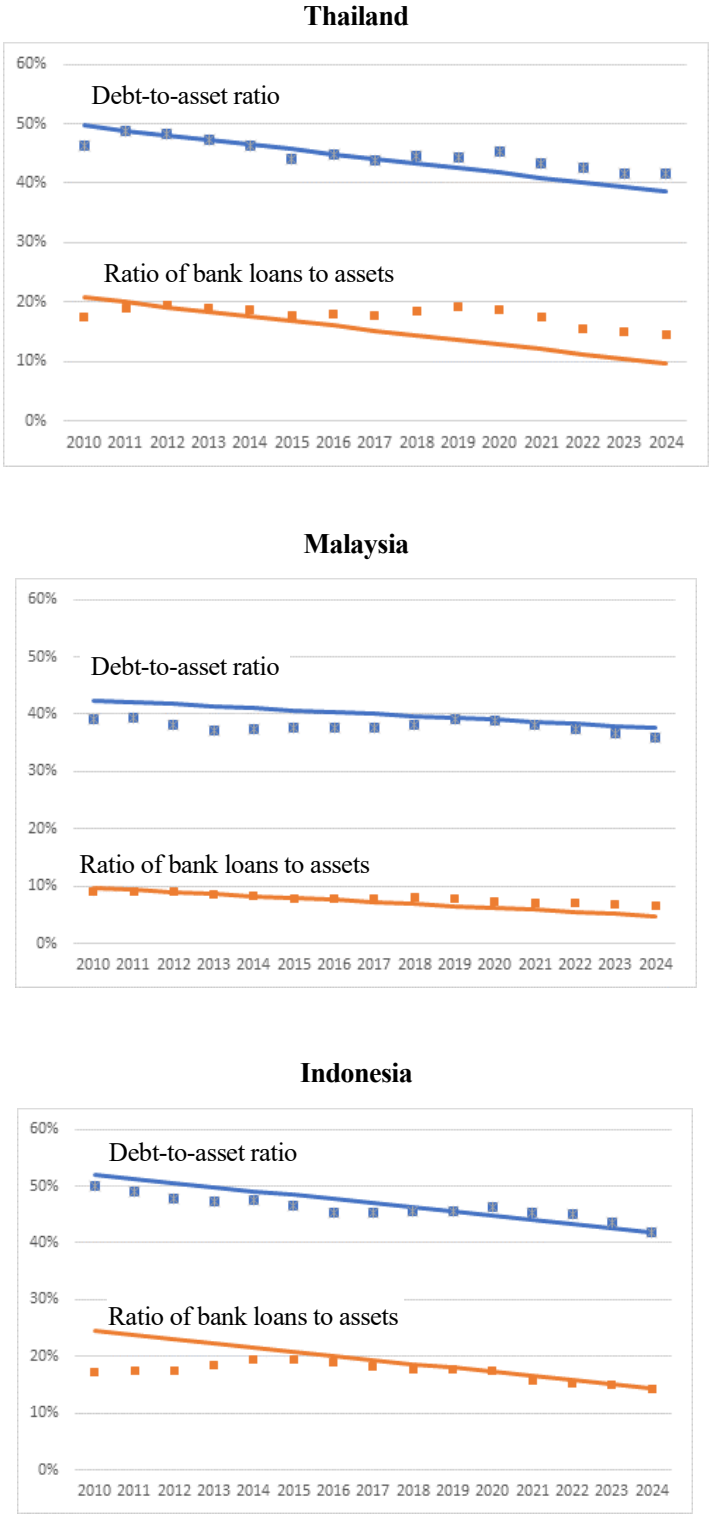


Figure 14: Estimation of average for ratios of debt to total assets and ratios of bank loans to total assets

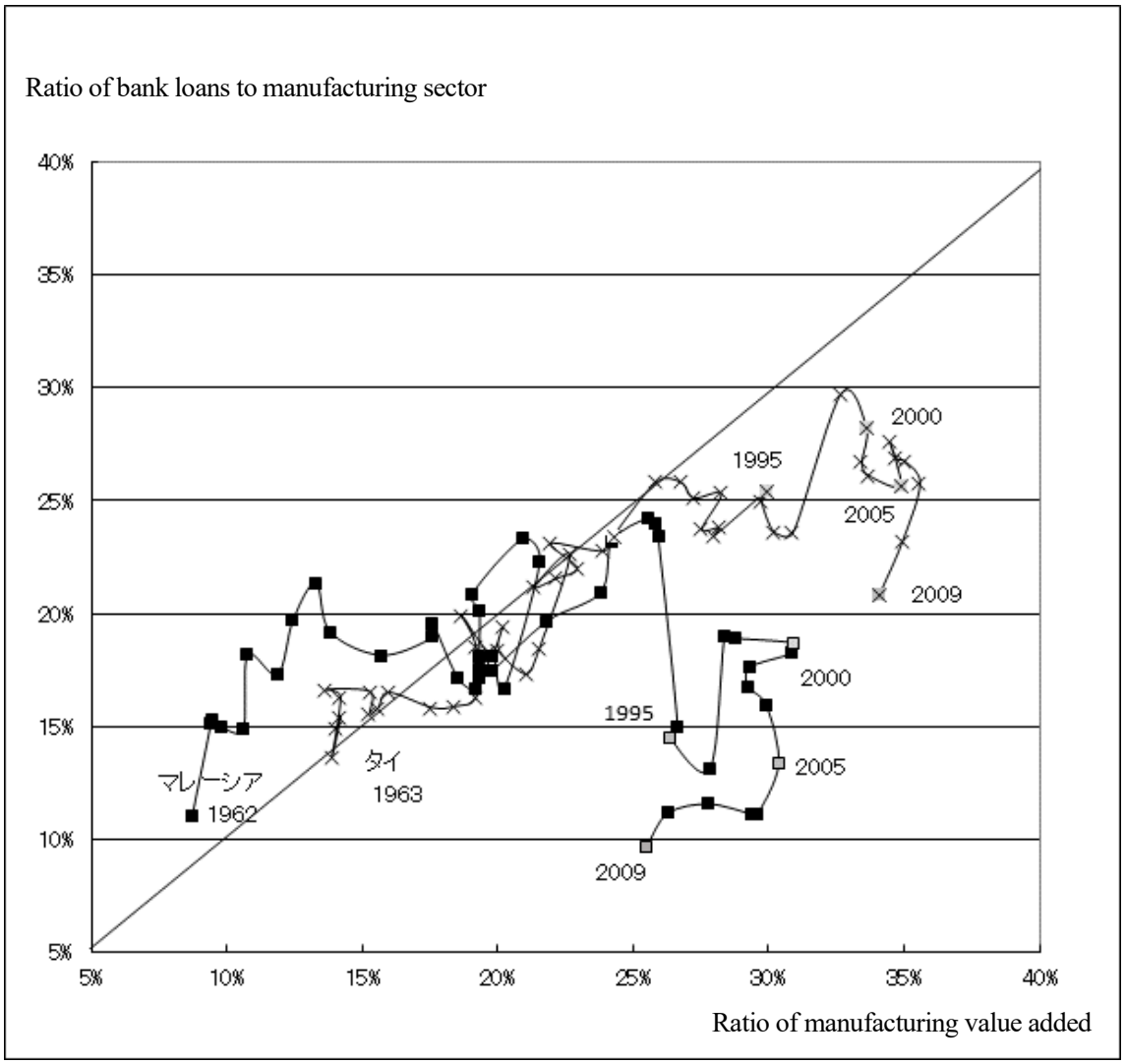
Note: straight lines are estimates. Dotted lines are calculated from samples (values in Figure 9).

Table 5: Estimation Results (Ratio of debenture to total assets)

Debenture to assets ratio

	Tobit Model					
	Thailand		Malaysia		Indonesia	
	1	2	3	4	5	6
Total Assets (Log Value)	0.091***	0.092***	0.121***	0.12***	0.092***	0.091***
	(35.390)	(35.250)	(11.620)	(11.580)	(24.250)	(23.630)
Retained Earnings	0.002	0.004	-0.036	-0.035	0.052***	0.059***
	(0.210)	(0.330)	-(1.470)	-(1.610)	(3.140)	(3.420)
Debt to assets ratio	0.33***	0.332***	0.535***	0.519***	0.396***	0.402***
	(16.290)	(16.330)	(7.420)	(7.260)	(14.220)	(14.280)
Capital Intensity	-0.138***	-0.136***	-0.178***	-0.077	-0.115***	-0.072***
	-(9.350)	-(9.200)	-(3.030)	-(1.200)	-(6.080)	-(3.320)
Mining Dummy		-0.077***		-0.099		-0.047**
		-(3.370)		-(1.130)		-(2.510)
Manufacturing A (Light Industry) Dummy		-0.036***		-0.099*		0.019
		-(3.140)		-(1.790)		(1.280)
Manufacturing B (Heavy Industry) Dummy		0.013		0.007		0.007
		(1.520)		(0.210)		(0.490)
Construction & Real Estate Dummy		0.036***		0.048		0.066***
		(3.210)		(1.410)		(4.350)
Transportation & Warehousing Dummy		-0.015		-0.267***		0.018
		-(1.050)		-(3.660)		(0.980)
Telecommunications & Information Dummy		0.006		-0.048		0.024
		(0.330)		-(0.910)		(1.190)
Annual Trend	0.006***	0.006***	-0.003	-0.003	-0.004***	-0.003***
	(7.040)	(6.900)	-(1.100)	-(1.210)	-(3.190)	-(3.070)
Constant Term	-1.482***	-1.499***	-2.447***	-2.42***	-1.564***	-1.596***
	-(38.500)	-(38.370)	-(13.530)	-(13.430)	-(26.670)	-(26.370)
Number of observation	9969	9969	12647	12647	8451	8451
LR Chi2	3204.49	3249.30	575.66	605.95	1674.95	1713.94
Log likelihood	-1106.82	-1084.41	-487.1476	-472.0031	-1026.878	-1007.38
Pseudo R2	0.5914	0.5997	0.3714	0.3909	0.4492	0.4597
sigma	0.1859	0.1843	0.3324623	0.3243141	0.214268	0.2134775
left-censored	8593	8593	12467	12467	7598	7598
uncensored	1376	1376	180	180	853	853

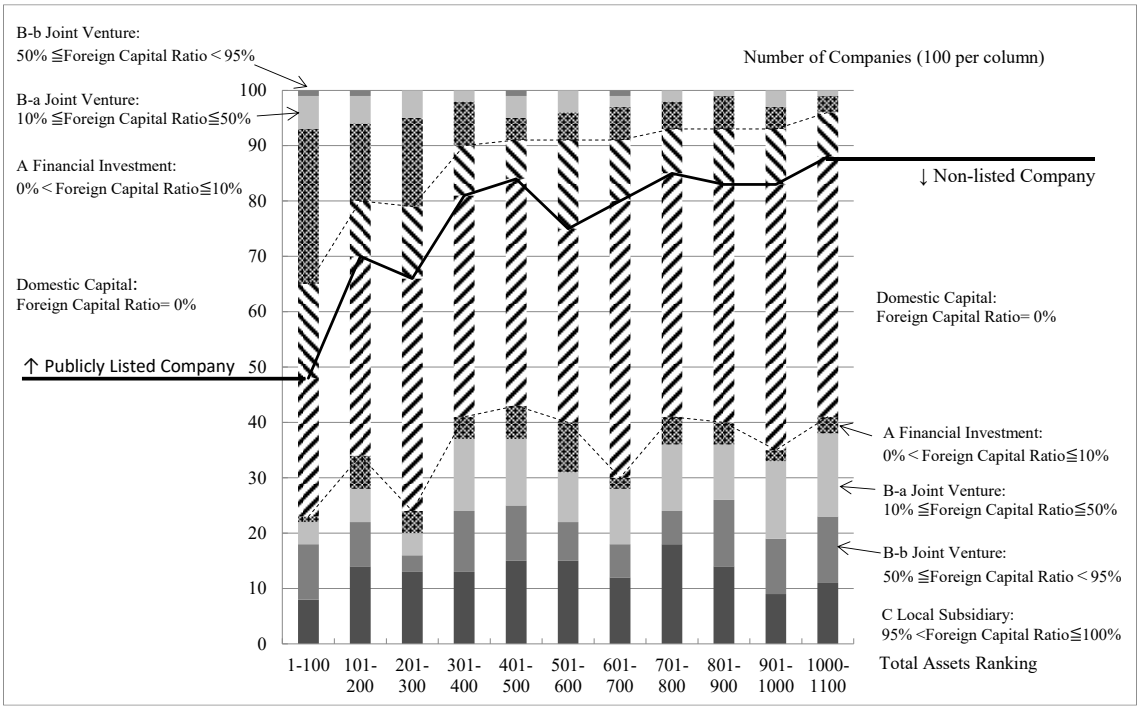
(Note 1) Values in parentheses indicate z-statistics.
(Note 2) ***, *, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.



Reference Figure 1: Long-term trend in the share of manufacturing sector and commercial bank lending to the sector in Thailand and Malaysia

Source: Reproduced from Mieno (2015, p.229, figures 7 and 8). The original data is from *Key Indicators* of the Asian Development Bank, and the Bank of Thaiand, NESDB, CEIC data base.

Note: Thailand is represented by ×, and Malayssia by ■.



Reference Figure 2: Distribution of Thai companies, classification by the size of total assets, by listed/unlisted firms, and by the size of foreign capital.

Source: Reproduced from Mieno (2015, p. 120, Figure 4.1). Source: Data from a joint survey conducted by the author and the Japan Bank for International Cooperation (as of 2005). Data source: The Registry of the Department of Commerce, a registry maintained by Business on Line (for research, see Mieno (2009))

Reference Table 1: Basic calculation for datasets

	Thailand Sample size 9,970				Malaysia Sample size 12,647				Indonesia Sample size 8,490			
	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum
Debt to assets ratio [debt / total assets]	0.4476	0.2205	6.E-05	0.9994	0.3789	0.2033	1.E-04	0.9961	0.4607	0.2286	2.E-04	0.9997
Bank borrowing to assets ratio [Bank Borrowings / Total Assets]	0.1768	0.1730	0	0.8944	0.0781	0.0985	-0.004782	0.7704	0.1475	0.1750	0	0.8827
Debenture to assets ratio [Debenture / Total Assets]	0.0211	0.0636	0	0.5384	0.0020	0.0257	0	0.7514	0.0130	0.0531	0	0.6912
Samples with Zero Bond Liabilities [Sample size]	1,376				180				853			
Samples with Zero Bond Liabilities [Ratio to Total Sample Size]	(0.1380)				(0.0142)				(0.1005)			
Total Assets (Log Value) [Log Value (in Millions of USD)]	11.3855	1.8094	2.3979	18.4324	11.3690	1.6790	3.4948	17.6585	11.5769	1.9222	2.5624	23.1500
Retained Earnings [Retained Earnings / total assets]	0.1130	0.4704	-15.2158	0.9641	0.1350	0.4873	-28.2050	2.3422	0.0562	0.8336	-21.8844	1.7243
Capital Intensity [Fixed Assets / Total Assets]	0.3246	0.2305	0	0.9737	0.2910	0.2164	0	0.9712	0.3563	0.2583	0	0.9903
Industry Dummies												
Mining	0.0200	0.1399	0	1	0.0177	0.1319	0	1	0.0807	0.2724	0	1
Manufacturing A (Light Industry)	0.1221	0.3274	0	1	0.1231	0.3286	0	1	0.1379	0.3448	0	1
Manufacturing B (Heavy Industry)	0.2771	0.4476	0	1	0.3293	0.4700	0	1	0.1940	0.3954	0	1
Construction & Real Estate	0.1143	0.3182	0	1	0.1227	0.3281	0	1	0.1398	0.3468	0	1
Transportation & Warehousing	0.0598	0.2371	0	1	0.0475	0.2128	0	1	0.1193	0.3242	0	1
Telecommunications & Information Services	0.0359	0.1861	0	1	0.0708	0.2564	0	1	0.0477	0.2132	0	1
Annual Trend [2010 Benchmark]	8.2629	4.2070	1	15	8.3614	4.2540	1	15	9.2037	4.0941	1	15

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