Stories about Institutions and Patterns of Slow Economic Growth from 21st Century Thailand

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Abstract (235 words)

This essay examines how institutions and economic trends have evolved during a period of slow economic growth after 2006, focusing on comparisons to 2000-2006, when the economy recovered from the Asian financial crisis, and the economic boom during 1990-1996. Private fixed investment declined sharply and remained low after 1996, contributing to relatively low growth. Institutional instability, particularly in political and financial markets, increased investor uncertainty and contributed to low growth. In contrast, important improvements in infrastructure, labor productivity and wages, education, health, and poverty reduction continued to boost growth after 2006. Income distribution among households and regions also tended to improve, although changes were small. Thailand's large international trade, policies that limit both import and domestic competition, and the need to strengthen environmental protection present important policy challenges.

The political alignments after the 2023 election offer hope that political parties and other political institutions can mature, stabilize, and help promote rebounds in private investment and growth, while helping

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promote further gains in education, health, and human capital formation. Literature on development and growth emphasizes the key roles of strengthening and stabilizing institutions that foster peace (the lack of violence, actual or threatened) and human capital formation (through healthcare, education, etc.) because positive externalities are often large in related markets. Fostering continued wage increases driven by corresponding increases in labor productivity (benefitting both producers and consumers) is another important challenge for high-income developing economies like Thailand.

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1. Introduction

Thailand is a small, price-taker economy in almost all world markets with a medium-sized population of about 70 million in 2019-2022. Thailand experienced substantial rises in per capita GDP and many other measures of economic welfare during most of the post-World War II era. Modern Thais usually much earn higher incomes, consume more and higher-quality goods and services, get more education, are healthier, and have a lower probability of living in poverty than previous generations. However, long-term growth rates of per capita GDP in 2002 baht fell from 6.9 percent annually during the boom period in 1990-1996 to 4.5 percent during the post-Asian-Crisis recovery period in 2000-2006 and then stagnated at 2.9 percent during the slow growth period in 2006-2019 (Table 1). The covid19 shock caused a sharp decline in 2020 and remained below the slow-growth average in 2021-2022. This purpose of this essay to paint a “big picture” of the Thai economy, comparing trends and patterns of growth and other important indicators of economic welfare and performance during the boom, recovery, and slow growth periods and analyzing implications for the future.

The essay consists of analytical "stories" about the evolution of the Thai economy.[2] Section 2 begins with "discouraging" stories about (a) slow growth, (b) the structure of aggregate demand and low levels of private fixed investment, and (c) slowed accumulation of private fixed capital. These stories are "discouraging" because they reflect slower increases in Thai incomes and economic welfare after 2006 than would be expected at Thailand's income level. Section 3 turns to "encouraging" stories about continued improvements in (a) infrastructure, (b) employment, labor productivity, and wages, (c) poverty reduction and income distribution, and (d) human capital formation. Section 4 discusses "challenging" stories about (a) exports and imports, (b) import protection, and (c) domestic competition and regulation. Section 5 concludes.

The essay emphasizes how discrete disruptions in financial markets and/or political institutions in 1997-1998, 2001, 2006, and 2014 created persistent instability and contributed to the decline in growth and private fixed investment. Large changes in financial markets and related institutions also contributed by reducing willingness to both lend and borrow, especially after the Asian Financial Crisis. In contrast, other institutions improved in education, health care, and infrastructure development, and boosted growth.

I focus on institutions because they play a key role determining the efficiency with which inputs are combined to produce output. Economists have long identified improvements in this statistically ambiguous definition of technology (estimates of which vary depending on production function form and the numbers and/or types of inputs and outputs hypothesized) as the major source of long-term economic growth in most diversified economies like Thailand. These arguments are consistent with studies emphasizing how legal and political transparency, for example, sometimes contribute positively to growth in cross-country samples (Barro 1996). Unfortunately, standard economic analyses that emphasize incremental adjustments to incremental changes are unlikely to depict the effects of large, discrete, institutional changes realistically. Thus, this essay relies on descriptive analyses and references to existing literature.

[2] A single paper such as this can never be comprehensive. Several important issues, including fiscal or monetary policies or regulation of bank and financial institutions, are not analyzed.

2. Discouraging Stories: Slow Economic Growth and Reduced Capital Accumulation

The growth rate of per capita GDP in 2002 baht is a key indicator of changes in living standards as perceived by Thais over time. Subsequent sections will examine trends in other important indicators of economic welfare. This section focuses on trends in growth and accumulation of fixed capital, and includes a simple analysis of aggregate demand structure suggesting that fiscal and monetary stimuli are relatively ineffective in Thailand.

2a. Growth Trends

Low growth after 2006 concerns Thai policy makers because increasing incomes is still a high priority for many Thais. Per capita GDP was US$3,370 in 2006, US$7,813 in 2019, and US$7,070 in 2022 (Table 1). One would normally expect middle-upper income developing economies to grow more rapidly, as they catch up with richer economies. However, as of October 2023, real per capita GDP growth rates were projected to remain at 2.5-3.1 percent in 2023-2025 (International Monetary Fund [IMF] 2023). Similar long-term trends were observed in neighboring Malaysia.[3]

Relatively low growth after the Asian Financial Crisis in Thailand and Malaysia often helped motivate analyses of the so-called middle-income trap in country-level samples (Agenor 2017; Felipe et al. 2017). However, most of the literature fails to identify economically meaningful "traps" which make policy ineffective. Rather, most literature suggests that long-term, national growth performances are primarily determined by domestic institutions, politicians, economic actors, and related policies, even in small, open economies like Thailand and Malaysia.

[3] IMF estimates of real per capita GDP growth for Malaysia were 6.9 percent in 1990-1996, 2.5 percent in 2000-2006, 3.3 percent in 2006-2019, -5.2 percent in 2020, and 2.7-3.2 percent in 2021 and in 2023-2025 projections. 2022 growth was much higher, 8.4 percent.

In Thailand, inflation rates were relatively low during the period studied, particularly after the Asian Financial Crisis. The baht depreciated markedly in from 25-26/US$ in 1990 and 1996 to 40 in 2000, but then fluctuated to 30-35 range in 2007-2022. The stability of prices and exchange rates also reflects generally conservative monetary and fiscal policies throughout the period studied. On the other hand, the precipitous decline in private capital formation after 1996 has been both a result and a cause of slow economic growth.

2b. GDP Expenditure Components and Fixed Investment Trends

Private consumption is the largest component of domestic aggregate demand, accounting for between about half or slightly more of GDP (Table 1 sources).[4] Relatively high shares of private consumption can explain a some of the relatively high growth in the recovery period. Reflecting effects of the baht's depreciation, ratios of goods' exports and imports to GDP rose after the Asian Financial Crisis, from 26-30 percent for exports and 33-35 percent for imports in 1990 and 1996, to as high as 58 and 52 percent, respectively, in 2006. Both export and import shares fell before the covid19 crisis to 45 and 40 percent respectively, in 2019, but increased sharply after covid19, to 58 and 55 percent, respectively, in 2022.[5] Services exports and imports also grew rapidly during the 1990s and fluctuated afterwards. Services exports contracted conspicuously during 2020 and remained low in 2021-2022, reflecting reduced tourism.

If exports are assumed to be exogenous, as is normal for a small country, fiscal or money multipliers are relatively small in Thailand because the marginal propensity to import is probably similar to or larger than the marginal propensity to consume. Thus, a relatively large portion of fiscal or monetary stimulus leaks out

[4] In 1996-2019, for example, household consumption shares of GDP were a mean of 51 percent in both Thailand and Malaysia, and similar to levels in Korea (49%), Taiwan (53%), but larger than in poorer economies like Indonesia (57%), Vietnam (61%), and the Philippines (72%). Data from Asian Development Bank (2023).

[5] Exports or imports can exceed GDP or value added, which excludes intermediate consumption, because they are measured as sales or output values, including intermediate consumption.

through imports. In short, policies like the proposed handout of 10,000 baht to many Thais or public works' expenditures are unlikely to create large aggregate demand stimulus.[6]

The decline of private fixed investment from 20 percent of GDP in 1990 and 1996 to 8-9 percent from 2000 was one of the most conspicuous long-term changes in the Thai economy after the Asian Financial Crisis (Table 1). The largest decline was in private construction, which fell from 12-15 percent of GDP in 1990-1996 to 3-4 percent in 2000 and later years. Before the crisis, private construction investment was often speculative and contributed to high asset prices in the early 1990s, but prices of land and stocks fell markedly in the 2-3 years before the crises. Falling asset prices and government failure to properly supervise lending practices of Thai financial institutions contributed to large debt accumulation and were a major cause of the Asian Financial Crisis. After the crisis, private investors have apparently become more risk averse. Further analyses of how Thailand's largest lenders and borrowers changed after the Asian Financial Crisis and again after the World Financial Crisis (e.g., Menkhoff and Suwanaporn 2011 for pre-crisis years) would help clarify important aspects of these changes.

Previous studies estimate the effects of economic uncertainty on private investment. Jongwanich and Kohpaiboon (2008) hypothesize uncertainty is related to the volatility of output growth, inflation, the real exchange rate, and the terms of trade. The negative effects of economic uncertainty on private investors are also emphasized in studies of Malaysia (Ang 2010) and Thailand (Apaitan et al, 2020). Suwanprasert's (2023) event study of the 2006's coup's discrete effects finds that consumption's GDP share decreased, while military spending and tourism rose afterwards. In contrast, effects on real GDP and many other indicators

[6] Because large portions of Thai exports conducted by large multinational enterprises, exports may not be entirely exogenous as usually assumed. However, I know of no study that estimates the effects of endogenizing exports on Thailand's macroeconomic multipliers.

were insignificant. It is difficult to measure how discrete changes in political leadership and related institutions affect the economy, partially because effects often take a long time to be realized.[7]

2c. Capital Accumulation, Average Capital Productivity, and Private Shares of Fixed Capital

Table 2 shows data on the nominal value of net capital stocks at replacement value to compare with data on nominal GDP (Table 1) and provide a long-term perspective on the causes and effects of prolonged, low levels of fixed capital formation. For example, the growth rate of nominal capital stocks fell from 15 percent during the boom period to 6.8 percent during the recovery period and 4.2 percent during the slow growth period (Table 2). If the capital stock deflator is used, real growth rates were similar, 15, 6.2, and 4.1 percent, respectively, but real growth rates were a bit lower if the GDP deflator is used (Table 1, Table 2 sources).[8]

The average product of capital has been relatively stable, decreasing from 0.45 in 1990 to 0.40 in 1996, and 0.37 in 2006 before rebounding to 0.41-0.44 in 2019-2022 (Table 2). There was substantial variation of average capital productivity among industries. It was higher than average in manufacturing and trade and vehicle repair, below the average in transportation and storage, and closer to the average in agriculture and construction. This variation reflects marked differences between industry distributions of the capital stock and GDP (Table 1). Transportation and storage and manufacturing had the two biggest capital stocks of the six industries in Table 2 in many years. "Other" industries accounted for much larger shares of fixed capital than of production, particularly during the boom and recovery periods.[9]

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[7] For example, the 2019 constitution can be viewed as a delayed result of the 2006 and 2014 coups' failures to eliminate political opponents from power.

[8] In order to calculate real capital stocks and related growth rates, one must account for changes in the economic value of pre-existing capital stocks, which is difficult when other asset (e.g., stock or land) prices fluctuate widely, in addition to accounting for how prices of new additions to the capital stock change.

[9] Finance and real estate (capital stock shares of 32, 27, 24, and 20-21 percent in 1990, 1996, 2006, and 2019-2022, respectively) was a large component of this "other industries" category.

Reflecting slow growing private fixed investment, the private share of total net capital stocks fell from 77 percent in 1990 and 1996 to 69-72 percent in 2006 and later years (Table 2). Private capital dominated (95 percent or more of the total) in manufacturing and in trade and vehicle repair, but private shares were only two-thirds or less in agriculture, construction, and transportation and storage. Low private shares in agriculture, construction, and relatively low shares in accommodation and food services are surprising because most production and employment in these industries probably originates in the private sector. If most production is indeed private, these data suggest that private producers are allowed to use government capital stocks in these sectors. Controversies related to the use of government-owned land by private agricultural producers are common, for example.

3. Encouraging Stories: Infrastructure, Labor Markets, Human Capital, and Poverty Reduction

There are also important, encouraging stories relating to (a) infrastructure and innovative effort, (b) employment, labor productivity, and wages, (c) poverty reduction and income distribution, and (d) human capital formation. They are reviewed below.

3a. Infrastructure and Innovative Effort

Reflecting rapid growth of capital stocks in related industries, use of transportation and communication infrastructure increased (Table 2). These usage increases largely reflect improvements in related infrastructure. Rail transport remains inefficient and a low priority for the Thai government (which does not report data on passengers after 2017 and freight after 2011. Conversely, air and road transport infrastructure are high priorities and grew rapidly during recent decades. Quantities of air freight and air passengers grew 13 and 9.4 percent annually, respectively, during the boom, but only 3.5 and 2.4 percent, respectively, during the recovery. Air freight continued growing slowly in 2006-2019 (0.8 percent), but air passengers' growth skyrocketed to 11 percent. Container port traffic also increased substantially, 9.8 percent annually in 2000-

2006 and 4.7 percent annually in 2006-2019. After the covid19 pandemic, the number of air passengers was only about 1/3 of 2019 levels in 2020 and 1/6 in 2021.

Communications infrastructure also improved rapidly and became highly sophisticated (Table 2).[10] In the boom period, all subscription types grew rapidly, but after 2006 fixed line subscriptions fell, as mobile subscriptions substituted for many of them. In 2019-2022, the average resident had 1.6-1.8 mobile subscriptions, illustrating how most Thais have embraced the tech revolution, with heavy reliance on mobile devices.

There are also some indicators of increased innovative effort by private firms. Thailand's R&D expenditures have been relatively low, at only 1.3 percent of GDP in 2020, but markedly higher than the 0.1-0.2 percent in 1996 and 2006 (Table 5). Private firms were increasingly dominant R&D spenders, accounting for 68-78 percent of the total in 2019-2020, up from 45 percent in 2006. Conversely, the share of higher education fell from 33 to 16-28 percent and the combined share of the government and public enterprises fell from 21 to 6-10 percent.

3b. Employment, Average Labor Productivity, and Wages

Slow growth of population, the labor force, and employment has been a conspicuous feature of the Thai economy since 1990 (Tables 1, 3). Even during the boom period, employment grew only 0.6 percent annually. On the other hand, employment growth remained positive (0.3 percent) during the crisis years in 1996-2000, despite sharp declines in production. Employment growth increased to 2.2 percent annually during the recovery of 2000-2006, before falling back to 0.4 percent during the slow growth period. Growth was slow (0.2 percent) in 2020-2021 but rebounded robustly (3.9 percent) in 2022 as the economy recovered from the covid19 downturn.

[10] Fixed-line subscriptions grew at 20, 3.2, and -2.2 percent, respectively, which mobile line subscriptions grew 74, 52, and 9.0 percent, respectively.

Thailand is aging rapidly. Thus, labor force participation rates declined from 85 percent in 1990 to 81 percent in 2006, and 76 percent in 2019 for men and from 74 to 64 and 59 percent, respectively, for women. (Table 3). However, labor force participation rates changed little in 2020-2022. Despite relatively low growth rates of GDP per capita and employment in recent decades, unemployment remained low.

Unemployment remained low, partially because many Thai workers are able to find employment in the large agriculture, forestry, and fishing industry during economic downturns. Agriculture's share of employment fell markedly during the boom, from 63 percent in 1990 to 45 percent in 1996, and more slowly thereafter to 40 percent in 2006 and 30-32 percent in 2019-2022 (Table 3). Agriculture's share of Thai employment remains larger than in most developing economies with comparable per capita GDP and land resources.[11] After 2000, manufacturing, trade and vehicle repair and other industries were the three categories with double-digit employment shares.

The industrial structure of employment differs from the corresponding production structure. Despite being the largest employment category, agriculture, fishery, and fishing accounted for only 10 percent of nominal GDP as early as 1990, with shares falling to 8-9 percent in subsequent years (Table 1). Outside of the heterogeneous other industries' group, GDP shares were largest in manufacturing (26-30 percent) and trade and vehicle repair (14-19 percent). Construction's share rose to 7.5 percent in 1996 but fell to 3.0 percent in 2000 and lower in subsequent years, similar to trends in private fixed investment in construction. Reflecting increases in tourism during the slow growth period, the share of accommodation and food services rose to 6.1 percent in 2019 from 3.0 percent in 2006. The share fell to 3.2 percent in 2021 and recovered to 4.3 percent in 2022, reflecting the effects of the covid19 crisis.[12]

[11] For example, according to Asian Development Bank (2023), agriculture's share of total employment in 2019 was smaller in Indonesia (29 percent) and the Philippines (23 percent).

[12] This paper focuses on the six main industries in Table 1-3 because industry definitions in data on production, labor, and capital stocks are relatively consistent and because these industries combined to account for 81 percent of employment in 2019-2021, and larger shares in previous years (Table 3). Although

Reflecting rapid increases in production compared to employment, nominal average labor productivity increased 12 percent annually during the boom, 6.4 percent during the recovery, and 5.1 percent during the slow growth period (Table 3). As expected in competitive labor markets, growth rates of compensation per employee (14, 5.7, and 5.3 percent, respectively) followed a similar trend. In agriculture, increases in average labor productivity and compensation per employee were even more rapid, but growth was slower in manufacturing.

These data suggest that manufacturing workers had unusually high productivity and wages compared to agricultural workers in Thailand. Manufacturing workers were a staggering 18 times more productive and earned 64-times higher compensation per worker than agricultural workers in 1990 (Table 3). Ratios subsequently fell to 8.3 and 19, respectively, in 2006 and 6.1 and 12, respectively, in 2019. In other words, combining official national accounts estimates of GDP and employee compensation (available through 2020) with labor force survey estimates implies that the average manufacturing worker continued to be 6 times more productive and earn 12 times more compensation than the average agricultural worker as late as 2019.

These manufacturing-agriculture ratios all seem implausibly large. For example, ratios for wages are much smaller if calculated from samples of formal workers, 2.6 in 2000, 2.0 in 2006, and 2.2 in 2019 (National Statistics Office 2022). Manufacturing-agriculture ratios are likely much higher for informal workers, but aggregate manufacturing-agriculture ratios for average labor productivity, including large informal sectors in all economies, are also higher in Thailand than in Indonesia and the Philippines, despite higher incomes that should contribute to lower ratios in Thailand (Table 3). Thai labor force surveys probably overestimate

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the heterogeneous other industries group accounted for under one-fifth of employment, about one-third of Thai GDP is produced by other industries (Table 1). This category includes the important finance, insurance and real estate industry, as well as public administration and defense, mining and utilities, and education, for example.

agricultural employment, contributing to unusually high Thai ratios,[13] but underestimation of GDP or and/or employee compensation in agriculture relative to manufacturing may also contribute.

3c. Education, Health, Human Capital Formation, Poverty, and Income Distribution

There were substantial improvements in human capital formation, many of them funded by the government. For example, among people 25 and older, lower secondary completion rates rose from 29 to 48 percent in 2006-2019 for females and 36 to 52 percent for males (Table 4). Upper secondary completion rates rose from 21 to 35 percent for females and 24 to 35 percent for males. Tertiary completion rates remained lower for both males and females in 2019, 17 and 14 percent, respectively. There have also been important improvements in education quality, but they are difficult to measure and sciences' education remains relatively weak.

Data on workers by education level also suggest improvements. Growth rates of workers finishing upper secondary and tertiary education were highest in 2001-2006, 6.3 percent each, and relatively slow in 2006-2019, at 3.2 and 3.9 percent, respectively (Table 4). On the other hand, the number of workers not completing primary education declined precipitously from 13-14 million in 2001 and 2006 to 7.8 million in 2019 and workers with lower secondary and primary education completed grew relatively slowly. Increases in the shares of managers, etc., and clerks, etc., in total employment also reflect important aspects of improved human capital formation. About half of the workers with tertiary education were occupied as managers, etc., with clerks, etc., being the second largest occupation group. There were also large increases in R&D workers per million Thais, from 101 in 1996 to 321 in 2007, 1,750 in 2019, and 2,024 in 2020. On the other hand,

[13] In the 1990s, several officials and academics told me Thailand's labor force surveys overestimated agricultural employment, partially because they failed to account for the many hours that farmers are engaged in manufacturing or services' work. Labor force survey compilation methods were changed in 2014, partially to address this issue, contributing to lower agriculture shares in subsequent years.

many Thai workers remain in non-wage occupations, often earning relatively low incomes in the informal sector.[14]

Health care improved rapidly for most Thais and improvements accelerated after 2006 (Table 5). For example, life expectancy increased 5 years in 1990-2006 and 4 years in 2006-2019.[15] The number of nurses per person also increased slightly more rapidly in the latter period. The number of doctors per person was consistently higher from 2017, suggesting a change in statistical definitions or methodology in that year. Infant and under 5 mortality rates continued relatively rapid declines of -4.5 percent annually each in 2006-2019, following more rapid annual declines during the boom and recovery periods. Data on HIV and malaria incidence also suggest large improvements with declines averaging -8.1 and -15 percent respectively, in 2006-2019. The decline in HIV was even larger during the boom and recovery periods (-11 percent annually in both periods). Grueber et al. (2014) find that health policy reforms by the Thai Rak Thai (TRT) government in 2001 led to increased healthcare utilization and reduced infant mortality, while Yu and Yang (2017) find they reduced out-of-pocket health expenditures. Modern Thais are much healthier, on average, than 30 years ago and improvements in government policies have contributed to improved health.

Poverty reduction was also rapid in all periods. In rural areas, the decline of poverty rates accelerated from -7.6 percent annually during the boom to -9.5 and -9.9 percent during the recovery and slow growth periods, respectively (Table 5). In urban areas, declines were largest in the boom and recovery periods, -12 and -10 percent, respectively, but remained rapid during the slow growth period at -7.5 percent. Consequently, only 3-4 percent of urban households and 6-7 percent of rural households were impoverished in 2019-2022.

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[14] As late as 2008, only 44 percent of Thai workers had formal wage employment (Charoenloet 2015, 133). According to the Labor Force Survey for the fourth quarter of 2019, only 49 of workers reported wage income (https://www.nso.go.th/sites/2014en/Survey/social/labour/LaborForce/2019/Full%20Report_Q4_2019.pdf).

[15] In 2006-2019, life expectancy also increased 4-5 years in India, Myanmar, and Korea but increase only 3 years in China, Hong Kong, Indonesia, and Singapore, for example (Asian Development Bank 2023).

Assertions that Thailand's income distribution is unequal and has increased are common in the media, but official data suggest weak trends toward greater equality since 1990 (Table 5). For example, the labor share of GDP rose from 26 to 30 percent during the boom period, remained constant at 30-31 percent during the recovery period and varied between 30 and 33 percent during the slow growth period. In the large agriculture sector, labor shares fell during the recovery, but rose during the boom and slow growth periods., In manufacturing, a large increase during the boom was followed by a large decline during the recovery and a then slower decline.

Estimates of income shares from the World Bank suggest the share of the poorest decile increased 0.3 percentage points during the boom, declined 0.2 points during the recovery, and then increased 1.7 points during the slow growth period (Table 5). Shares of the second poorest decile also increased during all periods and the share of the poorest 40 percent rose from 15 percent in 1990 to 19 percent in 2019-2021. In contrast, the share of the richest decile fell from 36 to 27 percent.

Alternative estimates use tax data to supplement household survey data because household data underestimate shares of high-income earners (Jenmana 2018, 25). The alternative estimates reveal a substantially smaller share for the poorest 50%, but faster growth of this share than suggested by official data, from 9.2 percent in 2001 to 12 percent in 2006, and 15 percent in 2016, for example. Similarly, the share of the highest decile fell from 56 to 53 and then 51 percent, respectively. Adjusted data suggest stronger trends toward equality than official data.

Trends in Gini coefficients also suggest that consumption expenditures became more equally distributed in urban and rural areas (Table 5). When consumption Ginis are calculated for five of the seven major regions, the data suggest relatively large declines in inequality during the slow growth period and much smaller changes during the boom and recovery periods. However, despite important poverty reductions, "low-income households remain highly exposed to income shock" and "have much higher shares of essential spending, which are harder to adjust" (Lekfuangfu, et al. 2020, p. 1).

3d. Regional Disparities and Politics

Regional disparities in per capita gross regional product (GRP) appear to have dissipated during the recovery and slow growth periods (Table 6). For example, growth rates of per capita GRP at 2002 prices were relatively high in five low-income clusters of the Northeast (4.1-5.8 percent during the recovery period and 3.6-5.0 percent during the slow growth period) and four in the North (3.2-5.9 and 2.5-3.0 percent, respectively) compared to high-income clusters in Greater Bangkok (-0.8 to 3.2 and -0.1-2.5 percent, respectively). Patterns contrasted in the South's border cluster, where slow growth and continued political violence resulted in one of the country's lowest-income clusters by 2019-2021. The East was another exception where relatively high-income clusters grew relatively quickly. However, high-income clusters generally grew relatively slowly, as illustrated by relatively strong, negative correlation coefficients of growth rates to initial GRP per capita among the 20 clusters identified in Table 6, -0.53 and -0.56 in the recovery and slow-growth periods, respectively. Correlations such as these are more meaningful over long-term (decade+) periods such as the slow-growth period.

Although there were trends toward greater regional equality, regional disparities remained pronounced in 2020-2021 (Table 6). Per capita GDP ranged from 417,000 baht (at 2002 prices) in Bangkok metropolis and 342,000-355,000 baht in the western cluster of the East region to lows of 41,000-45,000 baht in the Northeast upper 2, Northeast lower 2 and Southern border clusters. Differentials between high- and low-income clusters were even larger in 1996, for example 317,000 baht in Greater Bangkok and 269,000 baht in the East's west cluster, compared to only 19,000-21,000 baht in the poorest two Northeast clusters. This pattern again reflects relatively rapid growth in low-income clusters.

Regional growth patterns during 2020-2021 illustrate regional variation in the effects of the covid19 shock. Specialization in tourism services made the West coast cluster (Phuket, Krabi, and Phang-Nga) particularly vulnerable. Per capita GRP fell 26 percent in 2020 and another 12 percent in 2021 or 35 percent during 2019-2021 (Table 6). The western cluster of the East, where Pattaya is located, was also affected, but large declines in this cluster and in Samut Prakan involved manufacturing and trade to a much greater extent than in the South's west coast.

In 2000, the TRT won a single-party majority in parliament for the first time in modern Thai history, implemented significant populist policy changes, and greatly changed Thai politics. The TRT won partially because it successfully exploited discontent over unequal regional distribution in the North and Northeast, where 30 million Thais live, many with relatively low incomes (Table 6). The TRT was banned after the 2006 coup but soon reorganized as Puea Thai and won the 2011 general election. Especially after the 2014 coup, Puea Thai appears to have strengthened its internal infrastructure. It remains popular upcountry and its candidates also won the 2022 Bangkok mayoral election and the Prime Minister's post after the 2023 election.

The Move Forward Party (MFP) secured the largest number of parliament seats in the May 2023 election. It was unable to secure the Prime Minister's position because of opposition from the military-dominated Senate, particularly to MFP's goal of amending the lese majeste law. Subsequently, Puea Thai negotiated a deal to get support from the military-related, conservative parties, even though removal of the TRT/Puea Thai from Thai politics was the primary goal of the 2006 and 2014 coups, and Puea Thai Prime Minister, Srettha Thavisin previously stated that Puea Thai would never form a coalition with military-related parties.

Nonetheless, this may be a first step in progress toward stronger political parties, greater political stability, and smaller military involvement in politics and the economy. One important, remaining challenge will be to promulgate a constitution that most can support for governing subsequent civilian political successions. Reform to facilitate more transparent discussion of policies and political institutions will also be required if Thailand is to become a vibrant democracy. However, legal decisions in January 2024 suggest Thailand will continue to restrict open discussion of key political institutions. It also remains to be seen whether the Puea Thai and MFP can realize their potential to become policy-based political parties, representing important constituencies and helping promote the compromises needed to maintain stability, as well as increase transparency and accountability in public policy making.

4. Challenging Stories: International Trade, Import Protection, and Domestic Regulation

The evolution of Thai politics described above is both encouraging and challenging. This section turns to other challenges related to international trade and regulation of competition in import and domestic markets.

4a. Exports and Imports

Exports and imports are large relative to GDP in Thailand and diversified among many industries. Manufacturing accounts for much larger shares of exports and imports, three-fifths to three quarters of the totals, respectively, than of production or employment. Manufacturing shares were largest during the recovery period and 2014-2018, but remained well over 70 percent for most of the recovery period and in 2020-2022 (Table 7). The combined export share of food and other agricultural goods (including many products of food and beverage manufacturers) fell from 34 percent in 1990 to 25 percent in 1996, before stabilizing at 17-18 percent in subsequent years.[16] In recent years, manufacturing exports were largest in three machinery sectors (office and telecoms, automotive, other transportation), chemicals, and other manufactures, but textiles was the largest export category in 1990. Many of the machinery exports are parts and components used in product chains in neighboring economies.

Trends in revealed comparative advantage indices (RCAs or ratios of shares of commodity groups in Thai exports to corresponding shares in world exports, Table 7) illustrate the ability of Thai firms to sell in export markets relative to the world average. These indices always exceeded 1 in food and other agricultural goods. This partially reflects cost advantages resulting from Thailand's relatively large land endowment. Indices also exceeded 1 in office and telecom machinery in all years, automotive products and other transportation equipment in 2019-2022, and textiles and clothing through 2006. However, these indices need to be interpreted cautiously. For example, increases of exports and RCAs for automotive and other transportation equipment are often cited as successful examples of Thai industrialization. High import protection in these

[16] In commodity classifications of trade data, the categories of food, other agricultural goods, and fuels and mining products include many products of manufacturing processors. In industrial data, the firms and plants producing these goods are usually classified as manufacturers.

industries creates losses of consumer surplus that exceeded possible gains in the sum of producer surplus and import tax revenue, and contributes to high RCA indices.

Similar to studies of the United States (Bernard 2018) and Japan (Kiyota and Urata 2008), Apiatan et al (2019) recently found that few firms in Thailand export and a few, large firms account for the vast majority of Thai exports. The majority of these large-firm exports probably come from foreign multinationals (Ramstetter and Umemoto 2006), who are important sources of exports in in the three large machinery sectors. Large Thai multinationals also export substantial amounts, especially in food and other agricultural goods. Aptian et al. (2019, 20) emphasize the "fragility" of relying on large firms for export, but existing evidence suggests a few large firms account for most exports in market economies.

Importing is especially important in developing economies because it provides access to advanced technologies and cost-reducing inputs. The import-export ratios in Table 7 illustrate the product categories in which Thai imports (both competing final goods and intermediate goods) are large relative to export production, As might be expected, import-ratios were relatively high in categories where RCA's and Thai exports were relatively low. The import-export ratio in office and telecom was 0.7 to 1.0, illustrating how exported commodities often require large imports of intermediate goods in this broadly defined category.[17] Low ratios in automotive and other transportation equipment illustrate the effectiveness (i.e., high costs for Thai consumers) of Thailand's import restrictions in these industries.

[17] Comparisons of data on the domestic value added and gross values of Thai exports provide another useful perspective on the importance of intermediate inputs for export production (OECD 2022). For example, in 2005-2015, only 61-66 percent of total gross export (sales) value (including intermediate input) came from the domestic value added embodied in those exports. In manufacturing, where processing activities predominate, reliance on inputs is higher and ratios of domestic value added to gross exports were only 54-58 percent. These discrepancies illustrate the role of global value chains involving Thai exporters in a number of important processing industries.

4b. Import Protection

Because imports are an important source of high-quality capital goods, parts, components, and other inputs, import protection is particularly costly in a developing economy like Thailand. A good, recent example of the problem is a case where the Supreme Court found that a Toyota affiliate guilty of avoiding import duties on parts used in the production of its Prius models in Thailand. The penalty was 11.6 billion baht or US$315 million. [18] Because most of this cost increase will be eventually paid by Toyota consumers (including Toyota itself and other firms using Toyota parts) in Thailand, these tariffs cannot possibly make Thailand better off unless the tariffs lead to lower costs for Toyota or other firms in the future. However, in many ways, Thailand's automotive industry remains an expensive infant because it still relies on high import protection decades after import substitution began in the 1960s.

A small, open economy like Thailand could benefit substantially by learning from Singapore and eliminating reduces almost all tariffs and other trade barriers. Empirical studies suggest that import protection is usually costly worldwide. For Thailand, Sangkaew and Jayanthakumaran (2013) found that tariffs were negatively correlated with labor productivity in their samples of Thai plants for 1991, 1994, 1997, 2000, 2003, and-2007.[19] Microeconometric studies of Indonesia's plants (Amiti and Konings 2007; Imbruno and Ketterer 2018) and Vietnam's firms (Newman et al. 2023) in manufacturing also suggest efficiency gains from reduced tariffs. Other estimates suggest costs of import protection were substantial in large economies like China (Zhang et al. 1998), Europe (Messerlin 2001), Japan (Sazanami et al., 1994), and the United States (Hufbauer and Elliot 1994). Flaaen et al (2020) estimate the consumer cost of 2018 safeguard tariffs on U.S.

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[18] See *Bangkok Post*, 16 Sep 2022, https://www.bangkokpost.com/business/2392723/toyota-loses-315m-tax-case.

[19] Similarly, Karunaratne's (1998) CGE simulations suggest a 25 percent tariff cut in 1990-2000 "more than trebles international competitiveness … mainly because exports expanded due to gains in competitive efficiency" (p. 534), in addition to increasing economic growth and employment, for example.

imports of washing machines at US$817,000 per job, or well over 10 times the annual earnings of most workers in the industry. They also cite cost estimates for Section 421 tariffs on tire imports from China implemented in 2009 at about US$700,000 per job. Some argue that static losses can be offset by dynamic gains if protection can encourage infant industry development. In contrast, Thailand's experience illustrates how many infant industries never grow up.

Thailand's last, substantial, unilateral import liberalization occurred in the early 1990s. The Uruguay Round negotiations helped facilitate important steps toward liberalization during the politically tumultuous, 1991-1992 regimes of Anand Prachayaran, who was a technocrat and probably less beholden to protectionist interests than previous or subsequent leaders. Commitments to lower trade barriers followed after the Uruguay Round agreement. the World Trade Organization's founding in 1995 and the Thai government's acceleration of related reforms after the Asian Financial Crisis in 1998-2000.

Creation of the ASEAN Free Trade Area (AFTA) in 1992 also increased the political appeal of import liberalization in the early 1990s. After the collapse of the Doha Round in July 2008, Thailand's subsequent trade negotiations have focused on regional trading arrangements such as AFTA and related agreements. However, regional agreements often involve relatively little tariff reduction or trade liberalization in Thailand, compared to the Uruguay Round, for example.

Reflecting trends in multilateral liberalization, World Bank estimates of the trade-weighted average of most-favored-nation (MFN) duties on imported manufactures fell from 35 percent in 1990 to 16 percent in 1995, 10 percent in 2000, and 6.5 percent in 2006 (Table 8).[20] Trade-weighted averages are lower than simple average tariff rates because imports of commodities with relatively low tariffs account for most Thai imports in most categories.

[20] Tables 8 and 9 include simple averages for reference, but trade-weighted averages are more meaningful. Trade-weighted averages were lower than simple averages because relatively large imports are concentrated in low-tariff commodity groups.

In agriculture, both trade-weighted and simple averages remained over 25 percent in 2020-2022 (Table 9). In non-agriculture, tariffs were much lower but largely unchanged in recent years. Simple averages were 7.1-8.4 percent in 2006-2022, while weighted averages rose from 3.2 percent in 2006 to 4.3 percent in 2010, 4.9 percent in 2014, and 4.4-5.4 percent in 2019-2022 (Table 9). In other words, relatively large shares of non-agriculture imports were subject to relatively high tariffs in recent years compared to 2006. For example, non-agriculture imports facing duties of 10 percent or more increased from 3.8 to 6.5 percent of the total in 2006-2019 to 7.6-8.6 percent in 2020-2021, before declining afterwards. The share of non-agricultural imports entering duty free peaked at 60 percent in 2019, but was lower before and after.

In non-agriculture, tariffs were high in transport equipment and the diverse wood group, but these categories accounted for relatively small shares of Thailand's non-agriculture imports. Non-agriculture accounted for the vast majority of imports, making protection of non-agriculture relatively expensive for most Thai consumers. The most recent Trade Policy Review by the World Trade Organization (WTO) Secretariat suggests recent increases in average MFN tariff rates were "mainly due to nomenclature changes" (World Trade Organization 2021, 9).

Many small-economy governments impose import duties, even though it is well known that that tariffs harm consumers more than they benefit protected producers and the government in small, open economies. Why do Thailand and other small economies continue to tax consumers and reduce social welfare for the benefit of protected producers? In Thai autos, many firms have benefitted from over six decades of import substitution, for example. History suggests this kind of distortion often results when firm lobbies convince governments that import protection benefits the importing country, even though that assessment is almost never accurate. Firm lobbies also effectively emphasize that that taxing imports is relatively easy politically, because many consumers and voters fail to recognize the costs of import duties.

In Thailand and other developing economies, politicians and officials sometimes favor import protection because they believe it promotes infant industries, independent of lobbying. However, I believe that lobbying for import protection, which is often rent-seeking behavior and sometimes results in illegal corruption, is the most important part of this story. As is normal in market economies, large companies, both local and foreign,

have always had substantial influence over many Thai government agencies and the top levels of the Thai government.

On the other hand, Thai importing procedures may be improving, for example. Summaries of surveys and/or interviews of hundreds of officials from foreign multinational firms in the early- to mid-1990s (Michener and Ramstetter 1990; Ramstetter 1993, 1997) highlighted problems related to lack of transparency and corruption, but subsequent informal communication with several previously interviewed officials in 2015-2019 indicates the seriousness of related problems has diminished. This is consistent with the World Trade Organization's (2021, 9) recent policy review, which says reform "helped simplify customs procedures and improved transparency" but that Thailand's "tariff structure remains relatively complex". The WTO report also detailed a myriad of import prohibitions, licensing requirements, and investment incentives, which increase transactions' costs for importing into Thailand.

4c. Domestic Competition and Regulation

Thai regulations related to business, health, safety, environmental, and other issues are often complex and ambiguous, creating problems that are often relatively acute for small firms. In contrast, large firms often use substantial resources to influence the formulation of policy and business regulations, for example. This often involves lobbying for discretionary incentives and favorable regulation from the Board of Investment, as well as other ministries and agencies. Lobbying is normal in a capitalist economy, but a fine line distinguishes "normal lobbying" and "inappropriate or illegal influencing". Unfortunately, domestic regulation is often subject to "inappropriate or illegal influencing" in Thailand.

One well-known example was a previous regulation designed to benefit Thailand's two largest beer producers by requiring all commercial beer producers to have a minimum annual capacity (100,000 liters) and capital investment (3 million baht). This capacity was larger than all but a few craft beer manufacturers could utilize. Consequently, as late as 2021, I observed that most Thai brands of craft beer sold in Thai supermarkets were imported, usually from neighboring Cambodia or Vietnam. I have heard arguments that

the ban on small-scale production existed for health and safety reasons, but I believe the obvious intent of this regulation was to restrict competition for benefit of Boon Rawd Brewery and Thai Beverage PCL, the biggest Thai beer companies.

This regulation was changed in November 2021, allowing more small beer firms to produce and market in Thailand. The new regulations have been criticized for continuing to impose unnecessary costs on small producers.[21] Nonetheless, throughout 2023 and into early 2024, I observed increases in the number of Thai-made craft beers on the shelves of Thai supermarkets and convenience stores, suggesting the 2021 reforms were effective.

In Phuket, the provincial government continues to facilitate collusion among taxi and tuk-tuk drivers, thereby limiting competition in what would normally be monopolistically competitive markets. Fares in Phuket have usually been much higher (often 1.5 times or more per kilometer or per minute) than in Bangkok over the last three decades (hundreds of personal observations). Two prominent examples of collusion are concessions previously held by the main airport taxi company and various groups of taxi or tuk-tuk drivers at key tourist pickup locations.

Recently, regulators have allowed increased competition from taxis and ride-share services. Prices to and from Phuket Airport were more variable, but not much lower, in January-February 2024 than a year previous. Unfortunately, recent consultations among taxi groups and the local government have focused on protecting the monopoly power of drivers, not on improvements of taxi services to benefit consumers or on how to increase driver productivity and incomes.[22]

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[21] "Embittered Thai craft beer brewers plead for justice", *Bangkok Post*, 4 Jan 2023, https://www.bangkokpost.com/thailand/general/2474899/embittered-thai-craft-beer-brewers-plead-for-justice.

[22] "Officials attempt to unravel taxi driver woes", *The Phuket News*, 21 Sep 2023, https://www.thephuketnews.com/officials-attempt-to-unravel-taxi-driver-woes-89634.php.

Thailand's competition or anti-trust policies have usually been timid. For example, the Chairman of the Office of the Trade Commission voted against the 2020 takeover of Tesco-Lotus supermarkets (since rebranded as Lotus's in Thailand) by Charoen Pokphand (CP), one of Thailand's largest agribusiness conglomerates. He told the *Financial Times* "we are afraid that after the merger, they will have almost full control of the market" in most Thai provinces and "from the wholesale market they have Makro, they have Tesco, and in the downstream they have 7-Eleven, they have Tesco Lotus Express."[23] However, the Commission voted 4 to 3 in favor of the merger, suggesting that other members may have been convinced that the merger would generate substantial efficiency gains and therefore be worthwhile, even if competition was limited.

A more recent example is the True Corporation PCL's 2022 takeover of DTAC or Total Access Communications PCL.[24] The National Broadcasting and Telecommunication Commission (NBTC) approved this merger, which created the country's largest mobile communications firm. Conditions for the merger include independent verification of service fees and cost structure, and separate billing for separate services using average cost pricing principles. As with the CP purchase of Tesco-Lotus, this merger greatly increases the ability of the merged firm to exercise market power if it chooses to do so. On the other hand, to repeat, mergers like this often occur because the merged firm can lower costs by increasing static efficiency and investing in technological progress more than would have been possible before the merger.

[23] The quotes and information in this paragraph come from "Thailand's competition chief criticises $10.6bn CP-Tesco deal" in *Financial Times*, December 20, 2020, https://www.ft.com/content/1189fcac-df4c-41cd-b7c3-4f01e1c02db0.

[24] The information in this paragraph comes from "Thai telco regulator gives conditional clearance to True, DTAC merger", Reuters, October 20, 2021, https://www.reuters.com/markets/deals/thai-telco-regulator-greenlights-merger-true-dtac-with-conditions-2022-10-20/. AIS or Advanced Info Service PCL controlled 44 percent.

Environmental regulation has been weak in Thailand. This reflects a high priority on keeping firm costs low and generating economic growth, and low priority on reducing the pollution costs. Environmental costs are already high in urban Thailand and will explode as seas rise in the coming decades. Recent forecasts (Kahn 2019) suggest that most of almost all of greater Bangkok (like other low-lying, coastal areas) is likely to be submerged by rising seas in the next 5-7 decades, or earlier. Environmental issues have been a low priority for most Thais, but that may be changing. It remains to see if Thailand is ready for any serious attempt to reduce pollution because substantially higher energy taxes and prices will be required and unpopular.

Thai regulators face at least four important tasks going forward. First, many regulations restrict competition unnecessarily and illogically in markets that would otherwise be monopolistically competitive. Second, many regulations and enforcement procedures are unnecessarily complex and lack transparency, but some improvements were observed in recent years. Third, Thai regulators and policy makers appear to be heavily influenced by large firms. Problems related to complexity and lack of transparency emerge if large firms use this influence to obtain and/or exercise market power or convince policy makers to favor them with regulations, taxes, and tariffs. Fourth, environmental protection remains a relatively low priority for the Thai government and the Thai public.

Most countries in the world face similar problems and it is unrealistic to expect any government to eliminate all problems because new problems are always emerging. The focus of the proposed coalition between MFP and Puea Thai after the May 2023 election included strong emphasis on greater accountability and transparency in all areas of public policy making. The current Puea Thai government continues to emphasize these points to some extent. One can thus hope for continued improvements in public policy making and implementation.

5. Summary and Conclusion: Can Domestic Institution Building Help Revive Growth?

Section 2 discussed three discouraging stories focused on slow growth after 2006, low levels of private fixed investment after 1996, and the consequences for capital accumulation. If considered in isolation, these trends suggest a marked worsening of economic performance, especially after 2006. Section 3 tells encouraging stories of important improvements that continued after 2006 in infrastructure, labor markets, human capital, and poverty reduction. In short, the living standards of many Thais continued to improve rapidly in important respects not reflected in trends of GDP growth or investment rates. The section concluded by discussing how perceptions of unfair distribution affected politics, emphasizing how both official and adjusted estimates suggest that income distribution improved somewhat after 1990.

Section 3 also emphasized how Thailand's military can contribute by yielding power to the political parties and institutions, who are more representative of most Thais. There is a pressing need to draft a new constitution that most Thais can agree is fair and has the potential to last for decades, if not for centuries. As emphasized in the growth literature, political institutions have often been key contributors to relatively high levels of investor confidence and growth.

Section 4 discussed challenging stories related to international trade, import protection, and domestic regulation. The probability for serious war involving militarily-powerful, large, economic partners continues to be high in 2024, but Thailand has little influence over related matters. On the other hand, Thailand still has relatively high import protection in some industries like autos. As emphasized in studies of import liberalization, most Thai producers and consumers would benefit from eliminating this protection; the biggest losers would be multinational automakers, who would likely adjust easily to lower tariffs. Four sets of domestic policy issues were discussed: (1) the need to reduce illogical intervention in monopolistically competitive markets, (2) the need to make regulations less complex and more transparent, (3) the need to carefully consider regulations of large firms, especially when they engage in anti-competitive behavior, and (4) the need control environmental externalities more vigorously.

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Table 1: GDP, GDP per capita, Inflation, Exchange Rates, Population, and GDP Structure

Variable	1990	1996	2000	2006	2019	2020	2021	2022
BASIC INDICATORS								
GDP, current baht trillions	2.26	4.64	5.07	8.40	16.89	15.66	16.19	17.38
GDP per capita, current 1000 baht	40.0	77.1	80.5	127.6	242.6	224.4	231.4	248.0
GDP, chained prices, 2002=100	60.1	95.5	91.6	125.1	190.8	179.2	181.9	186.6
compound annual growth rate, %	-	8.0	-1.0	5.3	3.3	-6.1	1.5	2.6
GDP per capita, 2002=100	68.1	101.7	93.3	121.8	175.6	164.5	166.6	170.6
compound annual growth rate, %	-	6.9	-2.1	4.5	2.9	-6.3	1.3	2.4
GDP per capita, current US$	1,564	3,044	2,004	3,370	7,813	7,170	7,227	7,070
GDP per capita, current Intl$	4,251	7,296	7,295	11,037	19,214	18,238	19,295	21,154
GDP per capita, 2017 Intl$	7,010	10,467	9,810	12,838	18,432	17,270	17,486	17,916
GDP deflator, inflation rate, %	-	4.3	2.7	3.2	2.2	-1.3	1.7	4.7
CPI, inflation rate, %	-	5.0	3.8	2.7	1.7	-0.8	1.2	6.1
Baht/US$, annual average	25.6	25.3	40.2	37.9	31.0	31.3	32.0	35.1
Mid-year population, millions	56.6	60.1	63.0	65.8	69.6	69.8	70.0	70.1
EXPENDITURE SHARES OF GDP, percent at current prices								
Private final consumption	53.4	51.7	54.1	54.5	49.8	53.0	52.2	54.6
General govt final consumption	10.0	11.6	13.6	13.5	16.2	17.8	18.2	17.7
Fixed investment, private construction	15.3	11.9	2.9	4.2	3.4	3.5	3.5	3.3
Fixed investment, private equipment	4.5	8.1	5.6	4.7	4.3	4.8	5.0	4.6
Fixed investment, public construction	19.2	19.3	10.6	15.8	13.5	13.2	13.5	14.0
Fixed investment, public equipment	1.5	2.3	2.5	2.2	1.4	1.6	1.6	1.5
Change in inventories	1.1	0.9	0.7	0.2	1.2	0.5	5.1	4.5
Exports goods	25.8	29.7	53.9	57.6	44.6	45.3	53.5	57.5
Exports services	7.2	9.3	11.0	11.1	14.9	6.2	5.0	7.9
Imports goods	33.3	34.9	44.7	51.5	39.7	37.2	47.1	54.8
Imports services	7.2	10.3	11.8	13.9	10.5	9.1	11.5	12.7
PRODUCTION SHARES OF GDP, percent at current prices								
Agriculture, forestry, & fishing	10.0	9.1	8.5	9.4	8.1	8.7	8.7	8.7
Manufacturing	27.1	25.7	28.4	30.2	25.6	25.6	27.2	27.1
Construction	6.0	7.5	3.0	2.9	2.5	2.7	2.7	2.5
Trade & vehicle repair	18.6	17.4	16.7	14.0	16.2	16.9	16.2	15.4
Transportation & storage	5.5	5.6	6.5	6.0	5.8	4.8	4.6	4.7
Accommodation & food services	4.5	3.7	3.9	3.0	6.1	3.9	3.2	4.3
Other industries	28.3	31.1	33.0	34.4	35.6	37.5	37.4	37.3
Mining & utilities	3.8	3.9	5.3	6.1	5.5	5.0	5.2	5.6
Information & communication	1.4	1.8	2.2	2.3	2.6	2.8	2.8	2.8
Finance, insurance, real estate-a	8.4	10.8	8.1	8.7	10.0	11.0	11.0	11.0
Public administration & defence	3.7	4.5	5.9	5.7	5.9	6.6	6.5	6.2
Education	3.1	3.4	4.0	3.8	4.0	4.4	4.4	4.2
Human health & social work	1.8	1.7	2.0	1.8	2.2	2.5	2.5	2.6
Miscellaneous services	6.0	4.9	5.5	6.0	5.5	5.2	5.0	5.0

Sources: National Economic and Social Development Council (2023), International Monetary Fund (2023).

Table 2: Capital Stocks, Capital Productivity, Infrastructure, & R&D

Variable	1990	1996	2000	2006	2019	2020	2021	2022
NET CAPITAL STOCKS AT CURRENT REPLACEMENT COST, units as noted								
All industries, current baht trillions	5.06	11.71	15.23	22.61	38.82	38.46	38.98	40.02
Agriculture, forestry, & fishing % share	8.5	6.4	6.9	7.1	7.8	7.7	7.7	7.8
Manufacturing % share	14.1	16.8	17.1	17.3	17.3	17.3	17.7	17.5
Construction % share	2.2	3.6	3.5	3.3	3.4	3.4	3.5	3.4
Trade & vehicle repair % share	8.9	9.3	8.4	7.2	7.0	6.8	6.8	6.8
Transportation & storage % share	13.0	14.8	16.1	18.8	18.7	18.5	18.1	18.6
Accommodation & food services % share	3.9	4.1	3.9	3.3	3.6	3.3	3.2	3.3
Other industries % share	49.5	45.1	44.0	42.9	42.2	42.9	43.0	42.6
Private/Total Ratios %, all industries	77	77	74	72	71	70	69	70
Agriculture, forestry, & fishing	61	54	52	50	54	50	49	50
Manufacturing	95	96	95	95	97	97	97	97
Construction	52	67	60	55	57	50	48	49
Trade & vehicle repair	99	99	99	99	99	99	99	99
Transportation & storage	47	52	47	49	45	45	45	46
Accommodation & food services	76	76	73	70	68	65	64	67
Other industries	80	77	76	73	71	70	69	70
VALUE ADDED (GDP)-NET CAPITAL STOCK RATIOS								
All industries	0.45	0.40	0.33	0.37	0.44	0.41	0.42	0.43
Agriculture, forestry, & fishing	0.53	0.56	0.41	0.49	0.45	0.46	0.47	0.49
Manufacturing	0.86	0.61	0.55	0.65	0.65	0.60	0.64	0.67
Construction	1.21	0.84	0.29	0.33	0.32	0.32	0.32	0.32
Trade & vehicle repair	0.93	0.74	0.66	0.72	1.01	1.01	0.99	0.98
Transportation & storage	0.19	0.15	0.13	0.12	0.14	0.11	0.11	0.11
Accommodation & food services	0.52	0.36	0.33	0.34	0.73	0.48	0.41	0.56
TRANSPORTATION & COMMUNICATION INFRASTRUCTURE; R&D-GDP ratios								
Air freight, billion ton-km	0.66	1.35	1.71	2.11	2.33	0.68	0.60	-
Air passengers carried, millions	8.20	14.08	17.39	20.10	76.34	28.18	12.73	-
				2007	*2017*			
Rail transport, million ton-km	-	3,286	2,247	*3,161*	-	-	-	-
Rail passengers, billion passenger-km)	-	12.2	9.9	*8.0*	*6.0*	-	-	-
Container port traffic, TEU: 20 ft equiv.	-	-	3.2	5.6	10.1	9.6	10.4	-
Mobile line subscriptions/100 people	0.1	3.1	4.8	61	182	163	169	176
Fixed line subscriptions/100 people	2.4	6.9	8.9	11	7.6	7.0	6.5	6.1
Fixed broadband subscriptions, mil.	-	-	0.002	0.89	10.11	11.48	12.42	13.23
R&D-GDP ratios, %	-	0.12	0.24	0.23	1.14	1.33	-	-
SHARES OF TOTAL R&D EXPENDITURES BY OWNER				*2007*				
Government & public enterprise	-	-	-	*21*	6	10	-	-
Higher education	-	-	-	*33*	16	18	-	-
Private enterprise	-	-	-	*45*	78	68	-	-

Sources: National Economic and Social Development Council (2023a, 2023c), National Statistics Office (2024), World Bank (2023).

Table 3: Labor Force Indicators, Labor Productivity, and Employee Compensation

Variable	1990	1996	2000	2006	2019	2020	2021	2022
LABOR FORCE INDICATORS & INDUSTRY SHARES OF EMPLOYMENT in %								
Labor force, millions	30.82	32.12	33.22	36.43	38.18	38.54	38.70	39.90
Employment, all industries, millions	29.96	30.98	31.29	35.69	37.61	37.68	37.75	39.22
Agriculture, forestry, & fishing share	63.3	45.2	44.2	39.7	31.4	31.3	31.9	30.4
Manufacturing share	9.7	14.0	14.9	15.4	16.3	15.9	15.7	16.0
Construction share	-	-	4.8	6.0	5.8	5.9	5.9	5.6
Trade & vehicle repair share	-	-	14.0	15.5	16.6	16.7	16.6	17.2
Transportation & storage share	-	-	3.1	3.0	3.5	3.5	3.6	3.7
Accommodation & food services share	-	-	5.8	6.4	7.6	7.6	7.4	7.4
Other industries; defintions change 2011	-	-	13.3	14.0	18.8	19.1	19.1	19.6
Mining & utilities share	-	-	0.5	0.5	0.7	0.8	0.7	0.6
Information & communication, share	-	-	-	-	0.5	0.6	0.5	0.6
Finance, insurance, real estate, share	-	-	2.4	2.8	1.9	2.0	2.0	2.3
Public administration & defence, share	-	-	3.5	3.2	4.3	4.4	4.4	4.7
Education, share	-	-	3.0	2.9	3.1	3.2	3.0	2.8
Human health & social work, share	-	-	1.4	1.6	1.7	1.8	2.0	2.1
Miscellaneous services	-	-	2.5	2.9	6.6	6.3	6.4	6.6
Unemployment rate, %	2.2	1.5	3.6	1.5	1.0	1.7	1.9	1.3
Labor force participation rate, male %	84.5	78.7	77.1	80.9	76.2	76.4	76.3	76.6
Labor force participation rate, female %	74.0	62.7	60.9	64.0	59.4	59.8	59.9	60.3
GDP PER EMPLOYEE, 1000 current baht								
All industries	75.6	150	162	235	449	416	429	443
Agriculture, forestry, & fishing	11.9	30.1	31.2	55.7	116	115	117	127
Manufacturing	210	275	309	460	707	670	743	749
Construction	-	-	101	114	191	189	198	199
Trade & vehicle repair	-	-	193	214	439	422	420	397
Transportation & storage	-	-	344	470	756	567	546	560
Accommodation & food services	-	-	110	112	362	211	185	255
MANUFACTURING/AGRICULTURE RATIOS OF AVERAGE LABOR PRODUCTIVITY								
Value added per worker, Thailand	17.64	9.15	9.93	8.26	6.08	5.80	6.35	5.89
Indonesia	5.86	5.38	6.21	7.16	2.86	3.17	2.88	2.99
Malaysia	2.08	2.03	2.56	2.31	1.70	1.71	1.52	-
Philippines	5.06	4.78	6.73	6.82	5.36	5.31	5.41	5.21
COMPENSATION PER EMPLOYEE, 1000 current baht								
All industries	20.0	44.2	50.4	70.3	137	133	-	-
Agriculture, forestry, & fishing	1.05	3.25	5.16	7.56	17.6	17.6	-	-
Manufacturing	67	106	115	146	218	213	-	-
Mining & utilities	-	-	302	505	599	491	-	-
Construction	-	-	56	61	94	93	-	-
Trade & vehicle repair	-	-	19	38	84	81	-	-
Transportation & storage	-	-	67	103	158	128	-	-
Accommodation & food services	-	-	13	19	70	46	-	-

Sources: Asian Development Bank (2023, various years), Bank of Thailand (2023), National Economic and Social Development Council (2021, 2023c).

Table 4: School Completion Ratios and Employment by Education and Occupation

Variable	1990	1996	2000	2006	2019	2020	2021	2022
SCHOOL COMPLETION RATIOS FOR ADULTS 25+ BY SEX & LEVEL								
% Female Completed Lower Secondary	-	-	-	29	48	-	-	-
% Male Completed Lower Secondary	-	-	-	36	52	-	-	-
% Female Completed Upper Secondary	-	-	-	21	35	-	-	-
% Male Completed Upper Secondary	-	-	-	24	35	-	-	-
% Female Completed Bachelor's +	-	-	-	-	17	-	-	-
% Male Completed Bachelor's +	-	-	-	-	14	-	-	-
EMPLOYEES BY EDUCATION COMPLETED, mil.			*2001*					
No schooling or incomplete primary	-	16.6	*13.9*	13.4	7.8	7.5	7.1	6.5
Primary	-	7.0	*7.2*	7.8	8.4	8.2	8.3	8.3
Lower secondary	-	3.1	*4.1*	5.1	6.4	6.3	6.4	6.7
Upper secondary	-	1.9	*3.1*	4.3	6.4	6.6	6.8	7.6
Tertiary	-	2.4	*3.7*	5.0	8.2	8.6	8.7	9.7
Others, unknown	-	0.0	*0.1*	0.2	0.4	0.4	0.3	0.4
EMPLOYEES BY OCCUPATION, millions			*2001*					
Managers, professionals, technicians, etc.	-	2.4	*4.7*	5.4	5.2	5.7	5.2	5.6
Clerks, sales&service workers, etc.	-	5.2	*5.3*	6.3	9.3	9.1	9.4	10.0
Skilled agricultural/fishery workers	-	13.7	*11.9*	12.5	10.8	10.8	11.0	10.9
Craft, plant & machinery workers	-	1.3	*3.7*	4.0	4.2	4.2	4.2	4.2
Elementary & other workers	-	6.9	*6.6*	7.4	8.0	7.8	8.0	8.5
Others, unknown	-	0.0	*0.0*	0.1	0.1	0.0	0.0	0.0
TERTIARY GRADUATES BY OCCUPATION, mil. Q4			*2002*					
Managers, professionals, technicians, etc.	-	-	*2.3*	2.9	4.0	4.5	-	-
Clerks, sales&service workers, etc.	-	-	*1.0*	1.3	2.6	2.6	-	-
Other occupations	-	-	*0.5*	0.7	1.6	1.7	-	-
R&D researchers & technicians per million people			*2001*	*2007*				
Researchers in R&D	-	101	*280*	*321*	1,750	2,024	-	-
Technicians in R&D (*2019=2017*)	-	38.3	*112*	*143*	*297*	-	-	-

Sources: Asian Development Bank (various years), Bank of Thailand (2023), National Statistics Office (various years), World Bank (2023).

Table 5: Health, Poverty, and Distribution Indicators

Variable	1990	1996	2000	2006	2019	2020	2021	2022
HEALTH INDICATORS, World Bank Estimates, *for italics 1990=1991,1996=1997,2000=2001*								
Mortality rate, infant, per 1,000 live births	30	23	19	14	7.7	7.4	7.1	-
Mortality rate, <5, per 1,000 live births	37	27	22	16	9.0	8.6	8.3	-
Life expectancy at birth, total, years	70	72	72	75	79	79	79	-
Physicians per 1,000 people	0.23	*0.27*	*0.30*	0.29	0.90	0.93	-	-
Nurses and midwives per 1,000 people	*0.73*	*0.92*	*1.23*	1.53	3.08	-	-	-
HIV incidence per 1,000 uninfected	2.30	1.11	0.66	0.33	0.11	0.10	0.09	-
Malaria Incidence per 1,000 at risk	-	-	6.56	2.41	0.27	0.22	0.16	-
Tuberculosis incidence per 1,000 people	-	-	2.41	2.15	1.50	1.46	1.46	-
Population aged 65+, % of total	4.25	5.16	6.10	7.85	13.2	13.9	14.5	15.2
POOR HOUSEHOLDS (% of households with per capita income below the poverty line)								
Urban households	37	17	19	10	3.7	4.3	3.9	3.1
Rural households	64	40	48	27	6.8	7.2	6.1	5.8
SHARES OF INCOME BY INCOME EARNER GROUP & GINI, World Bank Estimates								
Lowest 20% of Earners	5.9	6.2	6.2	6.0	7.7	7.5	7.6	-
Second Lowest 20% of Earners	9.1	9.8	9.6	9.9	11.5	11.5	11.5	-
Second Highest 20% of Earners	19.8	20.4	20.9	21.4	22.3	22.4	22.4	-
Highest 20% of Earners	52.2	49.9	49.7	48.5	42.8	42.7	42.9	-
Highest 10% of Earners	36.4	34.3	33.7	32.5	27.2	27.0	27.3	-
GINI COEFFICIENTS								
Consumption income, all households	0.51	0.51	0.52	0.51	0.43	-	0.43	-
Urban households	0.48	0.48	0.47	0.48	0.41	-	0.42	-
Rural households	0.45	0.44	0.47	0.48	0.41	-	0.41	-
Consumption expenditure, all households	0.44	0.43	0.43	0.42	0.35	0.35	0.35	0.34
Greater Bangkok	0.38	0.35	0.33	0.36	0.29	0.29	0.30	0.29
Central Region	0.39	0.36	0.37	0.36	0.32	0.31	0.31	0.30
Northern Region	0.41	0.39	0.37	0.41	0.31	0.32	0.31	0.34
Northeastern Region	0.38	0.38	0.35	0.40	0.32	0.33	0.32	0.33
Southern Region	0.36	0.37	0.37	0.37	0.33	0.33	0.34	0.33
EMPLOYEE COMPENSATION SHARES OF GDP BY INDUSTY (percent)								
All industries	26	30	31	30	31	32	-	-
Agriculture, forestry, & fishing	9	11	17	14	15	15	-	-
Manufacturing	32	38	37	32	31	32	-	-
Construction	53	48	55	53	49	49	-	-
Trade & vehicle repair	6	7	10	18	19	19	-	-
Transportation & storage	20	20	19	22	21	23	-	-
Accommodation & food services	8	9	12	17	19	22	-	-

Sources: National Economic and Social Development Council (2021), National Statistics Office (2023), World Bank (2023).

Table 6: Per Capita GRP and Its Growth Rate in 2002 Baht by Cluster

Region, cluster(s), number of provinces	1996	2000	2006	2019	2020	2021
PER CAPITA GRP BY REGIONAL CLUSTER, 2002 baht, thousands						
Northeast, upper 1, 5 provinces	23	22	29	54	53	55
Northeast, upper 2, 3 provinces	21	20	25	40	41	43
Northeast, central, 4 provinces	25	25	35	57	57	58
Northeast, lower 1, 4 provinces	27	25	35	57	57	60
Northeast, lower 2, 4 provinces	19	18	25	42	43	45
North, upper 1, 4 provinces	50	46	58	80	77	78
North, upper 2, 4 provinces	25	25	32	46	45	46
North, lower 1, 5 provinces	32	30	36	53	50	51
North, lower 2, 4 provinces	36	35	50	69	64	64
South, western, 6 provinces	78	81	94	133	99	87
South, eastern, 5 provinces	61	61	74	89	84	84
South, border, 3 provinces	44	39	45	43	42	43
East, western, 3 provinces	269	263	352	376	342	355
East, eastern, 5 provinces	63	67	107	172	165	160
Center, 6 provinces	108	107	142	186	179	187
West, 6 provinces	59	59	76	96	90	92
Bangkok-center, Metropolis	317	282	323	446	417	417
Bangkok-southeast, Samut Prakan	262	288	276	273	223	221
Bangkok-north, PatumThani & Nonthaburi	220	163	156	159	152	149
Bangkok-west, Nakhon Pathom & Samut Sakhon	213	183	221	236	231	233
COMPOUND ANNUAL GROWTH RATE OF PER CAPITA GRP, 2002 baht, percent						
Northeast, upper 1, 5 provinces	-	-0.6	4.6	5.0	-3.0	4.2
Northeast, upper 2, 3 provinces	-	-0.9	4.1	3.6	2.2	3.9
Northeast, central, 4 provinces	-	0.0	5.8	3.8	-0.7	2.8
Northeast, lower 1, 4 provinces	-	-1.5	5.5	3.7	1.0	4.6
Northeast, lower 2, 4 provinces	-	-1.1	5.6	4.1	3.8	3.5
North, upper 1, 4 provinces	-	-2.0	3.9	2.5	-3.7	2.1
North, upper 2, 4 provinces	-	0.1	4.2	2.9	-2.3	2.2
North, lower 1, 5 provinces	-	-1.2	3.2	3.0	-5.4	1.4
North, lower 2, 4 provinces	-	-0.4	5.9	2.5	-6.8	0.6
South, western cluster, 6 provinces	-	0.9	2.5	2.7	-26.1	-12.0
South, eastern cluster 5 provinces	-	-0.2	3.4	1.4	-5.0	0.1
South, border cluster 3 provinces	-	-3.1	2.6	-0.4	-3.2	2.4
East, western cluster 3 provinces	-	-0.5	5.0	0.5	-9.1	4.0
East, eastern cluster 5 provinces	-	1.4	8.2	3.7	-4.1	-2.9
West region 6 provinces	-	-0.2	4.8	2.1	-4.0	4.7
Center region 6 provinces	-	0.2	4.4	1.8	-6.4	1.8
Bangkok-center, Metropolis	-	-2.8	2.3	2.5	-6.7	0.0
Bangkok-southeast, Samut Prakan	-	2.4	-0.7	-0.1	-18.2	-1.3
Bangkok-north, PatumThani & Nonthaburi	-	-7.2	-0.8	0.1	-4.4	-1.9
Bangkok-west, Nakhon Pathom & Samut Sakhon	-	-3.8	3.2	0.5	-2.3	0.9
SIMPLE CORRLEATION W/INITIAL LEVEL	-	-0.27	-0.53	-0.56	not meaningful	

Source: National Economic and Social Development Council (2023b).

Table 7: Exports, Revealed Comparative Advantage Indices, and Import-Export Ratios

Variable	1990	1996	2000	2006	2019	2020	2021	2022
MERCHANDISE EXPORTS, WTO classification, shares of exports unless noted								
Total, US$ billions	23.1	55.7	69.0	130	246	232	272	287
Food	29	20	14	11	14	14	13	14
Other agricultural goods	5.1	5.4	3.3	5.3	3.7	3.6	4.1	4.1
Fuels & mining products	1.9	2.3	4.4	6.5	5.0	4.5	6.1	6.5
Manufactures	63	71	75	76	68	71	73	72
Textiles & clothing	16	10	8.3	5.5	3.0	3.3	3.2	2.6
Chemicals	2.0	3.4	5.9	8.0	9.8	9.3	10.4	9.8
Iron & steel	0.6	0.8	1.3	1.4	0.7	0.6	0.9	0.9
Office & telcom machinery	15	24	27	23	14	16	16	16
Automotive products	0.5	0.8	3.5	7.6	11	10	11	11
Other transportation equipment	1.2	3.2	4.4	10	14	13	14	14
General & precision machinery	5.1	10.0	8.5	4.4	1.1	3.6	2.2	2.9
Other manufactures	22	19	16	16	16	15	15	15
Miscellaneous goods	1.2	1.3	3.0	1.1	9.1	6.5	3.4	3.6
REVEALED COMPARATIVE ADVANTAGE INDICIES								
Food	3.17	2.24	2.16	1.82	1.71	1.62	1.62	1.77
Other agricultural goods	1.79	2.31	1.79	3.41	2.72	2.71	2.93	3.19
Fuels & mining products	0.13	0.20	0.33	0.34	0.30	0.34	0.37	0.33
Manufactures	0.92	1.00	1.03	1.11	1.02	1.03	1.10	1.14
Textiles & clothing	2.67	1.71	1.51	1.26	0.72	0.75	0.80	0.71
Chemicals	0.24	0.38	0.65	0.78	0.85	0.74	0.84	0.80
Iron & steel	0.19	0.32	0.59	0.46	0.29	0.29	0.33	0.36
Office & telcom machinery	1.78	1.91	1.81	1.89	1.29	1.35	1.40	1.54
Automotive products	0.05	0.08	0.39	0.91	1.35	1.34	1.71	1.68
Other transportation equipment	-	-	0.34	0.86	1.19	1.28	1.49	1.56
General & precision machinery	-	-	2.13	1.21	0.26	0.67	0.40	0.55
Other manufactures	-	-	1.05	1.11	1.07	1.02	1.04	1.10
Miscellaneous goods	0.21	0.22	0.55	0.21	1.26	0.83	0.46	0.46
IMPORT-EXPORT RATIOS								
Total	1.43	1.30	0.90	0.99	0.96	0.89	0.98	1.06
Food	0.25	0.27	0.27	0.34	0.41	0.47	0.49	0.48
Other agricultural goods	1.33	0.87	0.79	0.35	0.36	0.33	0.40	0.37
Fuels & mining products	9.89	6.47	3.14	3.79	3.53	3.54	3.33	4.19
Manufactures	1.70	1.42	0.91	0.87	0.87	0.88	0.92	0.94
Textiles & clothing	0.25	0.27	0.31	0.33	0.60	0.54	0.55	0.69
Chemicals	7.37	3.65	1.67	1.26	0.96	1.10	1.14	1.22
Iron & steel	19.65	9.75	3.09	4.28	7.31	7.14	6.66	6.05
Office & telcom machinery	0.97	0.81	0.75	0.71	0.83	0.83	0.88	0.89
Automotive products	24.55	11.49	0.86	0.43	0.38	0.37	0.34	0.39
Other transportation equipment	13.83	4.13	1.13	0.49	0.48	0.42	0.43	0.46
General & precision machinery	3.31	2.00	1.41	2.65	8.13	2.89	4.74	3.39
Other manufactures	0.79	0.84	0.70	0.77	0.81	0.87	0.88	0.88
Miscellaneous goods	2.61	2.80	0.50	2.46	1.28	0.37	0.79	0.90

Source: World Trade Organization (2024).

Table 8: MFN Tariff Rates: World Bank Estimates (percent)

Variable	1991	1995	2000	2006	2010	2014
Primary products, simple average	48.5	38.5	30.5	16.2	14.3	18.8
Primary products, trade-weighted average	28.9	12.1	8.0	2.9	2.7	7.1
Manufactures, simple average	44.8	21.1	16.2	10.8	8.9	8.9
Manufactures, trade-weighted average	34.7	15.6	10.1	6.5	6.3	6.7

Source World Bank (2023).

Table 9: MFN Tariff Indicators: WTO Estimates (percent)

Variable	2006	2010	2014	2019	2020	2021	2022
AGRICULTURE							
Simple average duty	22.0	22.8	31.3	29.0	29.3	31.2	26.6
Trade-weighted average duty	14.1	13.3	41.2	16.5	29.4	37.5	30.4
NON-AGRICULTURE							
Simple average duty	8.2	8.0	8.3	7.2	7.1	8.4	7.1
Trade-weighted average duty	3.2	4.3	4.9	4.4	5.4	5.0	4.6
% of imports duty free	56.0	48.1	47.1	60.0	52.8	55.3	55.9
% of imports with duties 0% <= 10%	40.3	46.1	46.5	33.5	38.5	37.1	37.9
% of imports with duties 10% >= 100%	3.8	5.9	6.4	6.5	8.6	7.6	6.2
% of imports facing non ad valorem duties	8.2	3.4	3.7	1.2	1.8	1.2	0.9
SIMPLE AVERAGE DUTIES FOR WTO NON-AGRICULTURE PRODUCT GROUPS							
Minerals & metals	5.9	6.0	6.2	5.1	4.9	5.0	4.8
Petroleum	9.4	6.0	6.1	5.6	6.1	4.4	5.6
Chemicals	3.8	3.1	3.3	2.6	2.6	2.6	2.9
Wood, paper, textiles, clothing, leather & footwear	12.3	12.9	14.4	16.4	15.2	19.0	-
Non-electrical machinery	4.7	4.1	4.3	3.0	3.0	3.0	2.9
Electrical machinery	8.3	7.5	8.1	6.8	6.7	6.7	6.7
Transport equipment (incl. automotive products)	20.7	20.3	20.7	22.8	22.8	22.8	20.7
Other manufactures	11.0	10.2	10.6	7.8	7.6	7.5	8.1
SHARES OF TOTAL IMPORTS FOR WTO NON-AGRICULTURE PRODUCT GROUPS							
Non-agriculture groups	95.2	94.4	93.9	92.6	91.7	92.7	-
Minerals & metals	20.9	24.8	22.1	22.5	20.6	23.5	-
Petroleum	17.8	14.2	17.2	11.6	10.2	11.5	-
Chemicals	10.7	10.7	10.2	11.0	11.8	12.2	-
Wood, paper, textiles, clothing, leather & footwear	5.3	5.4	5.3	6.2	6.0	5.9	-
Non-electrical machinery	14.1	13.4	13.1	12.3	12.4	11.3	-
Electrical machinery	18.0	16.3	15.6	16.7	18.9	17.9	-
Transport equipment (incl. automotive products)	3.8	5.0	6.0	5.9	4.9	5.0	-
Other manufactures	4.6	4.6	4.4	6.4	6.9	5.4	-

Note: Average Duties for the wood & paper, textiles, etc., group are trade weighted averages of these 4 WTO categories.

Source: World Trade Organization (2024).