EE482 Industrialization: Role of Public and Private Sectors

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Chapter 1

Brief History of World Development and Industrialization

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1. Introduction

The rise of industrialization has brought about significant transformations in the global economic structure. Therefore, the first part of this chapter presents a sequence of changes in the economic system resulting from the industrial revolution, which led to rapid economic growth, societal changes, urbanization, and the migration of labor from agriculture to industry. This change has also created new socioeconomic classes within the societal and economic structure.

In the second part of this chapter, another perspective on economic change is presented. It illustrates that, even though the industry did not exist, expanding international trade was the main growth engine. It attracted labor from the agricultural sector into trade, along with the development of financial and legal systems. This enabled labor participating in trade to benefit from economic expansion. In particular, case studies of the economies of Venice and Amsterdam are introduced, demonstrating the establishment of inclusive development institutions that allowed the equity growth.

In the final section of this chapter, an overview of changes in the Thai economic structure is presented. Specifically, it discusses the transformations that occurred during the period from 1885 to 1980 (B.E. 2428 - 2523). These changes were primarily driven by the necessity to respond to external factors and influences. During this process of economic changes, capital accumulation was mainly concentrated within business groups emphasizing trade activities, while innovation was largely neglected by Thai entrepreneurs and lacked support from the government.

The entire content of this chapter is structured to establish connections and illustrate the chronological and international-level changes that ultimately had a continuous impact on the Thai economy. It also highlights the underlying factors leading to structural transformation and constraints within the contemporary Thai economy.

1.1 Brief History of World Trade and Economic Growth

Although humanity has a long history of cultural development, the history of economic development, especially in terms of promoting individual income and welfare, has occurred in less than 300 years. This has been significantly influenced by crucial factors stemming from technology, governance, and the changing paradigm of economic policies during that period.

1.1.1 The Industrial Revolution

When considering the changes in average income per capita for countries as shown in Figures 1.1 - 1.3, it becomes evident that there has been a substantial increase in the last approximately 250 years. It is clear that the rise in income levels has occurred in countries such as the United States, Europe, and Japan.

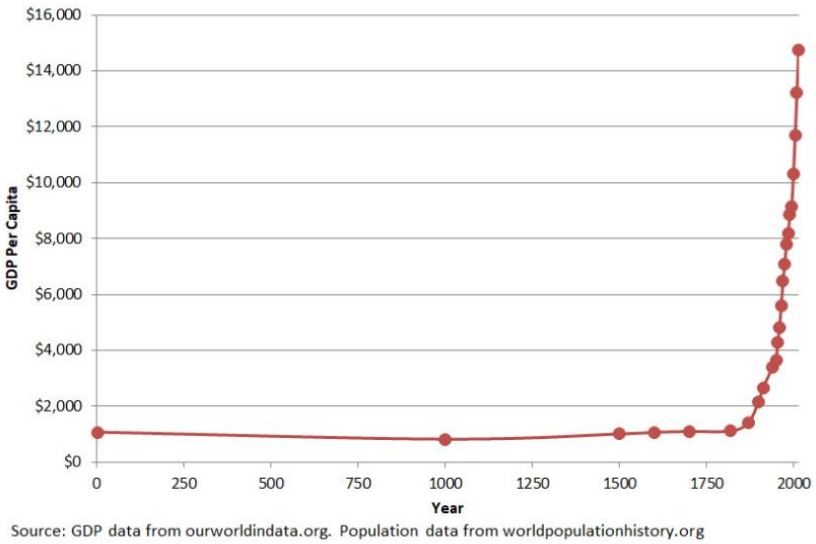


Figure 1.1: Global GDP per Capita (1-2015) (in 2011 International Dollars)

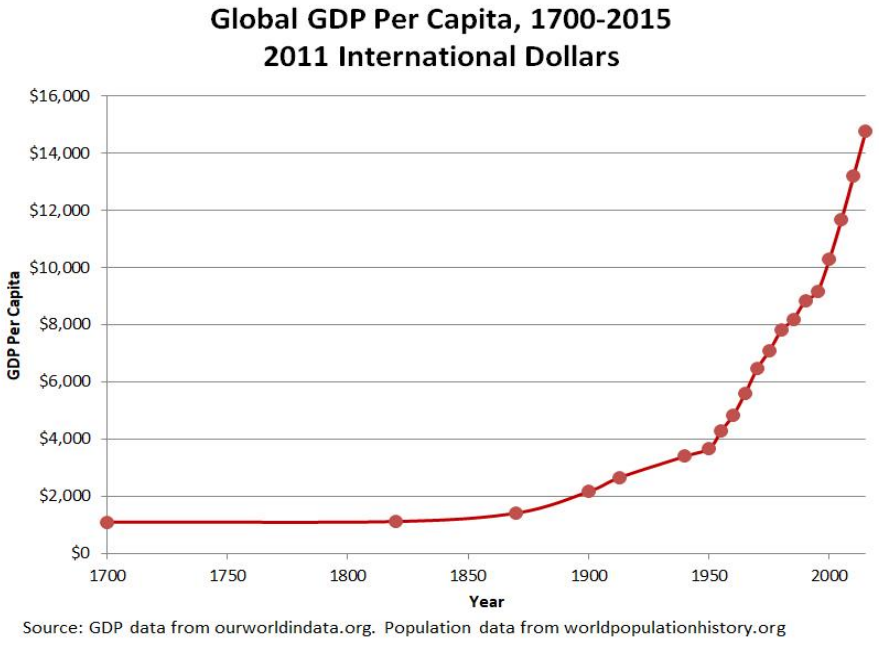


Figure 1.2: Global GDP per Capita (1700-2015) (in 2011 International Dollars)

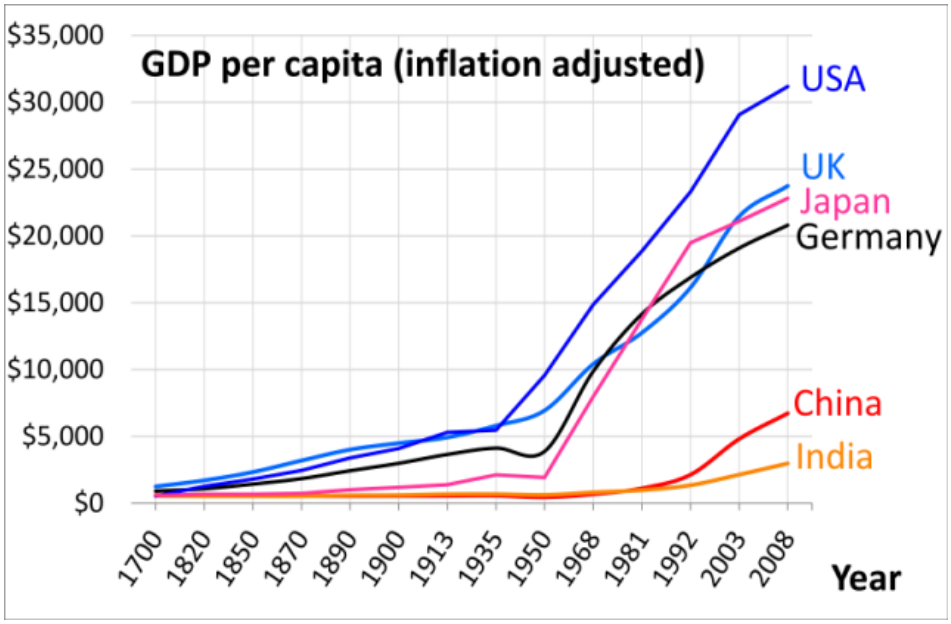


Figure 1.3: Changes in Average Income per Capita for the United States, United Kingdom, Germany, Japan, China, and India 1700–2008

Source: https://www.forbes.com/sites/goncalodevasconcelos/2015/03/04/the-third-industrial-revolution-internet-energy-and-a-new-financial-system/2/#7ec16dd7167e

Prior to the Industrial Revolution, economic development faced challenges due to economic activities predominantly being tied to agriculture. Additionally, technological development was limited. Therefore, the economic system before the economic implementation of steam engines did not undergo significant transformations. The majority of the economy relied heavily on subsistence farming, characterized by yearly cycles of planting and harvesting. This made economic growth difficult as it had to contend with risks from natural disasters, wars, and epidemics.

Before the Industrial Revolution, expanding production relied on increasing factors of production, primarily land and labor. These factors aligned with the characteristics of governance where those in power emphasized control over land and labor (e.g., feudal system) to possess agricultural potential or extract rents from farmers, empowering a particular group of rulers to maintain their dominance on administrative and economic powers.

Furthermore, recent archaeological discoveries, as shown in Figure 1.4 and parts of the text in Box 1.1, reveal that humans initiated agricultural activities alongside the beginnings of societies and communities in the early eras. Agriculture remained the primary activity of the economy for a long time until the Industrial Revolution. This is evident from the discovery of ancient cave drawings dating back 45,500 years in the Sulawesi Island of Indonesia.

Figure 1.4: Image from the News of the Discovery of 45,500-Year-Old Cave Paintings on Sulawesi Island, Indonesia

Source: https://www.bbc.com/news/world-asia-55657257

Box 1.1: Excerpt from the News of the Discovery of 45,500-Year-Old Cave Paintings on Sulawesi Island, Indonesia

"…..Archaeologists have discovered the world's oldest known animal cave painting in Indonesia - a wild pig - believed to be drawn 45,500 years ago. Painted using dark red ochre pigment, the life-sized picture of the Sulawesi warty pig appears to be part of a narrative scene. The picture was found in the Leang Tedongnge cave in a remote valley on the island of Sulawesi. It provides the earliest evidence of human settlement of the region. "The people who made it were fully modern, they were just like us, they had all of the capacity and the tools to do any painting that they liked," said Maxime Aubert, the co-author of the report published in Science Advances journal. …."

Source: https://www.bbc.com/news/world-asia-55657257

When considering the evolution of global economic changes, it becomes apparent that several countries have taken turns dominating the world's economy.

While agriculture has been the primary activity of human economic systems since the dawn of civilization, examining the economic transformation on a global scale reveals that many countries have played pivotal roles in the world's economy before the Industrial Revolution.

For instance, Spain and the Netherlands (Dutch) had significant roles in the global economy, as depicted in Figure 1.5, before the Industrial Revolution. Later, countries like England, the United States, and Japan took on leading roles in the world economy.

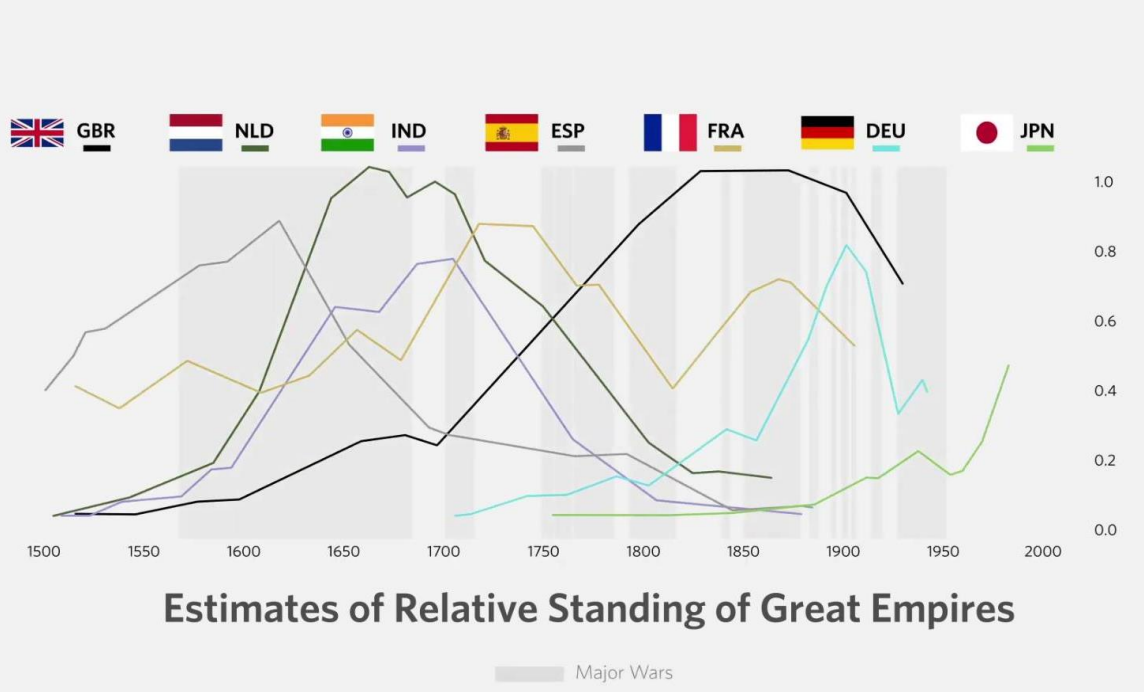


Figure 1.5: Index Depicting Roles in the Global Economy between AD 1500-2000

Source: https://www.youtube.com/watch?v=Mh0vEaac78U and https://www.bridgewater.com/china/

When considering the factors that influence the expansion of roles in the global economy, there are six features empowering such global dominance, namely:

(1) Technological and educational foundations
(2) Total production quantity
(3) Trade volume
(4) Military power
(5) Financial centralization
(6) Amount of international reserve capital

These six factors have contributed to Spain and the Netherlands (Dutch) gaining influence in the global economic system during certain periods in history. Even though the development of machinery was limited, the utilization of maritime

technology and advancements in weapon development allowed them to have a significant impact on global trade and play a prominent role in the world economy. This is evident in the case of the Netherlands (Dutch), as depicted in Figure 1.6. Specifically, the advancement of maritime technology, weapon development, and the establishment of the world's first stock exchange have jointly enabled them to expand their oceanic trade networks, reaching as far as Southeast Asia and even Japan.

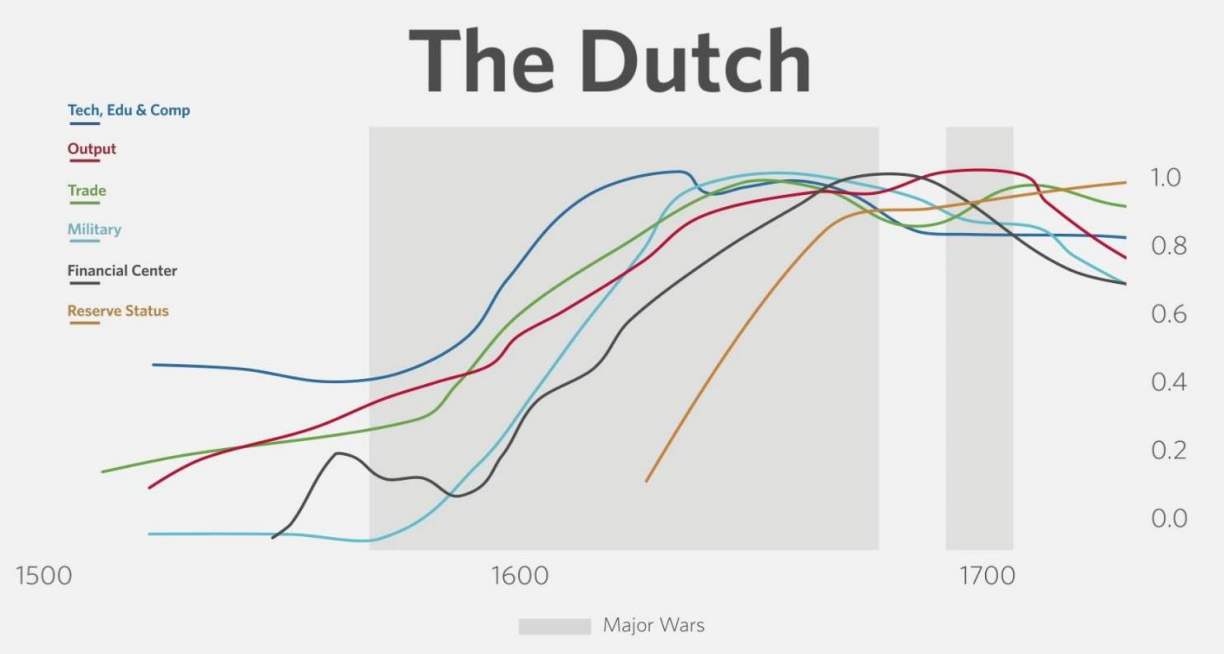


Figure 1.6: Index Showing the Role in the World Economy of the Netherlands (Dutch) between 1500 and 1700

Source: https://www.youtube.com/watch?v=Mh0vEaac78U and https://www.bridgewater.com/china/

After the Industrial Revolution, it became evident that England capitalized on being the first industrialized nation to expand its role in the global economy significantly. The development of steam engines greatly enhanced the potential for production and efficient transportation. Additionally, the United States and Japan began their industrial revolutions by incorporating steam engines into economic activities. During this period, both countries intertwined industrialization with the development of military capabilities, contributing to their influence in all six factors mentioned earlier. This rapid expansion of influence in the global economy is illustrated in Figure 1.7.

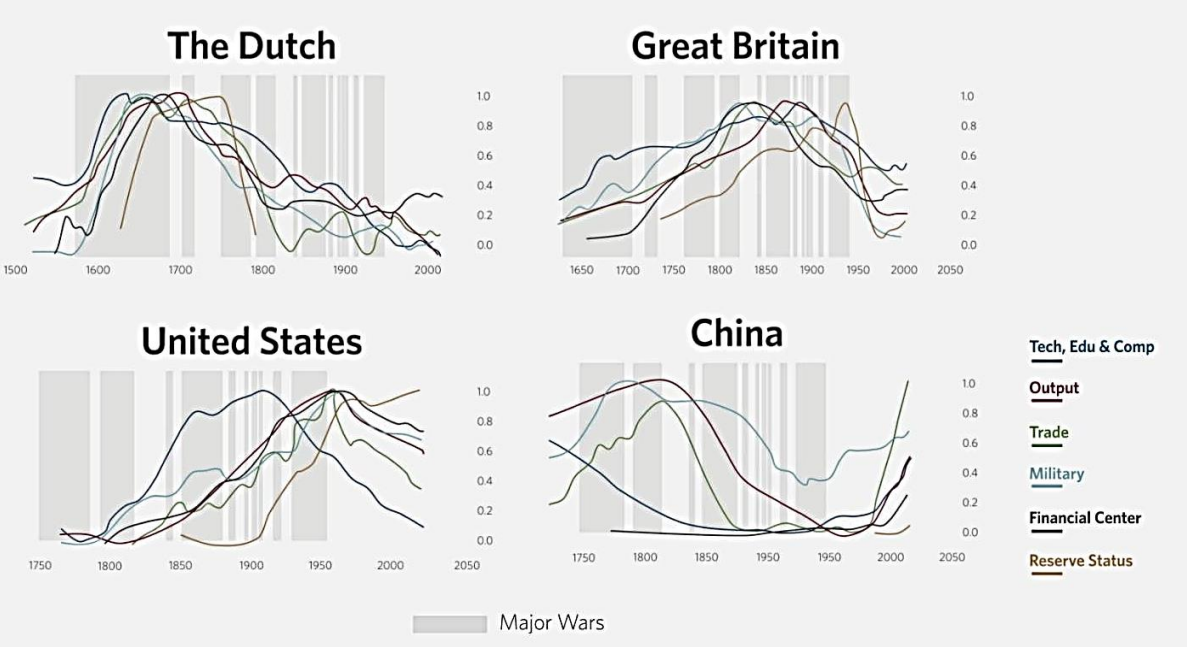


Figure 1.7: Index Showing the Role in the World Economy between 1500 and 1700

Source: https://www.youtube.com/watch?v=Mh0vEaac78U and https://www.bridgewater.com/china/

The ability to harness technology from the Industrial Revolution has transformed the structure of the global economy and become a key factor that has allowed all G7 countries (including the United States, the United Kingdom, France, Germany, Italy, Canada, and Japan) to have a comparative advantage in economic development in the post-industrial revolution era. This trend is clearly illustrated in Figure 1.8, which shows that the proportion of G7's GDP to the global GDP increased rapidly, reaching its peak in 1993 at 67% of the world's GDP.

At the same time, China and India, once the mainstays of the global economy and with the highest proportions of world GDP since 1AD, saw their proportions decline rapidly. In 1993, their share of global GDP was only 3%. China's historical maritime trade and shipping capacities were one of the main factors empowering the Chinese economy to gain an advantage in international trade and activity. Figure 1.9 compares ship sizes used by Zheng He, a prominent Chinese explorer, with those of contemporary Chinese shipping vessels.

From these trends, it is evident that the Industrial Revolution was a pivotal point in the structure of the global economy. Countries that seized the opportunities presented by this transformation became leaders in trade and production. These developments continue to impact the present day as they shifted the primary reliance from agriculture and basic trade to machinery-based production and more efficient transportation means (such as steamships and locomotives). This shift resulted in higher productivity and added value compared

to traditional activities and led to rapid urbanization, influencing population incomes and production efficiency. Moreover, it had a profound impact on knowledge and skill transmission among the workforce, continuously enhancing production efficiency and labor productivity.

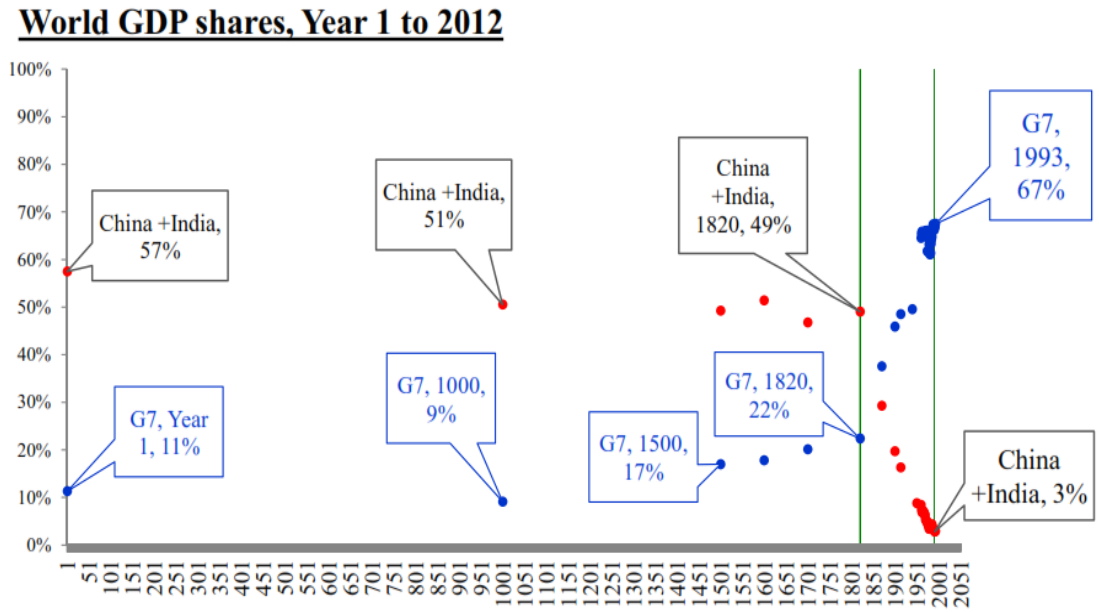


Figure 1.8: Comparing the GDP proportions of China and India with the GDP of the G7 countries as a percentage of the world's total GDP.
Source: Baldwin (2011)

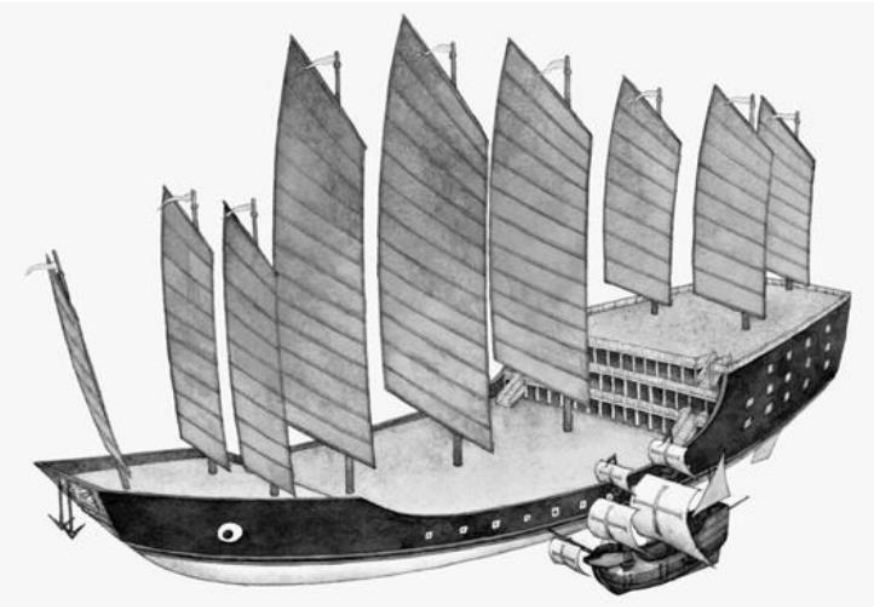


Figure 1.9: Zheng He's ship alongside Columbus's Santa Maria
Source: Gregory A. Harlin/National Geographic Stock

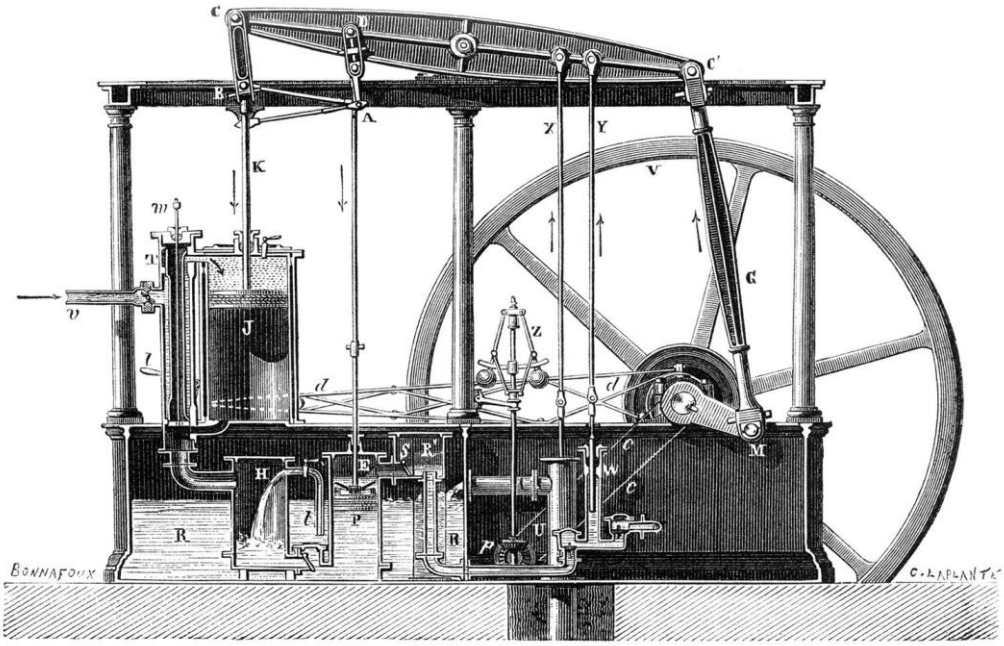


Fig. 59. — Machine à balancier de Watt.

v. Tuyau de prise de vapeur; T, tiroir; J, cylindre; H, condenseur; PE pompe d'épuisement; WY pompe alimentaire de la chaudière UX pompe d'alimentation de la bâche R; *p* Z régulateur; *dd* excentrique; ABCD parallélogramme; GM bielle et manivelle; V volant.

Figure 1.10: Blueprint of an early steam engine designed by James Watt
Source: https://www.oldbookillustrations.com/illustrations/watt-steam-engine/

The first industry to utilize steam engines was the textile industry in England, as illustrated in Figure 1.11, depicting the atmosphere in a textile factory in the year 1835. The textile industry was the first sector to transition to using steam engines as a source of power, marking a significant shift in industrial thinking. Before this change, industries relied on animal or natural power sources, such as water or wind for tasks like milling grain. This transformation had implications for both the economy and the labor market. It led to increased employment opportunities in factories and the emergence of a working class within the economic system. Additionally, it changed land-use patterns in urban areas, creating industrial spaces and worker housing within cities.

In summary, the application of steam engines marked a crucial turning point in economic development, known as the Industrial Revolution. It significantly improved production efficiency by mitigating the risk associated with weather variability, making production less dependent on natural conditions. Moreover, it triggered social and governance changes, leading to the demise of traditional systems (such as feudalism) that could not maintain economic and political centrality in the face of these advancements.

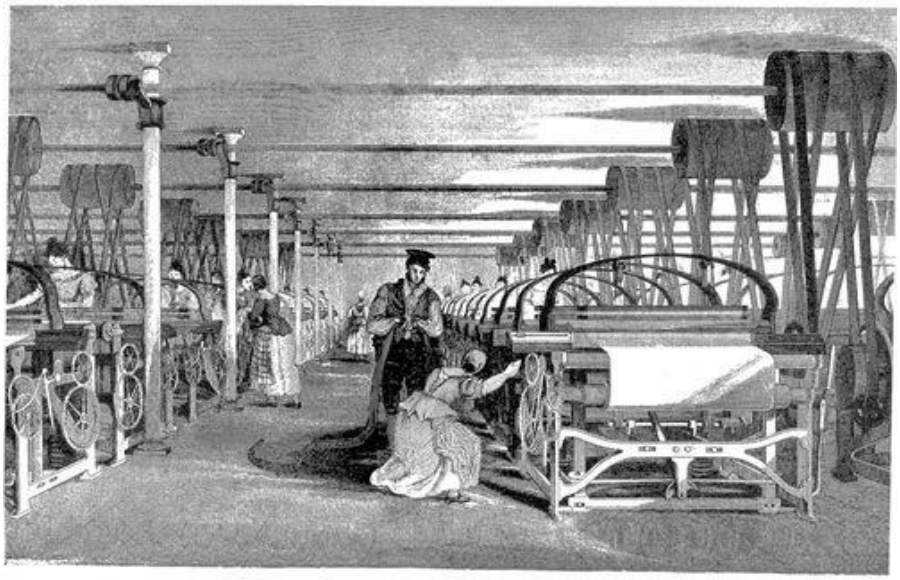


Figure 1.11: Interior Atmosphere of a Textile Factory in the Year 1835
Source: https://commons.wikimedia.org/wiki/File:Powerloom_weaving_in_1835.jpg

The Industrial Revolution had a profound impact on the social and economic class structure because landownership was no longer a primary factor in production or wealth accumulation. Instead, those who owned machinery and technology became the controllers of economic power, leading to the emergence of the capitalist class in society and governance systems. This shift resulted in the establishment of capitalism in many countries and significantly diminished the influence of the landowning class in both the economic system and the structures of politics and governance.

1.1.2 First Unbundling Revolution

As previously discussed, the application of steam engines led to the Industrial Revolution by significantly enhancing production efficiency in various industries, replacing human labor. Moreover, steam engines revolutionized transportation and trade. This transformation occurred through the development of transportation technologies, such as railways (resulting from the advancement of steam locomotives), which greatly improved transportation efficiency. Furthermore, the use of steam engines as the propulsion system for oceanic vessels, known as steamships, had a profound impact on international trade. This was due to the increased efficiency in maritime transportation and the elimination of the constraints imposed by natural factors like wind direction and seasons, which previously limited seaborne trade (as seen in the era of sailing ships). These changes are clearly illustrated in Figure 1.12, which demonstrates the continuous decrease in transportation costs and the rapid increase in export volumes for every country worldwide.

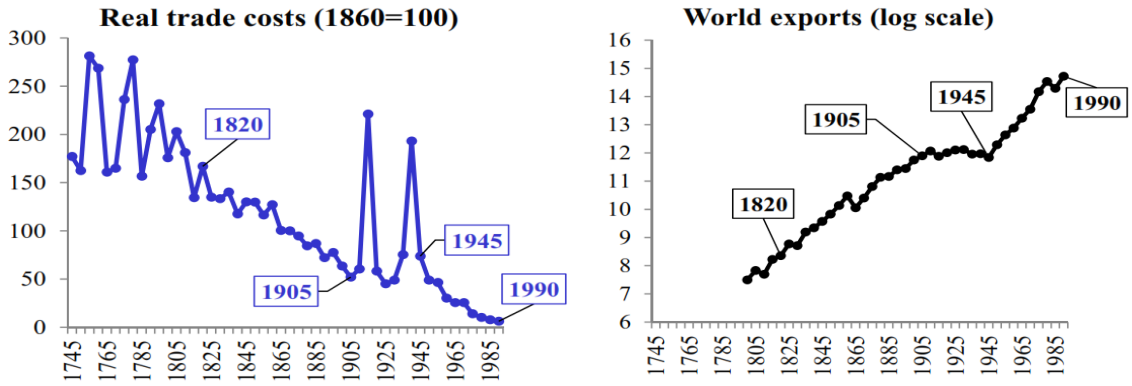


Figure 1.12: Trends in transportation costs and changes in global export volumes 1745-1985
Source: Baldwin (2011)

It should be noted that trade costs, comprising both transportation costs and tariffs, are the two main components. Transportation costs have continuously decreased due to technological advancements, while tariffs have fluctuated in accordance with trade policy changes. The trends in trade costs have varied over time, and this volatility has resulted from shifts in trade policy, including periods when countries adopted protectionist policies such as tariff walls (1914-1940) to safeguard their industries in the pre-World War II competitive era. This led to higher import prices due to increased import tariffs.

In the post-World War II period, a significant development in economic knowledge and trade theories highlighted the mutual benefits of countries expanding their economies by reducing tariff walls. This perspective promoted cooperation among countries to reduce trade barriers (1950-1980), as shown in Figure 1.12, ultimately impacting trade costs and leading to fluctuations in global trade volumes, as depicted in Figure 1.13.

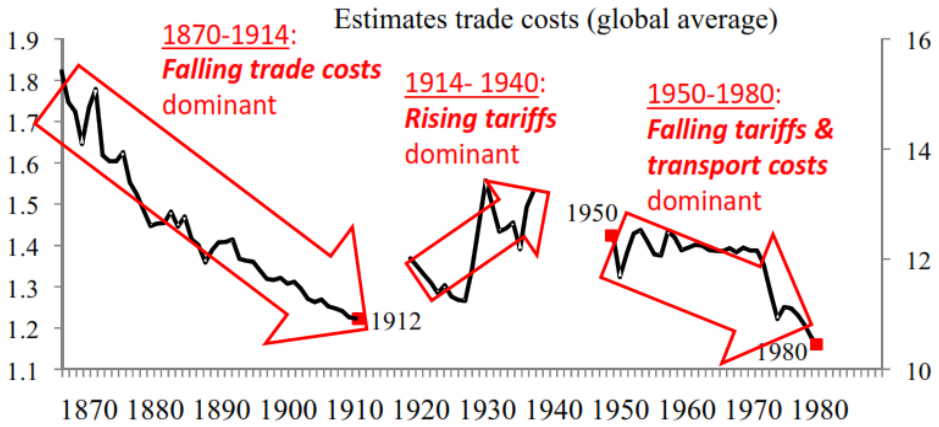


Figure 1.14: Trends in Changes in Global Trade Volume 1745-1985
Source: Gravity model-based estimates of trade costs (Jacks, Meissner, Novy 2011).

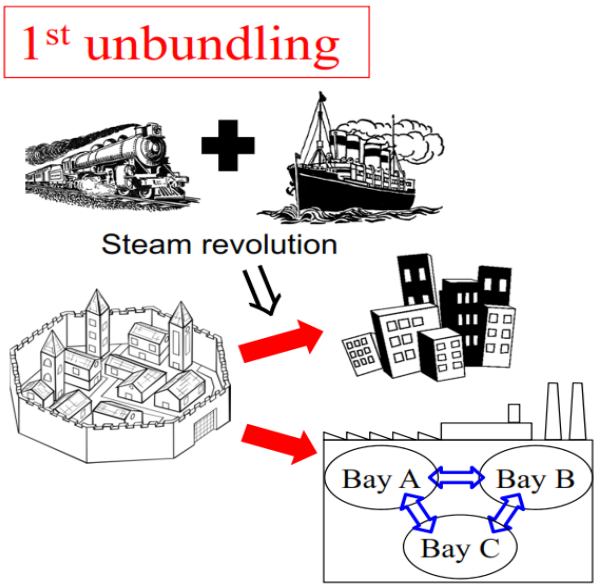


Figure 1.15: The Concept of the First Unbundling Illustrating the Impact of the Industrial Revolution on the Separation of Producer and Consumer Locations
Source: Baldwin (2011)

These changes transformed the geographical nature of economic activities. Before the transportation and trade revolution, transportation costs were prohibitively high, necessitating those producers and consumers be located in close proximity. However, as transportation costs decreased due to the use of steam engines in transportation processes, it led to the First Unbundling Revolution, allowing producers and consumers to separate their locations (or "Unbundling"). This resulted in a significant expansion of production and trade, as depicted in Figure 1.15.

Figure 1.16: Carcassonne in France, which features a pattern where production activities and residential areas are clustered together within the city walls
Source:https://en.wikipedia.org/wiki/Carcassonne#/media/File:1_carcassonne_aerial_2016.jpg

The introduction of the Industrial Revolution with the use of steam engines and the first unbundling revolution in transportation and trade significantly changed the global economic landscape. The G7 group (consisting of the United States, the United Kingdom, Germany, France, Japan, Italy, and Canada), which were early adopters of the industrial revolution, witnessed a rapid increase in their economic size. Their combined economic size reached its peak in 1996, accounting for 63% of the world's economy.

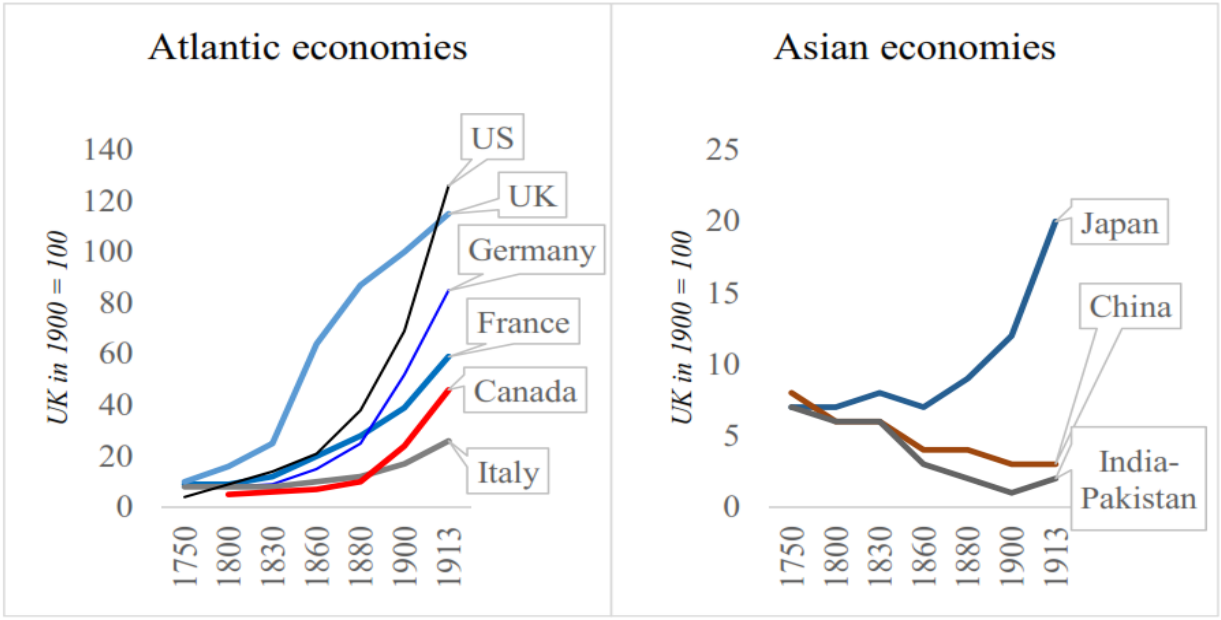


Figure 1.17: Comparing the economic growth between the G7 group and China and India
Source: Baldwin (2011)

1.1.3 Second Unbundling Revolution

The changes that occurred in the subsequent period after 1993 led to a second transformation known as the Second Unbundling Revolution. This transformation was driven by the development of Information and Communications Technology (ICT), which made it convenient to manage and control business operations and production processes, regardless of their distant locations.

The impact of these changes allowed for the fragmentation of production processes along supply chains, enabling the separation of tasks or work processes. This led to the emergence of parallel or simultaneous work processes, as illustrated in Figure 1.18. Consequently, this change can be considered a second revolution in the ongoing economic system. The First Unbundling Revolution, which resulted from transportation and trade transformations, had already led to a significant increase in Foreign Direct Investment and the creation of global supply chains.

In summary, the Second Unbundling Revolution brought about a significant shift in the global economic structure. The relocation of production bases to developing countries with lower labor costs allowed these countries to benefit from this transformation. This became a crucial driving force for economic expansion. As a result of these changes, the share of G7 countries in the world's GDP steadily decreased. In 2010, it had decreased to 50%, and the overall export share also consistently declined. In 1991, the export share was 52%, but it had reduced to 32% by 2011.

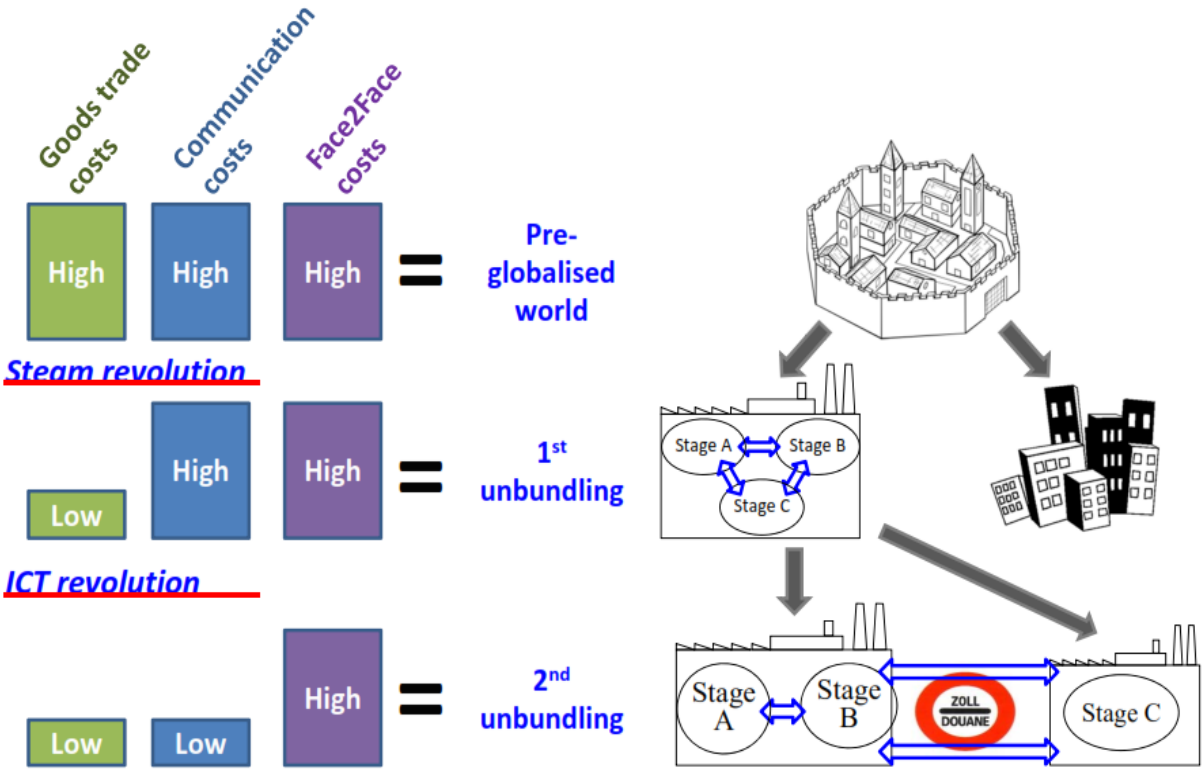


Figure 1.18: Comparing the Characteristics of the First Unbundling and Second Unbundling

Source: Baldwin (2011)

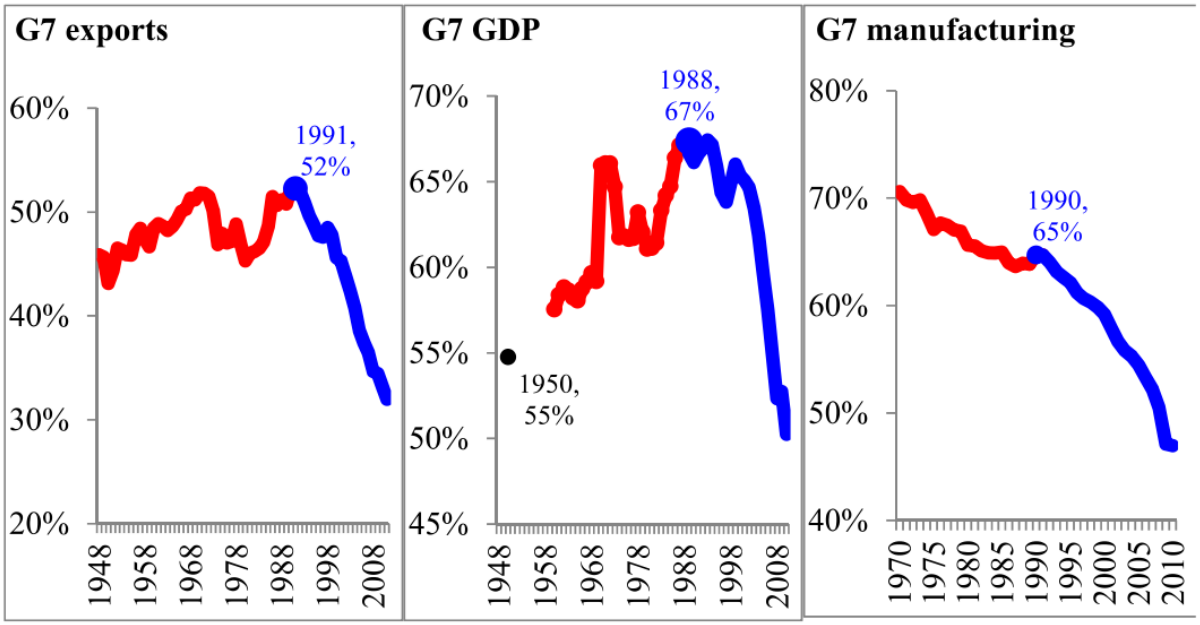


Figure 1.19: Changes in the Proportions of Exports, GDP, and Industrial Production of G7 Countries (Relative to World Total) after the Second Unbundling
Source Baldwin (2011)

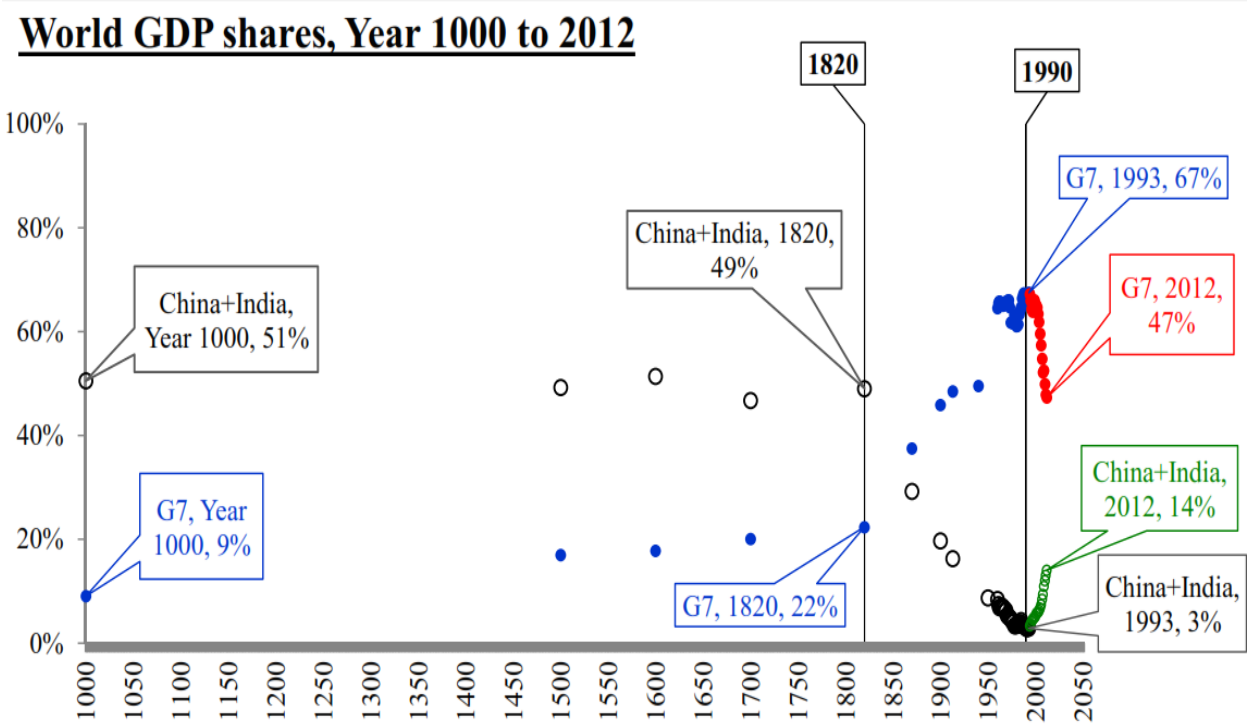


Figure 1.20: Changes in the Proportion of GDP after the Second Unbundling
Source: Baldwin (2011)

While most countries in the world didn't have the opportunity to benefit from the Industrial Revolution to drive economic growth, the Second Unbundling Revolution has provided developing countries with the opportunity to capitalize on these changes. In the case of Thailand, it is one of the countries that seized this opportunity to stimulate economic development since the 1980s-1990s.

Baldwin's research (2011) illustrates that Thailand is among the top six countries with the highest increase in the proportion of industrial production in the world (or the group of 6 EMs). This change led to the group's share of industrial production in the world's total value increasing from 6% in 1990 to 25% in 2010. The 6 Emerging Manufacturers (6 EMs) group includes South Korea, India, Turkey, Indonesia, Poland, and Thailand. The pattern of this transformation is depicted in Figures 1.21 and 1.22.

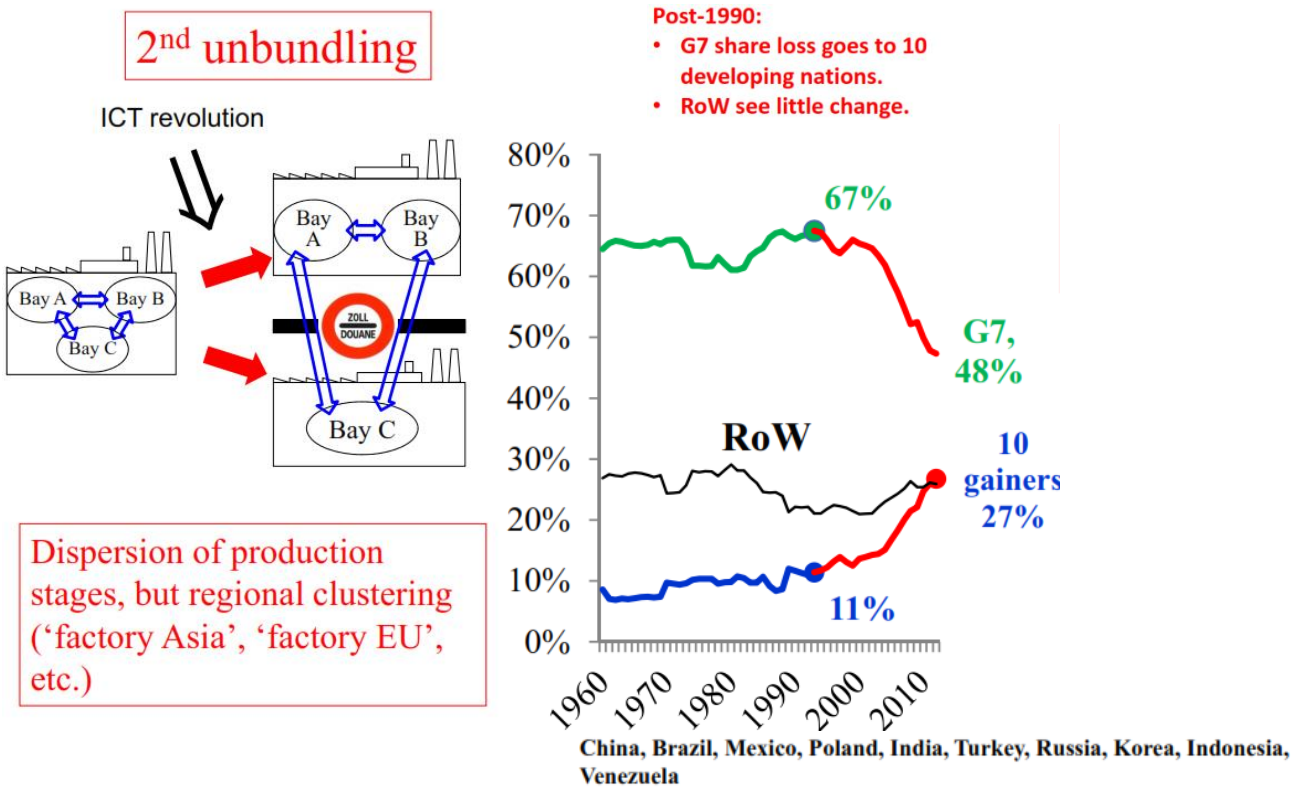


Figure 1.21: Patterns of Change in Second Unbundling in Proportions of GDP for Various Country Groups
Source: Baldwin (2011)

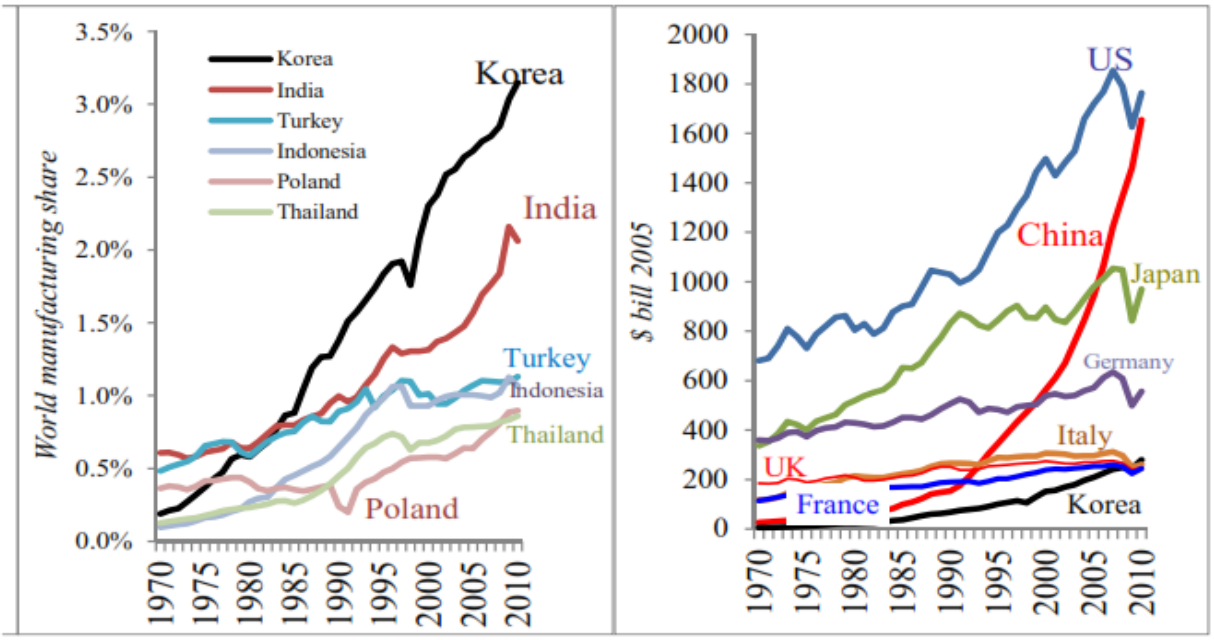


Figure 1.22: Patterns of Change in Second Unbundling in Proportions of Industrial Production for Various Countries Experiencing Rapid Growth
Source: Baldwin (2011)

The changes in the structure of the global economy following the Second Unbundling Revolution have clearly demonstrated the shift in production bases from the G7 countries to South Korea and developing countries. It can be observed that economic development, mainly after the Second Unbundling Revolution, has focused on foreign direct investment (FDI) and industrial development.

Additionally, the pattern of change also reveals the presence of the Rest of the World (RoW) group, which has maintained its proportion in total industrial production for over 40 years. These countries are developing nations that do not primarily rely on exports or the export of natural resources to drive their economies, such as countries in South and Central America.

The relocation of production bases due to the Second Unbundling's changes has led to adjustments in trade and investment agreements to facilitate the flexibility of production base relocation, especially among developing countries. Many developing countries have placed significant importance on this aspect to leverage their economies. Consequently, there has been a continuous increase in the number of bilateral investment treaties (BITs) and foreign direct investment (FDI) agreements, as depicted in Figure 1.23. This trend reflects the relationship between the dispersion of production processes across multiple countries in global production and the adaptation of international trade and investment regulations.

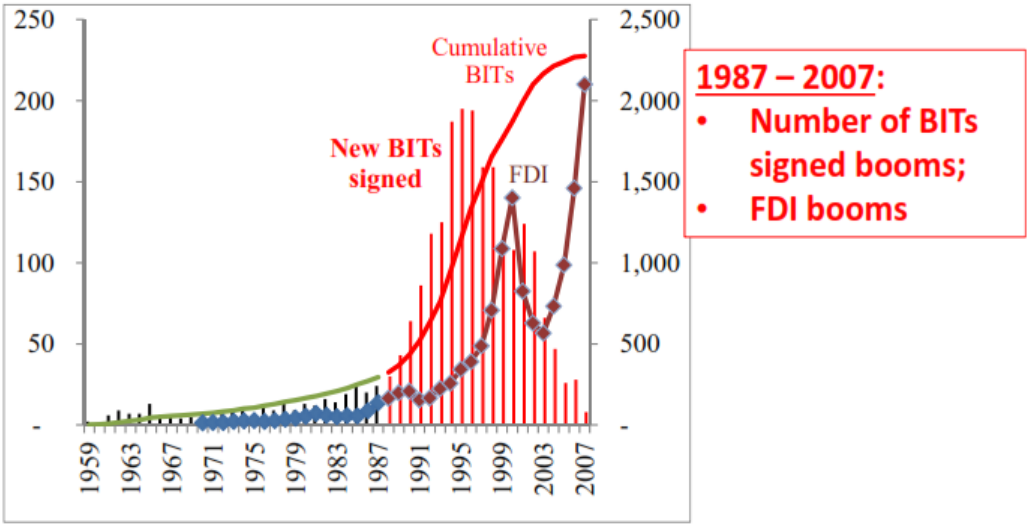


Figure 1.23: Number of Bilateral Investment Treaties (BITs)
Source: Baldwin (2011)

As a result of these changes, the production processes for various products have become distributed across different countries, leading to the emergence of a Global Value Chain (GVC) pattern, as illustrated in Figure 1.24. In the traditional production model (left side of the diagram), production processes, from the extraction of raw materials to final assembly, typically occurred within the same country or region. However, the Second Unbundling Revolution allowed for the separation of these production processes into different countries (right side of the diagram).

For example, in the case of electronics manufacturing, the traditional production process involved all stages, from mining ore for metals to producing the final electronic devices, occurring within a single area. With the Second Unbundling Revolution, the initial extraction of minerals for electronics production took place in Australia, followed by the creation of primary metals in Japan. These metals were then transformed into electronic components within Japan. Subsequently, these components were transported to China for final assembly, resulting in finished electronic products. Some of these products were exported from China to the United States for household use, while others were sent to the United Kingdom to be used as capital machinery in production.

This entire process illustrates a clear pattern of production interdependence across countries, with each country importing raw materials or components to add value continuously to the production chain. This concept is defined as the Global Value Chain (GVC).

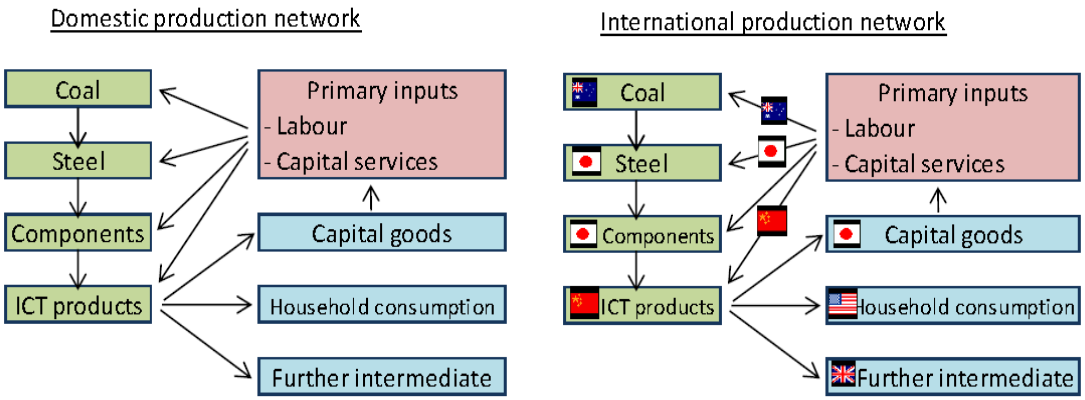


Figure 1.24: Changes in the Production Pattern in the Global Value Chain (GVC) Model
Source: Meng and Yamano (2011)

A clear and highly relevant example of these changes, closely related to everyday life, is Apple Inc.'s products. When Apple first started its business, it pioneered the production of personal computers with the Apple IIc model, creating the market for personal computers for the general public for the first time. The initial production of the Apple IIc was done in the state of Texas, USA. However, the manufacturing of Apple products was later relocated to Taiwan, with the company Foxconn taking over the production process. Subsequently, Foxconn shifted its production base to China, as shown in the production line in Figure 1.25. This production process reflects the Global Value Chain (GVC) pattern, where various components are manufactured in different countries and then brought to China for final assembly, as illustrated in Figure 1.26. This demonstrates the diversity of the sources of raw materials used in the production of electronic products.

Figure 1.25: A Comparison of Apple's Production Lines between the Early Days in Texas and the Current Operations in China
Source: Baldwin (2011)

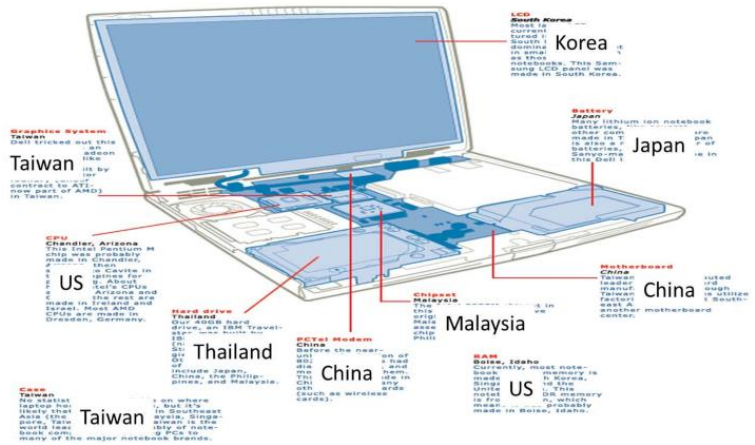


Figure 1.26: An Example Illustrating the Diversity of Sources for Components Inside a Computer
Source: Baldwin (2011)

The transformation of manufacturing processes under the Global Value Chain (GVC) model has led to the decentralization of production to various countries, resulting in increased complexity and costs in the production of goods. Take the example of mobile phone manufacturing, which illustrates how component sourcing has diversified across multiple suppliers, as shown in Figures 1.28. This diversification has made the production of mobile phones more intricate, leading to a complex supply chain where various components are sourced from different countries.

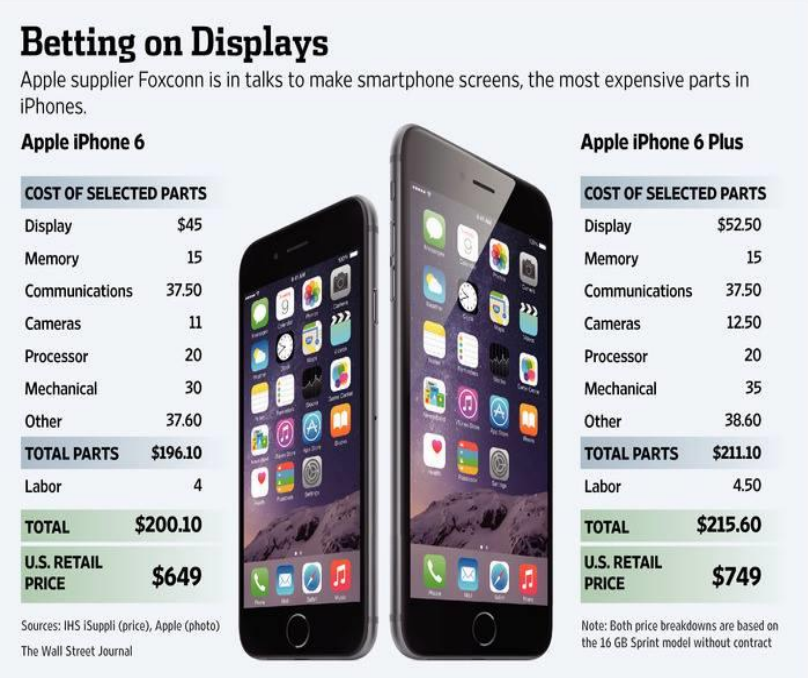


Figure 1.27: Cost Allocation Example for iPhone6 Production
Source: Wall Street Journal

Under the GVC framework, manufacturers consider production costs as a primary factor, leading to continuous shifts in production bases. This results in a clear distinction between upstream and downstream processes. Upstream processes, such as mining minerals and research and development, are typically labor and resource-intensive. In contrast, downstream processes focus on economies of scale, labor cost advantages, and efficient transportation and logistics. As a result, many countries in East and Southeast Asia have adapted their manufacturing processes and industrial structures to align with these characteristics. This adaptation has led to a continuous increase in both imports and exports, as countries import intermediate goods to assemble and export finished products in line with GVC stages. Additionally, it has driven labor migration from agriculture to industry and the transformation of vacant lands into industrial estates to accommodate the expanding industrial activities in line with the GVC model.

The changes that have occurred in the industry have made the manufacturing process the least value-added activity when compared to upstream and downstream activities. This shift is significant when comparing it to the period between 1970-1980. The proportion of value-added activities has changed dramatically since the 1990s. Upstream and downstream activities have seen an increase in their proportion of value-added, while midstream manufacturing activities have seen a decrease, as depicted in Figure 1.28. This demonstrates the transformation in the proportion of value-added activities in the midstream, which has decreased and is lower than both upstream and downstream activities. This phenomenon is often referred to as the "Smiling Curve."

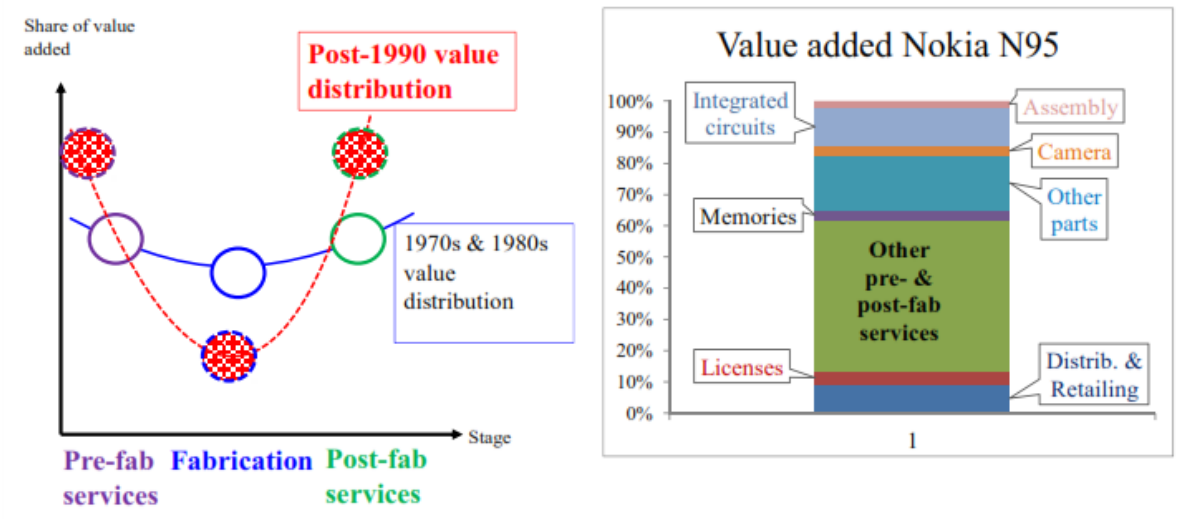


Figure 1.28: Value-Added Proportions and the Smiling Curve
Source: Baldwin (2011)

Figure 1.29 illustrates the changes in the proportion of value-added activities and the trend of the Smiling Curve that have occurred in predominantly Asian countries in East and Southeast Asia. The proportion of value-added activities in midstream manufacturing, which is the industrial process, has significantly decreased after the 1990s. This aligns with the changes brought about by the Second Unbundling, which led to the major relocation of industrial production to the Asian region.

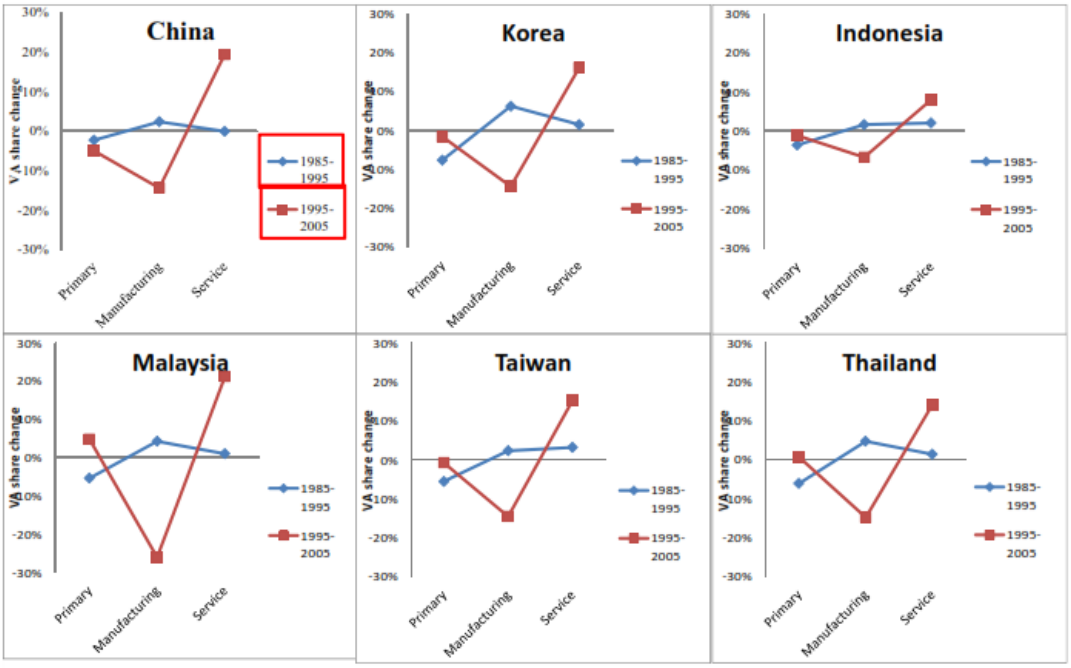


Figure 1.29: Changes in the Proportion of Value-Added and Smiling Curve Trends in Asian Countries in East and Southeast Asia
Source: Baldwin (2011)

Since 1990, the transformation brought about by the Second Unbundling has provided new opportunities for many countries in Asia that missed out on the opportunities of the First Unbundling (or industrial revolution), where Japan was the only country that effectively leveraged those opportunities to boost its economy. This restructuring of production processes connected to the Global Value Chain (GVC) has created economic growth opportunities for South Korea and Taiwan. They have utilized these opportunities to develop their domestic industries, enhancing their competitiveness and transitioning into high-income countries.

Singapore and Hong Kong have also leveraged these opportunities, despite their limited land area and challenges in expanding their industries. They have positioned themselves as transportation and financial hubs and have successfully moved into the high-income country category. The details of income and income level upgrading processes are illustrated in Figures 1.30-1.32.

WE2-1 Years of Asian Economies Shifting to High-Income or Upper Middle-Income Countries

Item / Country	Grouping	Per Capita Nominal GNI (2012)	Per Capita Nominal GNI (1995)	The year of entering into a group		
				High-Income	Upper Middle-Income	Lower Middle-Income
Japan	High-Income	47,870	41,350	1967	Before 1962	・・・
Singapore	High-Income	47,210	22,420	1981	Before 1962	・・・
Hong Kong	High-Income	36,560	22,619	1978	Before 1962	・・・
Taiwan	High-Income	20,083	12,648	1988	1973	Before 1962
Korea, Republic	High-Income	22,670	10,770	1993	1978	Before 1962
Malaysia	Upper Middle	9,820	4,010	–	1979-86、1991	Before 1962、1987-90
China	Upper Middle	5,720	530	–	2010	1998
Thailand	**Upper Middle**	**5,210**	**2,720**	**–**	**2010**	**1966**
Indonesia	Lower Middle	3,420	980	–	–	1979
Philippines	Lower Middle	2,500	1,030	–	–	Before 1962
India	Lower Middle	1,550	370	–	–	2007
Vietnam	Lower Middle	1,550	288	–	–	2008
Laos	Lower Middle	1,270	360	–	–	2010

Figure 1.30: Average income levels per capita of countries in East and Southeast Asia, categorized as high income, middle income, and low income.

Source: Suehiro (2014), Studies on Emerging Asian Economies: Beyond the Catch-up Industrialization, Iwanami Publisher, p.128 (in Japanese). Updating the figure of per capita GNI in 2012.

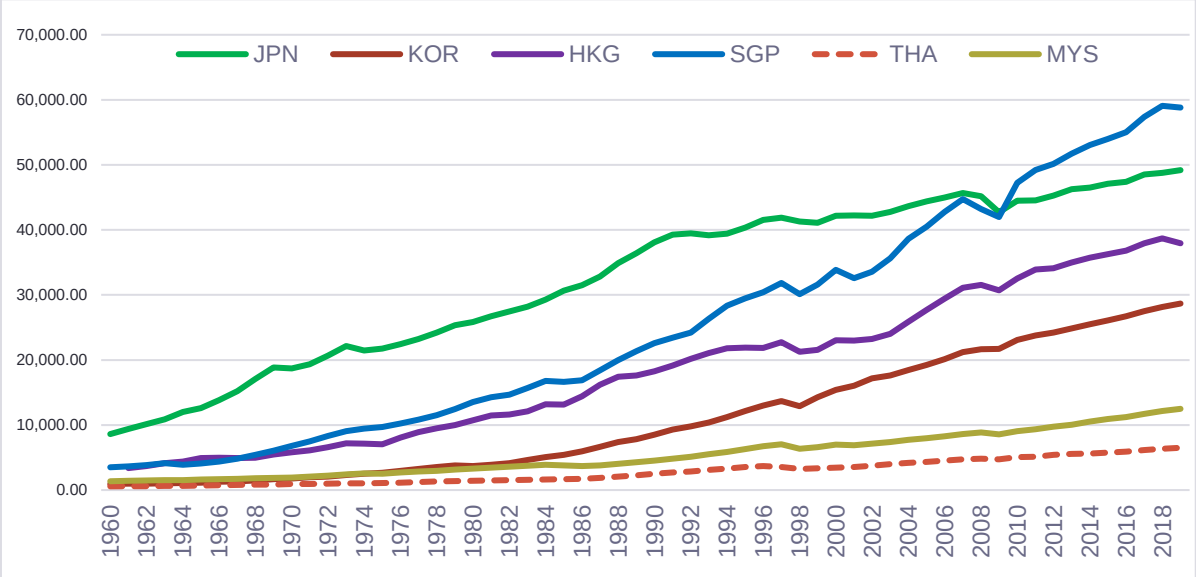
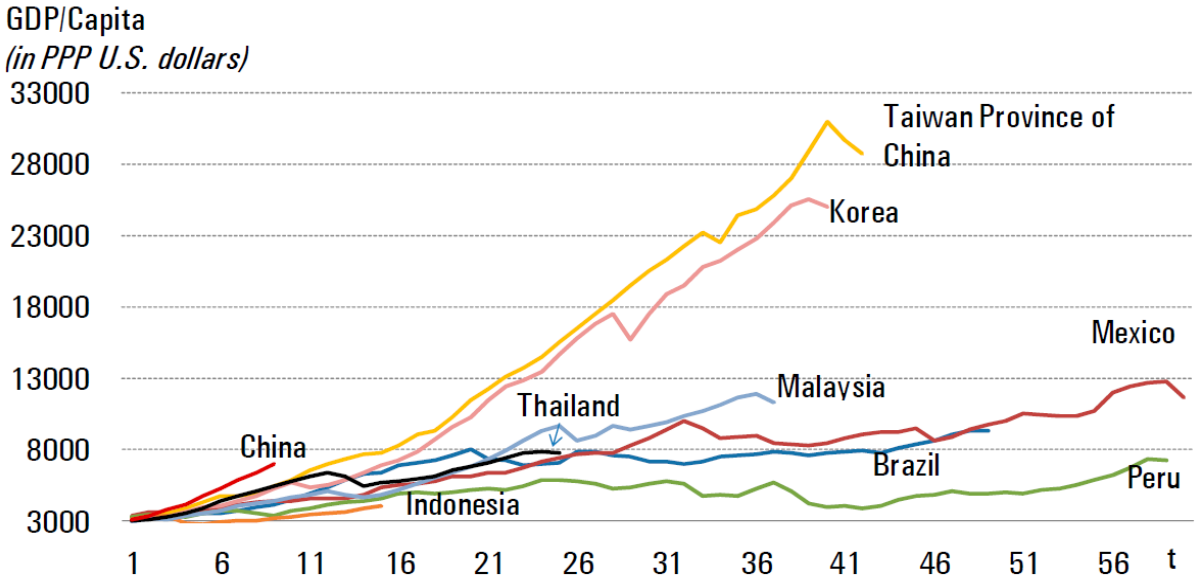


Figure 1.31: Changes in per capita income (GDP per capita at constant 2010 US$).

Source: World Development Indicator, World Bank



* t=0 is the first year when the average income per capita reached 3,000 U.S. dollars in Purchasing Power Parity (PPP) terms.

Figure 1.32: A comparison of the increase in income per capita (GDP/Capita)
Source: IMF staff calculations

Under the changing dynamics of the Global Value Chain (GVC), several developing countries that support production base relocation have had opportunities to stimulate their domestic economies by attracting foreign investment. This is a significant factor in elevating these countries from low-income to middle-income status, as seen in countries like Thailand, Malaysia, and China.

However, transitioning from middle-income to high-income status remains a challenging task. This is because, within the Global Value Chain (GVC) framework, simply attracting foreign investment (or relocating production by foreign companies) is insufficient to elevate a country to high-income status. It requires generating income from economic activities such as design, research and development (promoting high-value-added upstream processes) or fostering high-value-added service sectors like financial services or boosting the content industry (which promotes high-value-added downstream processes). This is because being the production base in the midstream stage has the lowest value-added and carries the risk of production base relocation to other countries with lower labor costs or lower cost advantages.

In the case of Thailand, even though it could not benefit from the First Unbundling transformation, it has effectively leveraged the opportunities provided by the Second Unbundling to transition to a middle-income country. However, to further develop the country and elevate it to high-income status, the average income per capita needs to increase by a factor of at least one. Since the 2010s, Thailand has experienced significantly lower economic growth compared to the 1980s-1990s, mainly due to various factors such as population structure, labor cost increase, global economic fluctuations, and delayed innovation

development within the country. As a result, the country's long-term development plans, especially in industrial development, must align and focus on increasing the value-added of production to maintain economic growth rates and enhance competitiveness in the long term.

1.1.4 Measuring the Impact of Technology on Economic Development

The content presented earlier has highlighted the significance of economic changes resulting from technological advancements in production. It is evident that both in the case of the First Unbundling Revolution and the Second Unbundling Revolution, technologies related to steam engines and Information and Communication Technology (ICT) have led to transformations in production and transportation. These changes have allowed many countries to benefit from these transformations, ultimately elevating their long-term income levels.

In the study of how technology impacts economic growth, knowledge has been developed using the fundamentals of macroeconomics. This is done through the use of aggregate output equations as a foundation for analysis. This has given rise to the concept of Growth Accounting, which aims to distribute the components affecting aggregate output, such as GDP. If we consider the Cobb-Douglas production function, which illustrates aggregate output (Y) derived from the use of total labor (L), total capital (K), and total factor productivity (A), the equation takes the following form:

$$Y = A\,L^{\alpha_L}K^{\alpha_K} \qquad (1)$$

Transforming the equation using logarithms on both the left and right sides, commonly referred to as Log-linearization, yields the following results:

$$\log Y = \log A + \alpha_L \log L + \alpha_K \log K \qquad (2)$$

By transforming the equation as mentioned, when calculating the differences between years and converting it into the form of a year-on-year change rate, it is equivalent to adjusting the equation to have the following form:

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \alpha_L \frac{\Delta L}{L} + \alpha_K \frac{\Delta K}{K} \qquad (3)$$

Presented in another format, it is expressed as the percentage change per year (%Δ) as follows:

$$\%\Delta Y = \%\Delta A + \alpha_L \%\Delta L + \alpha_K \%\Delta K \qquad (4)$$

By applying technology impact calculations, it is possible to replace variables in the following equation with actual time series data:

- Aggregate output (or GDP) is represented as Y.
- Total labor force is represented as L.
- Total capital value (e.g., the value of machinery, buildings, land, etc.) is represented as K.

When all the values are substituted, regression analysis methods can be used to estimate Equation (4). The results will yield coefficients α_L, α_K, and $\%\Delta A$, where $\%\Delta A$represents the change in overall factor productivity (A) or Total Factor Productivity (TFP). This reflects the impact of technology on economic growth.

		Contributions from		
	Output Growth	Capital Stock Growth	Labor Force Growth	TFP
Crafts				
1760-80	0.6	0.25	0.35	0.0
1780-1831	1.7	0.60	0.80	0.3
1831-73	2.4	0.90	0.75	0.75
Feinstein				
1761-1800	1.1	0.5	0.4	0.2
1801-30	2.7	0.7	0.7	1.3
1831-60	2.5	1.0	0.7	0.8

		Contributions from		
	Output Growth	Capital Stock Growth	Human Capital Stock Growth	TFP
Greasley & Oxley				
1760-80	0.6	0.3	0.2	0.1
1780-1831	1.7	0.6	1.1	0.0
1831-73	2.4	0.9	1.7	-0.2

		Contributions from		
	Capital Income	Labor Income	Land Income	TFP
Antras & Voth				
1770-1801	-0.1	0.2	0.0	0.1
1801-31	0.3	0.2	0.0	0.5
1831-60	0.3	0.3	0.0	0.6

Figure 1.33: Results of Growth Accounting analysis for the overall economy of the United Kingdom.

Source: Crafts (2002)

Based on the theoretical foundation and econometric methods mentioned above, these can be applied in empirical studies to investigate the impact of steam engine technology and Information and Communication Technology (ICT) (or the First Unbundling Revolution and Second Unbundling Revolution) on economic growth. In Craft's research (2002), Growth Accounting methods were applied (results are shown in Figures 1.38 – 1.40), and it was concluded that the impact of steam engine technology led to an increase in the GDP of the United Kingdom by 0.003-0.01 percent, while ICT had an impact on the GDP of the United States, increasing it by 0.17-0.49 percent.

	1760-1800	1800-30	1830-60
Steam Engine Capital Stock Growth	4.3	3.9	4.9
Income Share (%)	0.1	0.2	0.7
Steam Power Capital Deepening	***0.004***	***0.008***	***0.03***
Steam Engine TFP Growth	6.7	0.0	3.4
Output Share (%)	0.04	0.1	0.3
Steam Power TFP	***0.003***	***0.00***	***0.01***
Railway Capital Stock Growth			16.2
Income Share (%)			0.9
Railway Capital Deepening			***0.15***
Railway TFP Growth			3.5
Output Share (%)			1.4
Railway TFP			***0.05***
Total Steam	***0.004***	***0.008***	***0.24***

Figure 1.34: Results of Growth Accounting analysis for the economy of the United Kingdom, separating the impact of steam engine technology

Source: Crafts (2002)

	1974-90	1991-5	1996-9
Capital Deepening	0.81	0.62	1.10
ICT Capital	0.44	0.51	0.96
Other	0.37	0.11	0.14
Total Factor Productivity	0.33	0.48	1.16
ICT Sector	0.17	0.23	0.49
Other	0.16	0.25	0.67
Labor Quality	0.22	0.44	0.31
Labor Productivity Growth	1.37	1.53	2.57
Memorandum Items			
ICT Capital Income Share (%)	3.3	5.3	6.3
ICT Sector Output Share (%)	1.4	1.9	2.5

Figure 1.35: Results of Growth Accounting analysis for the economy of the United States, separating the impact of Information and Communication Technology (ICT)

Source: Crafts (2002)

Based on the analysis results by Crafts (2002), it is evident that the impact of the Second Unbundling Revolution has a more significant and lasting effect on economic growth compared to the impact of the First Unbundling Revolution.

1.2 Studying the Economies of Venice and Amsterdam

1.2.1 Economic History of Venice

While average income per capita increased rapidly after the Industrial Revolution in the 18th century, trade activities had already expanded, indicating economic growth independent of agriculture. The economic systems had centralized hubs in Venice and Amsterdam, a result of legal structures and financial systems that promoted economic expansion. This led to a population shift towards these cities as people moved there to engage in trade.

Figure 1.37: Aerial Photograph of the City of Venice

Source: https://www.reddit.com/r/CityPorn/comments/kigi0/aerial_view_of_venice_italy_1920x1145/

Figure 1.38: Aerial Photograph of the City of Venice
Source: https://www.airpano.com/360article/italy-venice/

Figure 1.39: Medieval Shipping Lanes of the Eastern Mediterranean
Source: Puga and Trefler (2014)

The significance of institutional and structural economic development has been thoroughly analyzed and presented in detail by Acemoglu and Robinson (2012). The key foundational factors for sustainable development and income equality at lower levels are the structures and economic institutions that create inclusive economic institutions. These institutions ensure that all sectors of the economy benefit from the development process. The case of Venice serves as an example of this mechanism in the pre-industrial revolution economic system, highlighting patterns in the establishment of structures and institutions in the post-industrial revolution economic system that create economic opportunities for the workforce.

The characteristics of Venice's economic growth are intriguing, starting from a city with a relatively small population. In the year 1050 AD, Venice had a population of 45,000 people. Over time, this population grew by 50% to reach 70,000 people in 1200 AD. In 1330 AD, the population increased by another 50%, reaching a total of 110,000 people. This continuous expansion led to Venice having a population equivalent to Paris and being three times the size of London. It can be considered the economically most prominent city in the world during that era.

Box 1.2: Summary of the Characteristics of Economic and Political Institutions Impacting Inclusive and Exclusive Growth

- **Extractive economic institutions:** Lack of law and order. Insecure property rights; entry barriers and regulations preventing functioning of markets and creating a nonlevel playing.
- **Extractive political institutions -** in the limit "absolutism": Political institutions concentrating power in the hands of a few, without constraints, checks and balances or "rule of law".
- **Inclusive economic institutions:** Secure property rights, law and order, markets and state support (public services and regulation) for markets; open to relatively free entry of new businesses; uphold contracts; access to education and opportunity for the great majority of citizens.
- **Inclusive political institutions:** Political institutions allowing broad participation – *pluralism* - and placing constraints and checks on politicians; rule of law (closely related to pluralism).
- But also some degree of *political centralization* for the states to be able to effectively enforce law and order.

Source: Acemoglu and Robinson (2012) and https://economics.mit.edu/files/8819

A critical factor that contributed to the economic expansion of Venice was the existence of a significant economic partnership known as "commenda." This was a trade contract primarily designed for short-term trading, typically lasting only one voyage. One party to the contract was a resident of Venice, while the other party was a merchant (or a companion on the trading voyage). Usually, the resident acted as the investor, while the traveling party provided skills or labor and bore the risks associated with the journey.

In case of any damage during the voyage, the responsibility for compensating for the loss depended on the agreement specified in the contract. Profit sharing in commenda contracts had two main forms:

- The resident investor in Venice invested 100% and received 75% of the profits.
- The resident investor in Venice invested 67% and received 50% of the profits.

The distinctive feature of commenda contracts led to the emergence of a new class of entrepreneurs, resulting in significant socioeconomic mobility in Venice. Historical documents show a large number of new individuals participating in commenda contracts, such as:

- In 960 AD, there was a 69% increase in new names.
- In 971 AD, there was an 81% increase in new names.

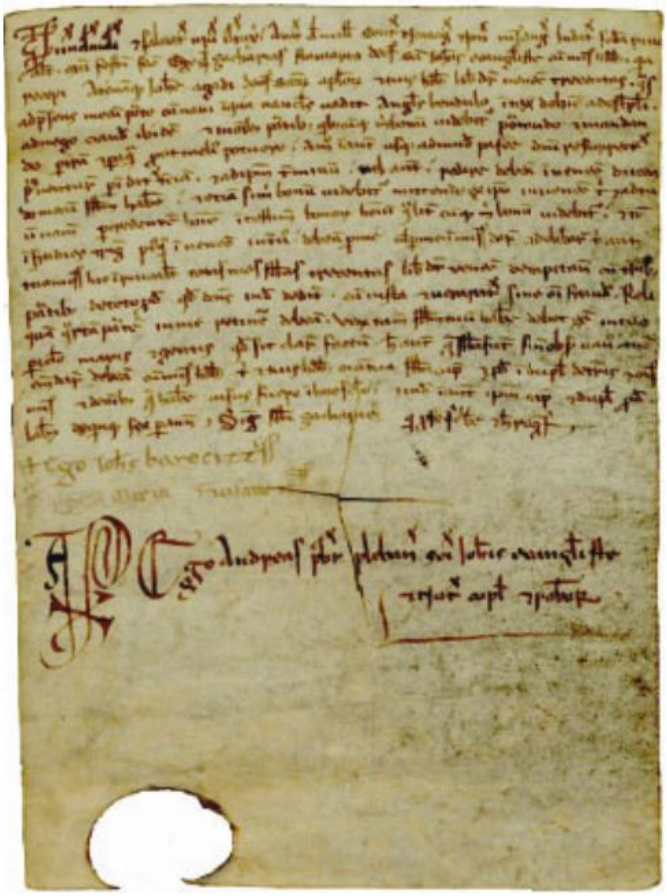
- In 982 AD, there was a 65% increase in new names.

The continuous economic expansion of Venice led to the development of advanced legal structures and justice systems, surpassing other European cities. This innovation included the creation of new types of business contracts, the establishment of district courts, and the formation of appellate courts. Furthermore, it contributed to the rapid expansion of commercial banking systems.

The continuous expansion of entrepreneurs and newly wealthy individuals in Venice also exerted political pressure. These groups desired to have a political role. Between 1297 and 1315 AD, the number of representatives in the Senate increased from 450 to 1,500 to accommodate these demands. In addition, in 1310 AD, a police organization was established to control public order and manage protests. However, in 1314 AD, the Senate prohibited commenda contracts to maintain the status quo in the social and economic hierarchy. Additionally, they regulated all trade to be conducted solely by the government, which provided its own galley ships for transporting goods.

In 1324 AD, private taxation began at high rates, and long-distance sea trade and transportation were reserved exclusively for the upper class. By 1500 AD, Venice's population had decreased to only 100,000 people, and economic activities had significantly declined. As a result, the center of trade shifted to Amsterdam, and Venice remained primarily focused on the glassblowing industry and jewelry made from glass.

In their research, Puga & Trefler (2014) studied the relationship between commenda contracts and the dynamics of Venice's social structure. They created a mathematical model using dynamic system analysis. Additionally, they applied Social Network Analysis to study marriage connections among elite families in Venice and their influence on the composition of representatives in Venice's Senate, which was dominated by these families.



Note: original parchment document, reproduced with permission from Archivio di Stato di Venezia (document identifier: San Zaccaria, Pergamene, b.35 pergg., n.160)

Figure 1.40: "Commenda" Contract between Mr. Zaccaria Stagnario and Mr. Giovanni Agadi, signed in August 1199 (written in Latin)

Source: Puga and Trefler (2014)

Their research was published in the Quarterly Journal of Economics, one of the top three journals in economics. The main findings of Puga & Trefler (2014) are depicted in Figure 1.41, which illustrates wealth distribution dynamics in a steady state. It shows that Venice's institutional structure led to wealth sharing between labor and merchant groups (inclusive development), but this equilibrium was disrupted after changes in 1314 AD when the wealthy elite tried to limit labor's economic participation. Furthermore, the elite families attempted to create their networks through intermarriage, leading to the concentration of power within a few families, as shown in Figure 1.42 from Social Network Analysis. This change also led to significant labor migration from Venice to seek new opportunities elsewhere.

These changes demonstrate the transformation of economic and social structures in Venice. Puga & Trefler's (2014) analysis showed that, without institutional and structural changes, Venice's economy could have continued to grow inclusively, benefiting both labor and capital, as seen through profit-sharing mechanisms like commenda contracts. However, Venice's economic institutions later evolved into a form of exclusive growth, where capital owners predominantly benefited. This led to long-term population decline and a reduction in economic activities.

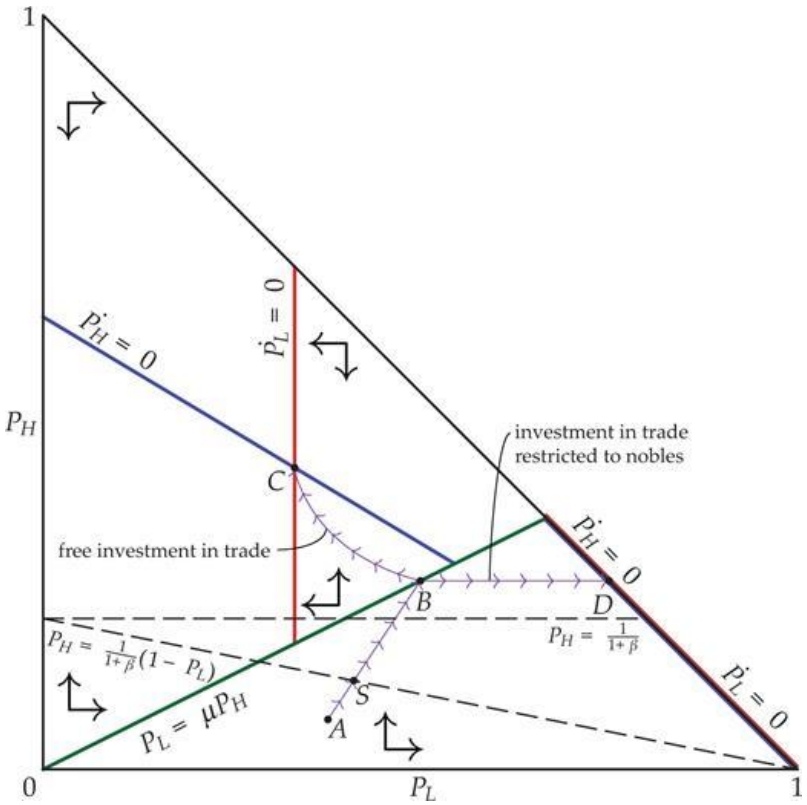


Figure 1.41: Evolution of the Wealth Distribution

Source: Puga and Trefler (2014)

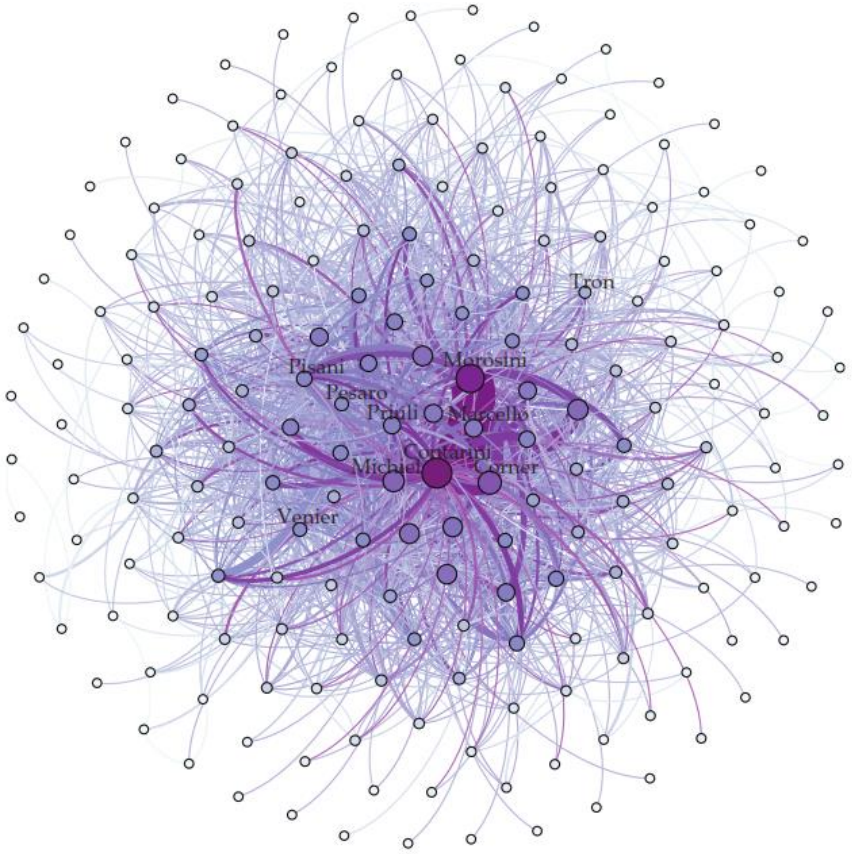


Figure 1.42: Marriage Network among Noble Families in 1400s
Source: Puga and Trefler (2014)

1.2.2 Economic History of Amsterdam and Dutch East India Company

In addition to the case of Venice, which illustrates an example of economic structures and institutions that contributed to inclusive economic growth, making Venice the largest city in Europe, the mechanisms of the trading system in Amsterdam are another interesting case study. Particularly noteworthy is the development of the capital market and the formation of the Dutch East India Company, the world's first multinational corporation. The outcomes of these financial mechanisms enabled broader public participation in economic growth and promoted the Netherlands to expand its influence in global trade and the economy prior to the Industrial Revolution. Figure 1.43 represents the quantity of maritime cargo transportation by the Dutch, reflecting the highest proportion.

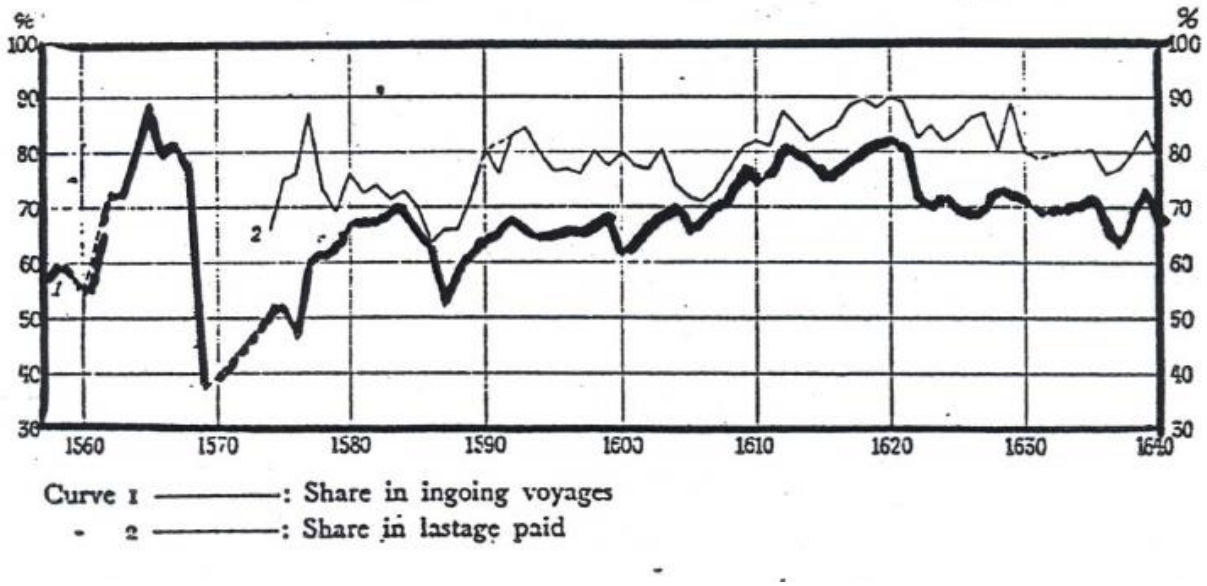


Figure 1.43: Proportion of Dutch maritime cargo transportation
Source: Munro. J. (2012) (https://www.economics.utoronto.ca/munro5/)

Some fundamental aspects of Amsterdam bear similarities to the case of Venice, both being coastal cities with canal-based transportation systems (as depicted in Figure 1.44). This design facilitated convenient maritime trade and transport activities within the city. Large sea vessels could efficiently navigate through the canals to transport goods to warehouses and shops within the city.

Figure 1.44: Aerial photograph of the city of Amsterdam
Source: https://www.iamsterdam.com/en/see-and-do/things-to-do/canal-cruising/reasons-to-see-amsterdam-from-the-water

Figure 1.45: Illustration of the return of the fleet of the ‘Oude Compagnie’, in Amsterdam

Source: https://www.worldsfirststockexchange.com/2020/10/15/the-worlds-first-ipo/

A significant transformation occurred when the Dutch East India Company (VOC) conducted its Initial Public Offering (IPO) in August 1602. This event marked the first instance in world financial history and laid the foundation for the modern stock market system. In the VOC's registration document from March 1602, under Article 10, it was specified that every citizen of the Netherlands had the right to purchase shares in the company, with no restrictions on the number of shares each person could buy (as shown in Figure 1.46, a document retained at the National Museum of the Netherlands).

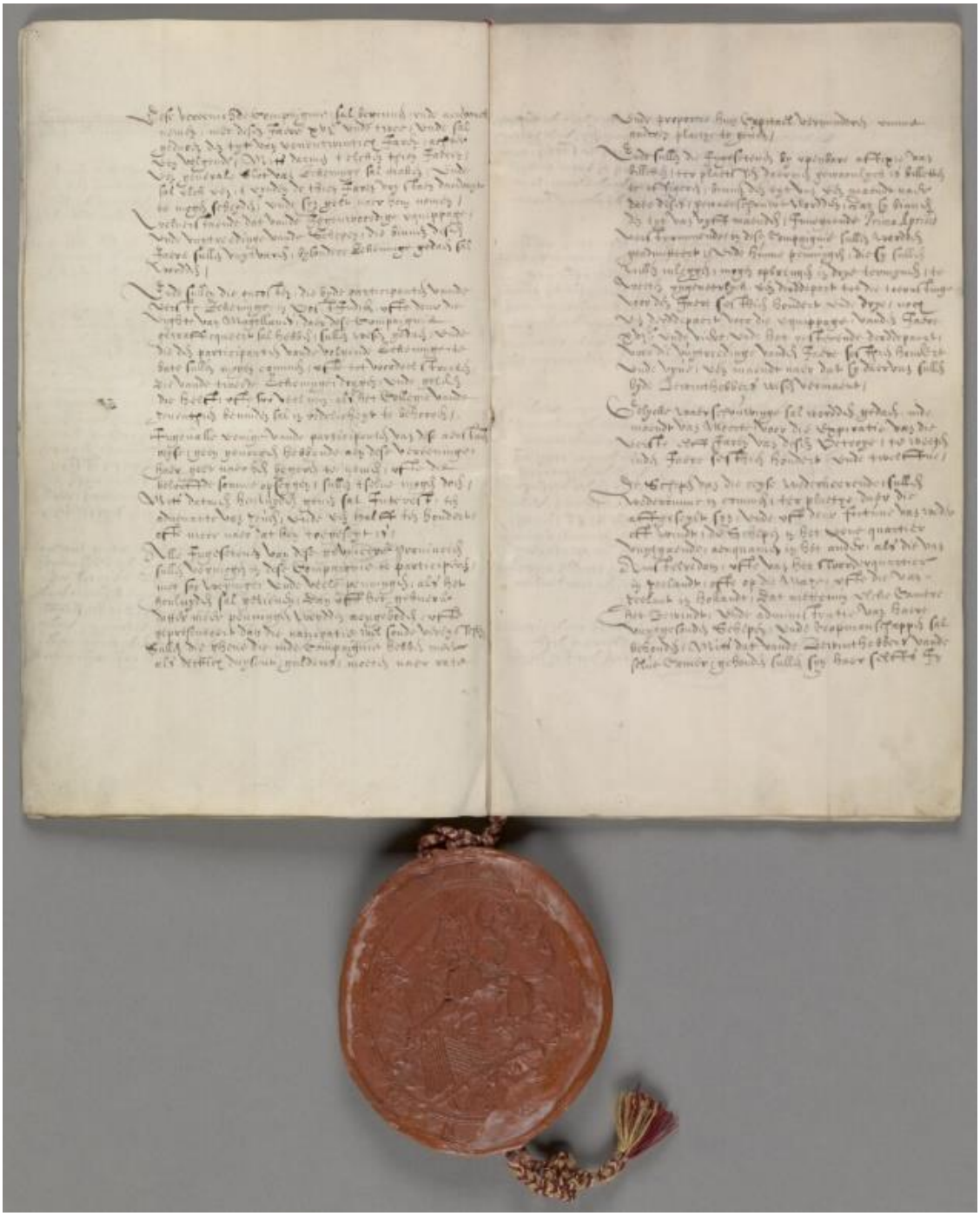


Figure 1.46: Registration document of the Dutch East India Company (VOC)
Source: https://www.worldsfirststockexchange.com/2020/10/15/the-worlds-first-ipo/

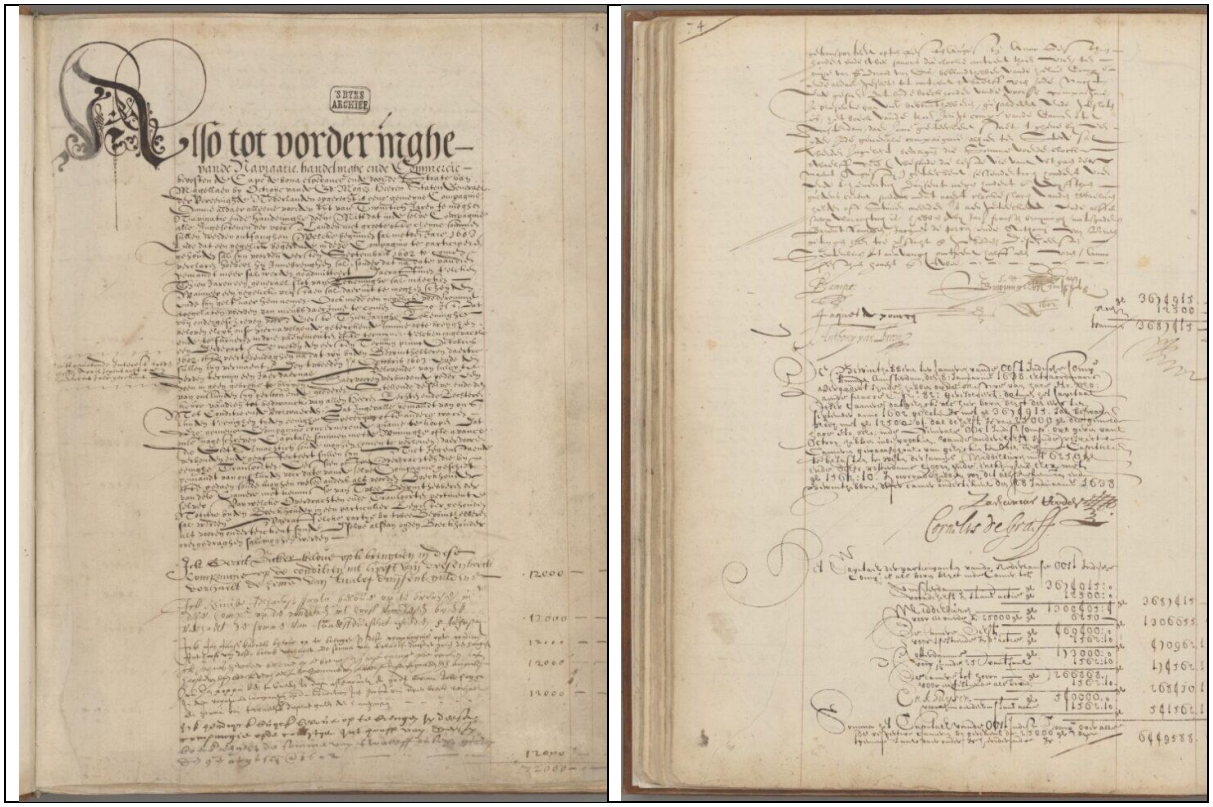


Figure 1.47: I mages of the first and last pages of the shareholder registry from the initial public offering (IPO) of the Dutch East India Company (VOC)
Source: https://www.worldsfirststockexchange.com/2020/10/15/the-worlds-first-ipo/

Details of the initial public offering (IPO) are shown in Figure 1.47, which is a shareholder registry (preserved at the National Museum of the Netherlands). The top part of the document indicates that the company's shares are tradable. The document also lists the names of the company directors, including Gerrit Bicker, Reinier Pauw, Jan Jansz Kaerel, Jacques de Velaer, Jan Poppen, and Hendrick Buyck, each of whom invested 12,000 guilders in the company (equivalent to the price of six expensive houses at the time).

The IPO attracted 1,143 investors interested in purchasing shares of the company. Notably, the 1,142nd investor (just before the last name) was Neeltgen Cornelis, who worked as a servant in Dirck van Os's home (one of the co-founders of the company). It's interesting to observe that many people bought shares at Dirck van Os's home. Neeltgen Cornelis had a daily income of approximately 0.5 guilders and purchased shares worth 100 guilders. This event led Barent Lampe, the registrar of this fundraising, to add the names of his own servants to the list of shareholders. In the registry, it was noted as "Barent Lampe for Dignum Jans __ 50 guilders," representing a bonus of 50 guilders (in the form of shares) that Barent Lampe intended to give to Dignum Jans, one of his servants.

The IPO closed at midnight on August 31, 1602, and the document on the left side, which is the last page of the registry, bears the signature of Jan Fransz

Bruyningh, who acted as the list inspector, along with two witnesses. Through this public offering, the company raised 3,674,945 guilders

.

Figure 1.48: The Hendrick de Keyser Exchange, the world's first stock exchange building in Amsterdam

Source: https://www.worldsfirststockexchange.com/2020/10/15/the-worlds-first-ipo/

The mentioned fundraising played a significant role in enabling Amsterdam to excel in both maritime trade and military power, expanding its territory to countries in East Asia and Southeast Asia. This contributed to a substantial proportion of sea trade handled by Amsterdam, as depicted in Figure 1.62, which shows the export volumes between 1600 and 1749, particularly Baltic grain trade, primarily transported on Dutch ships. Additionally, Figure 1.49 illustrates export volumes between 1660 and 1719.

Moreover, the Dutch East India Company (VOC) disseminated knowledge and technology to several countries in Asia, including Japan, significantly influencing their scientific and technological foundations. This laid the groundwork for future developments.

Furthermore, the impact of financial innovation through public fundraising created opportunities for inclusive economic development. Workers could purchase shares in companies of their interest and benefit from dividends and stock price differentials. This marked the first instance where an economic institution facilitated economic participation for labor through the stock market.

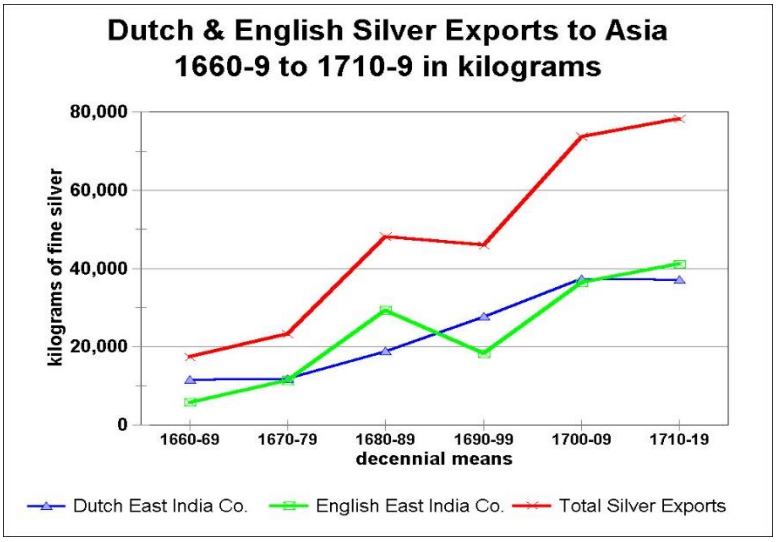


Figure 1.49: Export volumes between 1660 and 1719 (expressed as the value of trade compared to the weight of money used as a medium of exchange)
Source: Munro. J. (2012) (https://www.economics.utoronto.ca/munro5/)

1.3 A Brief History of Thailand's Economic Development

While the economic history of Thailand has a long-standing tradition, and scholars have produced a substantial body of work on its economic development, this section focuses on the chronological sequence of changes in the structure of the Thai economy during the post-industrial revolution economic system. This is to align the content with the presentation of economic structural changes in section 1.1 and the forthcoming case studies of Japan, South Korea, and Taiwan. Based on a review of research papers and publications related to Thai history, it is found that the works of Suehiro (1998), Ingram (1971), and Wyatt (2003) have presented issues that align with both temporal and structural aspects of the Thai economy. Therefore, the following content mainly consolidates data, ideas, and conclusions drawn from these three sources.

1.3.1 Phase I: Integration into the world economy (The Bowring Treaty 1855)

When examining the treasury system, it is evident that during the early reign of King Rama IV, Thailand had a revenue collection system similar to that of the Ayutthaya period. Revenue was collected in four categories, and this system persisted into the Thonburi and early Rattanakosin periods. During the reigns of Rama I and Rama II, foreign trade played a significant role in the Thai economy, generating substantial government revenue. The government even sent fleets to trade with China (and during the return from China, there was significant Chinese migration to Thailand).

However, during the late reign of King Rama II, profits from foreign trade declined, leading the government to increase domestic taxation to compensate for the loss in revenue from international trade. During the reign of King Rama III, a rebellion led by Chao Anouvong (the ruler of Vientiane) occurred, causing increased government expenditure. Due to these factors, there were reforms to enhance tax collection.

These reforms included introducing 38 new taxes, such as:

- Gambling and lottery taxes
- Taxes on prohibited goods
- Taxes on pepper
- Taxes on trading of various goods
- Salt tax
- Coconut oil tax
- Various other taxes

In addition to increasing government revenue through taxation on goods and activities, there were reforms in the tax collection system. The tax farming system, where tax collection was auctioned off to the highest bidder, was introduced. This allowed individuals or groups to represent the government in tax collection within specific areas.

During the reign of King Rama IV, after the signing of the Bowring Treaty, government monopolies on foreign trade ended, leading to a significant expansion of tax diversity to become the primary source of government revenue.

1.3.2 Phase II: Rising of capitalist groups (1885 - 1932)

The Bowring Treaty changed the structure of Thailand's exports since B.E. 2398 (A.D. 1855). The main economic activities focused on exporting each region's primary resources, which were closely related to resource utilization and reciprocity in operations. The key economic activities in each region were as follows:

- Northern Region: Teakwood extraction.
- Central Region: Rice fields and rice mills
- Southern Region: Tin mining.

These three categories of goods became Thailand's main exports, accounting for a significant proportion of the country's exports, reaching 87.8% during the years A.D. 1896-1899 and remaining high at 72.2% during the years A.D. 1936-1940, as shown in Figure 1.50.

Period	Rice	Teak	Tin	Total
1896-99	69.2%	8.8%	9.8%	87.8%
1900-04	67.5%	9.7%	9.9%	87.1%
1905-10	69.3%	11.2%	9.0%	89.5%
1911-15	69.9%	5.9%	12.4%	88.2%
1916-20	64.6%	4.6%	15.0%	84.2%
1921-25	68.5%	4.5%	8.8%	81.8%
1926-30	68.8%	3.8%	9.0%	81.6%
1931-35	59.6%	3.5%	12.5%	75.6%
1936-40	50.7%	4.0%	17.5%	72.2%

Figure 1.50 : Proportion of Rice, Teak and Tin in Thai Export
Source: Suehiro (1998)

The expansion of trade led to Thailand's increased involvement in both international and interregional trade, with international trade becoming the dominant economic activity. Additionally, the expansion of seaborne exports had a consequential impact on the migration of Chinese people to Thailand, particularly during their return journeys from delivering goods at southern Chinese ports. Suehiro (1998) documented the number of Chinese labor migrants to Siam (Thailand) during various periods as follows:

- Before the year 1820: 2,000 – 3,000 people per year.
- During the Sino-French War between 1882-1892: 16,000 people per year.
- From the year 1892 – 1917: 68,000 people per year.

Key factors contributing to this migration included drought in southern China and the demand for labor in Thailand's expanding economic activities, particularly those related to exports. These Chinese laborers, commonly referred to as "coolies," worked in various sectors, including harbors, tin mines, small-scale factories, and agricultural areas such as rice fields and sugarcane plantations.

These Chinese immigrants dispersed to different regions of Thailand. Several of these groups were able to establish and expand their businesses continuously, playing significant roles in Thailand's economic structure, especially in activities related to rice production and export. Suehiro (1998) summarized and presented the five major Chinese business clans rooted in rice-related activities:

- Hwang-Li Group (Bangkok Bank)
- Bun Suk Group (Thai Nam Thip)
- Bun Kul Group (Maboonkarn and Bumrung Thai Groups)
- Lumsum Group (Kasikorn Bank, PTT Group, and Lock & Lock Co., Ltd.)
- Eam Suvarn Group (Kamol Sukosol and Kasitsuk Group)

The expansion of these Chinese business groups occurred concurrently with the increased role of high-ranking civil servants and Western-educated Thai merchants in the country's economic landscape. Western-educated Thai merchants engaged in the teakwood and tin mining industries, resulting in a significant part of Thailand's exports originating from the activities of these merchants.

Furthermore, the expansion of rice exports had repercussions on land use, especially in terms of rice cultivation, milling, and storage facilities. This created economic opportunities for high-ranking civil servants who held land ownership rights and derived substantial income from land rents. The land rental values increased significantly over a short period of time. For instance, in the year 1900, an acre of land was priced at approximately 13 Baht, compared to an initial rental rate of 1 Baht in the first year, which then increased to 2 Baht in the second year, and further to 4 Baht in the third year, and so on. This illustrates that land rental became a lucrative investment within the first five years. In contrast, other businesses typically yielded annual returns of 4% to 12%.

The increased demand for land due to rice-related activities also extended to urban areas, leading to the construction of townhouses for rental purposes in Bangkok. These townhouses were frequently rented by Chinese merchants and Thai individuals. Notably, there was a substantial growth of townhouse construction in areas such as Sam Sen, Charoen Krung, Sampaeng, and Ratchawong.

The economic activities of Chinese merchants, Western-educated Thai merchants, and the benefits derived from land rentals of high-ranking civil servants contributed to the development of the Thai economy. This transformation is depicted in Figure 1.51.

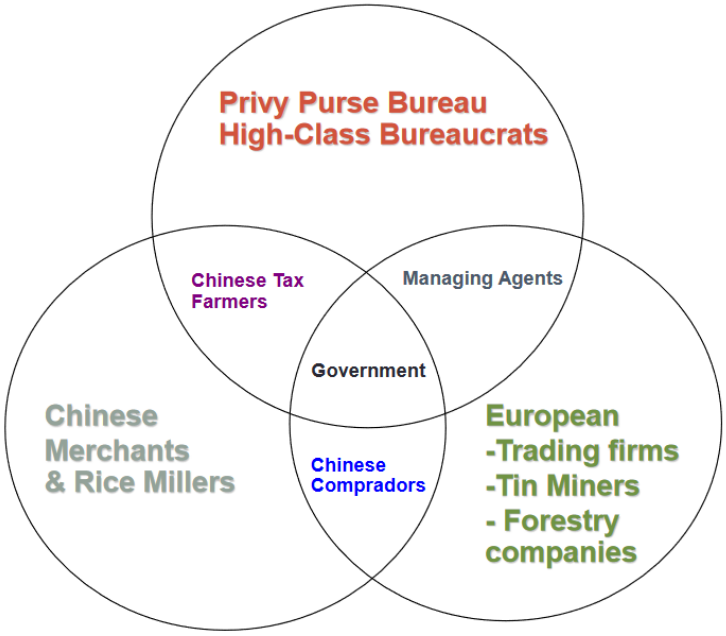


Figure 1.51: The structure of the Thai economy 1885-1932
Source: Suehiro (1998)

Additionally, apart from each group having their own economic activities, it also led to the emergence of special roles for individuals who facilitated coordination or activities between these groups. Two groups worked together and were interconnected through intermediaries who could coordinate and communicate. These intermediaries included the Chinese Tax Farmers, who were a group of Chinese whites responsible for tax collection in certain areas, and the Compradors, who were Chinese individuals acting as intermediaries for Western companies or banks. Furthermore, there were Westerners who served as representatives to liaise and coordinate with Thai government agencies, known as Managing Agents.

The Industrial Revolution also had an impact on the transformation of Thailand's economic structure. Starting from AD 1900, there was an importation of steam engines and locomotive engines (used to drive trains) and steam locomotives (utilizing steam engines as a driving mechanism). This led to the establishment of several companies to provide services or engage in production using these machinery. Moreover, several companies were formed to provide public services, including the founding of the Siam Commercial Bank, which was Thailand's first commercial bank. These established companies demonstrated the results of their business operations and profit-sharing, as depicted in Figure 1.52.

Name of Company	Registered Capital (baht)	Year- end Dividends (%)					Dividends Paid (%)		
		1909	1910	1911	1912	1913	1920	1922	1924
Siam Electricity Co., Ltd.	250,000	6	12	12	12	12			
Paknam Railway Co., Ltd.	500,000	22	15	14	13.5	18.5	27	20	20
Meklong Railway Co., Ltd.	2,230,000	5	5	5	5	5	7.5	8	9
Bangkok Manufacturing Co., Ltd.	400,000	14	10	10	8	8			
Bangkok Dock Co., Ltd.	1,000,000	5	2.5	3	7	8	15	10	10
Siam Commercial Bank Ltd.	3,000,000	3	2	2	3.5	4.5	5	5	5
Menam Motor Boat Co., Ltd.	200,000		4	4	4	7	10	10	14
Siam Steam Navigation Co., Ltd.	2,000,000	10	10	10	10	10	15	5	20
Siam Stoneworks Co., Ltd.	350,000	5							
Siam Steam Packet Co. ,Ltd.	190,000	8	7	8					
Bang Nara Rubber Co., Ltd.	240,000						7		10
Siam Cement Co., Ltd.	3,000,000						11	10	10

Figure 1.52: Dividends on the Issue Value of Major Thai Royal Chartered Company Stock

Source: Directly quoted from Suehiro (1998)

The economic growth, driven by the expansion of international trade due to the Bowring Treaty, resulted in the rapid increase in the value of international trade per capita. Figure 1.53 illustrates that the structure of the economy relied heavily on export activities for several decades.

Period		Trade (million baht)			Trade (Million pound)	Exchange rate (baht per pound)	Population (1,000 persons)	Trade value per capital (baht)
		Import	Export	Total				
1850	King Rama 4 (พ.ศ. 2393)	4.33	5.59	9.92	1.24	8.00	5,200	1.91
1865-67	King Rama4 (พ.ศ. 2408 - 10)	5.61	6.57	12.18	1.51	8.00	5,450	2.23
1870-74	King Rama5 (พ.ศ. 2413 - 7)	7.74	9.92	17.66	2.21	8.00	5,775	3.06
1880-84	King Rama5 (พ.ศ. 2423 -27)	10.36	16.56	26.91	3.14	8.56	6,200	4.34
1890-94	King Rama5 (พ.ศ. 2433 -37)	23.00	33.10	56.10	4.50	12.47	6,670	4.34
1900-04	King Rama 5 (พ.ศ. 2443 -47)	60.21	78.16	138.37	7.67	18.03	7,320	18.90
1910-14	King Rama 6 (พ.ศ. 2453 -57)	77.37	98.53	175.90	13.53	13.00	8,305	21.18
1920-24	King Rama 7 (พ.ศ. 2463 -67)	153.54	169.84	323.38	31.03	10.42	10,202	31.70

Figure 1.53: Expansion of the International Trade
Source: Directly quoted from Suehiro (1998)

1.3.3 Phase III: Economic nationalism (1932 - 1947)

Later, following the change in the governing system from an absolute monarchy to a constitutional monarchy in the year 1932, significant changes occurred, affecting various dimensions of governance, the economic system, society, and culture. This included the declaration of the Rattanakosin 12 Version of Statism.

The transformation was influenced by the economic ideas of Pridi Banomyong and the impact of the Japanese military during World War II. These changes altered the roles of foreign entrepreneurs, shifting them towards government-owned companies. The government established various state enterprises to control and manage the country's key economic activities, including:

- The rice-related business, through the establishment of the Thai Rice Company Limited, to oversee activities from rice cultivation to its final industrial processes.
- Industrialization, achieved by setting up numerous state enterprises to produce basic goods.
- Wholesale and retail trade, with the formation of Thai Niym Phanit Company Limited for wholesale trade and Thai Niym Changa Wat Company Limited for retail trade in each province.

The cumulative impact of the government's establishment of these three types of companies is illustrated in Figures 1.54 and 1.55. These figures show that all activities, from the initial stages to the final processes, were carried out by government-owned companies. This significantly reduced the roles of foreign entrepreneurs (both Chinese and Western) and marked the first time in Thailand's economic system that the government took comprehensive control and management of production, transportation, and trade through its organizations.

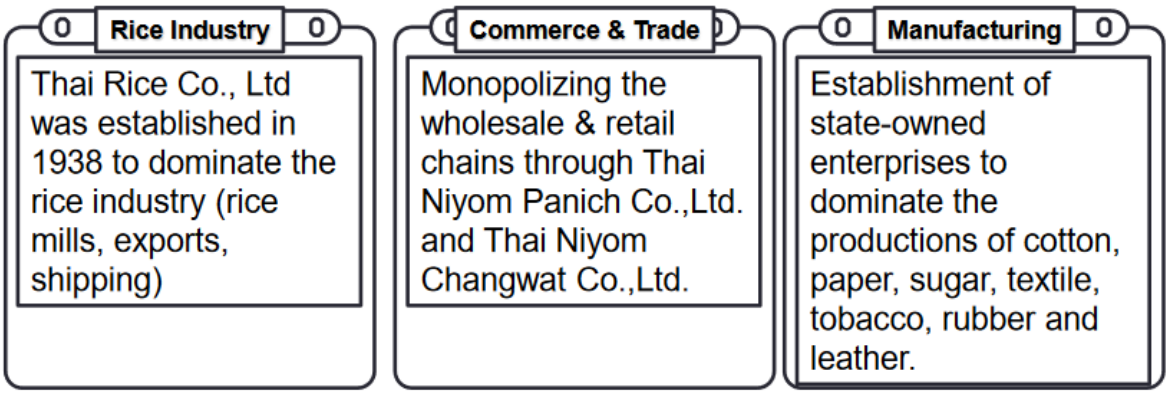


Figure 1.54: Expansion of exports and economic activities
Source: Directed quoted from Suehiro (1998)

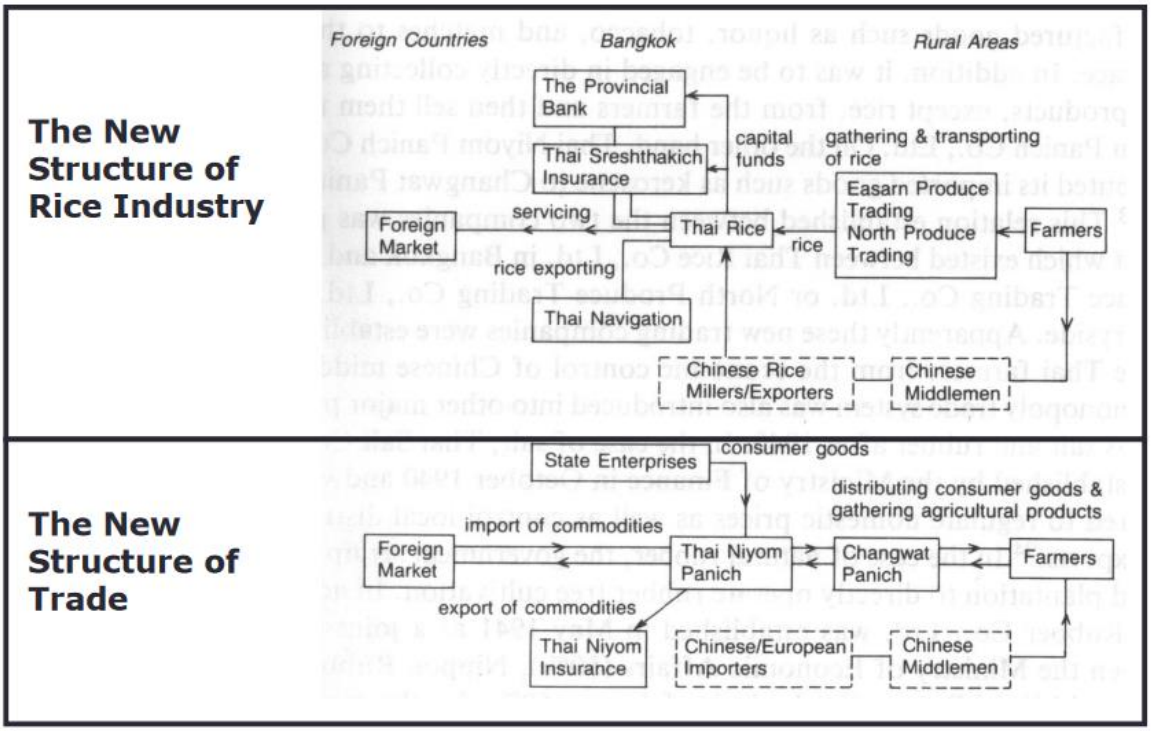


Figure 1.55: Transformation of economic structure in Thailand
Source: Directed quoted from Suehiro (1998)

The policy emphasizing an economic system run by Thais and the government as a whole resulted in the establishment of numerous state enterprises to conduct business in key sectors, as shown in Figure 1.56. This figure indicates the state enterprises founded in each period and operated under the supervision of relevant ministries. During the period from 1923 to 1960, a total of 100 state enterprises were established, leading to the creation of 41 factories (including data from the post-coup period under General Pibulsongkram's government)

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	No. of Factories	No. of State Enterprises	1923-45	1946-52	1953-56	1957-60
			พ.ศ. 2466 - 2488	พ.ศ. 2489 - 2495	พ.ศ. 2496 - 2499	พ.ศ. 2500 - 2503
M of Industry	19	15	3	5	6	1
M of Interior	0	6	0	0	4	2
M of Agriculture	8	7	1	2	3	1
M of Finance	8	16	7	3	5	1
M of Defence	5	10	1	1	6	2
M of Public Health	1	1	1	0	0	0
M of Communication	0	7	1	3	2	1
M of Econ Affairs	0	25	16	1	7	1
Other agencies	0	13	0	4	4	5
Total	**41**	**100**	**30**	**19**	**37**	**14**

Figure 1.56: Number of State Enterprises Established during 1923 -60
Source: Directed quoted from Suehiro (1998)

During this period, in line with the policy of running the economy by Thais and the Thai government, state enterprises that were established had their operations controlled by civil servants and politically influential figures. Figure 1.57 illustrates the direction and management of state enterprises through government officials and politically influential individuals who held positions as executives in these state enterprises that were established.

	TRC	PB	TSI	TNC	TNP	TNI	TNB	TNF	TSC	NCB	SCB	BOA	TSF
People's Party Members													
Charun Rattanakun	D	D	D	D	D	D	D	D		D			
(Luang Seriroengrit)	D	D	D										
Wanit Pananon	D	D								D	D		
Thawi Bunyaket		D	D										
Naep Phahonyothin	D	D											
Yon Samanon		D					D	D	D			D	
Luang Chawengsak- songkhram		D			D		D	D	D			D	
Chun Pintanon			D		D	D				D			
Prayun Phamoramontri					D	D	D	D			D		
Leng Srisomwong				D	D	D			D		D	D	D
Wan Ruyaphon			D		D	D	D			D			
Wilat Osathanon					D	D	D	D	D	D	D		
Sawaek Nisanchai			D		D	D	D	D		D	D		
(Khun Nirandonchai)													
Pridi's group													
Duam Bun-nak												D	D
Somphat Asawanon												D	D
(Luang Prachoet-aksonralak)													
Lui Phanomyong			D						D			D	D

D means the board member or chairman; TRC = Thai Rice; PB = Provincial Bank; TSI = Thai Sreshthakich Insuranace; TNC = Thai Navigation; TNP = Thai Niyom Panich; TNI = Thai Niyom Insurance; TNB = Thai Niyom Bangrak; TNF = Thai Niyom Phanfa; TSC = Thai Salt Co.; NCB = National & City Bank of Thailand; SCB = Siam Commercial Bank; BOA = Bank of Asia; TSF = The Safety Insurance

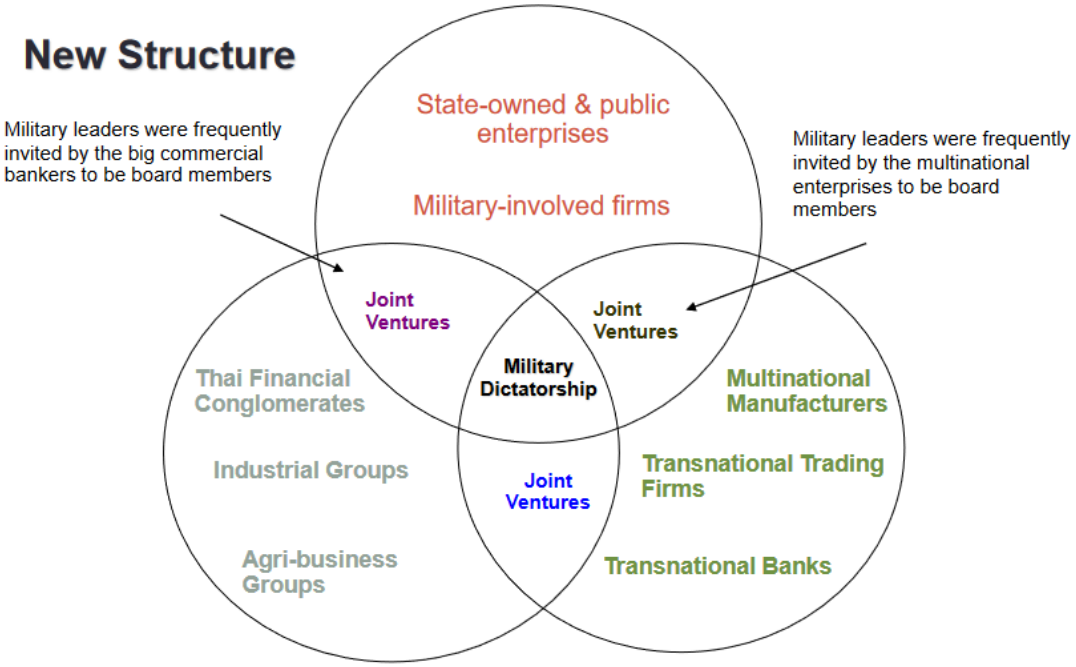
Figure 1.57: Economic Involvement of the People's Party and The Pridi Group in Major State Sponsored and Private Enterprises: 1938-46

Source: Directed quoted from Suehiro (1998)

1.3.4 Phase IV: Bureaucrat capitalist development (1947 – 1957)

After a group of military officers, led by General Praphas Charusathira and General Praphat Charusathira, staged a coup and seized power in November 1947, there was a shift in economic structure. This change reduced the nationalist direction and opened up a larger role for foreign entrepreneurs in Thailand's economic landscape. The economic structure during this period consisted of three major groups, as depicted in Figure 1.58. This figure illustrates the resurgence of Chinese and Western business groups in the economic structure.

Figure 1.58: Economic Structure during the Period 1947-1957



Source: Suehiro (1998)

Nevertheless, considering the economic development process during that period, it becomes evident that there was a delay in developing domestic industries within Thailand's economic system. The establishment of state enterprises led to issues of lagging development, significantly affecting Thailand's economic system. This was observed both in terms of overall efficiency and the distribution of industrial sectors, as shown in Figure 1.59.

During this period, there were only four industrial sectors (namely, tobacco, cement, sugar, and liquor) that contributed significantly to the value added by the industry as a whole (approximately 86%). Meanwhile, industries employing technology were still underdeveloped (such as steel, textiles, glass, and batteries). The development of industries became particularly significant during the government of Field Marshal Sarit Thanarat (AD 2501 - 2506), driven by the National Economic Development Plan.

During this time, the economic structure returned to a pattern similar to what was presented in section 1.3.2. The Chinese merchant groups regained their roles within the economic structure. However, it's important to note that the Chinese merchant groups during this period were different from those in the previous era.

Changes in Manufacturing Value Added in Thailand at 1962 price

	1950 (พ.ศ. 2493)	1957 (พ.ศ. 2500)	1964 (พ.ศ. 2507)	1971 (พ.ศ. 2514)
Manufacturing Total				
Food (1)	2,227	2,793	3,529	5,271
	(48.6)	(41.4)	(33.1)	(20.9)
Beverages (2)	352.00	511.00	906.00	2179.00
	(7.7)	(7.6)	(8.5)	(8.6)
Tobacco (3)	404.00	843.00	1162.00	2441.00
	(8.8)	(12.5)	(10.9)	(9.7)
Textiles	71	253	754	2,318
Wearing apparels	327	420	533	1,594
Wood, furniture, paper	397	456	1,135	1,129
Printing and publishing	100	288	350	621
Leather and leather products	15	21	31	194
Rubber and rubber products	37	49	68	480
Chemicals	311	442	665	1,631
Petroluem	-	-	139	2,136
Non-Metallic mineral products	86	213	570	1,490
Metal Products	20	31	118	327
Basic Metal	5	11	38	602
Electricals	18	31	80	339
Transport equipments	212	278	577	1,470
Total	**4,582**	**6,640**	**10,655**	**24,222**
(1)+ (2) + (3) as % of Total	65.10%	61.50%	52.50%	39.20%

Figure 1.59: Value Added by Thai Industrial Sector and the Distribution of Manufacturing Sectors
Source: Suehiro (1998)

After the year 2493 AD (1950s), a new wave of Chinese-origin businesspeople rapidly expanded. There were four main groups:

1. Asia Trust Group (Bangkok Bank): Comprising the Soponpan family.
2. Thai Hua Group (Krung Thai Bank and Siam City Bank): Comprising the Euachongprasit, Tejapaibul, Sethaputra, and Siri-Fueangfung families.
3. Bangkok Bank Group: Comprising the Rattanarak, Buasuwan, Siaosong, and Watthanavekin families.
4. Union Bank of Bangkok Group: Comprising the Mahakun family.

All four groups primarily used commercial banks (including other financial businesses like insurance) as their main pivot for business expansion. They covered various sectors, including manufacturing, transportation, and international trade. This differed from the five Chinese merchant groups in the 2473 BE era (1930s), who initially focused on the rice business before diversifying into other areas.

Each group expanded by leveraging their internal resources, leading to continuous growth (including expanding business networks through intermarriage within the groups). This contrasted with the case of the five Chinese merchant groups in the 2473 BE era (1930s), who grew from a single family and expanded their businesses using banks as their main focal point, resulting in significant business expansion, as shown in Figure 1.60.

	Commercial Bank	Finance & Insurance	Manufacturing	Commerce & Service	Total
Sophonpanit (Bangkok Bank Group)	[1] 39,872 (71.8)	[54] 13,603 (24.5)	[26] 1,286 (2.3)	[25] 738 (1.3)	[106] 55,499 (100.0)
Techaphaibun (Bangkok Metropolitan Bank)	[3] 10,698 (61.9)	[36] 4,473 (25.9)	[10] 687 (4.0)	[41] 1,419 (8.2)	[90] 17,277 (100.0)
Lamsam (Thai Farmer Bank)	[1] 9,048 (68.5)	[17] 2,080 (15.8)	[19] 885 (6.7)	[31] 1,193 (9.0)	[68] 13,206 (100.0)
Rattanarak (Bank of Ayudhya)	[1] 6,123 (70.6)	[8] 1,393 (16.1)	[8] 738 (8.5)	[14] 416 (4.8)	[31] 8,670 (100.0)
Total	[6] 65,741 (69.5)	[115] 21,549 (22.8)	[63] 3,596 (3.8)	[111] 3,766 (4.0)	[295] 94,652 (100.0)

Figures in brackets represent the number of firms
Figures in parentheses represent the share of total

Figure 1.60: Business Expansion of the Four Chinese Business Groups (Asset Value in the year 2522 BE)
Source: Suehiro (1998)

1.3.5 Phase V: Industrialization (1960s- 1980s)

General Srisdi Thanarath assumed power from the group led by General Pibul Songgram in the year 1947 AD and initiated a transformation in 1948 AD. General Srisdi emphasized that this transition was not a military coup d'état but rather a revolution. He argued that this change was necessary to address the structural problems in the governance system that had persisted since the People's Party took power in 1932 AD, aiming to modernize and develop the country.

A significant turning point occurred when the World Bank dispatched experts to conduct research in Thailand in September 1948 AD to study the country's structure and issues. The year-long research culminated in a presentation of the analysis results. It recommended long-term development with substantial investments in infrastructure and improving the efficiency of state-owned enterprises. The low efficiency of state-owned enterprises was identified as one of the key factors contributing to the slow pace of industrial development. This development plan was part of the broader effort to counter the expansion of communism in the region.

This transformation marked the beginning of industrialization in Thailand, driven by events in the year 1949 AD. During this period, the National Economic Development Office was established. In 1951 AD, the National Economic Development Plan, version 1 (for 1951 – 1956 AD), was created. It became the template for the country's development policy in the subsequent years.

	First Plan 1961-1966 (พ.ศ. 2504 - 09)		Second Plan 1967-1971 (พ.ศ. 2510 - 14)		Third Plan 1972-1976 (พ.ศ. 2515 - 19)		Fourth Plan 1977-1981 (พ.ศ. 2520 - 24)	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Agriculture	3.3	4.6	4.3	4.1	5.1	3.9	5.0	3.7
Mining	5.3	10.9	6.6	8.1	6.0	-0.5	3.2	9.7
Manufacturing	9.3	10.2	10.9	9.2	8.0	8.6	9.6	8.4
Construction	3.9	12.3	11.4	8.4	6.5	4.0	3.0	9.1
Electricity & Water Supply	16.4	18.2	18.0	20.7	15.0	14.4	11.3	11.8
Communication	9.3	9.0	11.0	7.5	6.0	8.1	7.4	8.4
Banking & Insurance	5.5	16.6	17.0	14.4	15.0	5.1	8.1	13.1
Trade	5.5	8.0	8.4	7.7	7.0	4.8	6.3	5.7
GDP	**5.5**	**7.3**	**8.5**	**7.2**	**7.0**	**6.2**	**7.0**	**7.1**

Figure 1.73: A Comparison of Industrial Growth between Target and Actual Growth, 1951 – 1979
Source: Suehiro (1998)

The development plans in various decades emphasized promoting investments from both within and outside the country. This led to the utilization of policy tools, including:

- Reducing personal income taxes for ordinary citizens.
- Lowering import duties on machinery and raw materials.
- Easing restrictions on repatriating profits.
- Relaxing land ownership conditions.
- Transforming the role of state-owned enterprises to focus solely on infrastructure and public utilities while reducing their involvement in manufacturing.

These policy implementations resulted in the expansion of industries and the diversification of industrial sectors within Thailand. The proportion of traditional industries, such as food, beverages, and tobacco, shifted towards new industrial branches with higher value-added.

1.3.6 Summary of Thailand's Economic and Industrial Development from 1850-1985

Ingram's Conclusion (1971)

- Throughout the development period, even though there were continuous increases in average income per person, what happened was not reflective of development characterized by the accumulation of capital alongside technological advancement but merely a change.
- Economic growth resulted from the forces of a growing population and expanding land use, but technological development did not occur.
- Economic changes occurred primarily due to external factors, with Thailand being merely a recipient of these changes.

Akira's Conclusion (1998)

- Many capital groups benefited from being monopolists or engaging in businesses in markets with few players, which did not stimulate business expansion or research and development of products.
- Various capital groups attempted to coordinate to receive protection from the government in markets with few players, including receiving support through special financial measures.
- The capital accumulation process and economic development did not grow significantly and differed greatly from Japan's case. Thailand's capital accumulation mainly occurred in the import-compensating industrial sector and the agricultural industry sector focused on exports.
- "Thailand's industrial development process differs from that of Japan and other industrialized nations because Thai entrepreneurs did not have a continuous expansion mindset and were mainly interested in producing consumer goods for the domestic market. This lack of incentive hindered innovation and relied heavily on importing technology."

1.4 Conclusion

In the course of human history, especially in the development of societies, there has been continuous evolution in various aspects, including social structures, spanning thousands of years. This evolution has led to the emergence of cultures in different regions of the world. Notably, economic systems have undergone distinct changes, particularly in the last two centuries, primarily driven by the Industrial Revolution. This rapid transformation has had profound effects, such as labor migration and the formation of urban societies.

Apart from the expansion of the global economy resulting from the Industrial Revolution, there have been previous economic systems that facilitated economic growth. These systems introduced new economic activities that led to the movement of labor away from agriculture and the creation of opportunities for individuals to transition from being laborers to becoming profit-sharing

participants in businesses, thanks to the development of financial instruments. Examples of such economic systems can be seen in the city-states of Venice during the years 900-1300 AD and in Amsterdam, the Netherlands, during the years 1500-1600 AD.

Venice's collaborative work arrangement, known as the "commenda," and the establishment of the world's first stock exchange in Amsterdam were critical factors that created opportunities for upward economic mobility for the workforce. These factors contributed to the formation of an economic system that fostered inclusive development, where more people had a stake in economic progress.

In summary, the history of human civilization reveals that economic development has been shaped by various factors, with the Industrial Revolution being a significant catalyst in recent times. However, even before the industrial revolution, there were economic systems that promoted economic growth and inclusive development. Understanding these historical examples can provide insights into the complex interplay of factors that influence economic evolution and inclusive economic systems.

In the case of this country, this section has presented a brief summary of the evolution of Thailand's economic structure, with significant changes starting during the reign of Rama V. It began with the signing of the Bowring Treaty, which was a trade agreement between Thailand and England. This led to an expansion of international trade and transformed the exports of Thai resources (teak, rice, and tin) into the country's main export products during the reigns from Rama IV to Rama VII.

Following the change of government in the year 2475 (1932 AD), there was a shift in economic policy thinking. It started with the planning of economic development and economic system management by Prince Purachatra, but these ideas were later contested and prohibited from dissemination. Eventually, during the administration of Field Marshal Pibulsongkram, the concept of nationalism became the cornerstone of economic restructuring. This transformation involved key economic activities in agriculture, industrial production, and services, and it was carried out by state-owned enterprises.

However, several changes in governance and economic structure subsequently reverted to the prominent role of large Chinese business groups and Western businessmen in the period from 2490 to 2500 (1947-1957 AD).

Key changes occurred in Thailand's economic structure after Field Marshal Sarit Thanarat came to power in the year 2500 (1957 AD). The World Bank provided consultation to the Thai government for economic development planning. This led to the establishment of the National Economic and Social Development Board (NESDB) and the systematic development planning using the Five-Year Plans. This approach has continued to guide economic development in Thailand up to the present day, fostering industrialization through

various government measures, such as tax incentives, aimed at promoting investment.

A study of the changes in Thailand's economic structure, as analyzed by Ingram (1971) and Akira (1998), concluded that Thailand did not have systematic planning, and economic changes were primarily stimulated or enforced by external factors. This resulted in setbacks in economic and industrial development. Additionally, it was noted that Thai entrepreneurs focused more on seeking influence from those in power for protection and privileges rather than emphasizing innovation, in contrast to the capital accumulation and knowledge development of Japanese entrepreneurs who transitioned from farmers to traders and ultimately to financial and service businesses. These cumulative processes contributed to continuous value addition.

Overall, the economic transformation in Thailand has been influenced by a combination of external factors, government policies, and the strategies of business groups, leading to significant shifts in the country's economic landscape.

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