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Estimating Vietnam's Required Investment for Economic Growth Scenarios Based on the Historical Growth Rates of South Korea and China

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Using exogenous input-output analysis for Vietnam's industrial sectors, this study estimates the required investment for growth comparable to South Korea (Scenario 1) and China (Scenario 2). By 2038, Vietnam's real GDP per capita could reach USD 11,326 and USD 11,169 under Scenarios 1 and 2, respectively. Achieving this would require USD 2.31 and 1.96 trillion if investment focuses on SOC, or USD 3.39 and 2.88 trillion for electronics. The findings reveal weak inter-industry linkages and limited value-added capacity in Vietnam's SOC and electronics sectors, underscoring the need for technological upgrading, attracting sustained foreign investment, and strengthening domestic supply chains.

JEL Classification: C67, E22, O47, O53
Keywords: Vietnamese economy, input-output table, input-output analysis, economic growth scenario, necessary investment funds, SOC and electronics sectors

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1. INTRODUCTION

Vietnam's economic growth has exhibited significant fluctuations in recent years. According to the World Bank (2024a), the country's GDP growth rate was 2.55% in 2021, surged to 8.53% in 2022, declined to 5.07% in 2023, and rebounded to approximately 7.09% in 2024. In an effort to sustain strong momentum, the government has set an ambitious growth target of 8.3-8.5% for 2025. These sharp swings highlight both the dynamism and volatility of Vietnam's economic performance. Nevertheless, the Communist Party, during its 13th National Congress in 2021, established the long-term goal of achieving the high-income level by 2045. Attaining this objective will require maintaining rapid and sustained economic growth over the coming decades.

In response, this study assumes scenarios in which Vietnam follows growth trajectories similar to those of South Korea and China during periods when their economic development levels were comparable to Vietnam's current stage, and estimates the investment required to sustain such growth under Vietnam's current industrial structure, as captured in the 2022 input-output table.

The reasons for assuming the growth rates of South Korea and China are as follows. South Korea became the first and only country in the world to transition from a recipient to a donor nation, having joined the OECD (Organisation for Economic Co-operation and Development) in 1996 and the DAC (Development Assistance Committee) in 2010. In particular, in July 2021, the UNCTAD (United Nations Conference on Trade and Development) officially recognized South Korea as a developed country. This marked the first time since UNCTAD's establishment in 1964 that a country's status was elevated from a developing to a developed nation. Thus, South Korea can be considered the most successful case of economic development among developing countries. South Korea's real GDP per capita (in constant 2015 USD) exceeded USD 5,000 in 1983, surpassed USD 10,000 in 1991, and reached USD 34,121 in 2023.

China declared its policy of reform and opening-up in 1978, becoming the first country in the world to initiate an economic system transition, and it is regarded as a successful case of gradual transition (Woo, 1999). At the start of its transition in 1978, China's real GDP per capita (in constant 2015 USD) was merely USD 381, but by 2023, it had surged approximately 32 times to reach USD 12,174.

Vietnam also began its gradual economic system transition from a centrally planned economy to a market economy with the adoption of the "Doi Moi" policy at the 6th National Congress of the Communist Party in December 1986. However, Vietnam's real GDP per capita (in constant 2015 USD) increased from USD 598.9 in 1986, when the opening and reform policies began, to USD 3,817.2 in 2023, representing a sixfold increase — showing a significant gap in economic development compared to South Korea and China. As Vietnam aims to become a high-income country by 2045, referencing the growth patterns of South Korea and China and calculating the investment required to achieve such growth is crucial for securing future investment funds and selecting key investment sectors.

Although many studies have examined Vietnam's economic outlook (Tran *et al.*, 2020; OECD, 2023; World Bank, 2024b) and analyzed its industrial structure using input-output tables (Kwon, 1999; Pham *et al.*, 2007; Trinh *et al.*, 2012; McCaig and Pavcnik, 2013; Cao and Kang, 2019), no research has applied input-output analysis to Vietnam's economic growth forecasts. Additionally, no studies have explored the required investment in specific industrial sectors to achieve targeted economic growth.

This study estimates the required investment funds using an exogenous input-output analysis. By utilizing Vietnam's input-output tables published by the OECD (2025), the estimation assumes that the additional increase in GDP is driven by the value-added effects generated through investment. Based on this assumption, the necessary investment amount is calculated.

Specifically, this study first examines Vietnam's current income level (as of 2023, based on GDP per capita) and reviews the average annual growth rates (in terms of GDP) of South Korea and China at similar income levels. Using these growth rates, the study projects Vietnam's income level over the next 15 years (2024-2038). Subsequently, the study estimates the increase in national income for Vietnam under two scenarios: one in which Vietnam grows at South Korea's growth rate (Scenario 1) and another in which it grows at China's growth rate (Scenario 2). Based on these scenarios, the required investment funds to achieve these income increases are calculated. Using the input-output analysis, the study specifically estimates the necessary investment amounts if the required value-added (national income growth) is to be generated solely through investments in social overhead capital (SOC) or solely through investments in the electronics sector.

The reasons for assuming investment solely in SOC or the electronics sector are as follows. Vietnam's investment in SOC plays a crucial role in its economic growth and has a broad impact on both the manufacturing and service sectors. It also significantly influences the strengthening of supply chains and the increase in trade (Hong *et al.*, 2017; Nguyen and Trinh, 2018; Baum, 2020; Nguyen and Nguyen, 2021). However, Vietnam's current infrastructure is severely inadequate to support its economic growth (Pham, 2022). In particular, green infrastructure and digital transformation are critical for achieving sustainable growth (World Bank, 2019). As a result, infrastructure development has become an important factor in Vietnam's ongoing economic growth (Pham, 2020; Lang, 2022).

Additionally, amid the U.S.-China trade war, many electronics and semiconductor manufacturers have been relocating their supply chains from China to Vietnam. Global companies such as Intel and Samsung have substantially expanded their investments in the country, which has contributed to a sharp rise in Vietnam's electronics exports — from 47th place globally in 2001 to 10th place in 2020 (Leung, 2022; Foster, 2024; Ghosh, 2024; KPMG, 2024). As a result, Vietnam has emerged as an important hub in the electronics and semiconductor industries, and this growth momentum is expected to continue in the coming years.

The analysis results can be summarized as follows. If Vietnam achieves high growth similar to that of South Korea (Scenario 1) or China (Scenario 2), its real GDP per capita (in constant 2015 USD) could reach USD 11,326 and USD 11,169, respectively, by 2038. To achieve such high growth through investments solely in SOC or the electronics sector, it is estimated that, based on South Korea's growth rate (Scenario 1), a total of USD 2.31 trillion (or USD 153.67 billion annually) would be required for SOC investment from 2024 to 2038, while based on China's growth rate (Scenario 2), a total of USD 1.96 trillion (or USD 130.47 billion annually) would be needed. If investments are made solely in the electronics sector, a total of USD 3.39 trillion (or USD 226.18 billion annually) would be required under Scenario 1, and USD 2.88 trillion (or USD 192.03 billion annually) under Scenario 2.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 describes the data and analytical framework. Section 4 outlines the scenarios for Vietnam's economic growth, while Section 5 quantifies the investment required to achieve these growth paths. Finally, Section 6 concludes with key findings and policy implications.

2. LITERATURE REVIEW

There are extensive studies on Vietnam's economic outlook (Tran *et al.*, 2020; OECD, 2023; World Bank, 2024b). Tran *et al.* (2020) argue that Vietnam's growth trajectory should be guided by the experiences of Malaysia, South Korea, and China. Their study projects Vietnam's economic growth through 2045 under four scenarios: maintaining its current growth rate (as of 2018); following Malaysia's rate (2021-2045: 7-8% per year); following South Korea's rate (2021-2025: 7-8%; 2025-2045: 10% per year); and following China's rate (2021-2045: 10% per year). Although maintaining the current growth rate yields the lowest level of economic expansion among the scenarios, Vietnam's per capita income still reaches approximately USD 25,000 (PPP, 2011 U.S. dollars) by 2045. Under the scenario in which Vietnam follows China's growth trajectory, the study projects that its per capita income would rise to about USD 70,000 (PPP, 2011 U.S. dollars) by 2045. However, the growth rates for each scenario are determined somewhat arbitrarily, drawing on the historical experiences of other countries rather than applying the actual growth rates observed when those countries were at a development stage comparable to Vietnam's current level. Consequently, the projections likely deviate considerably from realistic outcomes and may be regarded as overestimated.

The OECD (2023a) argues that although Vietnam has achieved remarkable economic progress over the past few decades, further structural reforms are necessary. In particular, the report emphasizes the need to reduce state intervention in network industries such as telecommunications, ensure a level playing field for all businesses, and deepen trade integration to strengthen supply chains. It also underscores the importance of enhancing workers' skills through vocational training and adult education. Since these reforms require substantial financial resources, the report further highlights the necessity of broadening the tax base to strengthen government revenues.

World Bank (2024b) states that Vietnam must maintain an average annual growth rate of around 6% over the next two decades to attain high-income status by 2045. Achieving this target depends on the country's ability to move up the value chain by advancing into higher value-added manufacturing and services through sustained investments in technology, skills, and innovation. Moreover, Vietnam will need to manage this transformation amid heightened global uncertainty and profound structural shifts in the international trading system.

Most of these studies, however, are confined to one-dimensional analyses based on statistical data and rely primarily on aggregate indicators that capture only the macroeconomic level of production activity. As a result, they fail to clearly identify the structural interrelationships among different industrial sectors.

By contrast, input-output analysis can identify the direct and indirect effects that changes in the demand for one industry have on the demand for all other related industries. Since 1989, the General Statistics Office (GSO) of Vietnam has intermittently published input-output tables, and international organizations such as the OECD and Asian Development Bank (ADB) have also produced input-output tables for Vietnam. Consequently, research employing these tables emerged in the late 1990s and has remained active to the present. Notable studies include Kwon (1999), Pham *et al.* (2007), Trinh *et al.* (2012), McCaig and Pavcnik (2013), Ha and Trinh (2018), and Cao and Kang (2019).

Kwon (1999), using the 1989 and 1995 input-output tables, shows that Vietnam's manufacturing base was relatively weak, which reduced industrial linkage effects and underscores the urgent need to strengthen the country's industrial foundation. Pham *et al.* (2007) analyze the 1989, 1996, and 2000 input-output tables and argue that integration into the international market is inevitable, while domestic final demand — namely, consumption, investment, and exports — plays a crucial role in economic development. Trinh *et al.* (2012) employ the 2000 and 2007 input-output tables to examine structural changes in Vietnam's economy. Their results indicate that, although the share of intermediate inputs in total inputs increased during this period, total factor productivity declined.

McCaig and Pavcnik (2013) analyze the relationship between Vietnam's economic development and industrial structural changes from 1990 to 2008. Their study shows that Vietnam continues to exhibit substantial productivity gaps across industries, and that during the 1990s and 2000s, a large number of workers moved from low-productivity agriculture to higher-productivity sectors, contributing to overall productivity growth. However, despite extensive economic reforms and the accompanying labor reallocation across sectors, significant productivity disparities persist both between and within sectors. The study further argues that changes in trade policies, the expansion of employment in foreign-owned firms, and the declining role of state-owned enterprises have significantly influenced the employment structure within the manufacturing sector.

Ha and Trinh (2018) analyze Vietnam's industrial structure for 2012 and 2016. Their study emphasizes that agriculture, forestry, and fisheries sectors generate the largest ripple effects on production, suggesting that capital investment — particularly in high-quality human capital — and policy support for sustainable development in these sectors are essential. By contrast, the service sector exhibits relatively weak ripple effects on production.

Cao and Kang (2019) analyze the economic development processes of China, Vietnam, and Cambodia using input-output tables for each country. The study shows that China's secondary industry exhibits substantially higher production inducement coefficients and effects, as well as value-added inducement coefficients and effects, compared with those of Vietnam and Cambodia. Moreover, the industrial structure of China's secondary sector has shifted from light industry toward high-tech and heavy industries, whereas Vietnam remains concentrated in light industry, reflecting relatively underdeveloped industrial sectors.

In summary, although numerous studies have examined Vietnam's economic outlook and others have analyzed its industrial structure using input-output tables, no research has yet employed input-output analysis to forecast Vietnam's economic growth. Moreover, there is a lack of studies quantifying the amount of investment required to achieve the targeted level of economic growth when focusing on specific industrial sectors.

This study seeks to address the limitations of previous research by estimating the amount of investment required within a model-based framework. Specifically, it assumes that Vietnam's future economic growth will follow the growth trajectories of South Korea or China during periods when their income levels were comparable to Vietnam's current stage of development. Building on this assumption, the study estimates the investment needed to achieve such growth and provides insights into the formulation of fundamental policy directions for mobilizing future investment resources, thereby distinguishing itself from previous studies.

3. DATA AND METHODOLOGY

This study first examines Vietnam's current income level (as of 2023) and then develops growth rate scenarios based on the economic growth rates of South Korea and China when their income levels were similar to Vietnam's. Using these scenarios, the study forecasts Vietnam's future economic growth.

Next, from the perspective of input-output analysis, the study measures GDP increase for each scenario and calculates the required investment funds for economic growth by

Table 1 Detailed Industries in the SOC and Electronics Sectors

Investment Field	Industry (ISIC Rev.4)	Investment Field	Industry (ISIC Rev.4)
SOC	◆ Electricity, gas, steam and air conditioning supply (35) ◆ Water supply; sewerage, waste management and remediation activities (36, 37, 38, 39) ◆ Construction (41, 42, 43) ◆ Land transport and transport via pipelines (49) ◆ Water transport (50) ◆ Air transport (51) ◆ Warehousing and support activities for transportation (52) ◆ Telecommunications (61)	Electronics	◆ Computer, electronic and optical equipment (26) ◆ Electrical equipment (27)

Notes: The industries listed in the table are selected from the 50 industries in the OECD (2025) input-output tables (2025 edition), specifically those that fall under the SOC or electronics sectors.
Source: OECD (2025).

applying the analysis results of two cases: investing solely in the SOC sector and investing solely in the electronics sector. The composition of the SOC and electronics sectors is shown in Table 1.

SOC consists of four categories defined according to the OECD input-output industry classification, which is aligned with International Standard Industrial Classification (ISIC) Rev.4: construction; energy and utility services, including electricity, gas, water, and waste management; transportation and logistics across land, water, air, and warehousing; and digital infrastructure represented by telecommunications. This classification covers both traditional physical and modern digital infrastructure and aligns with international frameworks (ADB, 2017; IMF, 2022; OECD, 2023b). The electronics sector comprises computer, electronic, and optical products and electrical equipment, corresponding to ISIC Rev.4 divisions 26 and 27.

Data on GDP per capita, total GDP, and growth rates for Vietnam, South Korea, and China are obtained from the World Bank's World Development Indicators (WDI) database.

Regarding input-output tables, the GSO of Vietnam has released a total of six input-output tables since 1989, covering the years 1996, 2000, 2007, 2012, and 2016. Although the input-output table for 2020 has been prepared, it has not been officially published as a statistical report. In addition, the OECD (2025) publishes Vietnam's input-output tables, which are in a non-competitive import type format, distinguishing between domestic and imported goods. The OECD input-output tables provide a time series from 1995 to 2022 and cover 80 countries/regions, including OECD member countries. They are classified into 50 industries according to the ISIC Rev.4. For these reasons, this study utilizes the 2022 input-output table for Vietnam from the OECD (2025).

The research methodology is explained as follows. First, the study begins by reviewing data on Vietnam's income level (based on GDP per capita). Next, it identifies the growth rates (based on GDP growth rates) of South Korea and China during periods when their economies were at a similar level to Vietnam's and separates these into distinct scenarios. The analysis is then performed by applying the two scenarios.

Subsequently, growth projections for Vietnam are carried out under these two scenarios, using Equation (1).

$$Y_{jt} = Y_{jt-1} \times \left(1 + g_j\right),\ j = \text{Korea or China}. \tag{1}$$

Y represents Vietnam's real GDP, t denotes the time period, and g represents the growth rate. The subscript j indicates country, South Korea or China.

After forecasting Vietnam's growth, the investment funds required to achieve the growth rates that are estimated using input-output analysis. Specifically, the approach involves estimating the total income increase and then measuring the necessary investments in the SOC or electronics sector to generate the corresponding value-added. First, the GDP increase amount for each year is calculated using Equation (2), where ΔY represents the increase in GDP.

$$\Delta Y_{jt} = Y_{jt} - Y_{jt-1}. \tag{2}$$

Next, the study estimates the required investment amounts for economic growth by applying Vietnam's 2022 input-output table. This study assumes that the increase in GDP is achieved through the value-added generated by investments. It further assumes that investments are solely concentrated either in the SOC sector or the electronics sector. The SOC and electronics sectors are each composed by integrating the relevant sub-industries from the OECD (2025) input-output table (see Table 1), and the analysis is conducted using the exogenous method in input-output analysis.

Input-output analysis is a research method that quantitatively examines the interdependencies between industries within a national economy using input-output tables. It can be categorized into endogenous and exogenous models. In an endogenous model, the industries receiving investment are not externally given but are included within the endogenous sector of intermediate inputs and distribution structures. The exogenous model, on the other hand, separates industries that are part of the endogenous sector as exogenous variables, allowing for an analysis of the independent effects of those industries on the endogenous sectors of other industries. This process of isolating specific industries to examine their impact on the endogenous economic sectors is called exogenization. In other words, by exogenizing the target (or specific) industries, the model analyzes how changes in the output of those industries create demand-side ripple effects on other industries that supply the necessary intermediate goods.

Despite these analytical advantages, input-output analysis is inherently static, as it assumes fixed production technologies and constant input-output coefficients. As a result, it cannot explicitly capture technological change, shifts in demand structures, or other dynamic adjustments over time. Accordingly, the results of this study should be interpreted as conditional on Vietnam's current industrial and technological structure.

In a non-competitive import type input-output table, let A represent the matrix of domestic input coefficients, X the vector of total output, Y the vector of final demand, and I the identity matrix. Since the direct and indirect demand for products must match the total output, the following relationship holds:

$$X = (I - A)^{-1}Y. \tag{3}$$

The term $(I - A)^{-1}$ on the right-hand side of Equation (3) is called the production inducement coefficient matrix (or the Leontief inverse matrix). The production inducement coefficient represents the direct and indirect ripple effects on the output of each industry when one unit of final demand is given.

Thus, the production inducement effect is derived as $\Delta X = (I - A)^{-1}\Delta X_h$. In other words, by multiplying the production inducement coefficient by the total investment fund for a specific industry, ΔX_h, the production inducement amount, ΔX, can be calculated.

The value-added inducement effect is derived as $\Delta V = v(I - A)^{-1}\Delta X_h$, where $v(I - A)^{-1}$ is called the value-added inducement coefficient, and v represents the diagonal matrix of value-added rates. The value-added coefficient is calculated by dividing total value-added by total input. By multiplying the value-added inducement coefficient by the total investment fund for a specific industry, ΔX_h, the value-added inducement amount, ΔV, can be obtained. Therefore, in this study, the increase in value-added (GDP) is defined as the value obtained by multiplying the value-added inducement coefficient by the investment amount.

In the analysis above, when examining the ripple effects of a specific industry, this industry is already endogenous and, therefore, not considered an independent sector. In other words, it follows the endogenous model.

The exogenous model exogenizes the target industry and analyzes how independent changes in its output generate demand-side ripple effects on other industries. Therefore, if the target industry h is exogenized and the relationship from Equation (3) is derived, the following relationship in Equation (4) holds:

$$X^e = (I - A^e)^{-1}(A_h X_h + Y). \tag{4}$$

A^e is the matrix of domestic input coefficients with the target industry sector removed, A_h is the matrix of domestic input coefficients for the target industry sector, X_h is the total output vector for the target industry sector, and X^e is the total output vector excluding the target industry sector.

The production inducement coefficient represents the direct and indirect production ripple effects triggered by a one-unit increase in the final demand of the target industry. In mathematical terms, this is expressed as $(1 - A^e)^{-1}A_h + 1$. By adding the total output of the target industry (X_h), the total production inducement effect can be calculated as $\Delta X = [(I - A^e)^{-1}A_h + 1]\Delta X_h$. Here, the first term represents the indirect production inducement effect, and the second term represents the direct production inducement effect.

The value-added inducement coefficient represents the direct and indirect value-added ripple effects triggered by a one-unit increase in the final demand of the target industry. It is expressed as $\hat{v}(I - A^e)^{-1}A_h + v_h$, where $\hat{v}(I - A^e)^{-1}A_h$ is called the indirect value-added inducement coefficient. $\hat{v}$ is the diagonal matrix of value-added rates with the target industry sector removed. v_h is the value-added coefficient matrix of the target industry sector and is referred to as the direct value-added inducement coefficient. Therefore, the total value-added inducement effect is $\Delta V = \hat{v}(I - A^e)^{-1}A_h\Delta X_h + v_h\Delta X_h$. The first term represents the indirect value-added inducement effect, and the second term represents the direct value-added inducement effect.

Therefore, this study aims to calculate the required investment amounts for Vietnam when focusing investments in either the SOC sector or the electronics sector, using the value-added inducement coefficient and value-added inducement effect. The specific steps are as follows.

As shown in Equation (5), the increase in GDP is defined as the product of the investment and the value-added inducement coefficient. Here, I_{jt} represents the investment, and $\hat{v}(I - A^e)^{-1}A_h + v_h$ is the value-added inducement coefficient.

$$\Delta Y_{jt} = I_{jt} \times [\hat{v}(I - A^e)^{-1}A_h + v_h]. \tag{5}$$

Rearranging Equation (5) gives us Equation (6). The investment is the GDP increase divided by the value-added inducement coefficient:

$$I_{jt} = \Delta Y_{jt}/(\hat{v}(I - A^e)^{-1}A_h + v_h). \tag{6}$$

Through Equation (6), the required investment amounts can be calculated by applying the growth rate scenarios for South Korea and China, respectively.

4. ECONOMIC GROWTH SCENARIOS

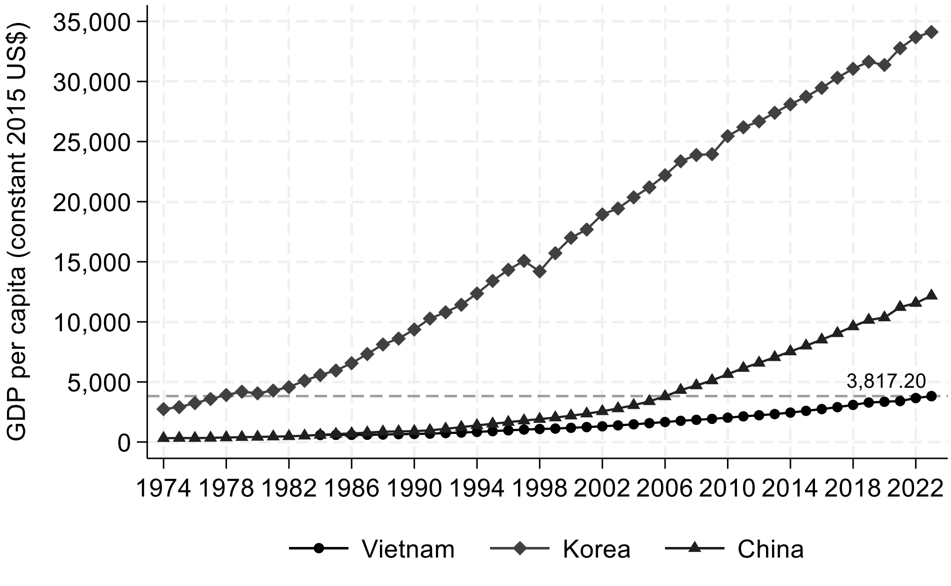
To forecast Vietnam's economic growth, the first step is to assess the current (as of 2023) economic level of Vietnam. Next, it is necessary to identify the periods when South Korea and China had income levels comparable to Vietnam's present income level. Based on this assessment, this study analyzes the growth patterns of South Korea and China during the periods when their income levels were similar to Vietnam's current level and applies them to predict Vietnam's future income growth.

Figure 1 examines the trends in real GDP per capita (in 2015 USD) for Vietnam, South Korea, and China. In 2023, Vietnam's real GDP per capita stands at USD 3,817.20. South Korea's real GDP per capita in 1978 (USD 3,913.83) and China's in 2006 (USD 3,800.77) exhibit similar income levels to Vietnam's in 2023.

Therefore, based on the long-term income growth rates of South Korea and China at income levels similar to that of Vietnam, this study examines Vietnam's potential income growth. Table 2 presents the average real GDP growth rates for South Korea and China over 15 years, starting from the point where their GDP per capita was similar to Vietnam's 2023 level. South Korea's average annual GDP growth rate from 1978 to 1992 was 8.82%, while China's from 2006 to 2020 was 7.99%. Accordingly, this study explores Vietnam's income growth under two scenarios: one following South Korea's growth pattern and the other following China's. Scenario 1 is based on South Korea's average growth rate, and Scenario 2 is based on China's average growth rate.

Accordingly, assuming that Vietnam will experience significant growth over the next 15 years, similar to South Korea or China, and applying the above scenarios, the projected GDP per capita and total GDP for Vietnam from 2024 to 2038 are shown in Table 3.

Figure 1 Real GDP per Capita of Vietnam, South Korea, and China



Source: World Bank (2024a).

Table 2 Scenario Settings for Vietnam's Income Growth Forecast

	Scenario 1	Scenario 2
Growth Rate	8.82%	7.99%
Period	1978-1992 (South Korea's average annual growth rate)	2006-2020 (China's average annual growth rate)

Note: The average annual growth rates are calculated using real GDP.
Source: Author's calculations.

Table 3 Vietnam's Real GDP per Capita and Total GDP Projections by Scenario

Year	Scenario 1		Scenario 2	
	GDP per capita (USD)	Total GDP (Billion USD)	GDP per capita (USD)	Total GDP (Billion USD)
2023	3,817.20	377.36	3,817.20	377.36
2024	4,104.25	410.65	4,100.44	407.52
2025	4,412.89	446.87	4,404.69	440.08
2026	4,744.74	486.28	4,731.52	475.24
2027	5,101.55	529.17	5,082.60	513.21
2028	5,485.18	575.84	5,459.72	554.22
2029	5,897.67	626.63	5,864.84	598.50
2030	6,341.17	681.90	6,300.01	646.32
2031	6,818.03	742.05	6,767.47	697.96
2032	7,330.75	807.49	7,269.61	753.72
2033	7,882.02	878.72	7,809.02	813.95
2034	8,474.75	956.22	8,388.45	878.98
2035	9,112.05	1,040.56	9,010.87	949.21
2036	9,797.27	1,132.33	9,679.48	1,025.05
2037	10,534.03	1,232.20	10,397.69	1,106.96
2038	11,326.19	1,340.89	11,169.20	1,195.40

Notes: The GDP per capita is calculated by applying the average annual growth rates of GDP per capita for South Korea and China, respectively. South Korea's average annual GDP per capita growth rate from 1978 to 1992 is 7.52% (Scenario 1), and China's average annual GDP per capita growth rate from 2006 to 2020 is 7.42% (Scenario 2).
Source: Author's calculations.

Table 3 presents the projected income growth for Vietnam from 2024 to 2038 based on the application of Scenarios 1 and 2. Scenario 1 assumes that Vietnam's income will grow at a rate similar to South Korea's growth rate. Under this scenario, Vietnam's total GDP is expected to surpass USD 500 billion in 2027, exceed USD 1 trillion in 2035, and reach USD 1.34 trillion by 2038. Scenario 2 assumes that Vietnam's income will grow at a rate similar to China's growth rate. In this case, Vietnam's total GDP is projected to surpass USD 500 billion in 2027, exceed USD 1 trillion in 2036, and reach USD 1.20 trillion by 2038.

In addition, the results from applying the average annual growth rates of GDP per capita for South Korea and China show similar projections. Under Scenario 1, Vietnam's real GDP per capita is expected to surpass USD 5,000 in 2027, exceed USD 6,000 in 2030, and reach USD 10,000 by 2037. Scenario 2 shows similar results to Scenario 1. Therefore, it is evident that securing the necessary investment funds is crucial to laying the foundation for Vietnam's income growth to follow the growth patterns of South Korea and China.

5. REQUIRED INVESTMENT FOR VIETNAM'S ECONOMIC GROWTH

The input-output analysis method calculates the required investment amount by assuming that Vietnam's additional GDP growth is achieved through investment. For instance, if Vietnam's GDP is expected to grow by USD 1 billion next year as a result of investment, this approach estimates the necessary amount of investment. In this example, if the value-added inducement coefficient of the investment is assumed to be 0.5, then an investment of USD 2 billion would be required to achieve a USD 1 billion increase in GDP.

To apply input-output analysis, two key data are required: the projected annual GDP increase and the value-added inducement coefficient of investment. Using the previously calculated scenario-based GDP projections for Vietnam (see Table 3), the projected annual GDP increases are calculated and shown in Table 4.

The next step involves calculating the value-added inducement coefficient for the specific (target) industries using exogenous input-output analysis to determine the required investment funds. In this study, the SOC sector and the electronics sector are analyzed separately. Tables 5 and 6 present the results of the exogenous input-output analysis using Vietnam's 2022 input-output table, showing the indirect and direct value-added inducement coefficients for the SOC sector, respectively.

Table 4 Real GDP Increase for Vietnam by Scenario (Billion USD)

Year	Scenario 1	Scenario 2
2023	–	–
2024	33.28	30.15
2025	36.22	32.56
2026	39.41	35.16
2027	42.89	37.97
2028	46.67	41.01
2029	50.79	44.28
2030	55.27	47.82
2031	60.14	51.64
2032	65.45	55.77
2033	71.22	60.22
2034	77.50	65.03
2035	84.34	70.23
2036	91.78	75.84
2037	99.87	81.90
2038	108.68	88.45

Note: Calculations by the author based on the GDP projections in Table 3.

Table 5 Indirect Value-Added Inducement Coefficients for Vietnam's SOC Sector in 2022

Investment Field	Coefficient
Agriculture and hunting	0.005
Forestry and logging	0.001
Fishing and aquaculture	0.001
Mining of coal and lignite	0.007
Extraction of crude petroleum and natural gas	0.001
Mining of metal ores	0.073
Other mining and quarrying	0.001
Mining support service activities	0.002
Food products, beverages and tobacco	0.002
Textiles, textile products, leather and footwear	0.001
Wood and products of wood and cork	0.000
Paper products and printing	0.001
Coke and refined petroleum products	0.006
Chemical and chemical products	0.003
Pharmaceuticals, medicinal chemical and botanical products	0.000
Rubber and plastics products	0.003
Other non-metallic mineral products	0.021
Manufacture of basic iron and steel	0.003
Manufacture of basic precious and other non-ferrous metals	0.001
Fabricated metal products	0.004
Computer, electronic and optical equipment	0.008
Electrical equipment	0.003
Machinery and equipment, nec	0.000
Motor vehicles, trailers and semi-trailers	0.000
Building of ships and boats	0.000
Manufacture of other transport equipment	0.000
Manufacturing nec; repair and installation of machinery and equipment	0.006
Wholesale and retail trade; repair of motor vehicles	0.016
Postal and courier activities	0.000
Accommodation and food service activities	0.004
Publishing, audiovisual and broadcasting activities	0.001
IT and other information services	0.003
Financial and insurance activities	0.010
Real estate activities	0.003
Professional, scientific and technical activities	0.007
Administrative and support services	0.003
Public administration and defence; compulsory social security	0.000
Education	0.001
Human health and social work activities	0.000
Arts, entertainment and recreation	0.000
Other service activities	0.001
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.000
Indirect Value-Added Inducement Coefficient	**0.203**

Source: Author's calculations.

Table 6 Direct Value-Added Coefficients for Vietnam's SOC Sector in 2022

Sector	Value Added (Million USD)	Total Input (Million USD)
Electricity, gas, steam and air conditioning supply	14,027.5	56,364.1
Water supply; sewerage, waste management and remediation activities	2,012.2	6,343.6
Construction	21,256.6	111,467.9
Land transport and transport via pipelines	4,900.8	19,267.2
Water transport	1,144.9	7,599.2
Air transport	1,314.4	10,521.9
Warehousing and support activities for transportation	3,043.7	11,649.0
Telecommunications	3,491.8	14,809.5
Total	51,191.9	238,022.4
Direct Value-Added Coefficient	**0.215**	

Source: Author's calculations.

As shown in Table 5, the indirect value-added inducement coefficient indicates that for every USD 1 invested in the SOC sector, USD 0.203 of value-added is generated in other industries, excluding the SOC sector itself. In Table 6, the direct value-added coefficient is calculated as the value-added divided by the total input, meaning that USD 0.215 of every USD 1 invested in the SOC sector contributes directly to value-added in the SOC sector. In summary, for every USD 1 invested in the SOC sector, USD 0.203 of value-added is generated in other industries, and USD 0.215 is generated within the SOC sector itself, leading to a total value-added amount of USD 0.418.

Tables 7 and 8 present the results of the analysis of the indirect and direct value-added inducement coefficients for the electronics sector. As shown in Table 7, the indirect value-added inducement coefficient indicates that for every USD 1 invested in the electronics sector, USD 0.052 of value-added is generated in other industries, excluding the electronics sector itself. In Table 8, the direct value-added coefficient is calculated as the value-added divided by the total input, meaning that USD 0.232 of every USD 1 invested in the electronics sector contributes directly to value-added in the electronics sector.

In summary, for every USD 1 invested in the electronics sector, USD 0.052 of value-added is generated in other industries, and USD 0.232 is generated within the electronics sector itself, resulting in a total value-added amount of USD 0.284.

Table 7 Indirect Value-Added Inducement Coefficients for Vietnam's Electronics Sector in 2022

Investment Field	Coefficient
Agriculture and hunting	0.002
Forestry and logging	0.000
Fishing and aquaculture	0.000
Mining of coal and lignite	0.000
Extraction of crude petroleum and natural gas	0.000
Mining of metal ores	0.008

Other mining and quarrying	0.000
Mining support service activities	0.000
Food products, beverages and tobacco	0.001
Textiles, textile products, leather and footwear	0.000
Wood and products of wood and cork	0.000
Paper products and printing	0.001
Coke and refined petroleum products	0.001
Chemical and chemical products	0.001
Pharmaceuticals, medicinal chemical and botanical products	0.000
Rubber and plastics products	0.002
Other non-metallic mineral products	0.001
Manufacture of basic iron and steel	0.000
Manufacture of basic precious and other non-ferrous metals	0.000
Fabricated metal products	0.002
Machinery and equipment, nec	0.000
Motor vehicles, trailers and semi-trailers	0.000
Building of ships and boats	0.000
Manufacture of other transport equipment	0.000
Manufacturing nec; repair and installation of machinery and equipment	0.001
Electricity, gas, steam and air conditioning supply	0.003
Water supply; sewerage, waste management and remediation activities	0.000
Construction	0.000
Wholesale and retail trade; repair of motor vehicles	0.015
Land transport and transport via pipelines	0.002
Water transport	0.001
Air transport	0.000
Warehousing and support activities for transportation	0.001
Postal and courier activities	0.000
Accommodation and food service activities	0.001
Publishing, audiovisual and broadcasting activities	0.000
Telecommunications	0.000
IT and other information services	0.000
Financial and insurance activities	0.003
Real estate activities	0.001
Professional, scientific and technical activities	0.002
Administrative and support services	0.000
Public administration and defence; compulsory social security	0.000
Education	0.000
Human health and social work activities	0.000
Arts, entertainment and recreation	0.000
Other service activities	0.000
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.000
Indirect Value-Added Inducement Coefficient	**0.052**

Source: Author's calculations.

Table 8 Direct Value-Added Coefficients for Vietnam's Electronics Sector in 2022

Sector	Value Added (Million USD)	Total Input (Million USD)
Computer, electronic and optical equipment	52,123.8	220,519.2
Electrical equipment	5,161.7	26,475.4
Total	57,285.5	246,994.6
Direct Value-Added Coefficient	**0.232**	

Source: Author's calculations.

Table 9 Estimated Required SOC Investment to Achieve GDP Growth by Scenario

(unit: Billion USD)

		Scenario 1	Scenario 2
Cumulative GDP Increase (2024-2038)		963.52	818.04
Required SOC Investment	Cumulative SOC Investment	2,305.07	1,957.03
	Average Annual Investment	153.67	130.47

Source: Author's calculations.

Table 10 Estimated Required Electronics Sector Investment to Achieve GDP Growth by Scenario

(unit: Billion USD)

		Scenario 1	Scenario 2
Cumulative GDP Increase (2024-2038)		963.52	818.04
Required Electronics Sector Investment	Cumulative Electronics Investment	3,392.68	2,880.42
	Average Annual Investment	226.18	192.03

Source: Author's calculations.

Table 9 presents the estimated SOC investment required to achieve the GDP growth targets for each scenario, based on the results of the input-output analysis. Over the 2024-2038 period, the cumulative GDP increase is projected to be USD 963.5 billion for Scenario 1 and USD 818.0 billion for Scenario 2.

To achieve these GDP increases, the required SOC investment is estimated to be USD 2.31 trillion (an average of USD 153.67 billion annually) for Scenario 1, and USD 1.96 trillion (an average of USD 130.47 billion annually) for Scenario 2.

Table 10 presents the estimated investment required for the electronics sector to achieve the GDP growth targets for each scenario, based on the results of the input-output analysis. To achieve the GDP growth under each scenario, the required investment in the electronics sector is estimated to be USD 3.39 trillion (an average of USD 226.18 billion annually) for Scenario 1, and USD 2.88 trillion (an average of USD 192.03 billion annually) for Scenario 2.

In summary, the required investment in the electronics sector is higher than that in the SOC sector. This is because the direct and indirect value-added inducement coefficients for electronics sector remain significantly lower than those for the SOC sector. This indicates that Vietnam's electronics sector has limited linkages with other sectors and lacks sufficient capacity for generating value-added on its own. Moreover, even the investment required for the SOC sector is substantial. While the SOC sector has higher direct and indirect value-added inducement coefficients compared to the electronics sector, it also exhibits weak linkages with other industries and limited capacity for generating value-added independently within the sector itself.

Figure 2 Trends in Value-Added Inducement Coefficients

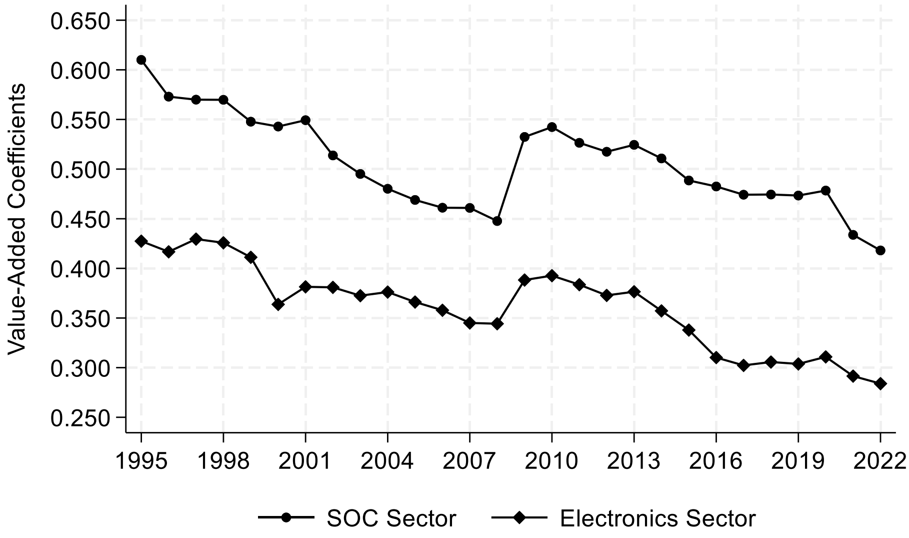


Figure 2 further plots the time trends of the value-added inducement coefficients for Vietnam's SOC and electronics sectors over the period 1995-2022, computed using the same exogenous input-output analysis framework. Despite Vietnam's recent rapid economic growth amid the U.S.-China decoupling and global supply chain reorganization, the value-added inducement coefficients of both sectors exhibit a clear declining trend. This indicates that, although output and investment have expanded, their capacity to generate domestic value-added — both directly and through inter-industry linkages — has weakened.

This pattern reflects Vietnam's deepening integration into global production networks in an assembly-oriented form. While many multinational firms have relocated production to Vietnam, especially in the electronics sector, production remains concentrated in low value-added assembly activities, with core components, intermediate inputs, and key technologies largely imported. As a result, technological spillovers to domestic firms remain limited, and a substantial share of value-added continues to be captured by foreign firms rather than retained within the domestic economy.

6. CONCLUSION

To achieve its goal of becoming a high-income country by 2045, Vietnam needs sustained high economic growth over the long term. This requires investments in sectors capable of driving such growth, along with effective capital mobilization.

This study estimates the investment required for Vietnam to achieve growth trajectories comparable to those of South Korea (1978-1992) and China (2006-2020), conditional on Vietnam's current industrial structure as captured in the 2022 input-output table. Using an exogenous input-output analysis, the study quantifies the scale of investment required (2024-2038) for Vietnam to achieve economic growth similar to that of South Korea and China.

The analysis results can be summarized as follows. First, if Vietnam, with its current (2023) real GDP per capita of USD 3,817, achieves high growth similar to South Korea (Scenario 1) or China (Scenario 2) over the next 15 years (2024-2038), the total real GDP is projected to reach USD 1.34 trillion under Scenario 1 and USD 1.20 trillion under Scenario 2 by 2038. Additionally, applying the average annual GDP per capita growth rates of South Korea and China, Vietnam's real GDP per capita is expected to exceed USD 10,000 by 2037 in both scenarios.

Second, this study estimates the scale of investment required for Vietnam to achieve high growth similar to South Korea and China, assuming investments are made solely in the SOC or electronics sectors. Based on South Korea's average annual growth rate (Scenario 1), an investment of USD 2.31 trillion (an annual average of USD 153.67 billion) is needed in the SOC sector from 2024 to 2038. Under China's average annual growth rate (Scenario 2), USD 1.96 trillion (an annual average of USD 130.47 billion) is required. If investments are made solely in the electronics sector, an investment of USD 3.39 trillion (an annual average of USD 226.18 billion) is needed under Scenario 1, while USD 2.88 trillion (an annual average of USD 192.03 billion) is required under Scenario 2.

The reason such large investment amounts are required compared to the projected GDP increase is that Vietnam's SOC and electronics sectors currently lack strong linkages with other industries and have limited capacity to generate value-added independently. This indicates that the overall development level of Vietnam's domestic industrial sectors is not high, and inter-industry supply chains are still in the early stages of formation. As a result, Vietnam relies heavily on imports to compensate for the insufficient domestic supply chains. In the long term, this dependency could negatively affect the development of domestic industrial competitiveness, hinder the formation of robust supply chains, and potentially impact economic security.

Therefore, Vietnam should actively pursue well-targeted policies that attract foreign direct investment and external financing to secure the necessary investment funds for achieving sustained high-growth trajectories similar to those of South Korea and China. At the same time, Vietnam must focus on enhancing the technological capabilities, productivity, and global competitiveness of domestic firms, while strengthening inter-industry linkages. This can be achieved through policy support for initiatives such as industrial cluster formation, supply chain integration, research and development collaboration, talent development, and digital transformation.

To translate these general policy directions into actionable strategies, more concrete policy priorities are required. First, Vietnam should prioritize technological upgrading in sectors that exhibit strong potential for domestic value-added creation, such as semiconductor testing and packaging, electronic components manufacturing, precision machinery, and digital infrastructure-related industries. Rather than remaining concentrated in final assembly, targeted industrial policies should promote upstream integration into higher value-added segments of the production chain. Second, to attract sustained foreign direct investment beyond short-term cost-driven relocation, institutional reforms are essential, including strengthening intellectual property protection, improving regulatory transparency, streamlining investment approval procedures, and enhancing contract enforcement. Third, the development of domestic supply chains should be supported through supplier development programs, fiscal incentives for local input sourcing, and public-private partnerships linking multinational enterprises with domestic small and medium-sized firms. Finally, large-scale investments in human capital — especially in engineering, digital skills, and applied research — are critical to ensure that technological upgrading and supply chain strengthening become self-reinforcing over the long run.

Finally, this study acknowledges the limitations of the input-output analysis, which is inherently based on the assumption of fixed input-output coefficients, and notes that, as these coefficients will evolve in practice due to technological advancements, industrial structure reforms, and income growth, the amount of investment required to achieve target income levels can be substantially reduced over time.

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