

China's FDI, ASEAN's Demographic Dividend and Economic Growth

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Abstract

The Association of Southeast Asian Nations (ASEAN) has evolved into the ASEAN Economic Community (AEC) with the aim of establishing a common market and production base, transforming ASEAN into a vibrant, competitive, and globally significant region. However, due to significant development disparities among its member countries and the relatively weak institutional foundation of ASEAN, whether ASEAN can achieve its original objectives remains uncertain. As ASEAN's largest trading partner, China has pledged to deepen China-ASEAN relations and provide more support, with China's Foreign Direct Investment (FDI) in ASEAN countries serving as an effective means. This study empirically examines the interplay between China's FDI, the demographic dividend, and economic growth in ASEAN based on panel data of China and ASEAN countries' FDI from 2005 to 2020. The empirical results demonstrate a significant positive impact of China's FDI on economic growth in the ten ASEAN countries, and these countries have benefited from the demographic dividend, as confirmed by robustness tests. Furthermore, in recent years, the influence of China's FDI on the economies of ASEAN countries has significantly diminished compared to the early 21st century. The findings of this study provide important policy implications for the long-term cooperation and investment activities between China and ASEAN, contributing to their practical significance.

Keywords

ASEAN; FDI; Demographic Dividend; Economic Growth.

1. Introduction

Over the past half-century, the Association of Southeast Asian Nations (ASEAN) has evolved into the ASEAN Economic Community (AEC) with the aim of establishing a unified market and production base, transforming ASEAN into a dynamic, competitive, and globally integrated region. The vision of creating an integrated market within the AEC facilitates the utilization of economies of scale through dispersed production and expands regional trade, thus enabling consumers to access cheaper and more diverse goods and services. With the establishment of the AEC in December 2015, ASEAN countries and China adopted the "China-ASEAN Strategic Partnership Vision 2030," establishing a new framework for cooperation and forging a closer community of shared destiny. The increased regional connectivity through China-ASEAN multinational corporations' regional production networks has not only facilitated China's outward Foreign Direct Investment (FDI) in ASEAN countries but also promoted regional economic integration.

Under the new development paradigm of dual circulation, domestic and international cooperation between China and ASEAN countries is expected to deepen on the existing foundation. During his inspection in Guangxi, General Secretary Xi Jinping emphasized the need for Guangxi to actively align with national strategic initiatives such as the development of the Yangtze River Economic Belt and the construction of the Guangdong-Hong Kong-Macao Greater Bay Area, integrate into the joint construction of the Belt and Road Initiative, vigorously develop the Western Land-Sea New Corridor, promote the coastal economy, enhance China-ASEAN open cooperation, establish a high-quality pilot free trade zone, and better leverage its unique geographical advantages for open and inclusive development.

It is worth noting that bilateral trade between China and ASEAN has shown an overall upward trend from 2013 to 2019. The total bilateral trade volume between China and ASEAN was \$443.6 billion in 2013, which increased to \$684.6 billion in 2019, more than five times higher. In 2020, ASEAN surpassed the European Union to become China's largest trading partner. As China has consistently been ASEAN's largest trading partner, the bilateral trade volume between China and ASEAN reached approximately \$5,539.2 billion in the first half of 2021, a year-on-year increase of 3.3%, accounting for around 14.5% of China's total foreign trade. Moreover, China's total foreign trade with countries along the Belt and Road Initiative has exceeded 60%. Additionally, ASEAN countries possess abundant population resources and a sufficient labor force, with the "demographic dividend" being regarded as a crucial source of rapid economic development in ASEAN in recent years. Currently, the population under the age of 35 in the region exceeds 380 million, accounting for 58% of the total population of ASEAN countries. The youthful population structure signifies significant potential. The abundant labor force in ASEAN countries has also attracted a portion of manufacturing industries relocating from China. Whether ASEAN will become the next "world's factory" is a thought-provoking question. The impact of China's FDI on the economic growth of ASEAN countries remains unclear, and it is yet to be explored whether the economic development and the foreign direct investment received by ASEAN countries are related to the demographic dividend. Given the diversity among ASEAN countries and the development gaps between them, as the largest trading partner, China has vowed to deepen China-ASEAN relations and provide more support, with China's FDI in ASEAN countries serving as an effective means.

This study aims to determine the effects of China's outward FDI and the demographic dividend on the economic growth of ASEAN countries. To achieve this, the study employs causal analysis using panel data covering the period from 2005 to 2020 for China and the ten ASEAN countries. This empirical investigation represents the first attempt to explore the causal relationship between China's FDI, the demographic dividend, and the economic growth of the ten ASEAN countries, providing important policy insights for the long-term cooperation and investment activities between China and ASEAN. The empirical findings of this study demonstrate a significant positive impact of China's FDI on the economic growth of the ten ASEAN countries. Additionally, the economic growth of these countries has benefited from the demographic dividend, a conclusion supported by robustness tests. The research results have important implications for strengthening specific cooperation between China and ASEAN and formulating policies to promote China's investment in ASEAN countries.

2. Literature Review

Foreign Direct Investment (FDI) refers to investments made by designated investors residing in one economy that have a sustained interest in another economy's enterprises, exerting a substantial influence on the control or management of those enterprises. Extensive literature has shown that foreign direct investment from abroad leads to changes in the domestic

economic landscape, with developing economies, including ASEAN countries, emerging as significant sources of FDI (Kumar & Chadha, 2009).

Research on whether FDI promotes economic growth has been analyzed at the firm, industry, national, and multinational levels. Most scholars believe that foreign direct investment has a positive impact on economic growth. Desai et al. (2005) argue that outward FDI can stimulate domestic investment and output through intra-firm trade, such as when home-country multinational corporations invest, export, and utilize home-country procurement to produce output within ASEAN. On the other hand, an increase in outward FDI by home-country multinational corporations may lead to output declines if domestic investment opportunities are relatively scarce (Stevens & Lipsey, 1992). Herzer (2010) found empirical evidence in the United States, demonstrating that advocates of FDI are both the cause and result of economic growth. Lee (2010) conducted an empirical study on Japan, indicating that outward FDI is a source of economic growth for the country. Concerning Latin American countries, Alvarado et al. (2017) found that FDI's overall impact on economic growth is not significant. When examining the economic development levels of individual Latin American countries, FDI has a negative impact on middle- and low-income countries and insignificant effects on middle- and high-income countries. Doku et al. (2017) studied 20 African countries, including Egypt and Morocco, using panel data from 2003 to 2012, and found that Chinese FDI has a significant positive impact on economic growth in African countries. Furthermore, Mohanty and Sethi (2019) discovered that FDI significantly enhances the economic growth of BRICS countries in the short and long term. However, these studies have not reached a consensus, and their scope is mainly limited to a national-level analysis.

Studies on ASEAN countries similarly indicate that FDI promotes economic growth. Xiao and Liu (2017) employed time series and spatial econometric methods to find that FDI has a significant positive impact on ASEAN's economic growth. However, the impact of foreign direct investment varies due to differences in each country's economic performance. Zhu and Sun (2019), using panel data models, found that investment efficiency in ASEAN countries does not have a significant influence on their economic growth in the current year, but it has a significant positive impact on economic growth in the previous year.

Regarding the theory and implications of the demographic dividend, many scholars define it as the "favorability" of population quantity and structural changes for economic development. Some scholars also consider the demographic dividend as the combined effect of changes in population age structure and improvements in population quality on economic development (Yang et al., 2017; Zhao et al., 2017). Numerous foreign scholars have extensively researched the demographic dividend. Mason and Lee (2006) argue that during the early stages of demographic transition, a decline in fertility rates leads to slow growth in the population of children, while the working-age population continues to increase. When the growth rate of the working-age population surpasses that of the dependent population, the released resources are primarily used for investing in the economy and increasing social welfare, resulting in a significant increase in per capita income, which is when the demographic dividend emerges.

Regarding the relationship between the demographic dividend and economic growth, most scholars believe that the demographic dividend has a positive impact on economic growth and acts as an important engine for economic development. Bloom et al. (2003) argue that a higher dependency ratio imposes a heavier social burden and lowers economic productivity, while a larger working-age population contributes to increased labor supply and savings, thus fostering faster economic growth. Zhong and Li (2010) verify the significant spatial spillover effects of the demographic dividend on economic development using spatial econometrics and generalized method of moments estimation. Lu and Cai (2014) find that the demographic dividend contributes to economic growth by promoting high investment and capital formation through abundant labor supply. Even without technological innovation and reforms, rapid

economic growth can be achieved. Some scholars consider the demographic dividend as a unique resource. Yang et al. (2017) argue that fundamentally, the demographic dividend is a time-limited resource that only occurs in developing countries during the period of demographic transition. If a country can fully utilize the advantages of the demographic dividend, it will stimulate economic development. Wang et al. (2022) conducted a qualitative study from the perspectives of both quantity and quality to explore the mechanisms and pathways through which the demographic dividend affects economic growth. They utilized panel data from 2001 to 2019 in 30 provinces to empirically analyze the impact. The findings reveal that the quantity dividend of the demographic dividend significantly drives overall economic growth, while the quality dividend has a positive but relatively weaker effect on both the overall economic size and economic quality.

In summary, although extensive research has been conducted on the influence of FDI and the demographic dividend on economic growth, previous studies have primarily focused on the impact of FDI in developed countries. Moreover, when examining the effects of Chinese FDI on ASEAN countries' economic growth, many domestic scholars have considered factors such as the level of openness, investment funds, bilateral trade, and financial development in conjunction with the impact of FDI, but they have paid less attention to factors such as the demographic dividend. Therefore, this study aims to investigate the interactive relationship between Chinese FDI, the demographic dividend, and economic development in ASEAN countries based on panel data from 2005 to 2020. The study aims to empirically verify whether this interaction can promote the ASEAN economic integration process. Additionally, specific policy recommendations are proposed for strategic cooperation between China and ASEAN to facilitate better economic development for both parties.

3. Theoretical Analysis and Research Hypotheses

3.1. Chinese FDI and ASEAN Economic Growth

Foreign direct investment (FDI) is a crucial factor in promoting economic growth for developing countries. FDI not only affects the scale of factor inputs and improves total factor productivity while reducing production costs in host countries, but it also brings about "crowding-in" and "crowding-out" effects on the capital stock of the host country. This can stimulate domestic investment in the host country, leading domestic investors to enhance the quality of their products and improve market competitiveness. Furthermore, FDI is influenced by the host country's own conditions, such as political stability, macroeconomic stability, educational systems, infrastructure development, and population resources. Overall, FDI brings not only capital inflows but also contributes to the improvement of management and technological levels in the host country, enhancing factor productivity and improving the employment environment. Additionally, FDI promotes exports and domestic consumption in the host country, playing a positive role in its economic development.

With the establishment of the China-ASEAN Free Trade Area, Chinese FDI in the ASEAN region has been growing continuously. According to the 2020-2021 ASEAN Investment Report released by the 24th ASEAN Investment Area Council Meeting, FDI from China has grown by 65% in the past decade. The average annual FDI inflows from China increased from USD 6.9 billion during 2011-2015 to USD 11.5 billion during 2016-2020, accounting for 7.9% of the total FDI inflows into ASEAN compared to 6.2% previously. ASEAN accounted for 5% of China's global investment in 2019, up from 4.5% in 2010. The proportion of China's investment flow to ASEAN increased from an average of 5.5% during 2009-2010 to an average of 9.0% during 2018-2019. In some member countries like Cambodia and Laos, China has been the largest source of FDI for several consecutive years.

According to statistics from the Ministry of Commerce of China, non-financial FDI from China to ASEAN reached USD 3.94 billion by April 2020, representing a year-on-year growth of 43.3%. This growth rate was more than three times higher than China's investment in the 53 countries along the Belt and Road Initiative during the same period. Chinese FDI in ASEAN countries covers 18 sectors, including agriculture, forestry, fishery, mining, manufacturing, leasing and business services, wholesale and retail trade, accommodation and food service activities, information and communication, finance and insurance activities, real estate activities, scientific and technological activities, health and social work, and education. Not only is the investment structure well-balanced, but the investment amount has also steadily increased. This is undoubtedly beneficial to the economic growth of ASEAN countries. Based on the analysis above, this study proposes the following research hypothesis:

H1: Chinese FDI has a positive effect on economic growth in ASEAN countries.

3.2. Demographic Dividend and ASEAN Economic Growth

Population is a fundamental, comprehensive, and long-term strategic element for economic and social development, serving as an important driver for promoting high-speed economic growth. In the neoclassical growth model, capital and labor are the core elements of economic growth. The demographic dividend refers to the "favorability" of changes in population quantity, structure, and quality for economic development. It represents the advantages brought about by changes in population age structure and population quality, serving as a strong guarantee for consumption growth and a core driving force for economic development. According to Marshall's demand theory, population growth promotes an increase in labor supply, facilitates division of labor and technological progress, and benefits profit growth, enhancing the agency of economic agents and increasing labor demand. Based on population economics theory, population growth contributes to economies of scale, promotes division of labor and technological progress. Under the conditions of abundant economic resources, population growth to some extent stimulates economic growth.

ASEAN countries have a massive population base and abundant labor resources, possessing abundant demographic dividends in terms of population quantity, quality, and structure. According to World Bank statistics, with a population of 650 million, ASEAN has surpassed the European Union to become the third-largest population area in the world, following China and India. Currently, the urbanization rate in the ASEAN region has reached 48.7%, with 70% of the population below the age of 40. The growing and youthful population brings vitality to cities and further contributes to the economic growth of ASEAN. Based on the analysis above, this study proposes the following research hypothesis:

H2: The demographic dividend has a positive effect on economic growth in ASEAN countries.

4. Model Construction and Data Sources

4.1. Model Construction

This study examines the impact of Chinese FDI and the demographic dividend on the economic development of the ten ASEAN countries from 2005 to 2020 using panel data. Drawing on the works of Zong et al. (2012) and Zhao and Li (2017), data on Chinese FDI, greenfield investments, and investment shares are sourced from the American Enterprise Institute for Public Policy Research (AEI). Additionally, GDP data, GDP per capita, and population data for each country are obtained from the World Bank.

To address potential issues of serial correlation and heterogeneity, a fixed effects model is employed. To account for clustering at the country level, the following model is specified:

$$\ln GDP_{i,t} = \beta_0 + \gamma \ln FDI_{i,t} + \alpha \ln POP_{i,t} + \lambda Z_{i,t} + \varepsilon_{i,t} \quad (1)$$

In equation (1), i represents the country and t represents the year. The variable $\ln GDP_{i,t}$ is the core dependent variable, representing the economic growth of ASEAN countries. $\ln FDI_{i,t}$ is the core explanatory variable in this study, representing foreign direct investment. $Z_{i,t}$ is the control variable, including per capita GDP (perGDP), greenfield investments (green), and investment shares (share). $\varepsilon_{i,t}$ denotes the random disturbance term. In the constructed model above, the coefficient γ of the core explanatory variable $\ln FDI_{i,t}$ captures the impact of Chinese FDI on the dependent variable $\ln GDP_{i,t}$, which is the main focus of this study.

Furthermore, to further examine the impact of the demographic dividend on the economic growth of the ten ASEAN countries and investigate the role of the demographic dividend by observing the differences in coefficients with and without the influence of Chinese FDI, the model can be written as follows:

$$\ln GDP_{i,t} = \beta_0 + \alpha' \ln POP_{i,t} + \lambda Z_{i,t} + \varepsilon_{i,t} \quad (2)$$

In equation (2), $\ln POP_{i,t}$ is the core explanatory variable, representing the demographic dividend. $Z_{i,t}$ is the control variable and denotes the random disturbance term. When the regression coefficient α' is greater than the coefficient α in equation (1), it indicates that Chinese FDI has fully utilized the benefits of the demographic dividend in the ten ASEAN countries.

4.2. Variable Selection

4.2.1. Dependent Variable

Economic growth ($\ln GDP$) is the core dependent variable, measured by the natural logarithm of GDP for each country in the ten ASEAN countries.

4.2.2. Explanatory Variables

Chinese foreign investment ($\ln FDI$) takes the natural logarithm of the amount of foreign direct investment from China to the ten ASEAN countries.

Demographic dividend ($\ln POP$): Following the approach proposed by Zhang et al. (2022) for handling the demographic dividend variable, it is calculated as the product of the resident population and the labor force ratio minus the dependency ratio for each country in the ten ASEAN countries. The variable is expressed as the natural logarithm.

4.2.3. Control Variables

To account for the potential influence of omitted variables on the empirical estimation results, the following control variables are included in this study: per capita GDP (perGDP), greenfield investments (green), and investment shares (share).

4.3. Descriptive Statistics

Table 1. Descriptive Statistics

VarName	Obs	Mean	SD	Min	Median	Max
$\ln GDP$	556	12.197	1.423	7.914	12.672	13.928
$\ln FDI$	556	5.709	0.865	4.605	5.521	9.112
$\ln POP$	556	17.412	1.459	12.870	17.266	19.427
green	556	0.156	0.364	0.000	0.000	1.000
share	556	41.814	26.304	10.000	49.000	97.000
perGDP	556	0.014	0.021	0.000	0.004	0.067

Panel data on Chinese and ASEAN countries' FDI investments from 2005 to 2020 are selected for analysis. The data sources primarily include the ASEAN Secretariat's ASEAN Statistical Yearbook, the official websites of national statistical bureaus, China Statistical Information Network, and EPSDATA. Real GDP data is obtained from the World Bank's World Governance Indicators. After removing samples with missing core variables, a total of 556 observations are available for the baseline regression analysis. The specific measurements and descriptive statistics of each variable are presented in Table 1.

5. Empirical Analysis

5.1. Baseline Regression

Table 2 presents the results of the baseline regression examining the impact of Chinese FDI and the demographic dividend on economic growth in the ten ASEAN countries. The dependent variable is the natural logarithm of the gross domestic product (lnGDP) for each country in the ASEAN region. Column (1) reports the regression results for Equation (2), with the core explanatory variable being the population (lnPOP). The coefficient α is significantly positive, indicating a significant influence of the demographic dividend on economic growth in the ten ASEAN countries. Column (2) presents the regression results for Equation (1), illustrating the significant promoting effect of Chinese FDI on the economies of the ten ASEAN countries.

Furthermore, by comparing the difference in lnPOP coefficients between Column (1) and Column (2), i.e., $\alpha' - \alpha = 0.036$, it can be observed that the demographic dividend encompasses the impact of Chinese FDI on the ASEAN countries. This suggests that Chinese FDI has fully utilized the benefits of the demographic dividend in the ten ASEAN countries. In economic terms, based on Column (2) as the reference, the GDP of ASEAN countries increases by approximately 0.02 percentage points, which accounts for around 0.14% of the sample mean, after receiving FDI from China.

Table 2. Baseline Regression Results

	(1)	(2)
	lnGDP	lnGDP
lnFDI		0.017*
		(0.009)
lnPOP	5.362***	5.326***
	(1.083)	(1.080)
green	0.023	0.027
	(0.022)	(0.022)
share	-0.001***	-0.001***
	(0.000)	(0.000)
perGDP	-6.212	-5.657
	(7.123)	(7.233)
N	160	160
Adj R ²	0.987	0.987

NoteL: * p < 0.1, ** p < 0.05, *** p < 0.01

5.2. Robustness Tests

Considering the varying impact of Chinese FDI on the ten ASEAN countries over different years and the differences in policies adopted by these countries at different stages of development, this section conducts robustness tests to reduce sample heterogeneity. Specifically, we divide the time period into three intervals: 2005-2010, 2010-2015, and 2015-2020. By examining the

effects of Chinese FDI on the ASEAN countries within these time periods, we aim to mitigate the endogeneity issues arising from year differences and explore the variations in the impact of Chinese FDI on economic growth across different time periods, thereby enhancing the homogeneity of our sample.

Columns (1)-(3) of Table 3 report the effects of Chinese FDI on economic growth in the ten ASEAN countries during the periods 2005-2010, 2010-2015, and 2015-2020, respectively. The results show that a 1 percentage point increase in Chinese FDI during the period 2005-2010 leads to an approximately 0.021 percentage point increase in the gross domestic product (GDP) of the ASEAN countries, surpassing the overall interval. This suggests that during the years 2005-2010, characterized by China's marketization wave and the beginning of ASEAN countries' opening-up, the impact of Chinese FDI on the economic growth of ASEAN countries was most pronounced. China brought in capital, technology, and managerial expertise, facilitating rapid economic growth in the early stages of openness for ASEAN countries. The results for the period 2010-2015 align closely with the overall regression results, indicating that the impact of Chinese FDI on the economic growth of ASEAN countries remained consistent with the average level over the past fifteen years. In the period 2015-2020, a 1 percentage point increase in Chinese FDI corresponds to a mere 0.001 percentage point increase in GDP. This could be attributed, on the one hand, to deepening cooperation and integration among ASEAN countries, leading to a gradual reduction in their reliance on foreign direct investment from countries like China. Additionally, influenced by global economic downturns and the COVID-19 pandemic, Chinese FDI in ASEAN countries has gradually declined over the past five years, resulting in a diminishing impact of Chinese FDI on the economic growth of ASEAN countries.

Table 3. Robustness Tests

	(1)	(2)	(3)
	lnGDP	lnGDP	lnGDP
lnFDI	0.021**	0.017*	0.001*
	(0.026)	(0.009)	(0.003)
lnPOP	1.708	5.326***	4.247***
	(3.341)	(0.749)	(0.625)
green	0.000	0.027	0.002
	(0.000)	(0.021)	(0.013)
share	0.001	-0.001*	-0.000
	(0.003)	(0.001)	(0.000)
perGDP	17.844	-5.657	11.730***
	(41.455)	(6.553)	(2.795)
N	14	160	93
Adj R ²	0.988	0.987	0.999

6. Conclusion and Policy Recommendations

The ASEAN Community (AEC) was officially established in December 2015. As the third-largest market in the world (after China and India), the regional economic community ranks seventh in terms of GDP. Furthermore, according to data from the ASEAN Secretariat in 2016, investment from China remains one of the significant sources of FDI, as it is the largest trading partner and a preferred investment destination within ASEAN. Fundamentally, the inherent economic diversity provides prospects and opportunities for regional economic integration through the linkages between outward foreign direct investment and intra-regional export trade. Additionally, the abundant "demographic dividend" has been recognized as a key driver

of ASEAN's rapid development in recent years, attracting foreign direct investment from China and other countries, and even drawing some manufacturing industries "out of China." Therefore, empirical research exploring the causal relationship between Chinese FDI, the demographic dividend, and the economic growth of the ten ASEAN countries has significant policy implications for long-term China-ASEAN cooperative relations and investment activities, with practical significance.

This study demonstrates that Chinese FDI has a significant stimulating effect on the economies of the ten ASEAN countries, effectively harnessing the demographic dividend of ASEAN. This evidence indicates that the high-quality development of China-ASEAN economic and trade cooperation will facilitate the identification of new growth points for mutual benefit and strengthen the capacity for mutual connection, while fully deepening China's reform and opening-up policy. Actively leveraging the demographic dividend advantages of the ten ASEAN countries can promote the formation of a closer community of shared destiny between China and ASEAN. In essence, further enhancing strategic cooperation between China and ASEAN contributes to encouraging ASEAN multinational corporations to establish platforms in different locations within China and ASEAN based on their comparative cost advantages. Simultaneously, the multinational activities of ASEAN countries also facilitate the "going global" of their talents, fully harnessing the role of the demographic dividend in the Asia-Pacific region. Therefore, to accelerate cooperation within the region, governments of ASEAN countries should actively encourage FDI from partner countries, promoting the transformation of population advantages into talent advantages.

Furthermore, the study also finds that as the sample period is divided into three parts (2005-2010, 2010-2015, 2015-2020), the economic growth effect of Chinese FDI on ASEAN countries gradually decreases over time. The primary reason is that in the early 21st century, during the wave of China's marketization and the beginning of ASEAN countries' opening-up, the economic growth effect of Chinese FDI on ASEAN countries was most pronounced. China brought capital, technology, and management experience, assisting ASEAN countries in achieving rapid economic growth in the early stages of opening-up. With the deepening cooperation and integration among ASEAN countries in recent years, along with the gradual reduction in reliance on foreign direct investment from countries like China, and the impact of global economic recession and the pandemic, the influence of Chinese FDI on the economic growth of ASEAN countries has gradually diminished. This poses higher requirements for China-ASEAN cooperation. Specifically, it is possible to combine with the global trend of digital economic development to promote the development of digital economy models, such as cross-border e-commerce platforms, digital finance, and innovation in digital assets, and engage in extensive cooperation to form a new investment cooperation model.

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