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The Nexus Between Economic Growth, Foreign Direct Investments, and Exports: Empirical Evidence in Chinese Provinces

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ABSTRACT

This unique study examines the causal relationships between economic growth, foreign direct investments (FDI), and exports in Chinese provinces by analyzing an unbalanced panel with 31 provinces in China from 2005 to 2022. The empirical results indicate a positive relationship between FDI and exports regarding economic growth in Chinese provinces. Moreover, economic growth will attract more foreign direct investment and promote exports from Chinese provinces. The findings support China's municipal governments in developing the economy sustainably. Specifically, the findings suggest that local governments should create incentives and favorable conditions to draw in more foreign direct investment and enhance export-oriented sectors to develop the economy sustainably. The findings align with industrial organization, international commerce, and endogenous growth theories.

INTRODUCTION

Export activity is widely recognized as a key driver of economic growth through its capacity to stimulate employment, enhance productivity, and improve a country's global competitiveness (Rauf & Jalil, 2021). Export growth also contributes indirectly to economic expansion by generating income and employment opportunities within export-oriented sectors (Rauf & Jalil, 2021). In the context of global development priorities, sustainable economic growth remains a central objective, particularly for developing economies. However, while a considerable body of literature has examined the individual effects of foreign direct investment (FDI) and exports on economic growth, most studies focus on unidirectional relationships (Sunde, 2017). Existing empirical investigations often isolate either the impact of FDI on economic growth (Saleem & Cheema, 2022), the relationship between FDI and exports (Muhammad Tariq Majeed, 2022; Yang & Li, 2019; Hayakawa et al., 2020; Duong et al., 2023), or the linkage between exports and economic growth

(Shafiullah et al., 2017; Sojoodi & Baghbanpour, 2023). Despite this, the evidence remains inconclusive, and the triangular, potentially bidirectional causal relationships between economic growth, FDI, and exports remain underexplored.

This study aims to address this gap by providing an integrated empirical assessment of the causal nexus among FDI, exports, and economic growth within the context of Chinese provinces. China presents a particularly relevant case for such investigation due to its unique economic trajectory. Since joining the World Trade Organization in 2001, China has undertaken extensive trade liberalization, fundamentally transforming its economic structure and positioning itself as one of the leading global exporters and top destinations for FDI inflows (Hayakawa et al., 2020). The country's experience provides an opportunity to draw broader implications for developing economies seeking to leverage trade and investment for sustainable development (Yang & Li, 2019).

Using a panel dataset covering 31 Chinese provinces over the period from 2005 to 2022, the study follows Le et al. (2024) and Duong et al. (2023) in applying three econometric models such as Pooled Ordinary Least Squares (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM) to evaluate the dynamic nexus among the variables. The selection of the most appropriate estimation technique is guided by the Breusch-Pagan Lagrange Multiplier test and the Hausman specification test (Le et al., 2023; Tran et al., 2023). The empirical findings demonstrate significant bidirectional causality between exports, FDI, and economic growth, suggesting that each variable influences and is influenced by the others.

This research makes two primary contributions. First, it is among the few studies that comprehensively assess the interdependent relationships between economic growth, FDI, and exports at the subnational level in China. Second, by drawing on China's experience, the study provides valuable policy implications for developing countries seeking to design integrated trade and investment strategies that support long-term, sustainable economic development (Hayakawa et al., 2020).

The study is organized as follows. The next section summarizes the theoretical aspects of the trilogy on economic growth, foreign direct investments, and exports in China. Section 3 provides a data overview and explains our empirical methodology. Section 4 reports empirical results, Section 5 discusses the results, and Section 6 concludes.

1. LITERATURE REVIEW

1.1 The relationship between FDI and economic growth

China's economic landscape has been significantly shaped by the large inflow and outflow of FDI in recent years. FDI acts as an external source of capital that bridges the host country's capital and technological gaps while enhancing economic growth in the domestic market (Jonah et al., 2018). While FDI is not a novel concept, its influence on economic development remains a subject of incomplete and contentious research. Duong et al. (2023) explored FDI's role in international trade, focusing on technology transfer and knowledge spillover. Previous studies demonstrated FDI's positive impact on economic growth (Duong et al., 2023; Oanh et al., 2021; Sultanuzzaman et al., 2018; Liu et al., 2002), while others argue that FDI hampers a country's economic development (Gunby et al., 2017).

China's unique and intricate economy, shaped by its geographic location, ethnic diversity, and religion, poses a challenge for studying FDI's impact on economic growth. China's remarkable growth in recent years has been closely linked to its ability to attract FDI and effectively leverage technology. Chuang and Hsu (2004) show that foreign trade and FDI support China's economic expansion in the long term (Liu et al., 2002). The trade openness policy has facilitated the interaction between FDI and domestic production capacity, shaping its economic trajectory (Duong et al., 2023).

In addition, Saleem et al. (2018) indicate that when developing market economies try to open up to external commerce, it can attract an increase in inward FDI. Furthermore, GDP growth is an important indicator of FDI inflows. Le et al. (2023) demonstrate that increased economic growth draws more FDI to Asia-Pacific nations.

Based on this literature review, we expect that FDI will positively impact economic growth in China (Sultanuzzaman et al., 2018). Furthermore, this economic growth, in turn, creates a more robust foundation for attracting increased FDI inflows. Therefore, we propose the following hypothesis:

H1: FDI has a significant positive impact on economic growth in Chinese provinces.

H2: Economic growth has a significant positive impact on FDI in Chinese provinces.

1.2 The relationship between exports and economic growth

Prior studies have explored the relationship between exports and economic growth (Kónya, 2006; Sunde, 2017; Shafiullah et al., 2017; Sojoodi & Baghbanpour, 2023; Saleem & Cheema, 2022). Kónya (2006) revealed a bidirectional causal relationship between exports and GDP in Canada, Finland, and the Netherlands. Sunde (2017) demonstrated that exports and FDI positively influence South Africa's economic growth. Shafiullah et al. (2017) explored the export-led growth theory at the sectoral level, identifying that exports of mining and fuels were critical drivers of Australia's economic expansion. Saleem and Cheema (2022) identified an asymmetric unidirectional causal relationship between exports and economic growth in Pakistan. Sultanuzzaman et al. (2018) found that while FDI inflows positively impacted economic growth in the short and long term, exports showed a strong negative correlation with economic growth. Muhammad Adnan Hye (2012) identified a bidirectional long-term relationship between China's economic growth, exports, and imports.

On the other hand, Sojoodi and Baghbanpour (2023) indicated no significant relationship between high-tech exports and GDP growth. According to the 2022 WTO report, China, the United States, and Germany were the top three exporters of goods in 2021, accounting for 15%, 8%, and 7% of global exports, respectively. China's accession to the WTO on December 11, 2001, has significantly bolstered international investor confidence, leading to a surge in FDI that has expanded production capacity and spurred the growth of export-oriented industries. Consequently, China's exports have risen sharply, positioning the country as a major player in global trade.

Drawing from the Chinese context and previous studies, we hypothesize that exports will significantly impact economic growth in China. Furthermore, this economic growth is expected to strengthen the foundation for attracting more exports. Therefore, we propose the following hypotheses:

H3: Exports significantly impact economic growth in Chinese provinces.

H4: Economic growth has a significant positive impact on exports in Chinese provinces.

2. DATA AND METHODOLOGY

2.1 Data

This research examines yearly statistics from 31 provinces in China from 2005 to 2022. Essential variables such as GDP, FDI, exports, labor, wages, transportation, investment, and capital are collected from reputable sources such as the China Statistical Yearbook. The exchange rates were obtained from the World Bank. We follow Le et al. (2023) and Tran et al. (2023) to exclude observations that do not have sufficient data to estimate the required variables. The final sample is an unbalanced panel with 588 annual observations from 31 provinces in China, covering the years 2005 to 2022

2.2 Model Construction

We follow Saleem and Cheema (2022) and Duong et al. (2023) to examine the link between exports and GDP. We construct the first model to estimate the impacts of FDI and exports on economic growth in provinces in China as follows:

$$GDP_{it} = \beta_0 + \beta_1*FDI_{it} + \beta_2*Exp_{it} + \beta_3*Tra_{it} + \beta_4*Hum_{it} + \beta_5*Exc_{it} + \beta_6*Lab_{it} + \beta_7*Cap_{it} + \beta_8*Wag_{it} + \varepsilon_{it} \quad (1)$$

Where GDP is the gross domestic product unique to each region, it includes all domestic output, a comprehensive measure of a nation's economic health. GDP is measured as the GDP growth rate from the prior year.

Foreign direct investment refers to the practice of FDI within an area. FDI initiatives can take many forms, including founding associates or subsidiaries abroad, taking a majority ownership in already-existing foreign businesses, and merging or forming joint ventures with foreign organizations. Increasing FDI inflows positively empower economic growth in the Chinese economy, especially in the high-tech manufacturing and services sectors. The entire value of products and services exported from a particular region is represented by its export value. Export earnings support international interactions and increase the GDP at the national level. This model (1) uses labor, capital stock, exchange, transportation, wages, and human capital as control variables.

In line with Yao (2006), GDP, wages, real exchange rate, and transportation are the key explanatory factors for foreign direct investment. Because of its relatively large economy, a province with a relatively high GDP may attract more foreign direct investment. GDP illustrates the size of the market. On the other hand, FDI can be absorbed by transportation and human capital. The actual exchange rate is a pricing component, and adequate salaries present the cost. Therefore, we develop the second model to test the impact of economic growth on luring FDI projects in Chinese provinces as follows:

$$FDI_{it} = \beta_0 + \beta_1 * GDP_{it} + \beta_2 * Wag_{it} + \beta_3 * Exc_{it} + \beta_4 * Tra_{it} + \varepsilon_{it} \quad (2)$$

Model (2) includes FDI, GDP, Wages, Exchange, and Transport.

GDP and the real exchange rate are predicted to influence exports. GDP shows the market size, whereas the exchange rate shows the cost of China's exports to other nations. Therefore, we construct the third model to examine the impacts of economic growth on exports in provinces in China as follows:

$$Exp_{it} = \beta_0 + \beta_1 * GDP_{it} + \beta_2 * Exc_{it} + \varepsilon_{it} \quad (3)$$

The GDP, export, and exchange rates are identical to those provided in (1). Table 1 lists the data sources and variable definitions for all variables.

Table 1. Definitions of variables

Variable	Variable meaning	Calculation formula	Citation
GDP	GDP	The GDP growth rate from the prior year. Data is collected from the China Statistical Yearbook.	Sojoodi & Baghbanpour (2023). Duong et al. (2023); Tran et al. (2023); Oanh et al. (2021)
FDI	Foreign Direct Investment	Net FDI inflow (% of GDP). Data is collected from the China Statistical Yearbook.	Duong et al., 2023; Le et al. (2024); Sultanuzzaman et al., 2018; Liu et al., 2002; Nguyen et al., 2024
Exp	Export	The export growth rate from the prior year. Data is collected from the China Statistical Yearbook.	Rauf and Jalil (2021); Sojoodi & Baghbanpour, 2023; Saleem & Cheema, 2022
Cap	Capital Stock	- Initial Capital Stock:	Yao (2006); Rauf and Jalil (2021)

		$K_0 = \frac{I_0}{(g+\delta)}$ $K_{it+1} = (1-\delta)K_{it} + \frac{I_{it+1}}{p_i^K}$ Where: + I: Fixed Asset Investment + g: Fixed Asset Growth Rate + δ: Capital stock depreciation rate + p: Investment Price Index Data is collected from the Statistical Yearbook.	
Exc	Exchange Rate	Actual Exchange Rate Effect. Data is collected from the World Bank.	Yao (2006); Muhammad Tariq Majeed (2022)
Hum	Human Capital	The growth rate of new students enrolling in secondary or higher education from the prior year. Data is collected from the China Statistical Yearbook.	Rauf and Jalil (2021); Yao (2006)
Lab	Labor	The growth rate from the previous year in the number of employed people. Data is collected from the China Statistical Yearbook.	Tran et al. (2023); Oanh et al. (2021); Yao (2006)
Tra	Transport	The combined length of roads, trains, and waterways. Total People in Employment. Data is collected from the China Statistical Yearbook.	Yao (2006)
Wag	Wages	Average wages as a percentage of GDP per capita. Data is collected from the China Statistical Yearbook.	Saleem et al. (2018); Yao (2006)

Source: Own

2.3 Estimation Methods

This study adopts a rigorous empirical approach to analyze panel data from 2005 to 2022. To ensure model reliability, it begins with multicollinearity diagnostics using Variance Inflation Factors (VIF) and correlation coefficients (Tran et al., 2023). Following Nghiem et al. (2024), a panel unit root test is conducted to examine the stationarity of variables. The empirical analysis proceeds with the estimation of Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM). Model selection is guided by the Redundant Fixed Effects test and the Hausman specification test, as recommended by Le et al. (2023) and Tran et al. (2023). While Pooled OLS assumes homoscedasticity, FEM accounts for time-invariant individual heterogeneity, and REM captures random variations across provinces (Le et al., 2024). This combined modeling strategy provides a robust and comprehensive framework for assessing the determinants of foreign direct investment inflows across the Asia-Pacific region.

3. EMPIRICAL RESULTS

3.1 Descriptive statistics

Table 2. Descriptive statistics

Variable	Obs.	Mean	Min	Max	Std. Dev.
GDP	588	0.1118	-0.3128	0.2380	0.1180
FDI	588	0.1319	-0.6794	1.0147	0.3641
Exp	588	0.1377	-0.5409	0.6530	0.2821
Cap	588	-0.0081	-0.0372	0.0519	0.0284
Exc	588	0.0722	0.0614	0.0828	0.0083
Hum	588	0.0473	-0.6895	1.2559	0.3877
Lab	588	0.0036	-0.5506	0.2726	0.1527
Tra	588	0.0545	-0.0168	0.4212	0.0988
Wag	588	0.0127	0.0072	0.0224	0.0042

Note: Table 1 reports each definition of a variable. The final sample included 588 annual observations from 2005 to 2022.

Source: own

Table 2 indicates that the average value of the GDP growth is about 0.11, the maximum value of GDP growth is about 0.23, and the minimum value is about -0.31. In addition, Table 2 also describes the average values of FDI, Exp, Cap, Exc, Hum, Lab, Tra, and Wag, which are 0.1319, 0.1377, -0.0081, 0.072, 0.0473, 0.0036, 0.0545, and 0.0127, respectively

3.2 Pearson Correlation Matrix

Table 3. Pearson Correlation Matrix

Correlation	FDI	Exp	Lab	Exc	Tra	Wag	Hum	Cap
FDI	1							
Exp	-0.0189	1						
Lab	-0.0203	-0.1966***	1					
Exc	0.0654	0.327622	-0.3268***	1				
Tra	0.1371***	0.089794	0.028460	0.3315***	1			
Wag	0.1485***	0.0747*	-0.0915**	0.1455***	0.0773*	1		
Hum	-0.0014	0.1727***	-0.0440	0.0128	0.0121	0.0249	1	
Cap	-0.0325	-0.1991***	0.2516***	-0.7698***	-0.2092***	-0.0157	0.0213	11

Note: All the variables are defined in Table 1. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Source: own

The correlation coefficient explains how independent and dependent variables are correlated linearly. It suggests that variations in one variable influence variations in another. The correlation matrix may be used to investigate the correlation between independent and dependent variables. All the factors' correlations are shown in Table 3.

Table 4. Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
FDI	2.19E-06	1.055941	1.041848
Exp	0.000199	1.459104	1.178050
Lab	0.000670	1.162424	1.161778
Exc	0.600166	235.7749	3.103666
Tra	0.001620	1.533501	1.175532
Wag	0.800973	10.67924	1.069420
Hum	9.26E-05	1.050635	1.035211
Cap	0.042415	2.756286	2.548361
C	0.002812	209.4282	NA

Note: This table reports results from the VIF test. All variable definitions are reported in Table 1

Source: own

We also performed the VIF test to ensure that there is no multicollinearity. We infer that our study has no significant multicollinearity since Table 4 demonstrates that all VIF values are less than 5 (Duong et al., 2023; Le et al., 2023).

3.3 Unit Root Test

Table 5. Unit Root Test

LEVEL	LLC	IPS	ADF	PP
GDP	-1.205	-9.606***	209.032***	186.629***
	(0.114)	(0.000)	(0.000)	(0.000)
FDI	-12.036***	-15.533***	334.907***	1363.28***
	(0.000)	(<0.001)	(0.000)	(0.000)
Exp	-14.348***	-18.773***	396.387***	1235.08***
	(<0.001)	(<0.001)	(<0.001)	(0.000)
Cap	8.8	-9.21267***	202.48***	448.82***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Lab	-8.3580***	-7.92225***	178.84***	204.19***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Exc	-4.1302***	-4.34472	101.03***	100.36***
	(<0.001)	(<0.001)	(0.001)	(0.002)
Tra	-7.6172***	-2.0125**	85.263**	96.093***
	(<0.001)	(0.0221)	(0.027)	(0.004)
Hum	-3.31509***	-1.74053**	113.58***	116.62***
	(<0.001)	(0.0409)	(<0.001)	(<0.001)
Wag	-7.74521***	-7.54895**	183.27***	241.20***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)

Note: The parenthesis surrounds the P-value. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Source: own

Models 1, 2, and 3 could yield biased findings if the variables are not stationary. One characteristic of a static variable is that it has no periodic oscillations, and its mean, variance, and autocorrelation structure do not vary with time. Developing theories and models becomes significantly more complicated if the variables are not stationary. Models must thus have static variables. We follow Tran et al. (2023) and Nghiem et al. (2024) to apply the panel unit root test to check whether the variables are stationary. Our findings

for all four approaches support the null hypothesis, which states that the variables are non-stationary. Therefore, the panel regression method is suitable for our study.

3.4 The impact of FDI and Exports on economic growth

Table 6. The Impacts of FDI and Exports on Economic Growth in China

Dependent variable: GDP	Pooled OLS	FEM	REM
FDI	0.1018***	0.0995***	0.1018***
	(<0.001)	(<0.001)	(<0.001)
Exp	0.1756***	0.1720***	0.1756***
	(<0.001)	(<0.001)	(<0.001)
Cap	-0.4730***	-0.6879***	-0.4730***
	(0.0138)	(0.0015)	(0.0123)
Exc	0.4630	0.9383	0.4630
	(0.5225)	(0.2119)	(0.5155)
Hum	0.0503***	0.0458***	0.0503***
	(<0.001)	(<0.001)	(<0.001)
Lab	-0.0300	-0.0501**	-0.0300
	(0.2145)	(0.0375)	(0.2069)
Tra	0.0378	0.0229	0.0378
	(0.3108)	(0.5358)	(0.3027)
Wag	-0.8736	-14.7753***	-0.8736
	(0.2934)	(<0.001)	(0.2854)
Constant	0.0436	0.1860***	0.0436
	(0.3784)	(0.0011)	(0.3705)
Observations	588	588	588
Adj. R-squared	50.68%	52.69%	50.68%
Redundant test (Prob.)		50.79	
		(0.0102)	
Hausman test (Prob.)			42.54
			(<0.001)

Note: All the variables are defined in Table 1. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Source: own

The regression results for Model 1 using three alternative methods, such as Pooled OLS, REM, and FEM, are presented in Table 6. First, across all models, the Adjusted R-squared shows that the explanatory factors account for over 50% of the fluctuations in the dependent variable. We implemented two further experiments to ascertain which approach was best for our dataset. In the fixed-effect method, we employ the Redundant Effects Tests. The Chi-square statistic is 50.79 at a 5% significance level, so the Redundant Fixed Effects Tests indicate that the OLS regression model is unsuitable. In addition, we use the Hausman test to select between the FEM and REM. The Hausman test results suggest that FEM is the best regression method.

3.5 The impact of economic growth on FDI

Table 7. The nexus between economic growth and FDI in China

	Pooled OLS	FEM	REM
GDP	1.4735***	1.5062***	1.4735***
	(<0.001)	(<0.001)	(<0.001)
Wag	8.1047**	18.2184*	8.1047***
	(0.0082)	(0.0691)	(0.0087)
Exc	3.1482*	2.2081	3.1482*
	(0.0711)	(0.2639)	(0.0732)

Tra	0.0854 (0.5342)	0.0901 (0.5202)	0.0854 (0.5374)
Constant	-0.3675*** (0.0027)	-0.4319*** (0.0017)	-0.3675*** (0.0029)
Observations	588	588	588
Adj R-squared	27.46%	26.33%	27.46%
Redundant test (Prob.)		<0.001	
Hausman test (Prob.)			<0.001

*Note: All the variables are defined in Table 1. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Source: own

Table 7 presents the Model 2 regression findings using three distinct approaches: FEM, REM, and pooled OLS. Then, we employ Redundant Fixed Effects Tests to indicate that the OLS regression model is unsuitable. In addition, we use the Hausman specification test to select between the FEM and REM. The Hausman test results suggest that FEM is the best regression technique.

3.6 The nexus between economic growth and exports in China

Table 8. The nexus between economic growth and exports in China

	Pooled OLS	FEM	REM
GDP	0.2121*** (<0.001)	0.2083*** (<0.001)	0.2121*** (<0.001)
Exc	8.6101*** (<0.001)	8.6492*** (-2.48)	8.6101*** (<0.001)
Constant	-0.5115*** (<0.001)	-0.5138*** (0.000)	-0.5115*** (<0.001)
Observations	588	588	588
Adj R-squared	17.41%	14.6%	17.41%
Redundant test (Prob.)		<0.001	
Hausman test (Prob.)			<0.001

*Note: All the variables are defined in Table 1. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Source: Own

The regression results for Model 3 using three alternative approaches are presented in Table 8. Table 8 indicates that GDP growth positively influences exports at a 1% significance.

4. DISCUSSION

Table 6 demonstrates a positive relationship between FDI and economic growth in Chinese provinces. The estimated coefficients for the FDI variable vary from 0.0995 to 0.1018, meaning that a 1% increase in FDI growth leads to provincial GDP growth in China from 0.0995% to 0.1018%. FDI can finance new infrastructure, expand existing businesses, and fund various development projects. The increased investment in the local economy can stimulate economic growth and create employment opportunities. In addition, foreign investors frequently deliver modern technology, experience, and best practices to the host country. Technology transfer and information exchange can help to strengthen local industries, raise productivity, and boost competitiveness. Local firms and individuals can benefit from their

overseas counterparts and obtain essential skills and know-how, thus contributing to long-term economic growth. Finally, FDI can provide local businesses access to international markets through collaboration with foreign companies. This access can help local businesses expand their customer base and export their products and services globally. By integrating into global supply chains and markets, local firms can experience increased revenue and growth, benefiting the overall economy. These findings also align with earlier research conducted by Duong et al. (2023), Oanh et al. (2021), Sultanuzzaman et al. (2018), and Yao (2006). The findings also support hypothesis 1. In contrast, the findings of this study are inconsistent with those of Gunby et al. (2017), who used a meta-analysis method to investigate the corresponding empirical literature. However, meta-analysis results may be compromised when there is incorrect or missing information in study publications.

In addition, Table 6 also reports a positive relationship between exports and economic growth in Chinese provinces. The results indicate that a 1% increase in exports empowers provincial GDP growth in China from 0.172% to 0.1756%. Exports bring significant revenue to provinces in China. When local companies sell their products or services to foreign markets, they earn foreign exchange, which adds to the provincial economy. This revenue can be reinvested in local businesses and infrastructure, driving economic growth and development. Moreover, Export-oriented industries often require a large workforce, creating numerous jobs within a province. The growth of export-driven sectors, such as manufacturing and agriculture, can increase residents' employment opportunities. As more people find work, household incomes rise, leading to higher consumer spending and contributing to GDP growth. Additionally, as China continues to engage in global trade, it has adopted policies and strategies that promote exports as a fundamental driver of economic development. Provinces with a strong export-oriented focus are more likely to experience GDP growth, provided they can adapt to changing market demands and remain competitive in the global marketplace. The findings are consistent with Muhammad Adnan Hye (2012) and support hypothesis 3.

Table 7 demonstrates that a percentage increase in GDP will result in an increase in FDI of around 0.946% to 1.409%. Provinces experiencing robust economic growth represent attractive markets for foreign investors. Rising incomes and increased consumer demand create opportunities for businesses to sell their products and services in these areas. Companies may invest in provinces with growing economies to tap into the local customer base and expand their market presence, which can lead to higher returns on investment. Moreover, provinces with strong economic growth often have a well-educated and skilled workforce. This can be especially appealing to foreign investors looking for a talent pool with the expertise and capabilities to support their operations. FDI projects benefit from access to a skilled labor force that can contribute to productivity and innovation. Furthermore, Economic growth often goes hand in hand with infrastructure development, including improved transportation networks, logistics facilities, and utilities. This infrastructure can reduce operational costs for foreign investors, making setting up and running their businesses more cost-effective. Additionally, well-developed infrastructure can facilitate the movement of goods and services, which is crucial for FDI projects involved in manufacturing and distribution. The findings also support hypothesis 2.

Table 8 shows that GDP positively influences Exports at the 1% significance level for all three approaches. A 1% rise in GDP growth will result in a corresponding increase in exports from 0.2083% to 0.2121%. The findings are consistent with those of Yao (2006) and Muhammad Adnan Hye (2012).

CONCLUSION

This study investigates the two-way causal relationship between FDI, exports, and economic growth. We employ the FEM method to analyze an unbalanced panel with 31 provinces in China between 2000 and 2018. The findings indicate a substantial positive relationship between China's GDP, exports, and FDI. Our findings suggest that economic performance in Chinese provinces primarily relied on local exports and foreign direct investment.

The study provides practical policy implications for promoting economic growth in Chinese provinces. Local governments should attract FDI by offering tax incentives, establishing free trade zones, and providing subsidies for strategic sectors. Additionally, trade promotion through international agreements and dedicated investment agencies is recommended to improve market access and export capacity. Export-oriented initiatives can further support local businesses in reaching global markets. Finally, the study

emphasizes sustainable growth by encouraging eco-friendly FDI through financial incentives and strict environmental regulations, enhancing product reputation and long-term development potential in China.

This study has the following limitations. Our research has yet to examine the relationship between exports, FDI, and economic growth at the sectoral level. Future studies can explore the impact of FDI and exports on specific sectors of the economy to offer nuanced insights.

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