







“Does type of capital matter for economic growth? A study of the Chinese economy”

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DOES TYPE OF CAPITAL MATTER FOR ECONOMIC GROWTH? A STUDY OF THE CHINESE ECONOMY

Abstract

The impact of different types of capital flows on China's economic growth has been widely studied to determine whether the type of capital significantly affects the Chinese economy. The purpose of this study is to investigate the relationship between long-term capital flows and economic growth in China, considering factors such as Foreign Direct Investment (FDI), portfolio equity, portfolio bonds, and external debt. All secondary data were collected from the World Bank database. The paper also investigates which type of capital flow has the most significant relation with the economic growth of China. A quantitative approach was chosen for the study. Moreover, to overcome the bias output of ordinary least squares, this paper deployed a Two-Stage Least Squares (2SLS) estimation method. This study has found a relatively stable positive relationship between FDI and growth, where the coefficient of 0.9699 indicates that a 1% increase in FDI is associated with a 0.97% growth in Gross Domestic Product (GDP). Similar to FDI, portfolio equity has a positive impact on GDP growth, with a coefficient of 2.1419. In contrast, portfolio bond and debts have a negative coefficient of -1.7752 and -0.2831. These findings contribute to a deeper understanding of China's development experience, particularly regarding the role of capital flow. The paper explores two key limitations that need to be explored in the future, i.e., the causal relation between each type of long-term capital flow and economic growth, and the impact of COVID-19 on the economic growth relationship.

Keywords

Chinese economy, foreign direct investment, portfolio investment, external loan, GDP growth, economic development, investment decision, Two-Stage Least Squares (2SLS)

JEL Classification

C58, F21, F43, G11

INTRODUCTION

“Does type of capital matter to the Chinese economy?” – To verify this question, this study will focus on how different types of capital influence China's economic growth. The relationship between long-term capital flow and economic growth has received considerable scholarly interest among scholars over the last few decades. However, which type of capital has a more significant relationship with economic growth remains uncovered. Moreover, no previous study has investigated the impact of each type of long-term capital flows on the overall Chinese economy by properly controlling the endogeneity problem. This study endeavors to augment existing knowledge by delving into the interrelationship between long-term capital flows and the economic growth of China, while simultaneously mitigating the confounding effects of endogeneity among the variables. For four decades, China's growing economy and massive capital flows have suggested a strong link. However, it remains unclear which type of capital has the greatest impact on China's economic growth and development. This study has fulfilled the scientific gap mentioned above through its findings.



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This research endeavors to shed new light on China's economic evolution by scrutinizing the intricate relationship between economic growth and diverse capital inflows, thereby offering valuable insights for understanding the broader implications for the global economy. The main goal of this study is to examine how different types of capital affect the growth of the Chinese economy. The paper explores which type of capital flow has the most significant relationship with China's economic growth. To achieve the primary and secondary goals, this study answers the following questions: How do different types of long-term capital flows influence China's economic growth? To what extent has China's economic success depended on FDI, portfolio equity, external debt, or domestic savings?

1. LITERATURE REVIEW

The relationship between capital liberalization and economic growth has been a subject of extensive research. While many studies have found a positive correlation between these two variables, the impact of different types of capital flows on growth remains a complex and debated issue. Literature has explored the effects of each investment component on economic growth in various contexts. Previous studies have found robust evidence that capital liberalization positively impacts a country's economic growth (Ghosh, 2003; Hung & Nguyen Thi Thuy, 2021; Das, 2010). Kose et al. (2009) have shown that capital liberalization significantly impacts economic growth. Nonetheless, the study also shows that capital liberalization increases the risk of financial crises. An investigation using microeconomic or macroeconomic data shows that market liberalization enhances output growth. Reisen and Soto (2001) pointed out that in pursuit of sustainable economic prosperity, developing countries foster the inflow of FDI and portfolio capital instead of relying solely on national savings. The paper analyzes the growth impact of FDI, portfolio, bonds, and short- and long-term bank loan inflows. The findings suggest that developing countries seeking to accelerate economic growth should prioritize attracting foreign direct investment and portfolio equity, as these types of capital inflows have a more pronounced impact than bonds and loans. Various studies suggest that growth is largely impacted by long-term capital flows (Kandil, 2011; Sini et al., 2022; Zardoub & Sboui, 2023). Nzioka (2017) finds a positive correlation between financial openness, measured by gross capital flow to GDP. Similarly, Shen et al. (2010) highlighted the importance of context-specific factors in understanding the relationship between foreign investment and growth. This argument is supported by Ekwe and Inyama

(2014). The paper emphasizes a significant correlation between the Nigerian economic growth and foreign capital inflows. Nevertheless, the potential negative effects of capital flows for the host economy have been a subject of growing concern among researchers (Basher et al., 2023; Ibhagui & Olawole, 2019).

The relationship between FDI and economic growth has been a subject of extensive research, with a wide range of empirical findings. However, studies based on microeconomic data show that growth in output and productivity is largely impacted by FDI through vertical linkages and spillover effects. Bengoa and Robles (2003) provided compelling evidence of the positive impact of FDI on economic growth in Latin America, underscoring the crucial role of an open economy in attracting foreign investment. According to Carkovic and Levine (2005), FDI does not directly affect economic growth. Macroeconomic stability, financial development, and trade liberalization can affect the correlation of FDI on growth. Moreover, Tiwari and Mutascu (2011) found a nonlinear association between exports and foreign investment in Asian economic development, where the study claims a significant correlation between economic growth and FDI. They also identify FDI as a feasible option for long-term growth. However, the accuracy of the study is questionable because the study has used macroeconomic data for only eight years. FDI inflows have been extensively studied for their impact on economic growth. Several studies have found FDI to be a driver of economic development. For example, Kueh and Yong (2018) in Malaysia, Omri and Sassi-Tmar (2015) in North African countries, and Sultanuzzaman et al. (2018) find significant positive impacts on the Sri Lankan economy. These studies emphasize the crucial role that FDI plays in fostering economic development. Moreover, Norehan et al. (2022) suggest that FDI inflows, along

with Information and Communication Technology (ICT), can influence the growth. Similarly, Vasa et al. (2023) found that ICT positively impacts regional development in Kazakhstan. This indicates that technological advancements and FDI inflows can synergistically enhance economic development. Additionally, Cicak and Soric (2015) point out that FDI inflow are particularly beneficial for the economies which are ready to effectively absorb new technologies and are in a developing stage. Nevertheless, it has been observed that the growth-FDI relationship may not always follow a simple linear pattern.

While the relationship between FDI and economic growth has been extensively studied, portfolio equity investments have also emerged as a significant source of capital inflows for many developing countries. By facilitating technology transfer, developing capital markets, stimulating consumption, generating fiscal revenue, portfolio equity investment can contribute significantly in developing host countries. In contrast, Alimov (2022) argued, while equity inflows can boost consumption and GDP in the short run, there's no clear link to sustained growth. Beckmann and Czudaj (2017) used the Vector autoregression (VAR) estimator method to uncover the growth-capital flow relation; they included only portfolio investment as capital flow and concluded that capital flows are positively correlated with GDP. However, their study did not include bonds or loans as long-term capital flows, which are also regarded as important capital sources. According to Baharumshah et al. (2017), the effectiveness of portfolio bonds varies by a country's financial health. The paper explores that highly financially developed countries are unaffected by portfolio bonds, whereas less financially developed countries are negatively affected by portfolio bonds.

Portfolio bonds are a powerful tool for driving economic growth in developing countries, offering a significant source of external financing. Existing studies suggest a positive relationship between international portfolio investment and GDP (Mlambo, 2022). Additionally, the findings challenge the notion that capital inflows are always a source of risk, demonstrating that even unexpected fluctuations can have positive consequences for the host economy (Anetor, 2019). Moreover, portfolio equity inflows have contributed to economic

growth for lower-income countries (Brambila-Macias & Massa, 2010). However, a complex correlation is observed in growth-capital flow relations, including portfolio investments. While some studies suggest that capital inflows, including portfolio investments, are necessary for developing economies to maintain macroeconomic growth and stability (Ejaz et al., 2021).

The influence of portfolio bonds on China's economic growth is multifaceted, with both positive and negative consequences depending on various factors. While they can contribute to capital market development, infrastructure investment, and currency appreciation, they also pose risks such as volatility, debt accumulation, and excessive currency appreciation. Research has consistently demonstrated that portfolio equity inflows can positively influence economic growth in lower-income countries, providing a valuable source of capital and contributing to development (Brambila-Macias & Massa, 2010). However, it is essential to note that while portfolio investment can be beneficial, it may also have counterproductive effects, potentially hindering economic growth through externalities (Ouedraogo et al., 2018). China, despite institutional restrictions, such as shocks associated with qualified foreign institutional investors for portfolio inflows, may not be able to effectively block free capital inflows (Wu et al., 2018). Additionally, foreign investment impact, including FDI and portfolio investment, on growth has been highlighted as crucial for stimulating sustainable growth in developing economies (Reisen & Soto, 2001). Moreover, the composition of investment, including portfolio bond inflows, can vary significantly across countries, and factors such as market structure characteristics and market liquidity (Cerutti et al., 2019). The impact of portfolio investment on Chinese growth has been noted to be affected by several factors, for instance, exchange rate volatility and the country's capital control policies (Li et al. 2019).

The relationship between debt and economic growth in China is complex. While external debt can finance development, excessive levels can pose risks to macroeconomic stability. Kose et al. (2009), Rocha and Oreiro (2013), and Aizenman et al. (2013) highlight the potential long-term negative impact of foreign debt on growth. Alimov

(2022) and Onofrei et al. (2022) find that debt can harm GDP growth, especially in countries with low governance quality or high levels of public debt. Ibrahim (2020) emphasizes the negative impact of corruption on the debt-growth relationship. Reinhart and Rogoff (2010) find a negative link between external debt and growth, especially when debt exceeds 60% of GDP. However, Baum et al. (2013) suggest that very high debt levels (above 95% of GDP) can also be detrimental.

Long-term loans significantly impact economic growth, but the relationship is complex. Eberhardt and Presbitero (2015) highlight the nonlinear correlation of external debt with growth. Makhoba et al. (2022) emphasize the positive impact of strategic public debt allocation, while Onofrei et al. (2022) find contrasting results for EU countries. Wang (2019) and Chen and Li (2019) focus on China, examining the impact of government debt on national and regional growth. Exchange rates also play a crucial role, influencing exports and attracting foreign capital (Guzman et al., 2018). Additionally, domestic credit can substitute for foreign capital in countries with low investment opportunities (Rodrik & Subramanian, 2009).

The purpose of the study is to investigate the correlation between long-term capital investment and economic growth in China while addressing the issue of endogeneity among the variables, focusing on four different types of capital flow. Specifically, the study examines the influence of four types of capital flow (FDI, portfolio equity, portfolio bonds, and external debts) on China's economic growth over the last 25 years, to determine which type of capital flow benefits the Chinese economy the most. In summary, while existing research provides a solid foundation for understanding the relationship between capital flows and economic growth, it often overlooks the specific impact of different types of capital flows and fails to adequately address endogeneity issues. Therefore, this study aims to bridge this gap by examining the dynamic impact of capital flow on growth of Chinese economy, incorporating four different types of capital flow considering the impact of gross savings, exchange rates, and net domestic credit as instrumental variables in a 2SLS estimation model.

2. METHOD

In the field of economics, there are several techniques to examine the linear connections between capital investment and economic growth across different periods such as the fixed-effects (FE) model, vector autoregression (VAR), regression analysis, multivariate probit model, and generalized method of moment (GMM) estimation. In this study, the aim is to explore the correlation between long-term capital inflow and economic growth, while adequately controlling for the impact of diverse variables on the growth. To achieve the goal, this study employs a Two-Stage Least Squares estimation. The logic behind this is that the coefficients of our dependent and independent variables are correlated with exchange rate, gross savings, and net domestic credit, and previous studies have also shown the interdependent relationship among these variables, and they clearly affect each other. Therefore, the outcome of OLS estimation could be biased. To deal with this, this study used 2SLS estimation, in which the paper quantitatively examines the measure of capital flow and studies its relationship with China's economic growth, as well as the influencing factors.

Table 1. Variable explanations

Abbreviation	Indicator Name
GDP	GDP growth (annual %)
FDI	Foreign direct investment
PEQUITY	Portfolio equity
PBOND	Portfolio bond
DEBT	External debt
GS	Gross saving
ER	Exchange rate
NCREDIT	Net domestic credit

From the above theoretical framework discussion, the analysis begins with the following simple growth regression:

$$GDP = f \left(\begin{matrix} FDI, PEQUITY, PBOND, \\ DEBT, GS, ER, NCREDIT \end{matrix} \right). \quad (1)$$

To make equation (1) suitable for calculations, it can be rewritten as

$$\begin{aligned} GDP_t = & \beta_0 + \beta_1 FDI_t + \beta_2 PEQUITY_t \\ & + \beta_3 PBOND_t + \beta_4 DEBT_t + \beta_5 GS_t \\ & + \beta_6 ER_t + \beta_7 NCREDIT_t + \mu_t, \end{aligned} \quad (2)$$

where t denotes the period; GDP_t is the dependent variable; FDI_t represents foreign direct investment; $PEQUITY_t$ represents portfolio equity; $PBOND_t$ represents portfolio bond; $DEBT_t$ stands for external debt; GS_t is the gross saving; ER_t is the official exchange rate; $NCREDIT_t$ represents net domestic credit; error term were indicated by μ ; FDI , $PEQUITY$, $PBOND$, $DEBT$, GS , and $NCREDIT$ are all expressed as a percentage of GDP. Table 1 presents a detailed explanation of all the variables. The data span of this study covers the period 1997–2021. All secondary data for this study were sourced from the World Bank database (WB, 2023).

Based on data from previous research, this study chooses annual GDP growth percentages, FDI, Portfolio equity and bonds, external debt, gross savings, exchange rates, and net domestic credit as major standards to measure annual economic growth and capital flows. Among these, the GDP growth rate per year is one of the most used indicators, as it presents the relative trend of an increase or decrease in GDP. Moreover, FDI is another important variable that shows the percentage of foreign net inflows entering GDP.

3. RESULTS

Table 2 shows descriptive statistics. From the explained variables, the average growth rate for GDP in the whole sample interval is 8.611%, where the maximum and minimum values are 14.231% and 2.240 %, respectively, indicating the explained variables have significant changes during the sample period.

Table 2. Descriptive statistical analysis for all variables

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

Variables	Mean	Std. Dev.	Min	Max
GDP	8.611371	2.344776	2.239702	14.23086
FDI	3.123643	1.090919	1.310719	4.725334
PEQUITY	.417557	.3198083	.0559416	1.557382
PBOND	.2594508	.3011862	-.1146255	1.101086
DEBT	13.17991	2.006799	8.411402	16.97637
GS	44.69095	4.71062	35.73955	51.78759
ER	7.287073	.847821	6.143434	8.289817

The data span of this study covers the period 1997–2021. For the analysis purpose, the paper investigates annual GDP growth. FDI, PEQUITY, PBOND, D, and GS, all variables were presented as percentages against GDP. All the data were collected from the World Bank database (WB, 2023). Table 1 presents a detailed explanation of all the variables. Table 2 reports the descriptive statistics.

Table 2 highlights the overall statistics of all variables in a detailed manner. Looking at the GDP based on the numbers from the table, it can be said that the average GDP growth rate for the whole chosen duration is 8.6%, the maximum and minimum rates were 14.23% and 2.23%, respectively. This means that there were many ups and downs in GDP growth over the years. FDI shows an average of 3.12%, whereas the highest percentage is 4.72%, indicating that there were not many differences during the sample period in terms of FDI.

Table 3 reports the OLS regression results. Here, this study attempts to determine how FDI affects China's GDP growth. This shows that FDI and PEQUITY affect GDP positively, whereas PBOND and DEBT have a negative impact.

Table 3 also illustrates the OLS regression data, where the total sum of squares (SS) is 131.9514 with a total degree of freedom (df) 24, which makes 5.498 the mean squared error (MS). A total of 25 observations were made for the regression analysis.

The coefficients of FDI were 0.9226, the standard error is 0.3649, and 2.53, respectively. The p-value for FDI was 0.020. At the 95% confidence interval, the obtained upper and lower FDI values were 1.6838 and 0.1614. The other positive indicator is PEQUITY, where the coefficient is 2.1955, standard error is 0.9431, and t-statistics is 2.33. The p-value for PEQUITY was 0.031. At a 95% confidence interval, the obtained lower value for FDI is 0.2282 and the upper value is 4.1627. The difference between the upper and lower values at the 95% confidence interval for PEQUITY was significant.

PBOND had a negative coefficient of -1.9241 with a standard error of 1.66228. This elucidated a t-statistics of -1.16 . The p value is 0.261. The difference between obtained upper and lower values of

Table 3. OLS regression results

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

Source	SS	df	MS			
Model	97.8337	4	24.4584	Number of obs = 25		
Residual	34.1177	20	1.7059	F (4,20) = 14.34		
Total	131.9514	24	5.498	Prob>F = 0.0000		
				R-squared = 0.7414		
				Adj R-squared = 0.6897		
				Root MSE = 1.3061		
GDP	Coef.	Std. Err.	t	p> t	[95% Conf. Interval]	
FDI	.9226	.3649	2.53	0.020	.1614	1.6838
PEQUITY	2.1955	.9431	2.33	0.031	.2282	4.1627
PBOND	-1.9241	1.6628	-1.16	0.261	-5.3927	1.5444
DEBT	-.2749	.1922	-1.43	0.168	-.676	.126
_cons	8.9353	2.3345	3.83	0.001	4.066	13.805

PBOND at the 95% confidence level was large, at -5.3927 and 1.5444, respectively. The coefficient of the constant (_cons) is 8.9353, which is significant, and the standard error is 2.3345. The t-stat was 3.83, and the p-value was 0.001. At the 95% confidence level, the lower and higher values are 4.066 and 13.805, respectively.

The regression results suggest that FDI and PEQUITY have positive and statistically significant effects on GDP growth, while external debt has a negative but statistically insignificant effect. This regression result proves the work of Hossain and Hossain (2023) otherwise as which shows that economic growth drives FDI inflows of China mainly and not vice versa. The study suggests that policymakers amend growth policies to expand the economy positively, which can attract FDI.

Table 4 reports 2SLS regression results. This illustrates that GDP is positively driven by FDI and PEQUITY. Meanwhile, PBOND and DEBT had negative influences.

25 observations were made during the regression analysis. Here, the data represent FDI with the coefficient of 0.9699354 and standard error of 0.3583554, where z and p were 2.71 and 0.007, respectively. At the 95% confidence interval, the lower and upper values were 0.2675717 and 1.672299, respectively. The coefficient of 0.9226 indicates that a 1% increase in FDI will lead to a 0.9226% GDP increase. This relationship is statistically significant (p-value = 0.020). In addition, PEQUITY had a coefficient of 2.141878 and a standard error of 0.8603126. The z- and p-values were 2.49 and 0.013. Within the context of this study, at a 95% confidence interval, the lower and upper values were 0.4556961 and 3.82806, respectively. The coefficient of 2.1955 indicates that a 1% increase in PEQUITY results in a 2.1955% GDP increase. This relationship is also statistically significant (p-value = 0.031).

In contrast, DEBT has a high negative influence, with -0.2831423 coefficient and 0.1738499 standard error, where the obtained z and p values were

Table 4. Effect of long-term capital on growth using regression analysis method 2SLS

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

GDP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
FDI	.9699354	.3583554	2.71	0.007	.2675717	1.672299
PEQUITY	2.141878	.8603126	2.49	0.013	.4556961	3.82806
PBOND	-1.775163	1.558797	-1.14	0.225	-4.830348	1.280022
DEBT	-.2831423	.1738499	-1.63	0.103	-.6238818	.0575971
_cons	8.879641	2.096111	4.24	0.000	4.771338	12.98794

Note: Instrumented: FDI. Instruments: PEQUITY PBOND DEBT GS ER NCREDIT.

-1.63 and 0.103. Again, the obtained upper and lower values were 0.0575971 and -0.6238818 at a 95% confidence interval. FDI and PEQUITY are found to have significant positive impacts on GDP growth in China. External debt, on the other hand, has a negative but statistically insignificant effect on GDP growth. The results suggest that attracting FDI and portfolio equity inflows can be beneficial for economic development in China. However, it is important to carefully manage external debt levels to avoid negative consequences on growth.

Table 5. Endogeneity test results

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

Test name	Results
Durbin (score) chi2(1)	0.10285 (p = 0.7484)
Wu-Hausman F(1,19)	0.078489 (p = 0.7824)

Note: The hypothesis is assumed: H_0 : All variables are exogenous.

The tests of endogeneity in Table 5 show the findings for both Durbin (score) chi-square and Wu-Hausman F-test. A null hypothesis (H_0) is assumed where all independent variables under consideration are exogenous, which confirms their independence from the error term in the regression model. The Durbin (score) chi-square test yielded a test statistic of .10285 and a 0.7484 p-value. Therefore, there is not enough evidence to support rejecting the null hypothesis, which indicates that the variables can be considered exogenous. Similarly, Wu-Hausman F-test results also failed to provide evidence to reject the null hypothesis of exogeneity. Where the F-statistic is .078489 and the p-value is 0.7824.

Table 6. First-stage regression results

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

Variable	R ²	Adjusted R ²	Partial R ²	F(3,18)	Prob > F
FDI inflows	0.9238	0.8984	0.8302	29.3266	0.0000

R-squared serves as a measure of the level at which independent variables explain the variance observed in a dependent variable. In Table 6, the investigation obtains 0.9238 R-squared values, demonstrating that 92.38% of the dependent variable's variation was explained through independent variables. Again, the adjusted R-squared is 0.8984, which indicates 89.84% of the variance was inde-

pendent variable. A 0.8302 partial R-squared indicates that approximately 83.02% of the dependent variable variance is justified through its independent variables. Assessing the overall model significance, F-statistic is a crucial component, and it also reveals whether any independent variable significantly correlates with the dependent variable. Higher F-statistic indicates a more robust connection of the dependent variable with independent variables. Within the context for this study, the F-statistic is 29.3266, p-value (Prob > F) is 0.0000, indicating that the regression model is statistically significant at its traditional significance point (usually $p < 0.05$). The results of this analysis provide information on the overall goodness of fit and significance of the first-stage regression.

This study also deployed instrument weakness to analyze whether the instruments are variables used to address endogeneity by proxying for potentially endogenous independent variable(s). A higher minimum eigenvalue statistic indicates stronger instruments. The obtained minimum eigenvalue statistic is 29.3266. In addition, the test was conducted using one endogenous regressor and three excluded instruments. This shows the extent to which the 2SLS estimator deviates from the true parameter values at different significance levels (5%, 10%, 20%, and 30%). Moreover, the overall output of these analyses helps evaluate instrumental strength, the potential bias in the estimators, and the size of the Wald tests in both the 2SLS and LIML estimation methods, aiding in assessing the validity and reliability of the instrumental variables approach used in the regression analysis.

Table 7. Results for the test of overidentifying restrictions

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

Test name	Results
Sargan (score) chi2(2)	8.96745 (p = 0.0113)
Basmann chi2(2)	10.0679 (p = 0.0065)

In Table 7, the provided test of overidentifying restrictions includes two test statistics: Sargan (score) and Basmann chi-square test. This Sargan chi-square test yielded 8.96745 with 0.0113 p value. Similarly, a Basmann chi-square test obtained 10.0679 test statistic, and 0.0065 p-value. These statistics evaluated the validity of the IV model's assumptions

Table 8. Results of the correlation for all variables

Source: Analysis based on data collected from the World Bank database (2023) using Stata 11.

	GDP	FDI	PEQUITY	PBOND	DEBT	GS	ER
GDP	1						
FDI	0.7369***	1					
PEQUITY	0.4285**	0.2645	1				
PBOND	-0.6686***	-0.6425***	0.0385	1			
DEBT	-0.5592***	-0.2959	-0.1064	0.6679*	1		
GS	0.3201	-0.0645	0.2828	0.0726	-0.3321*	1	
ER	0.3870**	0.6491***	0.1827	-0.4553***	-0.1916	-0.6215***	1
NCREDIT	0.5208***	0.7377***	-0.0501	-0.6274***	-0.3733*	0.1389**	0.1986**

Note: * p < 0.10, ** p < 0.05, *** p < 0.01.

Table 8 explains the correlation among all variables that drive GDP and, hence, economic growth. FDI and NCREDIT positively impact GDP to a great extent, while PBOND and DEBT pull it back. However, PEQUITY and ER positively boosted China's economy during this period. The table also shows that FDI increased because of ER and NCREDIT, while PBOND caused a negative slash. PBOND is negatively affected by ER and NCREDIT, which could be the reason why PBOND negatively impacts the other variables. However, DEBT gave it a slightly positive push, which helped to some extent. GS is negatively driven down by ER, but NCREDIT positively influences this matrix. The ER increased positively due to NCREDIT. DEBT received a negative hike from GS and NCREDIT. The PEQUITY remained neutral in terms of p-value.

In general, the correlation among all the variables proves the numbers shown in the regressions. This validates that FDI and PEQUITY positively drive China's GDP growth during the sample period, while PBOND and DEBT negatively affect economic progress.

4. DISCUSSION

This study provides valuable insights into the relationship between capital flows and economic growth in China over the 1997–2021 periods. The descriptive statistics (Table 2) highlight notable variations in the GDP growth rate during the study period, with an average growth rate of 8.61%, reaching a maximum of 14.23% and a minimum of 2.24%. Such variations suggest dynamic economic conditions, which is due to the shifts in

domestic and global economic policies, external market conditions, and investment trends. The regression results (Table 3) reveal a significant positive relationship between FDI and GDP growth. Specifically, a 1% increase in FDI contributes to a 0.92% GDP growth, as supported by a statistically significant p-value ($p = 0.020$). Similarly, portfolio equity inflows show a robust positive impact on GDP growth, with a 1% increase leading to a 2.20% rise in GDP. This finding aligns with prior studies, such as Aizenman et al. (2013), Sedai (2019), and Baharumshah et al. (2017), which also emphasize the critical role of FDI and equity inflows in fostering economic growth.

Conversely, the study highlights the negative impact of public bond inflows and external debt on GDP growth. Although PBOND and DEBT coefficients are not statistically significant, their negative influence raises concerns about the sustainability of such financing methods for long-term growth. In the same vein, Baum et al. (2013) highlighted the adverse effects of excessive debt on economic performance, while diverging from Chen and Li (2019), who noted regional benefits of government borrowing in China. The instrumental variables (2SLS) regression analysis (Table 4) corroborates the significant positive effects of FDI and PEQUITY, emphasizing their importance in driving economic growth. The results further suggest that external debt, while negative, does not exhibit a statistically significant influence on GDP. These findings diverge from Hossain and Hossain (2023), who argued that economic growth primarily drives FDI inflows, rather than vice versa.

The endogeneity tests (Table 5) confirm that the independent variables under study are exoge-

nous, supporting the reliability of the regression model. Furthermore, the strength of the instruments, as demonstrated by the high R-squared value of 92.38% and an F-statistic of 29.33 (Table 6), indicates robust explanatory power. However, the overidentifying restrictions test (Table 7) raises potential concerns regarding the validity of the instrumental variables, as suggested by the significant p-values for both the Sargan and Basman tests. The correlation analysis (Table 8) further validates the regression results, confirming that FDI and PEQUITY positively impact GDP, while PBOND and DEBT exhibit negative correlations. Notably, FDI and PEQUITY remain the key drivers of China's economic growth during the sample period, with external debt requiring careful management to avoid potential negative repercussions. The study's findings have several implications for policymakers. First, promoting FDI and equity inflows can significantly boost GDP growth. Policymakers should focus on creating a conducive investment environment by maintaining macroeconomic stability and reducing barriers to foreign investments. Second, the negative effects of ex-

ternal debt suggest the need for prudent borrowing strategies, emphasizing investments in high-return projects to mitigate potential risks.

This study provides valuable insights into the relationship between capital flows and economic growth. However, the absence of causality analysis restricts the ability to establish a definitive directional relationship between capital flows and GDP growth. Additionally, the study does not account for the regional disparities in China's economic development or the potential impacts of major global events, such as the COVID-19 pandemic. Future research should incorporate regional data and global disruptions to provide a more comprehensive understanding of capital flows and growth dynamics. This study underscores the critical role of FDI and equity inflows in driving China's economic growth, while highlighting the risks associated with public bond inflows and external debt. By addressing the identified limitations and exploring new dimensions, future research can enhance the understanding of the intricate relationship between capital flows and economic development.

CONCLUSION

This study aims to explore the relationship between long-term capital flows and economic growth for China, focusing on the challenge of endogeneity among the variables. It specifically investigates the impact of four types of capital flows – FDI, portfolio equity, portfolio bond, and external debts – on China's economic growth over the past 25 years, to identify which type of capital flow has the most significant benefits for the Chinese economy. This study found some variables showing a positive relation with the growth of the Chinese economy, where FDI has the most significant positive relation with growth. The 25 years of historical data on the Chinese economy and its analysis proved this statement throughout the paper. Moreover, the study showed that portfolio equity had a positive impact on the Chinese economy. This could be because the government decided on accelerated reforms to reduce restrictions on inflows gradually yet effectively, where the long-standing inbound quota system is removed and connect schemes for foreigners to access stock and bond markets. On the contrary, portfolio bonds and debt were pulling the economy back and trying to slow it. All these facts indicate that the type of capital and its growth rate matter in boosting or holding down a country's economy. That is, the larger the economy, the higher the FDI inflow. This study provides valuable insights into the relationship between capital flows and economic growth. It fails to establish causality between capital flow and growth, and does not consider the impact of COVID-19 or regional disparities in China's economic growth. Future research should address these limitations by considering regional data and the impact of global events like COVID-19.

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