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Geoeconomic Vulnerability in the Age of Globalization: An ARDL Analysis of U.S. Industry and Employment Dependence on Chinese Capital

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Abstract

The objective of this study is to empirically assess the impact of changes in Chinese foreign direct investment (FDI) and employment on U.S. gross domestic product (GDP) amid growing geopolitical tensions. The research methodology is based on an ARDL model with short-run dynamics and an error correction term (ECM), with the analysis grounded in quarterly data spanning a 20-year period. The empirical results reveal that employment growth has a strong, immediate positive impact on GDP, whereas the specific impact of China's TUI on U.S. economic growth manifests only with a three-quarter lag and is minimal in the short term. It was also found that a positive ECM coefficient signals atypical long-term divergence in the macroeconomic system in response to Chinese capital flows. The novelty of the study is grounded in a 20-year time series analysis, which empirically demonstrates that the impact of Chinese foreign capital on the U.S. economy requires a longer adjustment period, while labor market expansion directly stimulates GDP growth in the short term.

KEY WORDS: *geoeconomic vulnerability, Chinese FDI, ARDL approach, U.S. manufacturing, trade dependence, labor market displacement, technological sovereignty*

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1. Introduction

Globalisation has increased interdependence between national economies and rendered the US industrial base vulnerable to changes in Chinese capital flows and supply chain links [1]. However, this structural interdependence, contributing to the improvement of industrial efficiency historically, today poses a severe threat to the local economic resilience. Geopolitical tensions lead to systemic transformations of global value chains [2]. Recent work suggests that the government's recent focus on decoupling strategic technologies is changing innovation ecosystems and the economic basis of domestic labour markets [3]. The fast-changing nature of the U.S.-China bilateral relationship has thus shifted the perception of Chinese trade and capital from a pillar of efficiency to a perceived national security vulnerability [4].

This transition is exemplified by the emergence of state-driven industrial policies such as "Made in China 2025" that have encouraged Western politicians to focus on the deep integration of supply chains that threaten technical sovereignty [5]. Export bans and restrictive trade practices have emerged as a key policy tool to address the risks posed by the "dual-use" nature of interconnected supply chains. However, such regulatory measures are more likely to limit the consumer base and profitability of domestic companies [6]. These frictions have already resulted in large-scale structural decoupling, with a demonstrable $130 billion loss in market capitalisation for affected U.S. suppliers [7].

The success of such decoupling efforts hinges on the availability of alternative production and sourcing hubs in geopolitically aligned markets [8], as current forecasts suggest that a significant increase in trade costs could lead to a near-complete separation between the U.S. and Chinese technological blocs [9]. In this shifting environment, the complex relationship between Chinese foreign direct investment (FDI) and the U.S. industry has come into sharp focus. China's economy has transformed over the last several decades, making it the world's second largest economy behind the United States [10]. That economic rise has led to a systemic adjustment of American foreign policy. The election of Donald Trump

in 2016 marked a dramatic shift in this relationship, from a mainly liberal trade policy to a protectionist stance embodied by the “America first” ethos. The Trump administration saw China as a systemic strategic threat rather than a mere competitor and implemented comprehensive legislative reforms in the U.S. economic relationship [11]. Tariffs and strong investment restrictions were imposed to combat perceived unfair trading practices, which became the hallmark of this economic nationalism [12]. The geopolitical climate is in a continuous state of upheaval with concerns about national security, technological espionage, and intellectual property rights leading to unprecedented examination of the role of Chinese FDI in the U.S. [13].

The recent 2025 U.S. presidential election has further fuelled these discussions, as politicians increasingly use public and legislative opinion to fight against foreign investments that could potentially threaten domestic economic stability [12]. While much of the developing research investigates the macro-effects of trade, there are few studies on how these macro limitations and political shocks are transmitted to specific U.S. industrial sectors that rely on Chinese capital. While the decoupling of trade has been highlighted in the existing frameworks [7,9], the empirical micro-foundations of how U.S. industries react to the dual pressure of maintaining economic growth and mitigating geopolitical risks in the post-2025 regulatory environment remain to be examined.

This paper tries to fill this gap by investigating the empirical repercussions of changing Chinese FDI flows on U.S. industrial performance under rising geopolitical tensions. This study adds to the debate on economic sovereignty vs global capital integration by examining these processes and providing a comprehensive framework for policymakers that aim to balance national security with industrial competitiveness.

2. Literature Review

2.1. The Integration of the Inward FDI, Employment and International Trade in the U.S. Economy: Globalisation Changes and Geopolitical Challenges

Firstly, the endogenous nature of geopolitical risks must be considered. The present economic climate of increased economic nationalism, trade wars, and supply chain instability has a considerable effect on the performance of theoretically based models. The rising global fragmentation contradicts the classic eclectic paradigm [14]. For instance, the size of the US market, the US institutional system and the development of technology infrastructure are important locational benefits for foreign capital [14]. Even more, the rise of geopolitical tensions between the US and China, military conflicts in Europe, and the growth of protectionism have shifted traditional economic efficiency paradigms to security-oriented frameworks. Thus, in this new theoretical framework, the U.S. capital movements are affected not only by production costs.

Moreover, these costs of entry today for foreign firms into the US market involve not only regulatory or logistical hurdles, but also political risk insurance and compliance with heightened national security scrutiny [14]. This politically motivated distribution of inward FDI has obvious structural implications for the US labour market and domestic trade. For example, the US’s positive regulation on subsidies in key sectors such as semiconductors, renewable energy and electric cars has attracted a huge amount of inward FDI from allied countries [15]. Moreover, this process has the impact of “forced complementarity” in that inward investment creates growth in domestic manufacturing jobs, but also restricts trade flows with geopolitically disadvantaged countries.

Therefore, it counteracts the usual effect of total factor productivity spillover [16]. Inward capital can influence the national security sector [17] due to excessive concentration of capital and technology-intensive sectors. Foreign multinationals in US high-tech manufacturing fight for scarce local engineering and scientific talent, therefore they pay an even higher salary premium. It also notes occupational polarisation in the US and regional inequities, as the states drawing geopolitically secure FDI see faster technological transfers through labour mobility. The other regions, however, are more sensitive to the reduction of traditional trade flows [18]. Finally, the present literature does not see FDI, trade and jobs in the US via a liberal globalisation prism anymore. They also establish a new geoeconomic feedback loop, where geopolitical polarisation drives the direction of capital flows. Here it requires the rearrangement of US industrial independence and the qualitative structure of employment

2.2. Interlinkages between International Relations and the Impact of Chinese inward FDI on the U.S. industry

Much of the contemporary literature on political economy and international relations analyses the People’s Republic of China’s (PRC) foreign direct investment (FDI) in the West not as a standard economic integration flow, but as an instrument of geo-economic strategy. Classical international trade theory treats FDI as a process of mutual benefit through the interchange of capital and knowledge [19]. However, the entry of capital controlled by authoritarian regimes into liberal democracies suggests challenges of asymmetric dependency and security. In the U.S. context, China’s investment activity over the past decade has become a fundamental component of systemic competitiveness, altering the traditional conception of the boundary between national security and free-market principles. One of the primary theoretical problems of FDI in China is the close link between the state and private capital which is the reason for the emergence of what is referred to as "state capitalism" [20]. The PRC’s legal and political structure demands even private companies to cooperate with state intelligence and defence services. Therefore, any strategic acquisition of assets abroad is riddled with dual-use hazards.

U.S. authorities have identified three major threat vectors in the scholarly literature. The initial acquisition of the real estate and logistics assets [21] in geographically sensitive locations introduced physical and cyber threats [22] to critical

infrastructure and military security. Second, the systematic transfer of technological superiority. The investments are made through FDI and venture capital funds into the cutting-edge sectors (semiconductors, artificial intelligence, and biotechnology) to overcome the U.S. technological dominance. Third, there is a threat to resource sovereignty in terms of investments in agricultural land and food supply lines. These can be used to exert political pressure in the long run. In response to these asymmetric threats, the U.S. regulatory environment has shifted from a liberal open-door policy approach to defensive economic nationalism [19]. The principal institutional instrument behind this transformation is the Committee on Foreign Investment in the United States. Its powers have been substantially expanded and the legislation can now prohibit not just the purchase of controlling interests but also non-passive minority investments and technology collaborations. It is a regulatory tendency that points to a theoretical shift towards neo-mercantilism. This is how the state influences flows of investment actively through interventionist measures, to protect the technological core and the strength of its supply chains from the influence of strategic competitors [15].

The academic literature on the impact of Chinese FDI in the U.S. industrial sector underscores an agreement on a double, often paradoxical economic effect that is transforming the local labour markets. On the one hand, in the early stages of intensive capital expansion, Chinese direct investment, especially 'greenfield' projects and acquisitions of local factories, was a stabilising force for local employment, preserving or creating thousands of jobs in traditional US manufacturing states [19]. However, empirical studies show [19] that this positive impact on manufacturing employment was fragmented and the overall footprint of Chinese capital in the US labour market was limited compared to typical partners from Europe or Japan. Furthermore, the geopolitical chill in U.S.-China relations in recent years has resulted in a harsh shrinkage of Chinese FDI flows, along with the heightened CFIUS examination. It also curtailed the role of Beijing as a direct employer in American industry and diminished political support for Chinese capital at the local level. But the greater problem is asymmetric production dependency which is tightly related to the so-called "China shock" [23]. Chinese firms could use classic methods of corporate acquisition and investment to embed themselves throughout the deep U.S. supply chains, creating a structural dependence of the U.S. industry on intermediate goods and components made in China [15].

The US government strives to diversify the manufacturing capacity with the help of industrial policies and stringent tariffs. But the industrial value chains are still indirectly dependent on Beijing through third countries such as Mexico or Vietnam. Systemic risk: Having a monopoly in supplying critical components or rare earth materials. It also gives Beijing economic leverage, and China's new supply chain security laws demonstrate a determination to actively push back against the offshoring of manufacturing capacity out of China. Finally, the nature of Chinese involvement in industry suggests a threat to U.S. economic sovereignty [15]. U.S. industrial enterprises have often been the targets of strategic investments not for the purpose of creating long-term jobs but to acquire manufacturing know-how and intellectual property to back up surplus production capacity in China itself. This creates a vicious cycle where the U.S. industry is exposed to subsidised Chinese exports [18], which in the long run undermines the U.S. domestic industrial base and reduces the number of highly skilled manufacturing jobs in strategic sectors [18].

This is taking the U.S. down the road of a neo-mercantilist defence policy in which de-risking and supply chain resilience outweigh short-term investment advantages. This protective stance of the U.S. foreign policy interferes with the processes of technology diffusion and creates a scenario of "forced complementarity" that constrains the influence of foreign direct investment (FDI) on domestic employment [17,18]. But the long-term cointegration relationship between GDP and FDI is still present, and industrial robotisation breaks the direct link to sustainable job growth, thereby prolonging the "employment paradox" [15, 18].

3. Methodology

The ARDL model is frequently employed in numerous research examining the relationships between socio-economic and geopolitical factors [24]. The research employs the ARDL methodology to identify co-integration [25]. The ARDL modelling considers economic factors such as real GDP per capita, inbound Chinese foreign direct investment (FDI), and employment levels. Real GDP per capita is seen as an indicator of a nation's prosperity [26].

The data was gathered by the U.S. Bureau of Economic Analysis and encompassed over 20 years of quarterly periods. The ARDL model integrates endogenous and exogenous variables. The ARDL model incorporates lagged values of the dependent variable and values of the regressors as explanatory variables. The ARDL model is more appropriate for tiny and limited datasets. The ARDL methodology necessitates that all regressors are classified as either I(0) or I(1). In the ARDL methodology, the variables are either I(1) or I(0), or they exhibit cointegration [27]. I(1) represents the upper bound, while I(0) denotes the lower bound. The cointegration of research variables is determined by comparing the calculated F-statistic with the critical value of I(1). If the expected F-statistic is below the lower critical value for I(0), the variables are not cointegrated. The primary benefit of employing ARDL is its applicability to variables irrespective of their unit root status. The ARDL model necessitates that the series remain stationary; therefore, due to the constraints of a limited and finite sample size, the stationarity characteristics of the series are assessed using ADF tests.

Therefore, it is necessary to demonstrate the absence of variables exhibiting stationarity at the second difference I(II). The ARDL is implemented in three stages. Initially, five distinct criteria are employed to assess the maximum number of delays for the dependent variable and regressors. The subsequent phase involves examining the presence of a long-term link between defence burden and other variables. In the third stage, the coefficients of this relationship were computed after confirming the existence of a long-run relationship. In the third phase, if the hypothesis of a long-term association is rejected, only the coefficients of a short-term relationship are taken into account. The F-statistic is employed to validate or refute any

long-term link. The F-statistic has also been employed to indicate cointegration. The null hypothesis posits that no co-integration connection exists between the dependent and independent variables in the long term. The asymptotic distribution of critical values [28] is derived by the use of the ARDL long-run form and limits test. The error correction term (ECT) facilitates a comprehensive analysis of the prospective relationship between variables. ARDL (p, q_1, q_2,...q_k), where p represents the number of delays in the dependent variable Y_t, specifically Y_t=GDP, indicating the economic prosperity. Simultaneously, *q1, q2, ... qk* denote the quantity of lags of independent (explanatory) variables, X_{it}, where *i=1, 2, ... k* [27].

In this case the explanatory variables are international trade (TRADE), the prosperity of the country (GDP), foreign direct investment (FDI), employment. The ARDL model for bound test co-integration is expressed as follows:

$$\Delta GDP_t = \theta + \sum_{i=1}^{p} \theta_{1i} \Delta GDP_{t-i} + \sum_{i=1}^{q} \sum \quad \theta_{2i} \Delta FDI_{t-1} + \sum_{i=1}^{q} \theta_{3i} \Delta EM_{t-i} + \theta_4 GDP_{t-i} + \theta_6 FDI_{t-i} + \theta_7 EM_{t-i} + \theta_8 cont_{t-i} \quad (1)$$

$\boldsymbol{\theta_1, \theta_2, \theta_3}$, represent the error correction dynamics, while the second part of the formula, 1, $\boldsymbol{\theta_4, \theta_5, \theta_6}$, indicates long-run associations between dependent and explanatory variables. The null hypothesis and the alternative hypotheses are expressed as follow:

$$\boldsymbol{H0: \theta_1 = \theta_2 = \theta_3 = 0}$$

$$\boldsymbol{H1: \theta_1 \neq \theta_2 \neq \theta_3 \neq 0}$$

The ARDL equation to find the coefficient of the relationship in the short-run and long run is:

$$\boldsymbol{\Delta GDP_t = \theta + \sum_{i=1}^{p} \theta_{1i} \Delta GDP_{t-i} + \sum_{i=1}^{q} \theta_{2i} \Delta FDI_{t-1} + \sum_{i=1}^{q} \theta_{3i} \Delta EM_{t-1} + \mu_1 ETC + \mu_t}$$

Where ECT represents the error correction term, $\boldsymbol{\mu_1}$shows the coefficient of ECT. ECT unveils the speed of dynamic adjustments for the short-run deviations of the variables from those of the long-run, and the length of period it may take in order to achieve its equilibrium over the long-run [28].

The examination for the presence of a long-term relationship involves testing ρ=0 and δ_1=δ_2=⋯=δ_k=0. Residual diagnostics are carried out using the Breusch–Godfrey Serial Correlation Lagrange Multiplier (LM) and heteroscedasticity tests. If the probability values of all these tests above a 5 percent significance level, the null hypothesis cannot be rejected. This suggests that the study has no of heteroscedasticity and serial correlation [29]. To assess the stability of the ARDL long-run model, CUSUM and CUSUM squared tests are employed. The CUSUM and CUSUM square tests indicate that if the plots of the CUSUM and CUSUMSQ residuals remain under the critical limits at a 5% significance level, all coefficients in the specified regression are stable.

4. Results and Discussion

The results of the variables show that they are non-stationary, which validates the adoption of the ARDL model for the further cointegration study. All variables are shown to be nonstationary after first difference (I(1)). These results are extremely good since if any variable is *I*(2) then the ARDL model cannot be used as the crucial values of the Bounds Test would be invalid. The ADF test findings for quarterly data (see Table 1) show mixed order of integration of the variables: FDI is stationary at the first difference level (*I*), whereas the other variables (GDP, and EM) are only stationary after the first difference.

Table 1.

Augmented Dickey-Fuller test statistic for quarterly data

	LEVEL		1ST DIFFERENCE	
	Constant (M1)	*Constant and trend (M2)*	*Constant (M1)*	*Constant and trend (M2)*
GDP	0.762	1.463	-12.398***	-12.445***
FDI	-11.092***	-12.412***	-11.279***	-11.239***
EM	-2.669	-2.5168	-11.972***	-12.012***

Source: composed by the authors. Note: *p<0.1; **p<0.05; ***p<0.01

The next phase of estimation is to provide the ARDL model and number of lags (see Table 2). In order to identify the dynamic relationships between variables, the parameters of the ARDL (2,1,2) model were estimated in the initial stage. The empirical results reveal a significant influence of endogenous inertia and time lags on the gross domestic product (GDP) of the country under study. The econometric analysis confirms strong autoregressive inertia in GDP. Both lagged variables from the previous periods GDP (-1) and GDP (-2) are statistically significant at the highest level (p = 0.0000). It should be

noted that the first-order lag coefficient (0.76155) indicates a dominant direct transfer of the previous quarter's economic performance to the formation of current-period GDP. In assessing the impact of the labour market, it was found that the current quarter's employment level has a positive and statistically significant impact on economic growth (β = 187001.4, while p = 0.0000). However, the employment indicator for the previous quarter (Employment (t-1)) shows an almost negative coefficient (-185,661.3; p = 0.0000). This pattern of coefficients allows for an important macroeconomic insight. Thus, it is not the static level of employment but its dynamic change over time that is more important in determining fluctuations in output. An analysis of the impact of FDI reveals a specific structure of time lags.

The coefficients for the current period FDI and the first-quarter lag FDI (-1) are statistically insignificant (p > 0.05), which signals the absence of an immediate effect. However, the investment becomes statistically significant after a two-quarter lag period (FDI(-2)) generating a positive impact on GDP ($\beta = 11.798$, p = 0.0372). This empirical pattern is fully in the line with economic theory, which accounts for the time lag in the transformation of investment capital into real value added. Thus, in this case, an adjustment period of two quarters or half a year.

The model's diagnostic indicators confirm high specification reliability. The coefficient of determination (R^2= 0.998) and the adjusted coefficient of determination R^2 = 0.996 indicate that the independent variables explain as much as 99.8% of the variance in the dependent variable (GDP). Finally, the Durbin-Watson statistic (2.216) is close to the theoretical optimum (2.0), which eliminates the risk of first-order autocorrelation in the residuals and allows for a valid interpretation of the obtained parameters.

Table 2.

ARDL (2,1,2) model

VARIABLE	Coefficient	Std Error	t-statistics	p-value
C	30678.70	404952.1	0.075981	0.9396
GDP(-1)	0.76155	0.051394	14.81792	0.0000
GDP(-2)	0.2380	0.051998	4.577872	0.0000
Employment	187001.4	11674.52	16.01792	0.0000
Employment (-1)	-185661.3	11530.33	-16.10199	0.0000
FDI	-2.808142	5.528811	-0.507911	0.6127
FDI (-1)	3.846697	5.712159	0.673423	0.5023
FDI(-2)	11.798	5.585077	2.112493	0.0372
R^2	0.998			
Adjusted R^2	0.996			
F-statistics	8.125			
Prob.(F-statistics)	0.0000			
AIC	26.3657			
Durbin-Watson stat	2.216132			

The ARDL boundary test shows that the estimated F-statistic (5.9388) is over the upper critical boundary $I(1)$ at the level of 1% significance (5,393). The estimated F-statistic is greater than the upper limit even at 1% significance level and null hypothesis is rejected. There is a strong long-run link between GDP, inward Chinese FDI and employment. This confirms the existence of the cointegration among the variables studied. This discovery requires further investigation of the long-run correlations and the development of an error correction model (ECM).

Table 3

ARDL long-run form and bounds test

	F-STATISTIC	SIGNIFICANCE	I(0)	I(1)
Model	5.9388	10%	2.713	3.453
		5	3.235	4.053
		1	4.358	5.393

Source: estimated by the authors.

After conducting a cointegration test and confirming the existence of a long-run relationship between the variables, the next stage of the study involved identifying the long-run coefficients of the ARDL model (see Table 4). These coefficients reveal fundamental structural relationships between a country's GDP, employment, and foreign direct investment (FDI) in the long run. However, the empirical results show that when evaluating the variables individually, their direct long-run impact on the level of GDP is statistically insignificant. The coefficient for employment shows a high p-value in the long run (p = 0.9424), which exceeds standard significance thresholds.

A similar trend is observed for FDI—the coefficient obtained (31822.76) is statistically insignificant (p = 0.9355). Such a result, where the overall long-term relationship (cointegration) is confirmed by the bounds test. However, the individual coefficients of the variables are not statistically significant in the long run. Hence, it, indicates in econometric

practice that the variables act synergistically on GDP rather than in isolation. This also confirms the previously observed dynamic trend that these factors most strongly influence the economy through short-term changes and time lags, rather than through static long-term levels.

Table 4

ARDL long run coefficients and equation

Variable	Coefficient	Std Error	t-statistics	p-value
Employment	3322176	4589739	-0.072383	0.9424
FDI	31822.76	392250.1	0.081129	0.0.9355
EC=GDP-(3322176*Employment+31822.76*FDI)				

The results of the ECM regression using the ARDL model, reflecting short-term relationships between GDP, employment, and foreign direct investment (FDI), are presented in Table 5. In assessing the model's fit, it was found that the adjusted coefficient of determination (adjusted R^2 = 0.7439) is high, indicating that the selected regressors explain approximately 74.4% of the short-term variation in GDP. The overall statistical significance of the model is confirmed by a high F-statistic value ($F = 62.025$; $p < 0.01$). A key element in the short-term dynamics is the error correction term (CointEQ(-1)). The coefficient obtained is negative (-0.000403), which, from a theoretical perspective, proves that the model's tendency to converge to a long-run equilibrium following external shocks. However, this coefficient is statistically insignificant ($p = 0.1821$), and its absolute value indicates an extremely slow adjustment rate (only 0.04% of the imbalance is corrected per period).

This indicates that the long-run stable relationship between the variables under consideration in this model is weak or requires further specification refinement. When analyzing short-term effects, it was found that the increase in employment is the main immediate driver of economic growth, characterized by a positive and statistically significant coefficient (β = 187,001.4; $p < 0.01$). Conversely, the economic growth in the previous period has a negative feedback effect on the current change in GDP (β= -0.238, $p < 0.01$), reflecting the cyclical mechanism of economic adjustment. When assessing FDI, the change in FDI in the current period has no statistically significant effect on GDP growth. However, the first-lag coefficient is negative and significant at the 5% significance level (β= = -11.798, $p = 0.0272$). This suggests that, in the short term, Chinese inward FDI may cause an initial crowding-out effect of domestic capital or entail short-term structural adjustment costs that temporarily lower economic growth rates.

Table 5

ECM regression (short-run estimates)

Variable	Coefficient	Std Error	t-statistics	p-value
C	30768.70	736676.69	0.42176	0.6771
ΔGDP(-1)	-0.238083	0.050118	-4.749592	0.0000
Δ(Employment)	187001.4	11150.77	16.77027	0.0000
ΔFDI	-2.808142	5.172717	-0.542826	0.5884
ΔFDI(-1)	-11.79844	5.261929	-2.242227	0.0272
ConitEQ (-1)	-0.000403	0.000300	-1.343754	0.1821
R	0.7561			
R^2 adjusted	0.7439			
F-statistics	62.025			

Source: estimated by the author

The diagnostic test results reveal that the ARDL model is of high quality and reliable for further investigation. After running the Heteroscedasticity test is was estimated that p-value is 0.537 (table 6). This value is well over the standard 0.05 (5%) significance limit. Thus, the residuals of the model do not show heteroscedasticity. Further, the autocorrelation Test (Breusch-Godfrey Serial Correlation LM Test revealed p value of 0.250. This value is greater than 0.05. Thus, the errors are independent over time, there is no serial autocorrelation in the residuals of the model. Concluding, all dynamic information has been successfully integrated into the model and the next errors are independent of the prior ones. The bottom line of the analysis is that both tests produced p-values greater than 0.05 and this means that the residuals of ARDL model are white noise. This allows the interpretation of the cointegration results (long run relationships) and the short run coefficients.

Table 6.

Diagnostic tests

Heteroskedasticity Test	0.968 (0.537)
Breusch-Godfrey Serial Correlation LM Test	1.569 (0.250)

(P-values are presented in parenthesis.) Source: estimated by the author.

Model reveals significant differences in how Chinese FDI and employment in mostly Chinese FDI attracted sectors affect a country's economic growth and labour market. Model shows a strong long-term relationship. The F statistic from the boundary test (5,94) exceeds the critical thresholds, indicating that GDP, FDI, are structurally related in the long run. Economic growth is consistently dependent on these external factors.

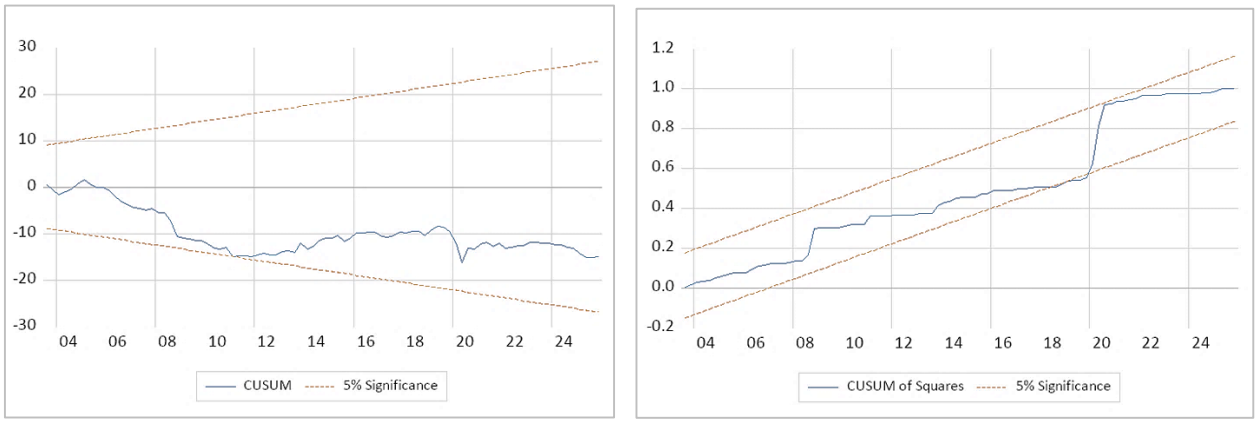

Fig. 1. Plots of Cumulative Sum of Recursive Residuals

From the CUSUM chart it clearly seen that the parameters of ARDL model are structurally stable but there is one important region which needs to be adjusted. The blue line (CUSUM) is the cumulative sum of the model mistakes in time. The red dashed lines are the critical values corresponding to 5% significance. If the blue line is contained inside the red dashed lines, the model coefficients are considered stable during the research period. As seen in the graph, between the years of 2010 and 2011, the blue CUSUM line is close to and seems to cross the lower red critical limit. This suggests that the data underwent a structural break during this period, probably due to the global financial crisis, which may have had a temporary impact on the stability of the parameters. The blue line came back to the safe zone after 2012 and stayed inside the crucial limitations till 2025, confirming the overall model stability acceptable. Since the cumulative total does not exceed the significant thresholds, the CUSUM test shows that the model parameters are practically constant at the 5% significance level with a small fluctuation around the border in the period of 2010–2011.

The CUSUM of squares test also shows the general stability of the model parameters at 5% significance level. The graph reveals a dramatic structural break in 2020, clearly related to the exogenous shock of the COVID-19 pandemic, where the cumulative accumulation marginally and momentarily passes the upper critical limit. But after this interval the model stabilises rapidly and goes back to acceptable bounds.

To summarize, the evaluation of the short-run error correction (ECM) of the ARDL model showed that the model reveals high explanatory power (adjusted $R^2 = 0.7439$)) and is highly statistically significant overall ($F = 62.025$, $p < 0.01$). Employment growth was identified as the strongest and most strategically important instantaneous factor of U.S. In the short run, GDP growth confirms the primacy of production factors in the economic cycle. The FDI does not show a direct positive effect in the short run; the first-lag coefficient (FDI (-1)) is negative and statistically significant, which indicates market adaptation costs or a local capital crowding-out shock. The statistically insignificant error correction term (CointEQ(-1)) reveals that there is no stable long-run cointegration among the variables under consideration.

5. Conclusions and Discussion

The empirical results of this study reveal complex and, in part, unexpected short-term dynamics of macroeconomic variables in relation to GDP growth. The largest positive impact on economic growth comes from an increase in employment. These finding is fully consistent with the classical postulates of Okun's law [30] and subsequent applications of the endogenous growth model, which emphasize the importance of labour as a primary factor of production. More studies [5] confirm that in developed markets, labour market activity makes a stronger and more stable GDP impulse in the short term

than fluctuating capital flows. Meanwhile, the impact of FDI exhibits a negative time lag effect. At the current moment, the impact of FDI is insignificant, but becomes negative after one period. This result contradicts the traditional "FDI-led growth" hypothesis but confirms the crowding-out effect of domestic capital described in the economic literature.

The latest analysis [31] emphasize that in the short term, large-scale foreign capital entering the market captures market share in strategic sectors, diverts local supply chain resources, and causes an initial structural imbalance. In this way, it temporarily dampens the overall GDP growth rate. The most methodologically significant finding of the study is the statistically insignificant error correction term. Although its sign is theoretically correct the lack of significance and the extremely slow adjustment rate indicate that a long-run stable equilibrium relationship between GDP, employment, and FDI does not exist in this model specification. This contrasts with the classic ARDL findings [27], this phenomenon can be explained by the theoretical insight [32] that the impact of FDI on long-term growth is not automatic. Hence, in the absence of sufficient national absorptive capacity and in the face of geopolitical uncertainty, short-term investment shocks fail to generate a stable long-term growth trajectory.

The model's finding of a negative short-term impact of FDI and the absence of cointegration indicate that Chinese capital flows to the U.S. no longer have the structural capacity to generate long-term U.S. GDP growth. Conversely, the latest statistical data show that Chinese capital has been moving to Southeast Asia and Africa, while U.S. investment activity is returning to the domestic market. This explains why the model's error correction term has lost statistical significance—the macroeconomic relationship between FDI flows and U.S. GDP growth has become fragmented and is no longer balanced in the long run.

Theoretical contributions. This study contributes to the literature on endogenous growth by demonstrating that, in developed countries subject to geopolitical fragmentation, employment has exponentially greater generative power in the short term than foreign capital flows. The results contribute to the application of ARDL methodology in macroeconomics by showing that even with high explanatory power of the model, variables destabilized by geopolitical shocks fail to form stable long-term cointegration.

Managerial implications. Since employment remains the primary driver of short-term GDP growth in the U.S., economic policy should focus on active domestic labour market measures rather than aggressive subsidies for foreign capital. From a managerial perspective, executives in strategic US industries should reduce supply chain risks and focus on investments in "friendly countries" (friend-shoring), as capital flows from China cause greater short-term adjustment shocks than real long-term benefits

Limitations and Future Research. The main limitation is the risk of omitted variables. The model did not directly account for the Geopolitical Risk Index (GPR) and changes in trade tariffs, which strongly influenced bilateral U.S.-China capital flows. In future studies, to better understand the loss of cointegration, it would be appropriate to apply a NARDL model, which would allow testing whether the US GDP response to positive capital inflows and negative capital outflows/restrictions FDI shocks is asymmetric, and to include structural break tests.

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