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Trade and inclusive economic growth: China and Latin America (2004-2021)

Comercio y crecimiento económico inclusivo: China y América Latina (2004-2021)

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Abstract: China has consolidated itself as a global economic power, and its growth has been remarkable. China's economic influence in Latin America has significantly increased, and the country has become one of the region's most important and relevant trade partners. Therefore, the trade relations between Latin America and China are considered "strategic." In this context, the purpose of this study is to analyze the relationship between international trade with China and inclusive economic growth in Latin America from 2004 to 2021, using data from 13 countries in the region (Uruguay, Peru, Paraguay, Panama, Mexico, El Salvador, Ecuador, Costa Rica, Colombia, Chile, Brazil, Bolivia, and Argentina). Our research is quantitative in nature, with a non-experimental design and a correlational scope. The econometric model used panel data and the Newey-West estimator to account for first-order autocorrelation in the error. The results indicate a statistically significant and negative relationship between Latin American exports to China, which has a 10% impact on inclusive economic growth. Similarly, imports from China to Latin America show a statistically significant and negative relationship of 5% with inclusive economic growth. However, no discernible evidence was found to support a relationship between China's foreign direct investment (FDI) in Latin American countries and inclusive economic growth.

Keywords: international trade, foreign direct investment, panel data, inclusive economic growth, Newey-West estimator, Latin America, China, Newey-West estimator.

Resumen: China se ha consolidado como una potencia global y su crecimiento ha sido notable. La influencia económica china en América Latina ha aumentado significativamente y el país es uno de los aliados comerciales más relevantes de la región. Por lo tanto, la relación comercial entre América Latina y China es estratégico. En este contexto, el estudio tiene como propósito analizar la relación entre el comercio internacional con China y el crecimiento económico inclusivo en América Latina entre 2004 y 2021, utilizando datos de 13 países de la región (Uruguay, Perú, Paraguay, Panamá, México, El Salvador, Ecuador, Costa Rica, Colombia, Chile, Brasil, Bolivia y Argentina). Nuestra investigación es de naturaleza cuantitativa, su diseño es no experimental y su alcance es correlacional. El modelo econométrico utilizado empleó datos de panel y el estimador Newey-West para tener en cuenta la autocorrelación de primer orden en el error. Los resultados indican una relación estadísticamente significativa y negativa entre las exportaciones latinoamericanas hacia China, lo cual tiene un impacto del 10 % en el crecimiento económico inclusivo. De manera similar, las importaciones desde China hacia América Latina muestran una relación estadísticamente significativa y negativa del 5 % con el crecimiento económico inclusivo. No se identificó evidencia que respalde una relación entre la inversión extranjera directa (IED) china en los países latinoamericanos y el crecimiento económico inclusivo.

Palabras clave: comercio internacional, inversión extranjera directa, datos de panel, crecimiento económico inclusivo, estimador Newey-West, América Latina, China, estimador Newey-West.

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Introduction

China's status as a global powerhouse and its remarkable growth have had significant attention. From 1990 to 2010, China achieved an average annual GDP growth rate of 10%, an impressive feat (World Bank, 2022). Currently, China proudly holds the position of the world's second-largest economy, trailing only behind the United States (International Monetary Fund, 2022). China's accession to the World Trade Organization (WTO) in 2001 marked a pivotal moment in global trade dynamics, profoundly shaping international commerce (InT). Since then, China has assumed a central role, leveraging its potential as a manufacturing hub within global value chains, leading to a substantial surge in its worldwide exports and establishing itself as a frontrunner since 2010 (Nicita and Razo, 2021).

According to the World Bank (2023a), China held the title of the world's largest exporter and second-largest importer until 2019. In 2021, China contributed to 15.07% of global exports, equivalent to an impressive US$3,363,835 million, and accounted for 11.90% of global imports, totaling US$2,688,634 million (WTO, 2022). In the realm of foreign direct investment (FDI), China stands as the world's second-largest recipient, attracting a sum of US$181,000 million in 2021, reflecting a notable 21% increase. Additionally, it ranks as the fourth-largest source of FDI overall, despite experiencing a 6% decline, with a contribution of US$145,000 million (UNCTAD, 2022). China's paramount economic and international cooperation strategy, the Belt and Road Initiative (BRI), was unveiled by Xi Jinping in October 2013. The BRI encompasses five primary objectives: political coordination, spatial connectivity, barrier-free trade, economic integration, and people-to-people bonds (The Green Finance and Development Center, 2023). As of March 2022, the BRI has garnered cooperation agreements with 32 organizations and 146 countries, and China's investments in BRI-affiliated nations from 2013 to 2021 have amassed to a staggering US$890,000 million.

The economic influence of China in Latin America has undergone a significant expansion (Feng and Zeng, 2021). Traditional partners of the region, such as the United States and Europe, now find themselves in competition with China for investments in this area (Zanabria, 2015; Lopes-Alfonso *et al*., 2021). The Ministry of Commerce of the People's Republic of China (2022a) reported a remarkable 41.1% increase in China-Latin America trade in 2021, amounting to US$451.590 million. Chinese exports surged by 52%, reaching US$229,010 million per year, while Chinese imports grew to US$222.580 million, signifying an annual increase of 31.4%. Brazil, Mexico, Chile, Peru, and Colombia stand as China's top five trading partners within the region (Ministry of Commerce of the People's Republic of China, 2022a).

The trade relationship between China and Latin America is strategically significant. China heavily relies on essential natural resources, such as soybeans, iron ore, and oil, abundant in Latin America. Moreover, Latin America serves as a significant consumer market for Chinese goods, particularly manufactured products (Lopes-Alfonso *et al*., 2021). In 2020, Latin America's primary exports to China included raw materials and minerals, with respective values of US$101,284,796 and US$46,836,546 (World Integrated Trade Solution, 2023). Notably, China's top imports from Latin America were capital assets and machinery, totaling US$97,112,863, and electrical equipment valued at US$90,063,973.

Kakwani and Pernia (2000) introduced the concept of inclusive economic growth (IEG), aiming to ensure that economic advancement benefits all members of society, particularly those who are less privileged. Wang *et al*. (2020) say that social exclusion occurs when individuals are unable to participate in specific activities, restricting their opportunities and depriving them of the skills needed for success. To mitigate social exclusion, inclusion strives to reduce disparities and eradicate poverty, fostering progress with equitable opportunities for all segments of society (Kuss *et al*., 2021; Saher *et al*., 2022).

Samuelson and Nordhaus (2009) contend that sustained economic growth is crucial for a nation's long-term success, whereas Stiglitz (2016) argues that excessive economic inequality can impede such growth. It is important to note that in low-income countries, both economic growth and equitable resource distribution are pivotal for

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lifting the incomes of the impoverished (UNDP, 2020). However, the benefits of economic advancement are not always evenly distributed, as evidenced in Latin America, where the continuous expansion between 1990 and 2000 failed to improve income inequality (Jalles and Mello, 2019).

Liu *et al*. (2022) and Topuz (2022) also shed light on the intricate connection between income disparity and economic growth. These authors emphasize that varying levels of wealth among different countries lead to diverse outcomes. In low-income nations, inequality has little effect on redistribution, while in developed nations, it contributes positively (Kraveishvili and Gogorishvili, 2022). Similarly, the impact of inequality on saving rates is less pronounced in low-income countries compared to high-income ones. Recent research delves into the role of entrepreneurial ecosystems in fostering environmentally and socially inclusive growth, as exemplified by Yoruk *et al.* (2022).

Stojkoski *et al.* (2023) have also incorporated trade data along with patent applications and research publications to formulate models that effectively and substantially augment the explanatory prowess of economic complexity measurements concerning global disparities in inclusive green growth. Their research underscores that complexity measurements grounded in patent and trade data are capable of prognosticating future economic development and wealth inequality. Nations that attain high scores across all three categories are predisposed to manifest lower emission intensities.

The research conducted by Ofori *et al*. (2023) is pertinent to foreign direct investment. This study addresses three key concerns related to inclusive green growth (IGG) in Sub-Saharan Africa (SSA). Firstly, it employs macro data to scrutinize the influence of FDI and economic freedom on IGG across 20 SSA nations. The findings indicate that, in isolation, FDI lacks statistically significant impact on promoting IGG. Secondly, the paper explores the interplay between economic freedom and FDI in fostering IGG. It unveils that SSA's "Moderately free" economic framework yields a negative impact of FDI on IGG. Lastly, the study identifies a critical threshold of 66.2% (Moderately free) economic freedom that is necessary for FDI to effectively encourage IGG. This report offers valuable insights for promoting inclusive green growth in the region by underlining the investments required to align SSA's economic structure with FDI.

Recent years have witnessed a surge in research on the interplay between InT and inclusive economic growth (IEG), as observed by Angulo-Bustinza *et al*. (2022) and Sadullaev (2023). However, a research gap still exists regarding how InT, particularly with China, can contribute to promoting IEG, especially within developing countries.

Moreover, the utilization of panel data to study inclusive economic growth is a recurring theme in recent works. Employing a quantitative, nonexperimental approach, Angulo-Bustinza *et al.* (2023) identify the determinants of inclusive economic growth in Latin America. A panel data model was employed to assess the impact of various variables on inclusive economic growth across 14 Latin American countries over a 25-year span (1995-2019). Results indicate that public expenditure and foreign trade have a positive influence on inclusive economic growth, whereas inflation, unemployment, and crises have negative effects. Meanwhile, Yang *et al.* (2023) employ diverse statistical methods, including "the linear dynamic panel GMM-IV estimator, panel corrected standard errors (PCSE) linear regression, and contemporaneous correlation estimator". Investigating the significance of inclusive growth and economic freedom in financial development, this study explores the connection between effective financial management and socioeconomic conditions conducive to technological innovation and long-term economic growth. The analysis spans from 2009 to 2017, encompassing 72 nations classified as less financially developed. The findings highlight how inclusive growth bolsters economic freedom, fostering overall financial development.

The aim of this paper is to explore the relationship between InT with China and IEG in Latin America from 2004 to 2021. IEG measurement relies on the proxy suggested by Anand *et al.* (2013) and Aoyagi and Ganelli (2015), and the panel data encompasses 13 Latin American countries (LAC). Estimates are computed using robust standard errors of Newey-West, considering the presence of first-order autocorrelation in the error term.

Methodology

Our research adopts a quantitative approach, employing a non-experimental longitudinal design and focusing on correlational analysis. To gather the requisite data, we drew upon sources such as COMTRADE (2023), the Ministry of Commerce of the People's Republic of China (2006, 2015, 2022b), and the World Bank (2022, 2023a, 2023b). All the information used in this study is publicly accessible. Table 1 presents the examined variables, encompassing: (i) Real per capita GDP growth - change in net inequality, (ii) China's investment in LAC, (iii) Exports from LAC to China, and (iv) Imports from China to LAC.

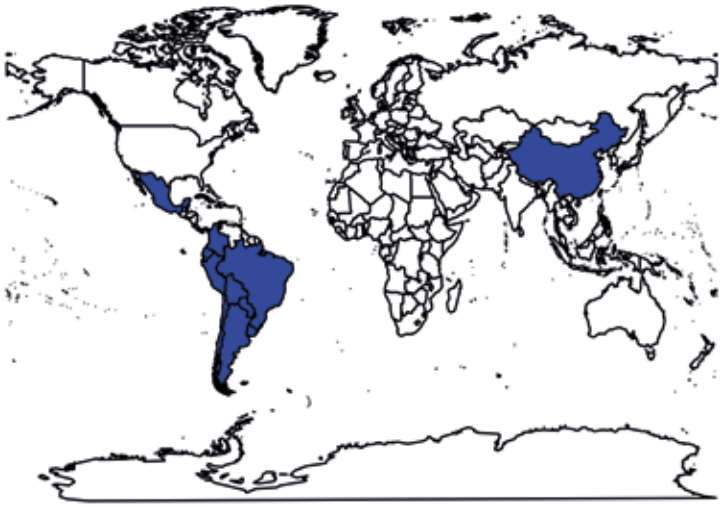
For the analysis, we compiled data spanning from 2004 to 2021, encompassing a total of 13 countries (Uruguay, Peru, Paraguay, Panama, Mexico, El Salvador, Ecuador, Costa Rica, Colombia, Chile, Brazil, Bolivia, and Argentina). This extensive dataset constitutes the foundation for conducting the panel data model, as elaborated in sections 2.1 and 2.2. Correlative and econometric analyses were conducted utilizing the Stata 14.0 trial version (StataCorp, 2015).

Table 1
Operacionalization of variables

Variable	Symbol	Indicador	Unidad de medida	Origen
IEG	CEI	Real per capita GDP growth - change in net inequality	Percentage	Own calculation from World Bank (2023b) and Solt (2020)
Foreign Direct Investment	FDI	China's investment in LAC	Millions of dollars	Ministry of Commerce of the People's Republic of China (2006, 2015, 2022b)
Export	EXP	Exports from LAC to China		COMTRADE (2023)
Import	IMP	Import from China to LAC		

Note: The sample includes 13 countries (see Figure 1): Uruguay, Peru, Paraguay, Panama, Mexico, El Salvador, Ecuador, Costa Rica, Colombia, Chile, Brazil, Bolivia and Argentina. The period is 2004-2021.

Figure 1
Countries included in the research



Note. Own elaboration using Philcarto (Waniez, 2023).

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Specification of the model

In empirical research, researchers benefit from utilizing panel data in several ways. Firstly, it fosters a deeper understanding of underlying dynamics by permitting the assessment of individual and time-specific impacts. The utilization of panel data also enhances statistical power by providing a larger sample size and mitigating the impact of omitted variable bias. Moreover, panel data facilitates the analysis of alterations across cross-sectional and time-series dimensions, thereby offering crucial new insights into the relationships under scrutiny. The Newey-West estimator employed in this study is especially advantageous due to its consideration of potential autocorrelation in the error term. This aspect ensures robust and precise parameter estimates. Consequently, this correction enhances the credibility and accuracy of statistical inferences derived from the data by addressing concerns related to serial correlation and producing accurate standard errors.

The research is based on the theoretical model:

$$CEI_i, t=F(FDI_{i,t,}\ EXP_{i,t},\ IMP_{i,t}) \quad (1)$$

F is a linear and static function, "i" represents the countries, and "t" the years of the horizon. The equation indicates that IEG (CIS) in Latin America is related to foreign direct investment (FDI, considered as the control variable), export to China (EXP), and import from that country (IMP) (Table 2). The following econometric model was used to test it:

$$CEI_{i,t}=\alpha+\beta_1 Log(FDI_{i,t})+\beta_2 Log(EXP_{i,t})+\beta_3 Log(IMP_{i,t})+e_{i,t} \quad (2)$$

$\beta_1>0,\ \beta_2>0,\ \beta_3>0$

"e" corresponds to the error; the introduction of the logarithm sought to reduce the range.

Panel data methodology

The characteristic of specification (2), a pooled model, is that it assumes the same intercept (α) for all countries, and its estimation by Ordinary Least Squares (MCO) is feasible. Furthermore, to capture the individual character of each country, a random effects model is specified:

$$CEI_i, t=\alpha+ui+\beta_1 Log(FDI_{i,t})+\beta_2 Log(EXP_{i,t})+\beta_3 Log(IMP_{i,t})+e_{i,t} \quad (3)$$

Where $_{ui}$ represents the intercept by country.

Alternatively, differences may be fixed, specifying:

$$CEI_{i,t}=v_i+\beta_1 Log(FDI_{i,t})+\beta_2 Log(EXP_{i,t})+\beta_3 Log(IMP_{i,t})+e_{i,t} \quad (4)$$

This is called a fixed effects model, and vi is a dichotomous variable corresponding to each country.

The choice between specifications (2), (3), and (4) consists of the following:

1. Apply the Breusch-Pagan test for random effects under the following hypotheses:

H_0: select the pooled model.

H_1: select the random effects model..

If H_0 is accepted, the process ends here.

2. Ask ourselves if the data correspond to all individuals in the population or if only a representative sample is used. In the case of the second response, a fixed-impact model should be estimated.
3. Utilize the Hausman test to determine the appropriate model, whether it be random effects or fixed effects, based on the given hypothesis:

H_0: "select the fixed effects model".

H_1: "select the random effects model".

Then the chosen estimate is validated with the statistical criteria (normality of errors, individual and joint significance) and econometric (low degree of multicollinearity, non-correlation, and homoscedasticity). After that, the model is interpretable.

Results

Descriptive results

According to Silveira (2017), Chinese investment in Latin America primarily focuses on public service concessions such as energy, telecommunications, and transportation. Additionally, it includes direct investments like company financing, the construction of road and rail networks, and the extraction of mineral resources. Meanwhile, Nedopil (2022) observes that 20 LAC are participating in the BRI initiative, resulting in LAC becoming one of the fastest-growing destinations for Chinese FDI. Chinese FDI in LAC has significantly increased in recent years, with an upsurge from US$16,656.51 million in 2020 to US$26,158.51 million in 2021. The "Ministry of Commerce of the People's Republic of China" (2022b) reported that the primary countries for FDI are the Cayman Islands, the British Virgin Islands, Peru, and Argentina.

Chinese companies operating in LAC have signed new contracts worth US$19,980 million in 2021, which resulted in US$7,970 million in sales. According to Figure 2, Asia is the region that receives the highest FDI inflows from China, with a total value of US$128,000 million in 2021, and LAC is second. Peru was the Latin American country that received the highest FDI inflows from China in 2021, as shown in Figure 3. Table 2 displays the major product types imported and exported between 13 LAC and China, revealing that the region mainly imports non-traditional products from China, while traditional products are exported to China.

Table 2

Main types of export and import products from Latin American countries with China (13 countries)

Country	Importing		Exporting	
	1	2	1	2
Argentina	Capital assets	Machinery and electrics	Raw materials	Vegetable
Bolivia	Capital assets	Machinery and electrics	Raw materials	Minerals
Brazil	Capital assets	Machinery and electrics	Raw materials	Vegetable
Chile	Consumer goods	Machinery and electrics	Intermediate goods	Metals
Colombia	Machinery and electrics	Capital assets	Raw materials	Fuels
Costa Rica	Consumer goods	Machinery and electrics	Machinery and electrics	Capital assets
Ecuador	Capital assets	Machinery and electrics	Raw materials	Animal
El Salvador	Consumer goods	Machinery and electrics	Intermediate goods	Food products
Mexico	Capital assets	Machinery and electrics	Raw materials	Minerals
Panama	Consumer goods	Textiles and clothing	Raw materials	Intermediate goods
Paraguay	Machinery and electrics	Capital assets	Intermediate goods	Raw materials
Peru	Capital assets	Machinery and electrics	Raw materials	Minerals
Uruguay	Consumer goods	Capital assets	Raw materials	Animal

Note. Based on data from World Integrated Trade Solution (2023).

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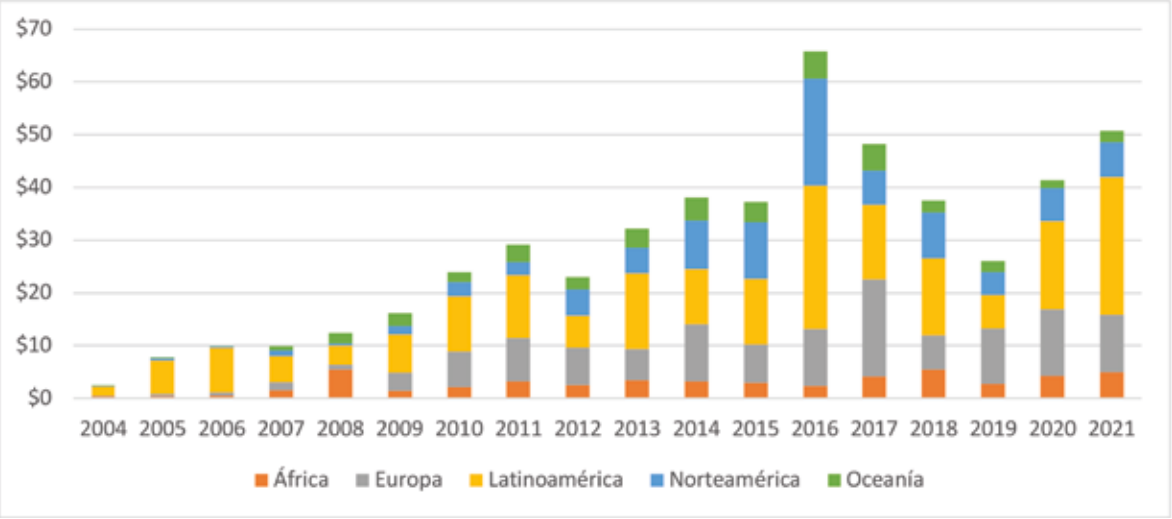
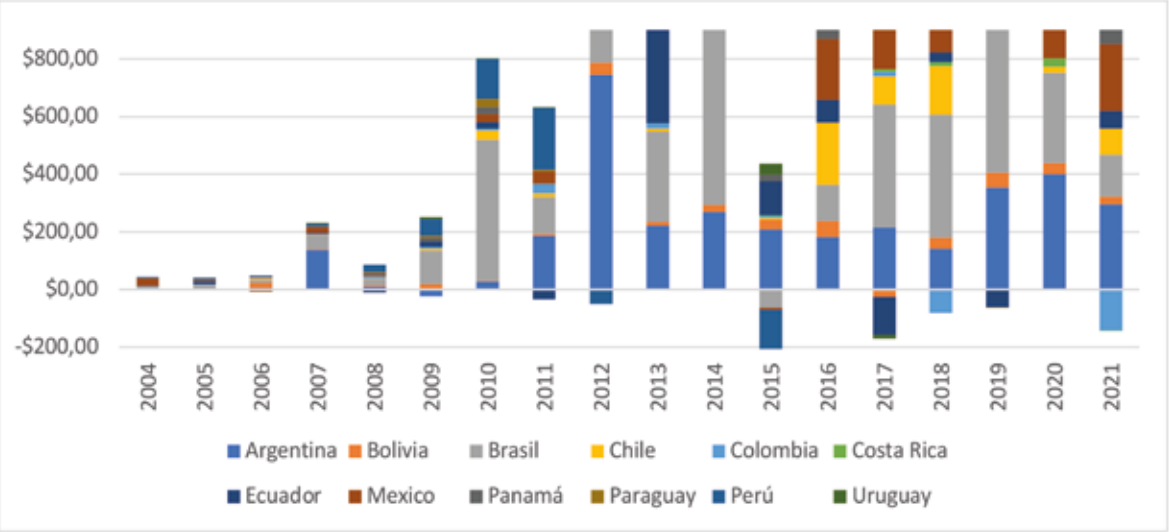
Figure 2
China's outward FDI flows by World Regions 2004-2021 (Asia excluded, Thousands of Millions of US$)



Note. Based on data from the "Ministry of Commerce of the People's Republic of China" (2006, 2015, 2022b).

Figure 3
China's outward FDI flows by Latin American countries 2004-2021 (Millions of US$)



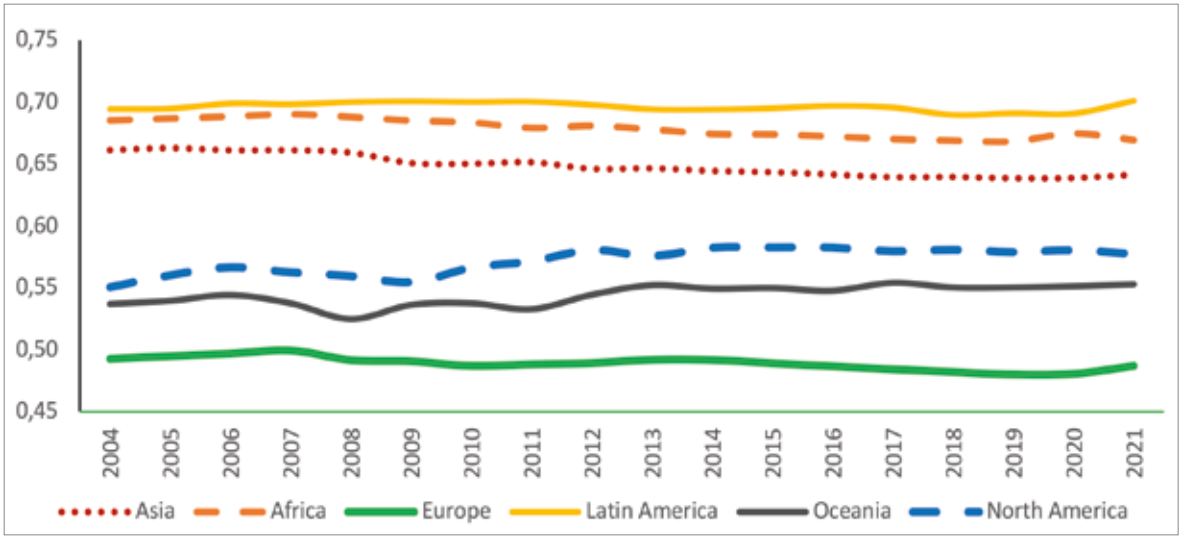
Note. Based on data from the "Ministry of Commerce of the People's Republic of China" (2006, 2015, 2022b).

As of 2021, the Latin American and Caribbean region has had considerable attention due to its distinction in displaying some of the highest levels of inequality globally, as outlined by the United Nations Development Program (UNDP). Cerezo and Landa (2020) even deem Latin America the most unequal region in the world. The widely used GINI index, ranging from 0 (perfect equality) to 1 (perfect inequality), serves as a measure of inequality, as reported by ECLAC (2021). Remarkably, Latin American countries exhibit the highest GINI index scores, as highlighted

by Drobotya *et al.* (2021). Evidently depicted in Figure 4, Latin America consistently holds the highest GINI index among other regions like Africa and Asia. In contrast, North America, Oceania, and Europe maintain GINI indexes below 0.60, indicating their success in sustaining lower levels of inequality.

Equally notable, Figure 5 portrays alterations in income distribution and national per capita GDP across the top 1%, 10%, and the bottom 50% of the population in the largest economies of Latin America spanning from 2004 to 2021. Despite periods of economic growth within this timeframe, income distribution has remained skewed towards the top 1% and 10% of society. Over the period of 2004 to 2021, Chile and Colombia witnessed the most substantial reductions in income concentration within the top 1% of the highest-income bracket, declining from 24.3% to 22.9% and from 19.2% to 17.8%, respectively. In contrast, Peru and Mexico experienced an expansion in income concentration, rising from 25.6% to 28.1% and from 16.6% to 26.8%, respectively. Meanwhile, Brazil and Argentina witnessed more pronounced improvements, with the lowest 50% of income distribution growing from 9.0% to 9.2% and from 11.8% to 13.2%, respectively, between 2004 and 2021.

Figure 4
GINI index in the world (2004-2021)



Note. Own elaboration based on World Inequality Database (2023).

However, despite the significance of InT for IEG as highlighted by numerous scholars, both traditional and endogenous growth theories have encountered challenges in achieving more efficient resource allocation, fostering heightened technology incentives, and reaping trade benefits from larger economies of scale (Kang *et al*., 2017). Huang *et al*. (2022) elaborate that the impact of InT on income inequality is contingent upon the developmental stage of each country, an aspect they correlate with the Heckscher-Ohlin (HO) standard model. This relationship is reversed in developed countries. The authors assert that "there is compelling evidence that trade diminishes income inequality in middle-income and high-income countries, yet it lacks statistical significance in low-income countries' income inequality" (Huang *et al*., 2022).

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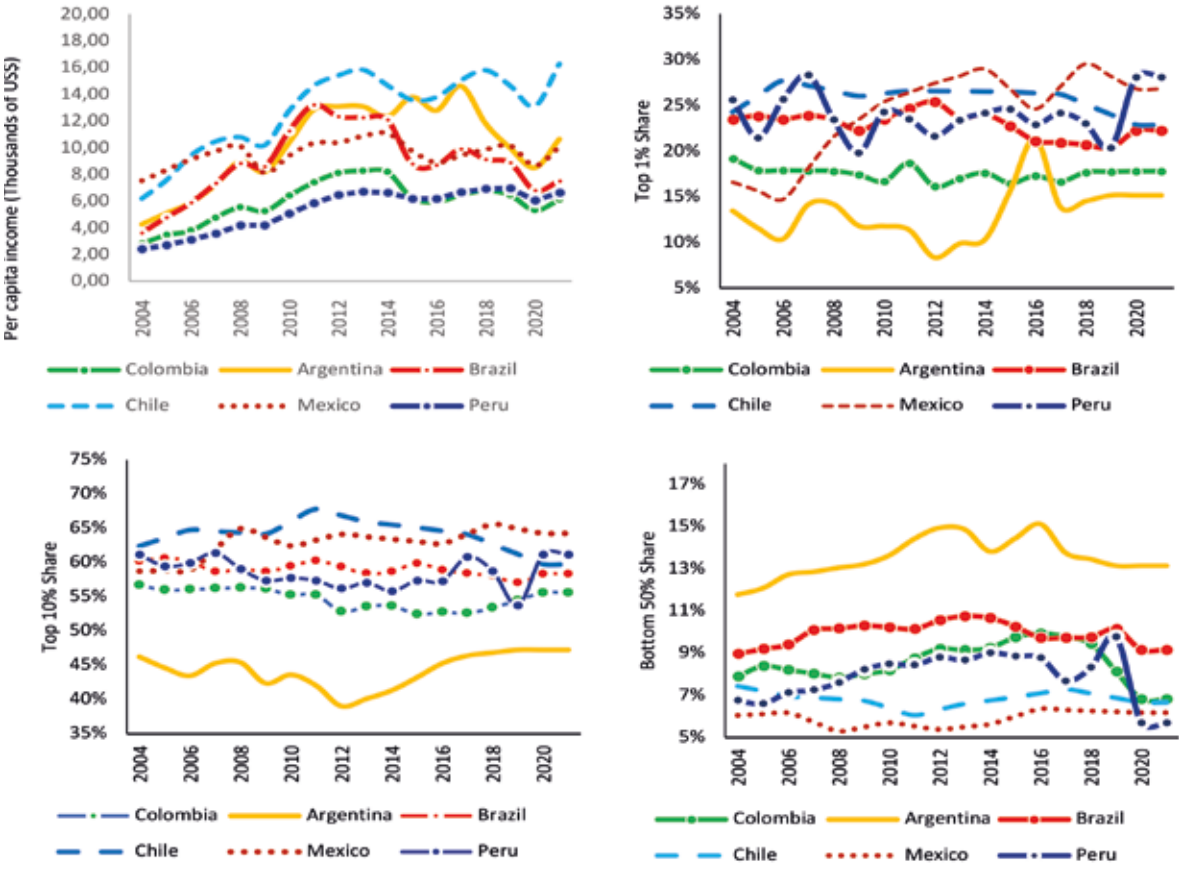
Figure 5

Per capita income, Top 1%, Top 10%, and 50% lower Latin America (2004-2021)



Note. Own elaboration based on World Inequality Database (2022).

Results of the model

The Breusch-Pagan test for random effects serves as a statistical methodology aimed at determining whether a random effects model is requisite or if a simpler pooled model suffices. This test involves comparing the variance of error terms for each panel unit within a random effects model to that of a pooled model. If these variances show similarity, a pooled model is deemed appropriate. Conversely, disparate variances signify the necessity for a random effects model.

In the present context, the p-value of 0.10 implies that the error term variances do not exhibit significant dissimilarity across panel units. This outcome suggests that opting for a random effects model might not be warranted. Consequently, a pooled model can be employed to evaluate the interrelation between IEG in LAC and FDI and InT with China within the period spanning 2004 to 2021.

The normality of the errors was analyzed with the Jarque-Bera test, whose hypothesis is:

H_0: "errors follow approximately a normal distribution"

H_1: "errors do not follow approximately a normal distribution"

With a probability value of 0.26 (greater than 5% significance), errors in the estimated model are normal, so subsequent statistical tests are valid. The t-test was used to analyze the individual statistical significance of the parameters:

H_0: "$\alpha=0$, $\beta_i=0$ (i=1, 2, 3)"
H_1: "$\alpha \neq 0$, $\beta_i \neq 0$ (i=1, 2, 3)"

The probability value associated with each estimator shows that only import from China (0.03<5%) is a statistically significant variable. Meanwhile, the goodness of fit was analyzed with the F test.

H_0: "$\beta_1=\beta_2=\beta_{3=0}$"
H_1: "at least one $_{\beta i} \neq 0$ (i=1, 2, 3)"

It is concluded that all variables together are significant for the adjustment of IEG, given that their probability value (0.00) is less than 5%.

Regarding econometric criteria, the degree of multicollinearity was measured with the variance inflation factor (FIV):

$FIV_j=1/(1-R^2_j)$ (j=1, 2, 3)

Where R^2_j represents the goodness of fit between the j-th explanatory variable of the model and the rest. Table 3 indicates that the multicollinearity of the model is low grade (FIV<5).

Table 3
FIV per variable and mean value

	FDI	EXP	IMP
FIV	1,18	1,10	1,07
Mean	1,12		

The second validated econometric assumption is homoscedasticity, with White's test and its hypotheses:

H_0: "errors are homoscedastic"
H_1: "errors are heteroscedastic"

With a probability value of 0.35 (greater than 5%), H0 is accepted; therefore, the model satisfies the assumption of homoscedasticity.

Finally, the Durbin-Watson test was used to validate the assumption of no autocorrelation, whose hypotheses are:

H_0: "the model does not have first-order autocorrelation"

H_1:"the model has first-order autocorrelation" with a Durbin-Watson statistic of 0.07, between 0 and the test's lower limit (1.68), H0 is rejected. Finally, the Newey-West consistent estimator was used to make the model interpretable (see Table 4)[1]. Table 4 shows the estimated parameters for three different models used in the analysis.

Table 4
Estimated parameters

Variable	Newey-West	Fixed effects	Random effects
Constant	8,30*** (1,11)	12,58*** 2,54	8,62*** 1,53
FDI	-0,12 0,09	-0,06 0,11	-0,11 0,10
EXP	-0,21* 0,12	0,01* 0,42	-0,20 0,14

1 This estimator is designed to correct potential biases that can emerge in panel data analysis due to autocorrelation, which occurs when observations in one period are correlated with observations in adjacent time periods.

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Variable	Newey-West	Fixed effects	Random effects
IMP	-0,36** 0,15	-1,12** 0,45	-0,41** 0,19
Additional information			
N° of observations	155		
Fitting criterion (R^2)	8,70%	9,20%	

Note. * significant at 10%, ** significant at 5%, *** significant at 1%,

Fixed random and fixed effects models are only shown to be neither interpretable nor comparable.

In summary, the analysis leads us to the conclusion that InT with China exerted a noteworthy and statistically significant adverse influence on the inclusive economic growth (IEG) of Latin America within the period from 2004 to 2021. Specifically, each 1% escalation in Latin American exports to China correlated with a 0.21% decline in the region's IEG (β2); simultaneously, equivalent increases in Chinese imports to Latin America resulted in a more pronounced reduction of 0.36% in the region's IEG (β3). However, there is insufficient evidence to substantiate a significant correlation between IEG and Chinese FDI (β1=-0.12). It is pertinent to acknowledge that the model's estimated capacity only accounts for 8.70% of the observed variability in Latin America's IEG throughout the span of 2004 to 2021. Despite this limitation, the model furnishes valuable insights into the interrelationships among the study variables.

Discussion and conclusions

Chinese investment has experienced a marked upswing in Latin America in recent times, particularly in sectors such as energy, telecommunications, transportation, and the extraction of mineral resources. The Belt and Road Initiative (BRI) has been instrumental in driving this influx of investment, with Peru emerging as the principal beneficiary of Chinese foreign direct investment (FDI) within the region. However, it remains notable that numerous countries in the region continue to import non-traditional goods from China while concurrently exporting traditional products.

The primary objective of this study is to scrutinize the correlation between international trade with China (InT) and inclusive economic growth (IEG) in Latin America spanning the period from 2004 to 2021. The researchers harnessed panel data encompassing 13 countries from the region and employed the Newey-West estimator, accompanied by robust standard errors, to address first-order autocorrelation inherent in the error term.

Our findings unveil a significant adverse correlation between Latin America's exports to China and IEG, bearing a 10% level of significance. Furthermore, a statistically significant adverse correlation surfaces between China's imports into Latin America and IEG, achieving a 5% level of significance. These outcomes align with prior investigations conducted by Kang and Martinez-Vazquez (2021) as well as Osabohien *et al.* (2021), who concluded that trade liberalization bears a detrimental impact on inclusive growth. Osabohien *et al.* (2021) reported a reduction of 1.91% in inclusive growth attributable to trade liberalization.

This negative association could be attributed to various factors and mechanisms that interact with each other. Below, we explain some potential reasons behind this negative relationship:

- Unequal competition: China is a highly competitive and productive economy capable of producing goods at relatively low costs. As a result, Chinese imports to Latin America may unfavorably compete with local products in terms of price and quality. This could impact local businesses and sectors, especially those that are not competitive in the transnational market,

leading to a decline in production and employment in those sectors.

- Productive specialization: Many Latin American countries have tended to export primary products and raw materials, such as natural resources, food, and agricultural products. These goods are often subject to price fluctuations in international markets and can be vulnerable to external economic shocks. If Latin American exports are highly concentrated in these products, dependence on China as a trading partner could increase the economic vulnerability of the region.
- Employment impact: Cheap imports from China may negatively affect certain local manufacturing sectors in Latin America, resulting in job losses in those industries. This could have a detrimental impact on income distribution and increase economic inequality in the region.
- Trade balance impact: If the value of imports from China significantly exceeds the value of exports to China, it could lead to a trade deficit in the region. Prolonged trade deficits can have adverse effects on the economy, such as reducing international reserves and the need to finance the deficit through external borrowing.
- Dependency on Chinese demand: If some countries' economies are reliant on Chinese demand for their exports, any economic slowdown in China could negatively affect exports and economic growth in the region.
- Challenges for industrialization: If cheap imports from China replace local production in key industries, it could hinder the industrialization and economic development in LAC.

Numerous research papers have delved into exploring the interrelation between trade openness and economic growth, poverty reduction, and inclusive growth within developing nations. Onakoya *et al.* (2019) unearthed those countries heavily reliant on imports experienced adverse effects on economic growth and poverty alleviation due to trade openness. In contrast, Kang *et al.* (2017) established a positive and substantial correlation between InT and inclusive growth. However, Adeleye *et al.* (2021) concluded that trade liberalization's impact on inclusive growth is statistically insignificant. The pronounced levels of inequality pervasive in Latin America and the Caribbean may accentuate the detrimental influence that InT with China has on the region's inclusive economic growth. Evidently, Latin America holds the highest global rates of inequality. Fosu and Gafa (2022) posit that inequality can impede economic growth in the Latin American context.

In accordance with our findings, there exists no discernible relationship between China's foreign direct investment (FDI) in LAC and inclusive economic growth (IEG). This outcome mirrors the observations of Ofori *et al*. (2023), who contend that, in the absence of other factors, FDI's impact on promoting inclusive green growth is statistically insubstantial. This result stands in contrast to the findings of Kang and Martinez-Vazquez (2021), who noted a positive effect of FDI on inclusive growth within nations boasting well-established infrastructure and sizable manufacturing sectors. Moreover, Onakoya *et al.* (2019) unveiled a positive and statistically significant correlation between foreign direct investment and the Human Development Index. It is noteworthy that despite the escalating influx of China's Foreign Direct Investment (FDI) in sectors like energy, telecommunications, transportation, and mineral resource extraction, many Latin American countries persist in importing non-traditional goods from China while concurrently exporting traditional products.

One limitation of this study is that the estimators are not interpreted as an impact since the model does not determine whether the independent variables precede IEG or if there are other variables that explain the relationship found. The authors recommend analyzing the type of goods traded to identify the basket that favors IEG in Latin America within the methodological framework. Another constraint of the paper relates to the availability of data. For this study, it was only possible to include information up to 2021.

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A potential extension of the study would involve incorporating data from subsequent years.

Further empirical research is needed to explore the relationship between InT and IEG in developing countries using both macro- and micro-level data while considering the distributional effects of trade, with emphasis on gender. Moreover, valuable research should examine policies and strategies to decrease the negative impact of trade on income inequality and promote more IEG. A future line of research is to measure the impact of international trade with China on the IEG by type of flow, for example, capital goods, inputs, and others. The relationship between variables can even be studied by differentiating the country with which a trade agreement is maintained, which would give signs of winners and losers of the treaty.

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