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Dual Effect of Exchange Rate Policies and Export Promotion on China's Economic Growth (1990-2023)

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Abstract

The study aims to identify the Chinese economy's economic variables by studying and analyzing exchange rate and export promotion policies as they directly relate to the country and its external environment. Studying the relationship between currency exchange rates and exports, on the one hand, and exports and economic growth in China, on the other hand, is essential in knowing when devaluing the Yuan exchange rate leads to higher export growth, which helped raise economic growth rates in China. Therefore, the study relied on the hypothesis that "if China comes up with financial policies to reduce the exchange rate of its local currency, we will reflect on the growth of exports, which will cause positive effects on economic development in it.

The study based on the Econometric approach showed a long-run integrative equilibrium relationship between the variable following economic growth in China and the independent variables of both the exchange rate and exports. Every single change in the rate of export growth leads to direct changes in China's gross domestic product (GDP) by the amount of the correction coefficient of (0.28), which is an outcome that is consistent with economic logic. When exports increase, a surplus in the trade balance is achieved to reflect positively on economic growth.

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Introduction

Like other industrial economies, China encounters internal and external problems that hinder its ability to achieve its goals and reach the planned economic growth. Therefore, China has pursued many economic policies to achieve high economic growth rates. One of these policies is the exchange rate policies and the promotion of exports through the reduction of the value-added tax (***Gourdon, 2022***), as well as the policy of devaluing the national currency against the currencies of trading partners ***(Devadoss, 2014*)**. China's increased reliance on market forces and mechanisms in allocating economic resources and its continued desire to access international markets through the export gateway is related mainly to its exchange rate management policy (***Byrd, 1987)***. States have begun intervening to regulate exchange rate fluctuations (***McKinnon, 2012)***. Like other countries, China has adopted many economic reforms, represented by the competitive devaluation of the local currency in global markets through the exchange rate (***Devadoss, 2014*)** . Especially the policy of devaluation of the Yuan, which gave Chinese exports an advantage abroad in light of the production apparatus's flexibility and increased production ability. The decline in the exchange rate thus achieved high economic growth rates until China became the second-strongest economy in the world (***Shusong, 2010***).

Problem: Studying the relationship between currency exchange rates and exports on the one hand and exports and economic growth in China on the other leads us to question the reality of the links between these variables; what is their nature in light of its historical data? Will lowering the Yuan exchange rate lead to higher export growth? Does this lead to higher rates of economic development?

Hypothesis: The research assumes that China's reliance on economic policies that require a reduction in the exchange rate of its local currency and its impact on export growth has positive effects on its economic development.

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Objectives: The study aims to shed light on the variables affecting economic activity, as the primary goal of economic activity is economic growth. The study aims to identify the variables affecting the Chinese economy through exchange rate policies and export promotion directly related to the state's relationship with its external environment.

1- Exchange Rate Policy Concept

The existence of a foreign exchange market in the presence of potential buyers on one side and potential sellers on the other leads to the formation of foreign exchange rates called exchange rates or rates. The exchange rate is the price of a foreign currency denominated in units of the local currency or the number of units of foreign currency necessary to obtain one unit of the local currency. This correspondence enables exchange rates to link between different countries' currencies, making possible international comparisons in terms of prices and costs **(Mandour, 1990)**. The exchange rate is a price like any price, as the price of any commodity is formed due to the convergence of its supply with its demand. The exchange rate of a currency is also formed by the convergence of its supply with the demand for it, as some factors contribute to determining it, including the world's demand for the commodity of the state and the state's demand for the goods of the world, as well as capital movements to and from the state. The exchange rate, determined by the supply and demand of the currency, is also affected by the monetary base and the state's intervention **(Hajjar, 2003)**.

The exchange rate policy is an economic policy that, over time, gains independence from monetary policy within its excellence in objectives and tools. The exchange rate policy seeks to resist inflation, as the improvement in the exchange rate leads to a decrease in the level of imported inflation and an improvement in the competitiveness of projects. In the short run, the reduction of import costs has a positive impact on the decrease in the level of inflation, so it doubles the profits of projects and aims to reallocate economic resources. The exchange rate that makes the economy more competitive leads to the diversion of resources to the export-oriented primary goods sector so that many goods become exportable, thus reducing the number of goods imported and adjusting the balance of payments to achieve the objectives above. The exchange rate policy uses the following tools **(Mohammed, 2018)**:

1-1- Adjustment of the currency exchange rate: The state devalues or revalues the currency when it intervenes within the framework of the fixed exchange rate system, in the flexible system, so it works to affect the improvement or deterioration of the currency value, and uses the policy of reduction in general to encourage exports.

1-2- The use of exchange reserves: Under the fixed or semi-managed exchange rate system, the state resorts to maintaining the exchange rate of its currency. When the local currency collapses, the state sells its foreign currencies against the local currency. When it improves, it buys those currencies against the local currency, and when the reserves are low, the central bank in the state reduces the local currency.

1-3- Exchange rate control: The state works within the framework of its foreign exchange management policy by taking several measures, including obligating the return of foreign currencies collected abroad as a result of export within a specified time, determining the allocations in foreign currency placed at the disposal of travelers abroad for tourism, as well as dividing bank accounts into accounts for residents and accounts for non-residents.

1-4- Adopting multiple exchange rates: In light of this, it aims to reduce the effects of the volatility in the markets, directing its trade policy to achieve specific purposes. It may rely on two or more prices, one of which is excessive about transactions related to essential imports or imports of the sectors to be supported at the end of the standard exchange rate to which domestic goods destined for export or non-essential imports are subject.

2- Export Promotion Policy Concept

Encouraging exports is one of the economic policies aimed at achieving high economic growth rates, as it prepares the means for faster economic growth under other economic policies **(Saidi, 2002)**. In particular, the import substitution policy, where the state imposes strict customs and non-tariff barriers to protect and encourage local industries. However, the existence of negatives in this type of industry, as well as their inconsistency with the international general trend based on the liberalization of international trade and the lifting of restrictions on trade, has become an obstacle to achieving its objectives. The import substitution policy raises the prices of goods that compete with imports and directs resources from export industries to industries that compete with imports. Hence, it leads to difficulties in exporting both primary and industrial products because it biases the industries competing for imports at the expense of export industries and the narrow size of the local market in the country to the extent that it can not reach the optimal level of production, there is often surplus capacity **(Kreinin,**

2010). Therefore, due to shortcomings in this policy, countries began to resort to export promotion policy, which includes changing the incentive system in favor of exports and reducing or removing bias against them. Countries can offer many financial incentives that raise exporters' revenues, such as supporting exports or reducing exporters' costs, such as reducing customs duties on imports that are used as inputs in the export industry or reducing income tax rates, so that some countries import inputs without customs duties, from which the final products are exported abroad as in the case of free industrial zones **(Kreinin, 2010)**.

The tendency of different countries to adopt an export promotion policy through the development of appropriate plans and strategies aims to raise productive efficiency and then economic efficiency, improve the quality of commodity products as well as increase the degree of diversification and development, which is reflected in the promotion of their commodity exports and access to global markets **(Ministry of Planning, 2021)**. It is used within the framework of export promotion policy and achieves its objectives through **the** following tools **(Shihab, 2007)**:

2-1- Granting Subsidies: According to this system, the state provides cash or in-kind benefits to exporters to export a particular commodity to gain markets abroad. Grants or subsidies are provided to compensate for the profit lost by selling their goods abroad at a price that does not bring them that profit, in the sense that the state here urges exporters to abandon market profit and obtain a government profit in the form of a subsidy. A subsidy is a system that encourages exports and protects local products without customs duties. The subsidy may be directly in the form of a certain amount for the value or quantity of the exported commodity or an indirect subsidy, either in the form of a financial grant or in-kind facilities for a local industry that produces goods intended for export or it may be incorporated into a re-examined customs duty that exceeds it. In return, there may be a counter-reaction by the importing country by imposing customs duties equal to the subsidy on the commodity that was granted an export subsidy.

2-2- Dumping system: According to this system, the locally produced commodity is sold in the international markets at a price that is less than the cost of its production or less than the prices of similar or alternative goods in those markets. It is a system of selling at two prices: the first is high in the local market where the commodity is produced, and the second is low in the international market. The primary purpose of this system is to win international markets by eliminating all possible competition, in return for which there are counter-reactions, by imposing additional customs duties on countries that have faced dumping to reduce the impact of dumping, which may amount to banning the import of goods subject to the dumping system.

3- Main indicators of the Chinese economy for the period (1990-2023)

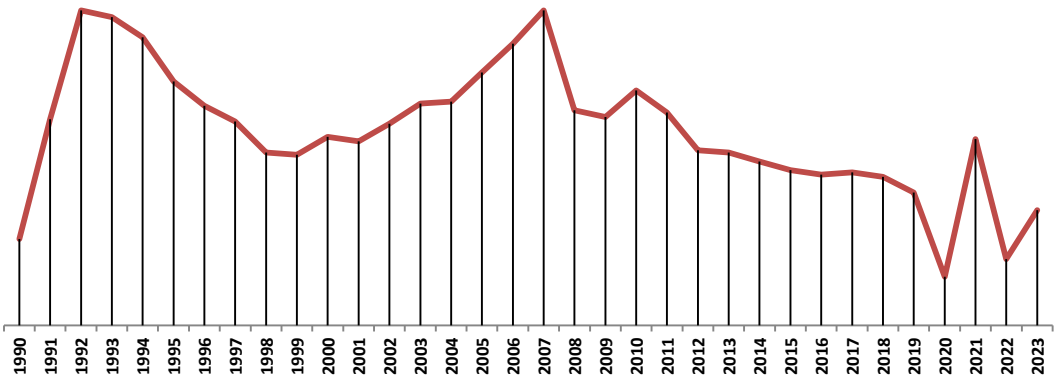
Many developing and emerging countries, including China, have taken significant steps towards liberalizing their trade systems. These are linked to adopting stabilization and adjustment programs that include following specific domestic policies and opening markets abroad. Since 1978, China has begun to implement a new economic policy based on reform, opening up, and modernization by adopting all available means and combining a comprehensive planning method with a free market economy through what is known as the Socialist market economy. The main aspects of the reform included the diminishing role of central planning in exchange for increasing reliance on market forces in allocating resources and determining prices and output **(Abdul Ghaffar, 2002)**. One of the most prominent results of this policy was the development of GDP and the achievement of considerable leaps in economic growth, the highest in the world. In 2023, China ranks as the second strongest economy in the world after the United States of America in terms of GDP value by (17.79) trillion dollars. Table (1) shows the economic growth rate in China for the period (1990-2023).

Table (1) China's economic growth rate for the period (1990-2023) (%)

Year	1990	1992.	1994	1996	1998	2000	2002	2004	2006
GDP	3.9	14.2	13	9.9	7.8	8.5	9.1	10.1	12.7
Year	2007	2009	2011	2013	2015	2017	2019	2021	2023
GDP	9.7	10.6	7.9	7.4	6.8	6.7	2.2	3	5.2

Source: World Bank: https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD.ZG

Figure (1) China's economic growth rate for the period (1990-2023)



Source: Figure prepared by the two researchers based on the data of Table (1).

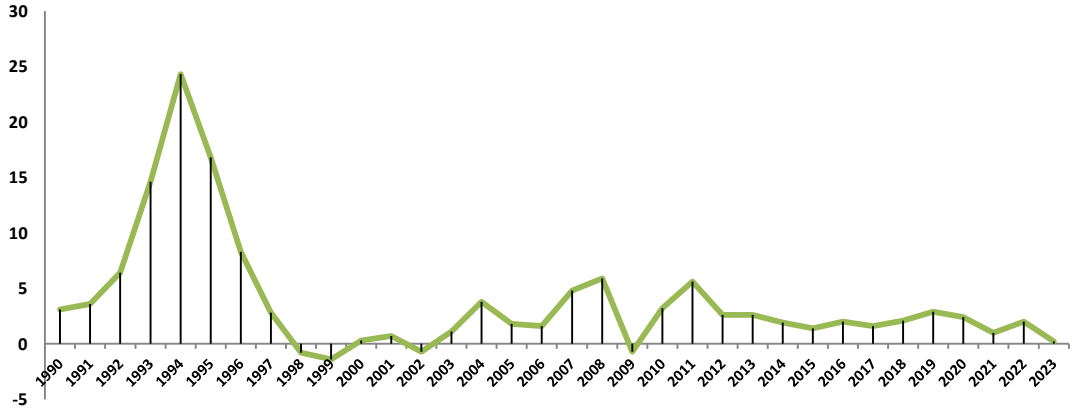
On the other hand, the successive increase in Chinese economic growth rates has been accompanied by similar spikes in inflation rates as a result of increases in aggregate demand, specifically fixed investment, excessive granting of credit, and price investigation, so that the inflation rate reached (24.3%) in 1994 while imposing economic reforms by strengthening the control of the central authority over macroeconomic policies on the one hand, and expanding the scope of market-oriented policy tools. As a result, China achieved a significant decrease in the inflation rate until it decreased to (2.8%) in 1997. Then, the declines continued until 2023 to reach the limits of **(0.2%) (Worldbank.org)** without causing a significant imbalance in economic growth rates. Table (2) shows China's inflation rates for the period (1990-2023).

Table (2) China's inflation rates for the period (1990-2023) (%)

Year	1990	1992.	1994	1996	1998	2000	2002	2004	2006
INF	3.1	6.4	24.3	8.3	−0.8	0.3	-0.7	3.8	1.6
Year	2007	2009	2011	2013	2015	2017	2019	2021	2023
INF	5.9	3.2	2.6	1.9	2	2.1	2.4	2	0.2

Source: World Bank: https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD.ZG.

Figure (2) China's inflation rates for the period (1990-2023)



Source: Figure prepared by the two researchers based on the data of Table (2).

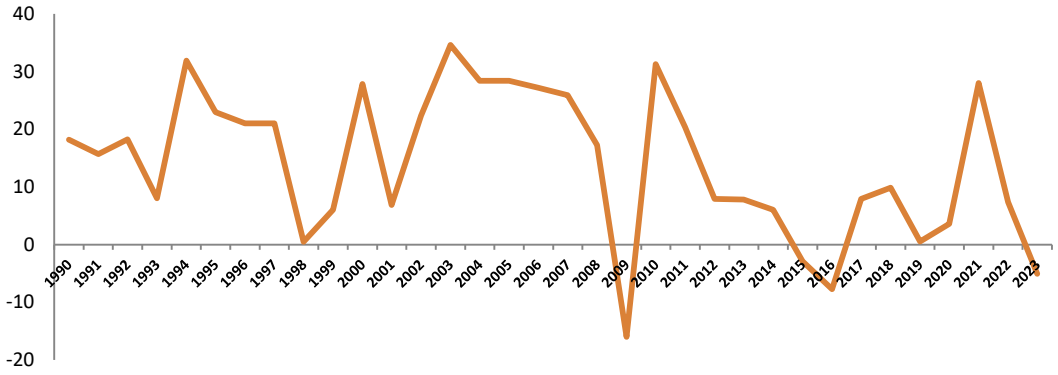
The high economic growth achieved in China is mainly due to the superior performance of exports due to the development of foreign direct investment flows in the export sector. Therefore, China provides an economic model for the exciting transformation of the foreign investment system by applying the open-door policy. As a result of the development of many economic sectors, exports have developed significantly, especially with the beginning of the twenty-first century. The value of exports increased from (62090) million dollars in 1990 to (122060) million dollars in 2007 and then to (3380020) million dollars in 2023. Table (3) shows the evolution of the value of exports in China for the period (1990-2023).

Table (3) Evolution of the value of exports in China for the period (1990-2023) (million dollars)

Year	1990	1992.	1994	1996	1998	2000	2002	2004	2006
LDCs	62090	84940	121010	151050	183710	249200	325600	593330	968980
Year	2007	2009	2011	2013	2015	2017	2019	2021	2023
LDCs	1220060	1201610	1898380	2209000	2273470	2263340	2499480	3316020	3380020

Source: National Bureau of Statistics of China, https://data.stats.gov.cn/english/easyquery.htm?cn=C01

Figure (3) China's export growth rates for the period (1990-2023)



Source: Prepared by the two researchers based on:

National Bureau of Statistics of China, https://data.stats.gov.cn/english/easyquery.htm?cn=C01

4- China's exchange rate management and its role in enhancing its market access capacity

The growing volume of exports in China and its high economic growth rate have led to an increase in the Chinese Yuan's chances of upgrading from a local currency to settle local and regional payments to confront significant currencies such as the dollar and the euro, thus seeking to make the Yuan play a key role at the international level. The exchange rate management in China has also witnessed significant shifts, as during the period (1981-1993) the dual exchange rate system prevailed, as (80%) of economic transactions were carried out through the market price, and only (20%) of foreign exchange transactions are carried out at the official price **(Sayed, 2021)**, while during the period (1994-2005) the Chinese Central Bank kept the relationship between the Yuan and the dollar stable to achieve economic progress driven by attracting more direct foreign investments and the rapid expansion of exports, as exchange rates were stable at (8.28) Yuan/dollar **(https://data.albankaldawli.org/)**. Since 2001, after joining the World Trade Organization, China has allowed the Yuan to appreciate against the dollar, ostensibly to reduce its current account surplus with the United States.

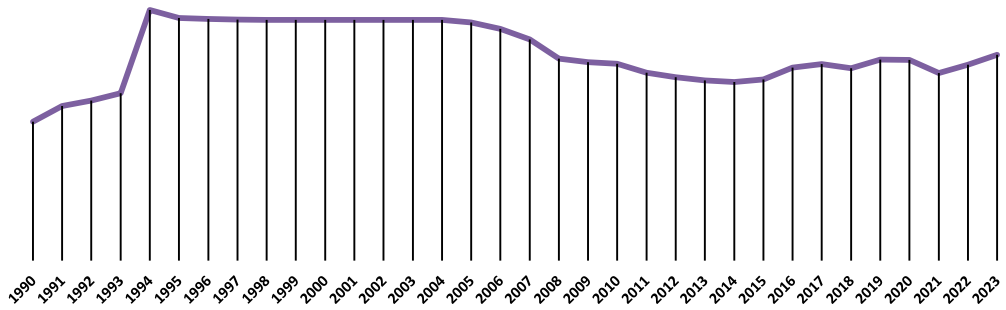
Within the framework of changes in monetary policy in China, the Central Bank of China announced in 2005 a more flexible system of managed floating of the exchange rate, where the exchange rate is determined by a basket of currencies with undeclared relative weights that allow movement within the limits of (+/- 3%) during any day that increases the flexibility of the exchange rate if the relative weight of the dollar is predominant in this basket (**Sayed, 2021**). With the inclusion of the Yuan in the SDR basket, he expects more support for its already growing use and trading internationally. Table (4) shows the China's exchange rate growth for the period (1990-2023).

Table (4) China's exchange rate growth for the period (1990-2023) (Yuan/Dollar)

Year	1990	1992.	1994	1996	1998	2000	2002	2004	2006
Exchange rate	4.78	5.51	8.62	8.31	8.28	8.28	8.28	8.28	7.97
Year	2007	2009	2011	2013	2015	2017	2019	2021	2023
Exchange rate	7.61	6.83	6.46	6.2	6.23	6.76	6.91	6.45	7.08

Source: World Bank: https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD.ZG.

Figure (4) Exchange rate path in China for the period (1990-2023)



Source: Figure prepared by the two researchers based on the data of Table (4).

With the efforts made by China to artificially weaken its currency during the period (2005-2013), as an economic policy that helps increase exports, it weakens its currency to make its exports cheaper, which leads to raising the level of demand for them, by printing more of them to decrease their value, to reduce inflation to reduce the supply of markets with their currency while increasing the volume of exports, the Yuan becomes strong against the dollar, this allows the purchase of raw materials and their import at lower prices **(Shihab, 2021)**. China's adoption of the policy of reducing the Yuan as one of the policies aimed at encouraging exports and then achieving economic growth rates comes mainly from the flexibility of internal production of exportable goods and services, and thus the ability of production to increase by a percentage of trade depreciation of the exchange rate, noting that the reduction procedure inevitably leads to retaliatory measures by other countries, as this leads to countries meeting the state's exports with measures that restrict their entry **(Shihab, 2007)**. This happened when the United States of America asked China, after several negotiations, to raise the value of the Chinese Yuan against the US dollar. The devaluation of the Yuan gives Chinese exports an advantage abroad and mitigates some of the adverse effects of US tariffs on the Chinese economy.

5- Econometric Analysis of the Relationship between Exchange Rate and Export Promotion on Chinese Economic Growth

5-1- Mathematical Characterization and Formulation

The variables of the model are divided into internal and external variables, a dependent variable, and two variables independent of the Chinese economy, as follows:

A. Dependent variable: A symbol to the dependent variable (GDP) GDP, the researchers took the growth rate of GDP estimated in Chinese Yuan.

B. Independent variables: A symbol of the first variable exchange rate (RX) and the second variable export growth rate (EX).

C. It symbolizes the Random Variable (U).

The research relied on mathematical and standard relationships to reach the best-unbiased estimates, as follows:

$$GDP_t = f\,(EX_t\,, RX_t) \qquad 1$$

By adding the random variable, the standard model is as in the following Equation:

$$GDP_t = B_0 + B_1 EX_1 + B_2 RX_2 + \varepsilon_t \qquad 2$$

Intending to obtain the standard model of economic activity in China due to the impact of the exchange rate and the rate of export growth on economic growth in China, the researchers used a time series of (35) views extending from (1990) to (2023) as in tables (1-4):

5-2- Stability Test

The static or non-static test is used to identify the random flow of the values of the variables over time. The starting point is the process of the Unit Root (***Pesaran, 2007***).

If the general trend of the variable is predictable, we call this a general trend. Otherwise, it is a random trend. The variables to be estimated are stable and do not suffer from Spurious Regression if they are free on average from the trend over time (***Herranz, 2017:295***). The integral rank of all variables is determined by detecting the Unit Root. The strength of the test depends on the rejection of the null hypothesis. We also calculate the strength of the test by the probability of error, which is the most considerable value of the force equal to (1).

The Augmented Dickey-Fuller test is the test for research data, based on the three equations below to detect stability in the time series of the variable, to test the following two hypotheses and the following equations (***Pesaran, 2007***):

A. The null hypothesis states the existence of the Unit Root (instability of the time series).
B. The alternative hypothesis states no Unit Root (time series stability) exists.

$$\boldsymbol{model(i): \Delta yt = \lambda . Y_{t-1}} \\ \boldsymbol{- 1 \sum_{j=2}^{p} \phi j\ \Delta xt - j + 1} \\ \boldsymbol{+ \varepsilon t} \qquad \boldsymbol{3}$$

$$\boldsymbol{model(ii): \Delta yt} \\ \boldsymbol{= \lambda . Y_{t-1}} \\ \boldsymbol{- 1 \sum_{j=2}^{p} \phi j\ \Delta yt - j + 1 + c} \\ \boldsymbol{+ \varepsilon t} \qquad \boldsymbol{4}$$

$$\boldsymbol{model(iii): \Delta yt} \\ \boldsymbol{= \lambda . Y_{t-1}} \\ \boldsymbol{- 1 \sum_{j=2}^{p} \phi j\ \Delta yt - j + 1 + c + bt} \\ \boldsymbol{+ \varepsilon t} \qquad \boldsymbol{5}$$

Equation (4) differs from Equation (3) in that it contains the fixed term (C), and Equation (5) differs from Equations (4 and 3) in that it includes the Constant and Trend. After estimating the equations, the null hypothesis (Ho: ∅=1) and the alternative hypothesis (H1:∅<1) were tested.

5-3- Results (ADF) Test

The values of the variables (GDP, EX, ER) during the period (1990-2020) are unstable at this level. After taking the First Difference, it was found to be stable in the case of a constant, without a constant, and a trend at the level of (1%, 5%, 10%). As shown in the Table with a sign (* * *), all variables can be tested to be stable at the first difference and integrated from degree I(1) ***(Kruse, 2011).***

Table (5) Unit Root Test (ADF)

UNIT ROOT TEST RESULTS TABLE (ADF)

Null hypothesis: the variable has a unit root

At Level

		GDP	EX	RX
With Constant	t-Statistic	-1.6993	-4.1603	-1.7482
	Prob.	***0.4220***	***0.0027***	***0.3975***
		n0	***	n0
With Constant & Trend	t-Statistic	-3.2597	-4.8147	-5.4865
	Prob.	***0.0913***	***0.0025***	***0.0006***

		*	***	***
Without Constant & Trend	t-Statistic	-0.7685	-1.1916	-1.3924
	Prob.	***0.3754***	***0.2083***	***0.1488***
		n0	n0	n0
	At First Difference			
		d(GDP)	d(EX)	d(RX)
With Constant	t-Statistic	-7.2614	-7.2635	-6.7799
	Prob.	***0.0000***	***0.0000***	***0.0000***
		***	***	***
With Constant & Trend	t-Statistic	-7.1884	-7.1265	-5.3850
	Prob.	***0.0000***	***0.0000***	***0.0008***
		***	***	***
Without Constant & Trend	t-Statistic	-7.3633	-7.3807	-6.9746
	Prob.	***0.0000***	***0.0000***	***0.0000***
		***	***	***

Notes:

a: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

b: Lag Length based on SIC

c: Probability based on MacKinnon (1996) one-sided p-values.

5.4 Co-integration Test

Co-integration is defined as the stable time path of two or more time series over the long-run, where they share the same rank, where changes in one variable lead to the cancellation of changes in the other variable. Jointly integrated variables can eliminate the imbalance in the long-run and achieve balance. The ratio between the two values is fixed over time (***Bayer, 2013***).

The long-run equilibrium relationship between variables is significant for predicting the values of the dependent variable in terms of independent variables. The research relied on the (Johnson) test because it fits with the data of the Chinese model. Co-integration is achieved in the case of the regression of the dependent variable, represented by gross domestic product (GDP), on the independent variables, represented by the exchange rate (RX) and the export growth rate (EX). This is important in co-integration theory. To determine whether there is a standard integration between the variables, I propose (Johnson) Trace Test (λ Trace) according to the following formula **(*MacKinnon, 2010*)**:

$$\lambda Trace = -n \sum_{i=r+1}^{k} \ln(1 - \lambda i) \qquad 6$$

With the same methodology, (Johnson) suggested testing the value (Maximum Eigenvalue Test (λ Max)) according to the following formula**:**

$$\lambda Max = -n \ln(1 - \lambda r + i) \qquad 7$$

It is clear from Table (6) that after testing the model, the integrative equilibrium relationship between the dependent variable and the independent variables was based on the Trace value test (λ Trace) and the latent value test compared to the critical value of (Mackinnon). It was found that the calculated value is greater than the critical value and the existence of one joint integration, so the estimated value of (λ Trace) of (37.09) for the first variable was more significant than the tabular value of (29.7) with a probability of (0.006). Accordingly, we reject the nihilism hypothesis and

accept the alternative hypothesis that there is joint integration between variables, in the sense that there is joint integration between variables so that over a long time, it can achieve balance to exceed the problems facing GDP, exchange rate or export growth rate in China through joint accompaniment. In the long run, China can also achieve growth through the exchange rate if it impacts the general level of prices in the short run.

The second test, as in Table (6), related to the test of the value of (λ Max-Eigen), showed that the calculated value is greater than the tabular value of the first variable, as the computed value was (26.1) more incredible than the critical values of (Mackinnon), which is (21.1). It confirms the research hypothesis that the exchange rate and the growth rate of exports affect the growth rate of the Chinese economy during the long-run, if its impact during the short-run leads to high inflation rates.

Table (6) Co-integration of China's growth rate, exchange rate, and export growth rate

Date: 09/13/24 Time: 10:54

Sample (adjusted): 1992 2023

Included observations: 32 after adjustments

Trend assumption: Linear deterministic trend

Series: GDP RX EX

Lags interval (in first differences): 1 to 1

Unrestricted Co-integration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.558460	37.09604	29.79707	0.0060
At most 1	0.220979	10.93644	15.49471	0.2154
At most 2	0.087938	2.945507	3.841466	0.0861

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.558460	26.15959	21.13162	0.0090
At most 1	0.220979	7.990938	14.26460	0.3796
At most 2	0.087938	2.945507	3.841466	0.0861

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

6- Testing the Error Correction Vector Model (ECM)

The Error Correction Vector Test is complementary to previous tests of model variables, as it is appropriate to estimate the parameters of the Chinese model using the (ECM) methodology in the case of one dependent variable. This methodology is characterized by the link between the short and long-run in deltoid relationships. Especially when there is a standard integration between them, the variables can correct their time course and overcome their immediate short-term problems (***Mantalos, 1998***).

Suppose one of the variables is unstable in the short-run. In that case, it is possible to achieve joint integration with other variables during the long-run, which represents joint integration which is intended to correct the time path in the long-run integrative (***Chamalwa, 2016***) relationship.

6-1- Interpretations of the results of the Error Correction Vector (ECM)

The research reached results to show the extent to which it is possible to predict the future of economic growth in China through the growth rate (GDP) due to the impact of the exchange rate and the rate of export growth to make it clear through joint integration that values may deviate from the planned path for external reasons. Still, these changes are temporary and return to balance and correct the path in the long-run as follows:

- **A.** Short-run fluctuations are corrected by (-0.68), as a one-time decrease in the exchange rate leads to an increase by the correction factor in GDP, meaning there is an inverse relationship between the exchange rate and economic growth.
- **B.** Every single change in the rate of export growth leads to direct changes in the gross domestic product (GDP) by a correction coefficient of (0.28), which is a result consistent with economic logic, as when exports increase, they achieve a surplus in the trade balance that is reflected positively on economic growth.
- **C.** The corrected coefficient of determination (R2) value shows the effect of the independent variables in the model, whose impact was estimated at 64%. In comparison, the variables that were not included in the model are explained by 36%.
- **D.** The (F) test was significant to the model through Fisher's calculated value of (9.3), which is greater than the (F) tabular value, that the model is substantial and its hypotheses are valid for prediction.

Table (7): Estimating the regression equation according to the (ECM) model

Vector Autoregression Estimates

Date: 09/13/24 Time: 12:45

Sample (adjusted): 1991 2023

Included observations: 33 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	GDP	EX
GDP(-1)	-0.68622	0.987706
	(0.16361)	(0.19050)
	[-4.1976]	[5.18477]
EX(-1)	0.281150	0.206933
	(0.03721)	(0.05024)
	[7.55690]	[4.1188]
RX	0.383353	0.926690

	(0.11000)	(0.12256)
	[3.48560]	[7.56425]
R-squared	0.684049	0.742733
Adj. R-squared	0.642986	0.685582
Sum sq. resides	158.7899	4599.092
S.E. equation	2.300652	12.38156
F-statistic	9.352587	2.497473

Conclusions and Recommendations

❖ Conclusions

A. The existence of a long-run integrative equilibrium relationship between the variable dependent on economic growth in China and the independent variables of exchange rate and exports based on the impact test (λ Trace), as the calculated value is greater than the critical value of (37.09) for the first variable is greater than the tabular value of (29.7) with a probability of (0.006). The test (λ Max-Eigen) calculated value (26.1) is greater than the critical values of (Mackinnon), as it was (21.1). Therefore, we reject the nihilism hypothesis and accept the alternative hypothesis that variables are mutually integrated.

B. Every change in the export growth rate leads to direct changes in China's gross domestic product (GDP) by a correction coefficient of (0.28), a result consistent with economic logic. When exports increase, they achieve a surplus in the trade balance that does not reflect positively on economic growth.

C. China has succeeded in the competitive devaluation of the local currency by relying on the exchange rate, which creates competitiveness for Chinese goods in importing countries. Chinese imports are high in price compared to those produced at home. In the medium and long-run, it stimulates economic activity and achieves economic growth.

D. The significance test of the model according to the Fisher test (F) showed that the model is significant through the calculated Fisher value of (9.3), which is greater than the tabular value (F), and that the model is significant. Its assumptions are valid for prediction, and the results of the standard model can be used in subsequent studies because the model is significant. All its variables affect the dependent variable represented in GDP.

❖ Recommendations

A. Monetary Policy Guidance: The Chinese government should strengthen its monetary policy to support exchange rate stability, which contributes to improving export competitiveness and economic growth.

B. Increased Support for Exports: The government can increase financial and technical support for Chinese exporters, which enhances the competitiveness of Chinese goods in global markets.

C. Stimulating Innovation: R&D in China's industrial sector must be encouraged to increase product quality and improve competitiveness.

D. In-depth Market Studies: periodic studies are necessary to analyze global markets and understand economic trends, which helps guide Chinese policies more effectively.

E. Diversification of Target Markets: China should explore new markets for exporting its goods, reducing reliance on traditional markets and promoting economic growth.

F. Strengthening International Economic Relations: To enhance trade relations between China and other countries through free trade agreements to promote exports.

G. Continuous Evaluation of Economic Policies: It is necessary to periodically evaluate China's economic policies and their impact on economic growth to ensure that the desired economic objectives are achieved.

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