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The Republic of China: Economic Growth, Challenges, and Global Impact

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Abstract: This thesis analyzes the economic development of the People's Republic of China over the last decade. It examines the changes in key sectors such as oil and gas, tourism, industry, agriculture, and import-export activities. The paper discusses economic diversification processes, government policy reforms, and the influence of global economic factors. Correlation regression analysis is applied to identify the relationships between economic indicators and the factors affecting the country's economic growth.

Keywords: Economic development of China, tourism sector, oil and gas industries, correlation analysis, regression analysis, economic diversification.

Introduction: The People's Republic of China, located in the southern part of East Asia, has retained its strategic importance due to its proximity to India, Africa, and other countries. Over the last decade, China's economy has undergone significant changes. Traditionally reliant on the oil and gas sectors, the country has seen new sectors develop as a result of global economic shifts and internal diversification policies. This thesis analyzes China's economic growth, changes in various sectors, and the impact of factors such as import-export activities and government policies. Correlation regression analysis is used to explore the interrelationships between economic indicators.

Economy: China's nominal GDP makes it the second-largest economy in the world, and in terms of purchasing power parity (PPP), it ranks first. In 2022, China accounted for 18% of the global nominal GDP. The country has consistently been one of the fastest-growing large economies, with nearly uninterrupted growth at around 6% since 1978. According to the World Bank, China's GDP increased from $150 billion in 1978 to $17.96 trillion by 2022. The country is also one of the largest markets for capital and futures and has the third-largest bond market in the world. In 2024, China is home to 135 of the world's largest companies, making it a global economic powerhouse.

China in the Global Economy: China has been a member of the World Trade Organization (WTO) since 2001 and has become the world's largest trading power, surpassing 124 countries by 2016. Since 2013, China has been the world's largest trading nation in terms of imports and exports, dominating the dry bulk market with approximately 45% of global shipments. In 2022, China's foreign exchange reserves totaled $3.246 trillion, making it the world's largest holder of foreign reserves. The country is also a major recipient of foreign direct investment (FDI), attracting $180 billion in 2022. Additionally, China is one of the top remittance recipients globally, receiving $53 billion in remittances in 2021.This provides an overview of China's economy, its rapid growth, diversification efforts, and its influence on the global market in recent years.

China's industrial sector is diverse and continues to evolve, with significant contributions from manufacturing, technology, and infrastructure. It is a global leader in electronics, steel, textiles, and machinery. Key industries include automobiles, petrochemicals, aerospace, and shipbuilding. The country is also a major player in renewable energy technologies such as solar power and electric vehicles. China is the largest producer of steel and cement globally, and its industrial base has been a driving force behind its economic expansion.

Agriculture: China is the world's largest producer of rice and a major producer of wheat, potatoes, and various fruits and vegetables. The country has made significant advances in modern farming techniques, increasing productivity through the use of technology, mechanization, and improved irrigation systems. However, despite its agricultural advancements, China still faces challenges such as rural poverty, land degradation, and the need for sustainable farming practices. It is also one of the top producers of livestock products, including pork, poultry, and dairy.

Foreign Trade Turnover: China has become the world’s largest trading nation, with foreign trade turnover surpassing that of many other countries. It is the world’s top exporter, with key exports including machinery, electronics, textiles, and chemical products. Major export partners include the United States, the European Union, and countries within the Asia-Pacific region. China is also a top importer of raw materials, including crude oil, iron ore, and agricultural products. The country is heavily involved in global supply chains, making its foreign trade turnover a critical factor in the global economy.

Transportation: China has an extensive and rapidly developing transportation network, including highways, railways, ports, and airports. The road network is one of the largest in the world, facilitating the transportation of goods across the country. Rail transportation, especially high-speed rail, has expanded dramatically, making it a leader in this sector. The country is also home to some of the world’s busiest ports, including Shanghai, Shenzhen, and Ningbo, which are key to global trade. China’s aviation industry has also grown, with major airports in cities like Beijing, Shanghai, and Guangzhou handling a significant number of passengers and cargo. Despite these advancements, transportation infrastructure in rural areas remains underdeveloped, and congestion in urban areas is a challenge.

Table 1: The economic data of China from 2013 to 2023

Year	Exports of Goods and Services (Billions USD)	GDP (Billions USD)	Gross National Expenditure (Billions USD)	Industry (including Construction), Value Added (Billions USD)
2013	14,590	59,300	58,180	26,200
2014	15,130	64,360	63,290	27,730
2015	14,710	68,890	66,970	28,130
2016	14,620	74,640	72,900	29,540
2017	16,380	83,200	81,440	33,160
2018	17,570	91,930	90,870	36,480
2019	18,160	98,650	97,930	38,070
2020	18,840	101,360	100,040	38,360
2021	22,920	114,920	111,550	45,150
2022	25,050	120,470	116,360	47,380
2023	24,890	126,060	123,180	48,260

Source: dataworldbank.org

China's economy has grown steadily from 2013 to 2023. In 2013, exports totaled 14.586 trillion USD, and by 2023, this number had risen to 24.888 trillion USD. Additionally, China's Gross Domestic Product (GDP) nearly doubled between 2013 and 2023, with GDP in 2013 at 59.296 trillion USD, reaching 126.058 trillion USD by 2023. The country's Gross National Expenditure (GNE) also increased, from 100.036 trillion USD in 2020 during the pandemic's impact, to 123.180 trillion USD in 2023. The added value in industry and construction sectors has also risen at a high rate, reaching 48.258 trillion USD in 2023. These growths highlight China's achievements in exports and industry, further strengthening its position in the global economy.

Table 2: DESCRIPTION STATISTICS

Exports of Goods and Services (Billions USD)		**GDP (Billions USD)**		**Gross National Expenditure (Billions USD)**		**Industry (including Construction), Value Added (Billions USD)**	
Mean	18441.82	Mean	91252.73	Mean	89337.27	Mean	36223.64
Standard Error	1224.328	Standard Error	6985.561	Standard Error	6770.106	Standard Error	2429.434
Median	17570	Median	91930	Median	90870	Median	36480
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	4060.637	Standard Deviation	23168.48	Standard Deviation	22453.9	Standard Deviation	8057.52
Sample Variance	16488776	Sample Variance	5.37E+08	Sample Variance	5.04E+08	Sample Variance	64923625
Kurtosis	-0.92706	Kurtosis	-1.35451	Kurtosis	-1.39935	Kurtosis	-1.35972
Skewness	0.79558	Skewness	0.132123	Skewness	0.078544	Skewness	0.322955
Range	10460	Range	66760	Range	65000	Range	22060
Minimum	14590	Minimum	59300	Minimum	58180	Minimum	26200
Maximum	25050	Maximum	126060	Maximum	123180	Maximum	48260
Sum	202860	Sum	1003780	Sum	982710	Sum	398460
Count	11	Count	11	Count	11	Count	11
Confidence Level(95.0%)	2727.973	Confidence Level(95.0%)	15564.8	Confidence Level(95.0%)	15084.74	Confidence Level(95.0%)	5413.115

Table 3: CORRELATION ANALYSIS

	Exports of goods and services (current LCU)	**GDP (current LCU)**	**Gross national expenditure (current LCU)**	**Industry (including construction), value added (current LCU)**
Exports of goods and services (current LCU)	1			
GDP (current LCU)	0,957274	1		
Gross national expenditure (current LCU)	0,949453	0,999358	1	
Industry (including construction), value added (current LCU)	0,978741	0,994749	0,992054	1

The given data represents a correlation analysis and shows the interrelationships between various economic indicators. The correlation coefficient between exports and GDP (YaIM) is 0.957274, indicating a very strong positive relationship, meaning that as exports increase, GDP also grows. Similarly, the correlation coefficient between exports and gross national income (GNI) is 0.949453, indicating that the increase in exports positively impacts national income. There is a very strong positive correlation of 0.978741 between exports and industrial value-added, showing that exports significantly influence industrial development. The correlation between GDP and national income is 0.999358, showing an almost perfect positive relationship between the two indicators. The growth of GDP is also strongly correlated with industrial value-added (0.994749). The correlation between national income and industrial value-added is 0.992054, which also shows a high positive relationship. Overall, all indicators show a positive correlation, meaning that exports, GDP, national income, and industrial value-added are strongly interconnected, indicating that the factors influencing China's economic growth are closely related.

Table 4: REGRESSION ANALYSIS

Regression Statistics	
Multiple R	0,999966
R-squared	0,999931
Adjusted R-squared	0,888813
Standard Error	8,6E+11
Observations	11

The results of the given regression analysis show a very high correlation. The multiple R (0.999966) is very high, reflecting the strong relationship between the model's variables. The R-squared (0.999931) indicates how well the model fits the data, and its high value suggests that the model explains almost all of the data. The normalized R-squared (0.888813) shows the model's efficiency relative to the variables, though it is slightly lower than the R-squared because it only explains the significant parts. The standard error (8.6E+11) indicates the model's precision, and this high value suggests that the model's reliability may sometimes be low. The number of observations (11) indicates the number of data points used in the analysis, which is a relatively small sample, and the model's reliability could improve with more observations. Overall, the regression analysis shows high correlation and good fit, but the model's reliability may sometimes be lower due to the high standard error.

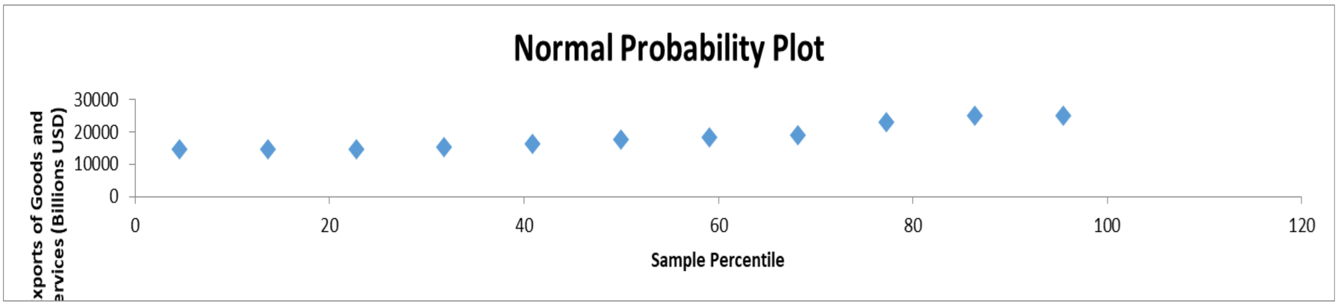
ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	1.63E+08	54304263	192.4734	4.36E-07
Residual	7	1974973	282139		
Total	10	1.65E+08			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1347.31	1462.681	-0.92112	0.38763	-4806	2111.383	-4806	2111.383
GDP (Billions USD)	0.208306	0.300322	0.693607	0.510282	-0.50184	0.918455	-0.50184	0.918455
Gross National Expenditure (Billions USD)	-0.41617	0.252154	-1.65045	0.142837	-1.01242	0.180083	-1.01242	0.180083
Industry (including Construction), Value Added (Billions USD)	1.047931	0.245818	4.263032	0.003733	0.466663	1.629198	0.466663	1.629198

RESIDUAL OUTPUT **PROBABILITY OUTPUT**

Observation	*Predicted Exports of Goods and Services (Billions USD)*	*Residuals*	*Percentile*	*Exports of Goods and Services (Billions USD)*
1	14248.43	341.5736	4.545455	14590
2	14779.18	350.8247	13.63636	14620
3	14610.48	99.5211	22.72727	14710
4	14817.95	-197.95	31.81818	15130
5	16840.49	-460.493	40.90909	16380
6	18213.68	-643.679	50	17570
7	18341.57	-181.566	59.09091	18160
8	18331.86	508.1371	68.18182	18840
9	23481.86	-561.859	77.27273	22920
10	24973.08	76.92088	86.36364	24890
11	24221.43	668.57	95.45455	25050

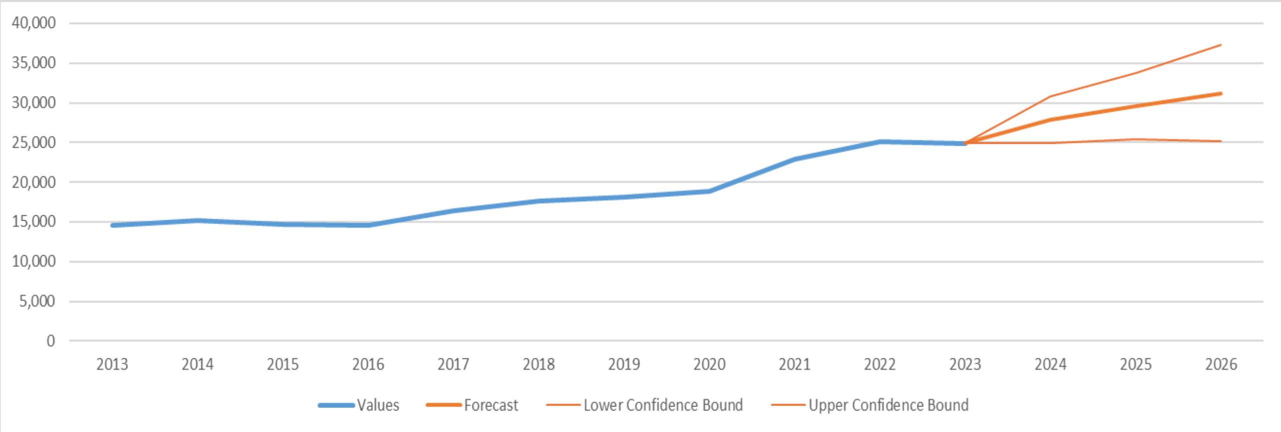


The following chart presents the projected growth rate of South Africa's GDP up to 2026.

Timeline	**Values**	**Forecast**	**Lower Confidence Bound**	**Upper Confidence Bound**
2013	14,590			
2014	15,130			
2015	14,710			
2016	14,620			
2017	16,380			
2018	17,570			
2019	18,160			
2020	18,840			
2021	22,920			
2022	25,050			
2023	24,890	24,890	24,890	24,890
2024		27,855	24,904	30,807
2025		29,534	25,362	33,705
2026		31,213	25,134	37,291

Statistic	**Value**
Alpha	0.50
Beta	0.50
Gamma	0.00
MASE	2.29
SMAPE	0.08
MAE	######
RMSE	####

Figure 1: The line graph shows the changes of GDP and the prediction till 2016.



Conclusion: Over the last decade, China has seen impressive economic growth, with significant advancements across key sectors including oil and gas, tourism, industry, agriculture, and foreign trade. The country's shift from a reliance on traditional industries to embracing new sectors like technology, manufacturing, and renewable energy reflects its ongoing diversification efforts. China's global influence has expanded, positioning it as the world's largest trading power and the largest exporter of goods. Its industrial sector continues to drive economic expansion, while agriculture remains vital for both domestic consumption and global trade.Despite challenges in rural poverty, land degradation, and the need for sustainable farming practices, China has successfully modernized its agricultural practices. The country also continues to dominate international trade, supported by an extensive and rapidly developing transportation network, including highways, railways, and ports. However, congestion in urban areas and underdeveloped infrastructure in rural regions still pose challenges to further growth.

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