

# Economic Growth under the Influence of Greece's Export-Oriented Economic Environment

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**Abstract:** Greece's sovereign debt crisis has a great impact on the European Union and even the world economy. This paper will study the economic factors that are really related to economic growth in an export-oriented economic environment. This paper mainly studies the impact of monetary policy and fiscal policy on the Greek economy, and selects interest rate, exchange rate, tax, general government balance deficit, government public debt and other factors for correlation analysis.

## 1. Introduction

### 1.1 Background

Greece is located in the southeastern corner of Europe, the country is composed of more than 3000 islands in the Peloponnese Peninsula and the Aegean Sea, is the strategic location connecting Europe, Asia and Africa. Greece is a developed capitalist country, a member of the European Union and NATO, but also the largest economy in the Balkans. Its maritime industry, tourism, remittances of overseas Chinese are listed as the three pillars of foreign exchange earnings. Agriculture is developed, and the main industries are food processing and light industry.

In 2001, Greece formally joined the euro and sat on the European integration express. But in the context of economic globalization, Greece has not been able to fully stimulate its creativity and competitiveness, and its three pillar industries have been seriously damaged in the financial crisis. After Greece joined the euro zone, borrowing from Germany and France, the economic credibility of these Euro economic powers, the cost of borrowing significantly reduced, a large number of debt. The financial crisis in 2008 and the debt crisis in 2010 led to a continuous decline in Greece's GDP and a sharp drop in people's income and unemployment.

In order to alleviate the negative impact of Greece's sovereign debt crisis, the European Commission and the International Monetary Fund (IMF) took a series of measures in early 2010 to assist the Greek government, trying to stimulate the Greek economy through the rescue plan to ensure economic and financial stability in Europe. However, after several rounds of bailout, Greece still faces problems such as increased risk of debt restructuring, lack of domestic economic growth points and increased political contradictions, and the high bailout package has also led to increased financing pressures among eurozone member states, mutual holding of European banking systems, and the debt crisis has begun within the eurozone. From periphery countries to core countries.

The three pillar industries of Greece are closely related to the international environment, and the three rounds of aid Greece receives after the debt crisis have brought them closer to the eurozone. Based on this, this paper will make an in-depth study of the real economic factors related to economic growth in the export-oriented economic environment.

## 2. The Impact of Greek Industry and Trade on its Economic Growth

### 2.1 Industrial Development

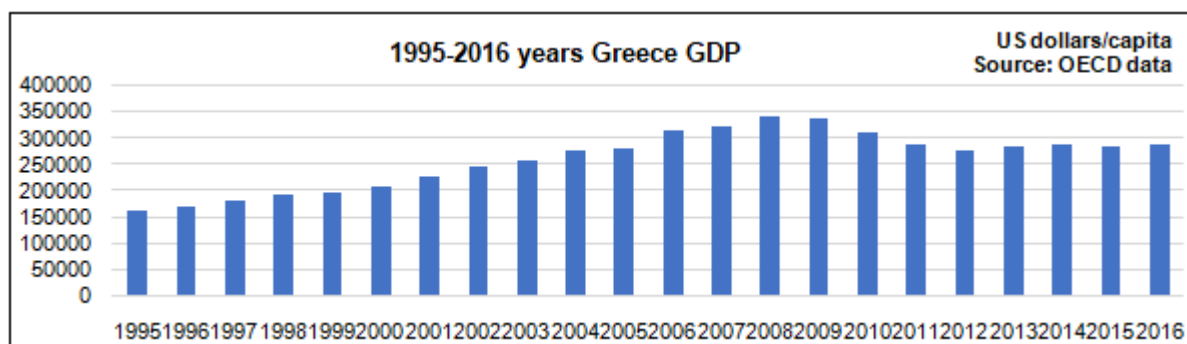


Figure 2-1: 1995-2016 Greek GDP

Greece is one of the less developed countries in the European Union. Its economic base is weak, and the industrial manufacturing industry is lagging behind. The three largest industries in Greece account for 85% of GDP, 12% of industry and 3% of agriculture. Its economic growth

mainly comes from the tertiary industry, especially the tourism, shipping and remittance industries as Greece's three lifeblood industries for a long time, while the contribution of the secondary industry is relatively low.

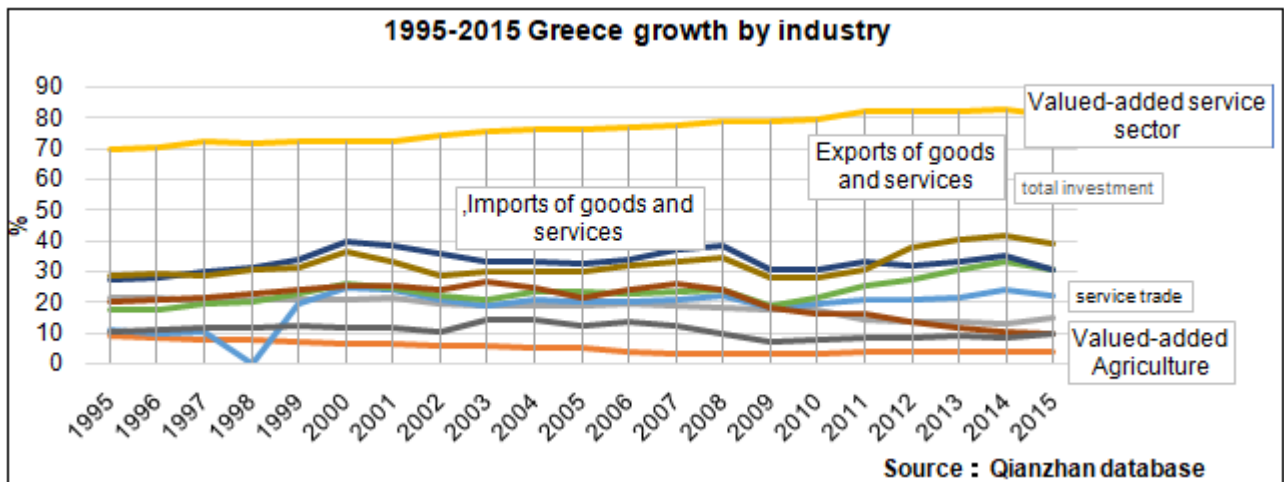


Figure 2-2: Growth of Greek industries in 1995-2015

Thanks to historical culture and natural scenery, Greece is favored by tourists all over the world. In 2001, Greece relied on tourism revenue of 10.6 billion, accounting for about 8% of GDP, and employed more than 350,000 people, accounting for 10% of the total labor force. In 2004, the total tourism revenue amounted to 10 billion 300 million euros, accounting for 9% of GDP. Even before the crisis, Greece had nearly 10 million overnight tourists in 2007, spending about 4.5 billion euros a year on tourism. Therefore, tourism has become the most important pillar industry of the Greek economy, and the fastest growing industry in the tertiary industry.

The development and growth of the shipping industry in Greece benefited from Greece's superior geographical position, regardless of the number of fleets or load, Greece is in the leading position in the world. A total of 3,025 Greek merchant ships, including those flying foreign flags, rank fourth in the world after Japan, Germany and China, but the total registered capacity of Greek merchant ships ranks first in the world, about 196 million tons, accounting for 18.6% of the world total. Nearly 23.5% of the world's oil tankers are owned by Greece, which amounts to the sum of oil tankers in Japan and the United States.

The overseas remittance industry is a relatively unique source of foreign exchange revenue for Greece compared to other European countries. During the two world wars, a large number of Greek residents emigrated overseas. After World War II, with the development of Greek shipping industry and the acceleration of European integration, more

Greeks went abroad to work and live in other European countries and regions. This group of expatriates is a major feature of the Greek economic system and also constitutes a major pillar of the Greek economy remittance industry.

Compared with the vigorous development of the third industry, the development of the second industry in Greece is lagging behind. This is the result of political and historical reasons, as one of the main battlefields of the two world wars, the Greek economy suffered serious damage. When World War II ended, Greek politicians used the money provided by the Marshall Plan to suppress the civil war. Later, Greece experienced the period of military dictatorship from 1967 to 1974, and did not catch the first bus of the third industrial revolution led by the information revolution after the war. The real modern democratic Greece began in 1974, which has left Greek industry seriously behind other EU members. Up to now, Greece has not established an independent and complete industrial system, its industrial raw materials and equipment still need to be imported in large quantities, and Germany has been Greece's largest source of imports.

Greece's three pillar industries are closely related to the international economic environment, and its own industrial system is not perfect, making its single industrial structure more vulnerable to changes in the international economic environment, and the ability to resist the impact of external economic environment is limited.

## 2.2 Import and export



Figure 2-3: Total import and export volume in Greece in 2001-2016

**Table 2-1: Total import and export volume of Greece in 2006-2016 years**

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total export (millions of euros)	46130	52404	56533	45089	49958	52866	54845	54835	57838	56074	53037
Total import (millions of euros)	69010	81453	87040	68319	69452	66889	63353	59915	62171	55821	54216
Export accounts for GDP	21.2%	22.5%	23.4%	19.0%	22.1%	25.5%	28.7%	30.4%	32.5%	31.9%	30.2%
Imports account for GDP	31.7%	35.0%	36.0%	28.8%	30.7%	32.3%	33.1%	33.2%	34.9%	31.8%	30.8%
Export growth rate	8.6%	13.6%	7.9%	-20.2%	10.8%	5.8%	3.7%	0.0%	5.5%	-3.0%	-5.4%
Import growth rate	17.1%	18.0%	6.9%	-21.5%	1.7%	-3.7%	-5.3%	-5.4%	3.8%	-10.2%	-2.9%

Greece's exports of goods and services grew by 11% in 2010 after a sharp 20% decline in 2009, but that growth has not been sustained effectively. In the 2011-2012 year, although the absolute value of export remained on the rise, the growth rate was declining. In recent years, Greece has been tightening policies, increasing taxes, and imports and exports have declined year-on-year. The absolute value of the total export volume is not as good as that of 2008. In terms of import levels of goods and services, Greece showed a dramatic change of extreme instability, with total Greek imports plummeting by 21.5 per cent in 2009 as a result of the outbreak of debt problems, followed by a slight rise (1.7 per cent) in import levels as a result of EU and IMF bailouts. But in 2012 it suddenly dropped by 5 percentage points, indicating a sharp drop in Greece's domestic demand. On the one hand, the deepening debt crisis has affected the domestic economy and national income level, and the decline in government expenditure has reduced the government's purchasing power and transfer payment level. The decline in welfare level has also affected the domestic consumption level. On the other hand, because the Greek bailout program has little impact on Greek real economic growth, it only alleviates the maturity of Greek debt and does not really promote Greek economic growth.

### 2.3 Correlation analysis of import and export volume

This section analyzes the correlation between the total import and export volume and GDP in Greece from 2000 to 2016. The data selected are from the European Commission Database. The results show that there is a significant positive correlation between the total import and export volume and GDP in Greece, but the relationship between the total import volume and GDP is stronger than the total export volume. This shows that imports relative to export trade play a decisive role in the economic development of Greece.

**Table 2-2: Correlation analysis**

		Correlation		
		GDP	Total import	Total export
GDP	Pearson correlation	1	.868**	.585*
	Saliency (double tail)		.000	.017
	Case number	22	16	16
Total import	Pearson correlation	.868**	1	.547*
	Saliency (double tail)	.000		.028
	Case number	16	16	16
Total export	Pearson correlation	.585*	.547*	1
	Saliency (double tail)	.017	.028	
	Case number	16	16	16

<p>** . At the 0.01 level (double tail), the correlation is significant.  * at the 0.05 level (double tail), the correlation is significant.</p>
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### 3. The Impact of the Economic Crisis on Greece's Economic Growth

#### 3.1 Exchange of money between Greek government and Goldman Sachs Group

The Stability and Growth Pact stipulates that eurozone members must meet the criteria of a fiscal deficit below 3% of GDP and a debt below 60% of GDP. At the end of 2000, the Greek government sought the help of international investment banks such as Goldman Sachs Group to reduce the fiscal deficit in order to join the euro zone successfully. Goldman Sachs gradually increased its portfolio of swaps issued by Greece to hedge US dollar and yen debt. In December 2000 and June 2001, new cross-currency swap agreements were signed with the Greek government to restructure the cross-currency swap portfolio held by Goldman Sachs at previously extended exchange rates. The deal successfully masked a debt of up to 1bn, dramatically reducing the debt and deficit ratio of the Greek government that year and successfully joining the eurozone to meet the requirements, but in fact it also laid a hidden danger for the Greek government's future debt and financial pressures.

#### 3.2 The continuation and deepening of the subprime mortgage crisis in the United States

In 2008, the subprime mortgage crisis in the United States triggered the global financial crisis, and the economies of various countries have experienced varying degrees of recession, so the government has adopted the method of expanding fiscal expenditure to stimulate economic growth. In order to curb the continued economic downturn and maintain the stability of financial markets, Eurozone countries have implemented varying degrees of fiscal expansion policies, injected large amounts of money into the financial system, increased bank liquidity, and guaranteed the debt of banks, but this has also led to a sharp rise in public debt and fiscal deficits in Eurozone countries.

The impact of the global financial crisis on Greece is particularly significant, affecting Greece's export-oriented leading industries. Among the member countries of the eurozone, Greece is a relatively underdeveloped country with a relatively weak economic base. Greece's economic structure mainly relies on shipping, tourism and remittances to obtain foreign exchange earnings, the lack of real

economic self-growth of the "hematopoietic" industry, but the financial crisis on the most serious impact of foreign-demand industries, resulting in heavy losses to Greece's domestic economy. It has disrupted its usual way of financial operation depending on the interest rate of debt issuance.

The decline in national income and tax revenues brought about by the recession have a direct impact on the Greek government's fiscal revenue; the increase in government transfer spending caused by rising unemployment has expanded the government's fiscal expenditure; and economic stimulus programs such as the large-scale rescue plan have made the Greek government's fiscal budget more inadequate, the Greek government does not It is not enough to borrow money abroad. In a recession, liquidity constraints have led to insufficient funding in the eurozone and rising bank lending rates, and the financial crisis has led to a decline in government bond yields and a narrowing of debt spreads. These factors have further exacerbated the Greek government's fiscal deficit and debt burden, and the fiscal situation has deteriorated sharply at any time. Analysis of debt default.

### **3.3 The occurrence and evolution of the Greek sovereign debt crisis**

The Greek government has long relied on borrowing to earn interest margins to maintain huge fiscal expenditures. During the boom period, the Greek government, with the good credit of the eurozone as a whole, was able to issue bottom-line government bonds or apply for very low-interest loans, and then bought high-interest government bonds, earning interest margins and guaranteeing fiscal budgets. Liquidity, however, in the face of the financial crisis, the recession led to liquidity tightening, the Greek government in the past debt arbitrage way unsustainable, thus revealing the Greek debt problem.

In October 2009, Greece's new prime minister, Papandreou, declared that Greek fiscal data released by his predecessor were grossly inaccurate; on October 21, the Greek government resubmitted statistics to the European Statistical Office, in which the government deficit rose from 5.0% to 7.7% of GDP in 2008 and the 2009 forecast from 3.7%. The ratio of public debt to GDP reached 113 per cent, much higher than the 3 per cent and 60 per cent ceiling set by the Stability and Growth Convention. The statement by the Greek government disclosed its huge debt problem.

In December, Fitch, Standard & Poor's and Moody's downgraded Greece's sovereign rating from A - to BBB +, with a negative outlook. Greece's stock and bond markets suffered severe setbacks, the international financial markets shook, the Greek government's increased default risk led to the rising price of credit default swaps for Greek government bonds, the cost of government financing substantially increased, liquidity tightened, thus formally escalating the Greek debt problem into a sovereign debt crisis.

In response to the debt crisis and EU regulations, the Greek government continued to introduce fiscal austerity plans, trying to reduce the deficit level, but caused domestic discontent and public resistance, strikes occurred frequently. At the same time, the market also has a moderate response to the Greek government's debt reduction capability, and its financing costs continue to rise. Other countries with heavier financial burden in the euro area are also implicated in the liquidity problem. The euro zone debt problem has become the focus of market attention, and the euro credit has been seriously questioned.

In April 2010, the three major international rating agencies downgraded Greece's sovereign credit rating again, and the Greek government completely lost its right to finance the international market. At the same time, Greece is facing 20 billion euros of maturing debt, market Panic erupted again, in addition to Greek government bonds, other euro zone member states bonds and the euro were also sold, under the pressure of huge maturing debt, the Greek government formally applied to the EU and the IMF for assistance. To this end, the EU summit resolution provides assistance to member states with debt problems, defends the status of the euro, cracks down on financial speculation, and avoids the gradual spread and deterioration of Greece's debt crisis in the eurozone.

Greece has received three European Union and International Monetary Fund aid, a total of about 260 billion euros, followed by the embarrassment of non-repayment. Greece's debt is still high, and its public debt accounted for 179% of its GDP last year. The unemployment rate in the country is still 23%, and the youth unemployment rate is as high as 48%. In May 2017, the Greek parliament voted to adopt stricter fiscal policies in order to complete the creditors'assessment of the implementation of the third rescue agreement as soon as possible and create conditions for a new round of 86 billion euros of aid. According to the IMF, the economic crisis Greece experienced was as severe as the Great Depression of the 1930s, but lasted longer.

## **4. The Impact of Greek Monetary Policy on its Economic Growth**

### **4.1 Monetary Policy**

After Greece joined the European Union in 2001, it followed the monetary integration policy of the eurozone, that is, to abandon monetary sovereignty, to coordinate and cooperate among the member states, and to reduce the market segmentation effect brought about by the exchange rate control policies. The euro was issued mainly on the basis of the average economic indicators of the member states of the euro zone, with the aim of maintaining price stability and controlling inflation.

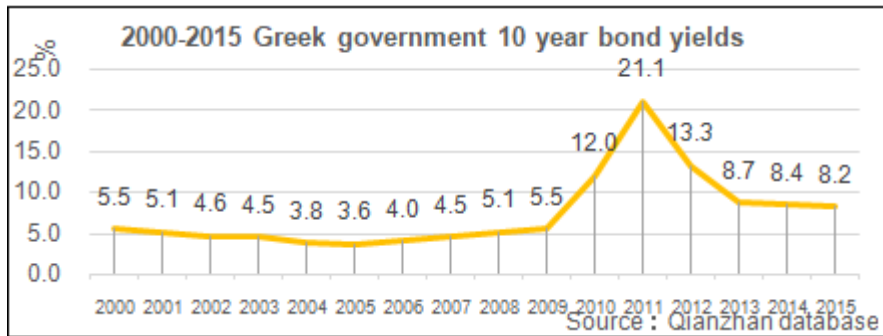
At the same time, a unified monetary policy is a voluntary abandonment of the discretion of policy jurisdiction by Member States in order to obtain greater economic freedom. The monetary policy adhered to by the member states of the

eurozone is formulated by the European Central Bank, but the strong economic strength of Germany and France occupies a great weight in the average macroeconomic indicators, thus leading to the formulation of monetary policy. For example, Germany's adoption of the euro has greatly promoted export growth, making it the world's largest trade surplus. Germany wants to curb overheating by raising interest rates, while some southern European countries, such as Greece, Portugal and Spain, want to cut interest rates to stimulate already weak economic growth. In 19 European countries with uneven levels of economic development, adopting the same monetary policy is difficult to achieve results that benefit everyone. For a small country like Greece, there is a serious asymmetry between policy implementation and economic reality, so the unified currency has become an external constraint on Greek economic growth.

#### 4.2 Interest Rate Correlation Analysis

##### 4.2.1 2000-2015 year Greek government 10 year bond yields

At the end of 2010, the European Union, the IMF and the European Central Bank tripartite review panel, in their second round of eligibility for loan aid, concluded that Greece had failed to fulfil the austerity and reform programme required by the first round of aid agreements, which did not meet the requirements for granting aid loans. This also meant that Greece would not be able to obtain the fifth loan scheduled for June. A loan of 12 billion euros. Greece was facing a debt maturity of 13.7 billion euros, and the market reacted immediately, with the yield on its 10-year bond soaring to around 20%. Over the next few years, yields continued to decline, falling to the lowest level since the debt restructuring in 2012 in 2015. The difference between 2011 and 21% is very different. This shows that the cost of borrowing in Greece has declined. If Greece's debt becomes more holdable, the ECB will decide to reintroduce Greece in bond purchases. This has convinced the market that Greece will soon return to the international debt financing market.



**Figure 4-1:** 2000-2015 Greek government 10 year bond yields

The 10-year Greek government bond yield for 2000-2015 was selected as the criterion for Greek interest rates, and the data came from a forward-looking database. The results show that the Greek government's 10 year bond yield has no significant impact on GDP.

**Table 4-1:** Correlation analysis  
Correlation

		GDP, Greece	Government 10 year bond yields
GDP, Greece	Pearson correlation	1	.265
	Saliency (double tail)		.322
	Case number	16	16
Government 10 year bond yields	Pearson correlation	.265	1
	Saliency (double tail)	.322	
	Case number	16	16

#### 4.3 Exchange Rate Correlation Analysis

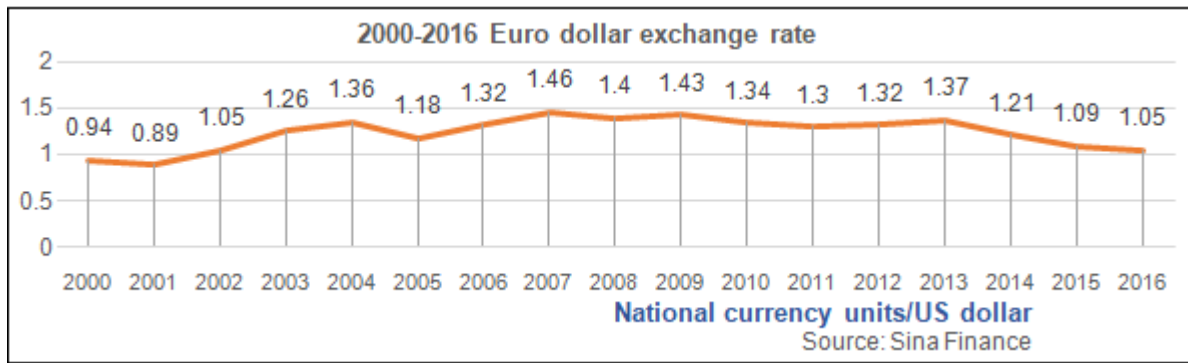


Figure 4-2: 2000-2016 Euro dollar exchange rate

From the chart, we can see that the exchange rate of the euro dollar has risen continuously since Greece joined the euro in 2001. In 2005, the Greek government faced a debt crisis due to insufficient financial capacity in the future. Goldman Sachs Group, as a capital-gaining investment bank, in order to pass on the risk, before the Greek debt problem surfaced, Goldman Sachs Group took the first step to make more Greek debt credit default swaps in the market, and then made Greek payment capacity. The euro market is expected to sell lots of euros in the face of declining strength and low euro market expectations. Meanwhile, due to the short-selling of the euro by other international hedge funds, the exchange rate of the euro fell sharply against the dollar under the joint speculation of Goldman Sachs Group and hedge funds, while the price of credit default swaps on Greek debt rose, exacerbating market turmoil, and the expectation of Greek debt default continued to rise, even affecting the credit level of the euro. 2007-2009 years later, under the influence of the financial crisis and debt crisis, the fluctuation trend of exchange rate continued to decline.

The Eurodollar exchange rate for 2000-2016 was selected as the standard for Greek interest rates, and the data came from Sina Financial Database. The results show that Greece's Euro dollar exchange rate has a significant positive correlation with GDP.

Table 4-2: Correlation Analysis

Correlation			
		GDP	Euro dollar exchange rate
GDP	Pearson correlation	1	.820**
	Saliency (double tail)		.000
	Case number	22	17
Euro dollar exchange rate	Pearson correlation	.820**	1
	Saliency (double tail)	.000	
	Case number	17	17

\* \*. At the 0.01 level (double tail), the correlation is significant.

#### 4.4 Correlation Analysis of Total Reserves

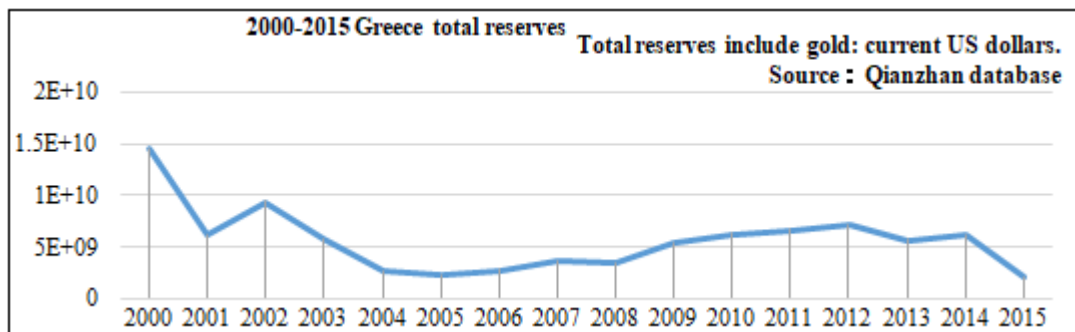


Figure 4-3: Total Greek reserves in 2000-2015 years

Since 2000, the total amount of Greek reserves has been declining. The 2004 Athens Olympics were held, but Greece was already in the early stages of a debt crisis. The government was still holding out until the end of the Games. The Olympic Games were badly depleted and the reserves were greatly reduced, reaching their lowest level in 2005. In order to ensure the stability of the financial market and implement the policy of fiscal policy expansion, the financial crisis in 2008 injected a large amount of funds into the financial system. The debt crisis that erupted in 2010 and Greece's debt repayment dilemma after receiving aid also prompted it to tap its reserves. In 2015, Greece again used emergency reserves for debt repayment, up to 650

million. The following table analyzes the correlation between Greek reserves and GDP from 1995 to 2016, and selects data from a forward-looking database. The results show that the total amount of Greek reserves has a significant negative correlation with GDP.

Generally speaking, GDP and reserve assets should be positively correlated, that is, the better the economic situation, the higher the reserve assets should be. Greece's current situation, on the contrary, may be due to the debt crisis Greece receives three rounds of aid, the continuous facing debt repayment problems, resulting in abnormal reserve assets.

**Table 4-3: Correlation Analysis**  
 Correlation

		GDP	Reserve assets
GDP	Pearson correlation	1	-.910**
	Saliency (double tail)		.000
	Case number	22	20
Reserve assets	Pearson correlation	-.910**	1
	Saliency (double tail)	.000	
	Case number	20	20

\* \*. At the 0.01 level (double tail), the correlation is significant.

### The impact of Greece's fiscal policy on its economic growth

The eurozone retains the decision-making power of fiscal policies of its member states and adjusts the macro-economy accordingly to suit the unified monetary policy. On the one hand, the decentralized fiscal policies of the eurozone can be regarded as the policy arrangements of independent sovereign states, which have spillover effects, which will directly affect the interest rates and output levels of both domestic and foreign countries, and form a spillover-feedback cycle; on the other hand, it can be regarded as the policy arrangements within the region. Acting on related club products will affect the economic development of other member countries.

#### 5.1 Tax policy and correlation analysis



**Figure 5-1: 1995-2016 years of Greek government revenue**

Greek taxes remained around \$4,000 per capita in 1995-2001, rising steadily after joining the European Union in 2001, peaking at \$9,977 in 2008. Then, due to the impact of the financial crisis and the bond crisis, it declined rapidly.

In the fifth austerity package in 2010, Greece will definitely raise the value-added tax rate and increase taxes on the fuel, tobacco and alcohol industries. In 2011, in the second round of new aid, Greece again unveiled a five-year fiscal austerity plan featuring wage cuts, tax increases and layoffs. In October of the same year, the Greek parliament passed austerity measures, including a 28 billion austerity policy and 50 billion privatization of state-owned enterprises. Under the plan, Greece's tax threshold would be reduced from 12,000 euros a year to 8,000 euros; a progressive tax would be levied on top officials' incomes of more than 12,000 euros; a lower tax limit would be imposed on self-employed people; the property tax threshold would be reduced from 400,000 euros to 200,000 euros; and the Greek parliament voted through in May 2017. A more stringent fiscal policy, which includes reducing pensions and raising taxes. Despite the rise in tax rates, Greece's tax rate is declining year by year.

This paper analyzes the relationship between Greek tax

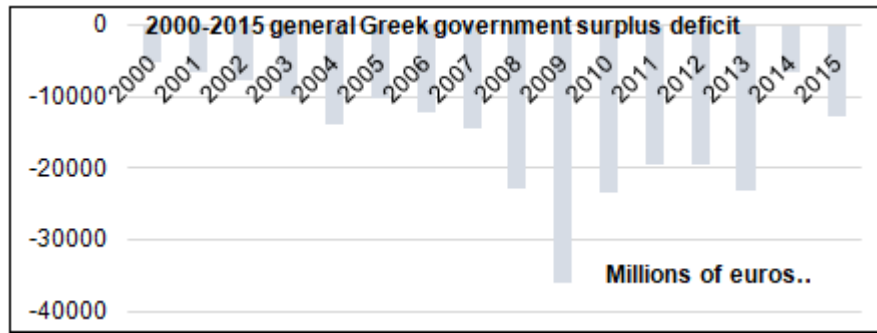
revenue and GDP in 1995-2016 years, and selects data from the OECD database. The results show that there is a significant positive correlation between Greek taxation and GDP, which means that the development of Greek production, the expansion of economic scale and the improvement of efficiency will make Greek taxation increase.

**Table 5-1: Correlation Analysis**

Correlation			
		GDP	Tax (per capita US dollar)
GDP	Pearson correlation	1	.944**
	Saliency (double tail)		.000
	Case number	21	21
Tax (per capita US dollar)	Pearson correlation	.944**	1
	Saliency (double tail)	.000	
	Case number	21	21

\* \*. At the 0.01 level (double tail), the correlation is significant.

#### 5.2 Correlation analysis of general government surplus deficit



**Figure 5-2:** General government balance / deficit in Greece in 2000-2015

Greece's deficit reached its peak in 2008-2009 years. It is mainly due to a series of expansion policies and large-scale rescue plans. In 2010, Greece, in its fifth austerity package, set clear targets for reducing its fiscal deficit from 13.6% to 8.1% of GDP by 2011, to 7.6% in 2011 and to 2.6% in 2014, in order to get more external aid. In the second round of aid, Greece explicitly reduced government spending by 400 million euros in 2011. At the same time, Greece has increased its tax revenue, which can also be seen in the changing trend of government revenue, the general government balance / deficit is declining.

This analysis of the 2000-2016 Greek fiscal deficit and GDP correlation, selected data from the forward-looking database. The results show that there is a significant negative correlation between Greece's fiscal deficit and GDP, which means that the better the economic development of Greece, the smaller the fiscal deficit.

**Table 5-2:** Correlation analysis

Correlation			
		GDP, Greece	General government surplus deficit
GDP, Greece	Pearson correlation	1	-.765**
	Saliency (double tail)		.001
	Case number	16	16
General government surplus deficit	Pearson correlation	-.765**	1
	Saliency (double tail)	.001	
	Case number	16	16

\* \*. At the 0.01 level (double tail), the correlation is significant.

### 5.3 Empirical Analysis of Greek Government's Public Debt

After joining the eurozone, Greece borrowed heavily from the eurozone as a whole to reduce its own borrowing costs. The following chart shows the ratio of Greece's public debt to GDP since 1977. The blue one is the Greek index, while the green one is the European average.

There are three main sources of money for Greece's crazy debt raising: the first is to increase defense spending. The proportion of Greek defense funds to GDP is second only to that of the United States in NATO. The second is to expand the civil service. Greek civil servants can receive 14 months' salary a year, one month's paid vacation and start receiving pensions at the age of 40. Civil servants account for more than 25% of the population, and 40% of the government budget is devoted to the income and welfare of civil servants. The third is to increase pensions and other social benefits. The Greek government has raised the Greeks' wages and benefits to a level that does not match the strength of the country - free medical care, free education, universal endowment insurance.

From 1999 to 2009, Greece's public spending soared by 129%, accounting for half of GDP when the debt crisis broke out. At the end of 2009, the Greek government suddenly announced that its fiscal deficit and public debt accounted for 12.7% and 113% of GDP, respectively.

During the financial crisis, the overall level of national income fell, Greece implemented a large-scale rescue plan, had to borrow a lot. After the 2010 debt crisis, Greece's external debt continued to rise after three rounds of aid.





Figure 5-4: 1995-2016 Greek government public debt

The following table analyzes the relationship between Greek government public debt and GDP from 2000 to 2016. The data are selected from the OECD database. The results show that there is a significant positive correlation between Greek public debt and GDP, which means that the better the economic development of Greece, the greater the Greek public debt.

Table 5-3: Correlation Analysis

Correlation			
		GDP	Government public debt
GDP	Pearson correlation	1	.478*
	Saliency (double tail)		.025
	Case number	22	22
Government public debt	Pearson correlation	.478*	1
	Saliency (double tail)	.025	
	Case number	22	22

\* at the 0.05 level (double tail), the correlation is significant.

## 5. Summary

Greece has three main economic pillars: tourism, shipping and overseas Chinese remittance. This kind of foreign-oriented economic structure lacks industrial foundation and relies too much on the international economic environment. Therefore, in the economic crisis, Greece suffered great economic shocks.

Table 6-1

Correlation analysis with GDP	tax revenue	Reserve assets	Total import	Euro dollar exchange rate	General government surplus deficit	Total export	Government public debt	Government 10 year bond yields
Pearson correlation	0.944**	-0.910**	0.868**	0.820**	-0.765**	0.585*	0.478*	0.265
Saliency (double tail)	0.000	0.000	0.000	0.000	0.001	0.017	0.025	0.322

Among the variables, the factors that have a significant impact on Greek economic growth are: tax, reserve assets, total imports, Eurodollar exchange rate, general government balance deficit, total exports and government public debt.

Taxes, total imports, Eurodollar exchange rates, total exports, and government public debt fluctuate in the same direction as Greece's GDP. This is mainly because the Greek economy is closely linked to the international community, and the fluctuation of industrial factors has a significant impact on its economy. At the same time, because of its economic structure, the positive fluctuation of the total import volume to the economy is significantly stronger than that of exports. On the other hand, the Greek government is

now heavily indebted to foreign countries, tax, exchange rate and government public debt increase, on its economy. To alleviate the debt crisis and further develop the economy has a positive effect.

Reserve assets, general government surplus deficit and Greek GDP reverse direction. The better the economy, the smaller the general deficit in Greece. Greece received three rounds of aid after the debt crisis, and its foreign debt has been difficult to repay, and its reserve assets are in a state of instability. The reverse effect of reserve assets on GDP may be that Greece has been borrowing new debt to repay old debt, but when it makes small repayments, it will increase the confidence of the European Union, IMF and others in

repaying its debt, so as a bargain for new aid to develop the domestic economy.

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