

Analysis of internal and external factors of German economic success

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Abstract: The success of the German economy is the result of the interaction of many factors. This paper mainly analyzes it from two aspects. The first part is the domestic reasons. Firstly, it briefly summarizes the basic situation of Germany from two aspects of Germany's advantageous chemical and automobile industries and then explains why the German industry is so advanced from its unique dual system of education mode. The second part focuses on Germany's foreign trade, especially with the EU Member States, from the perspectives of tax, currency, relevant laws and regulations to production costs. This paper holds that among many factors, the main reasons for Germany's economic success are Germany's domestic education system and foreign trade model. As the largest economy in the EU, while making full use of the EU's long-term and stable market, Germany has also actively attracted talents from many backward EU Member States, injecting vitality into Germany's innovation and development. Together, these potential factors and convenience have contributed to Germany's economic success. Covid-19 has had a great economic impact on the world, and Germany is not an exception. Therefore, this paper has certain enlightenment significance for rethinking German economic problems in the future.

1. Introduction

Since the end of World War II, Germany caught a mass of people's eyes due to its economic miracle. Studies over the past decades have provided significant information on it. But from the 21st century, the German economy appeared to be far more compelling, and some scholars even emphasized that the German economy has achieved huge success since 2000. Two main measures of economic success are currently GDP at the national level and profit at the organizational level [1]. As such material living standards improve and the natural environment increasingly becomes a limiting factor in economic activities, we would like to use a completely different definition in this research paper.

While various definitions of the term economic success have been suggested, this paper defines economic success through three main perspectives. (1) The economy has a large volume. (2) The overall economic growth situation remains optimistic. (3) The economy should maintain stability and recover from a crisis timely.

According to the International Monetary Fund, in 2021, the German economy will be the fourth largest globally, around a third bigger than the UK's. Besides, the GDP of the EU was 15.3 billion euros in the year 2017[2], more than one-fifth of that figure was generated by Germany, which ranked first. As the biggest economy among the EU, the German economic growth rate has always maintained higher than the EU over the past 21 years. Even though the whole economic world was attacked by the global economic crisis in 2008 and by the pandemic of Covid-19 in 2020 separately, both of them had less impact on Germany. In addition, the German economy has a strong recovery ability as well. Under the influence of the 2008 economic crisis, nearly all countries suffered grievously.

As the biggest economy in the EU and the fourth largest economy in the world, the rationale behind German economic success becomes the focus of common concern in the academic community.

Especially with the rapid expansion of the European Union and German economic hegemony in the EU, research on this issue becomes more meaningful. Nowadays, the epidemic of Covid-19 has caused global panic, and the economic situation is deteriorating. Researches on German experience probably could give a little bit of inspiration to the other countries, especially in the aspect of facing a crisis. Although extensive research has been carried out, there still is scope for further research which illustrates German economic success both through its domestic elements and external relations. The manufacturing industry has been making a huge contribution to the growth of the German economy. Despite major economic fluctuations, earnings have risen in most sectors of industry over the past twenty years. Chemical industry and the automobile industry is an important contributor to growth and prosperity. Vehicle manufacturing also secures earnings for other sectors, as it has close links with companies in the chemicals, electrical engineering, steel, metal, and textile industries [3]. Furthermore, as the innovation leader, high-quality, innovative talents and skilled workers are necessary parts. Therefore, in terms of internal reasons, this paper will mainly concentrate on its special education system. With regard to external elements, this paper focuses on trades between Germany and the EU, which provides Germany with talents, cheap lands, a labor force, and a stable market without trade barriers.

This paper is divided into two main parts. The first part focuses on domestic reasons. It firstly gives a brief overview of the basic German situation from two aspects of its advantageous industries (chemistry and automobile industry). It then explains why German industry is such advanced from its unique educational model dual system. Then the second part analyses its external trade, especially with EU member states, ranging from tax, currency, regulations to cost of production. The last section emphasizes the conclusion that why Germany could achieve huge success in the perspective of its domestic education system and its external trades.

2. Domestic Reasons

Since the reunification of Germany in 1990, The German economy has maintained a high growth rate and become the most important economy in the European Union. Such rapid and stable economic development is inseparable from the domestic economic environment and related policies. Germany's developed industrial strength and German education system have become the escort of the German economy. At the same time, Germany's developed transportation, huge investment in scientific research, and well-trained labor force have all become important factors for the success of German industry.

2.1. Chemical industry

Germany has the largest chemical industry in Europe. Industry revenues reached 147 billion euros in 2019, ranking third in the world after China and the United States. In 2019, Germany accounted for 27% of total European market sales of 579 billion euros. There are 2900 chemical companies in Germany, of which 96 percent are Of the 2,900 chemical companies in Germany, 96 percent are small and medium-sized enterprises with fewer than 500 employees [4]. This makes it easier for Germany to seize market segments in various fields of the chemical industry. The German chemical industry has a unique value due to its special status as producers and suppliers of raw materials for other industries. This value is also reflected in the German invention of chemical parks, where synergy and compound effects can be made highly efficient. Production is efficient and qualitative-chemical products; "Made in Germany" enjoy a high international reputation. In addition, the industry is highly innovative. Every fifth patent comes from the chemical industry [4]. Over the past 40 years, the German chemical industry has been growing at a rate of 20 percent per decade. It has been promoting automation and informatization while expanding its scale, increasing its efficiency, and requiring fewer workers.

2.2. German Automobile Industry

According to German government statistics, Germany's automotive industry had a turnover of 425 billion euros in 2017 and employed 840,000 workers and related workers. It accounts for 20% of Germany's total industrial income. Germany accounts for nearly 30 percent of passenger car production and nearly 20 percent of new car registrations. Germany is the global leader in car production, producing more than 15 million vehicles in 2015, or 19 percent of the world's total. Despite the lack of resources at home, Germany's success in other areas helped them to become competitive in the auto industry. Germany has a large number of well-educated industrial workers who have high practical skills in specific technical areas. At the same time, Germany's complete upstream and downstream industrial chain also makes it easier to develop the auto industry in Germany compared with other countries. Automotive suppliers can be supported by various component suppliers, such as steel, metal, and plastic. Germany's relatively integrated industrial chain supports its development.

2.3. Education and dual system

When introducing the above two industries, it is always mentioned that the German education system provides a large number of high-quality labor forces for Germany, thus enabling Germany to have more technological advantages in industrial development. Students generally enter the dual system after secondary education, with about two-thirds of the curriculum at vocational schools consisting of theoretical teaching in their chosen field. In contrast, the other third consists of general education subjects such as German, social studies, or English. Courses last two to three and a half years, depending on the major. Upon completion of the school component, students will receive a Certificate of Completion of vocational School. Training in the dual system aims to provide, in a well-ordered training program, broadly based basic vocational training and the qualifications and competencies required to practice an occupation as a skilled worker in a changing world of work.

Career coaching aims to inspire and enable individuals to plan a precise path to their goals in work and life. The aim is to develop and consolidate the ability to choose a career early through career guidance measures. To achieve these goals, it is necessary not only for general schools, vocational schools, and the Federal Employment Agency to work together in a coordinated manner but also with other actors such as parents, youth welfare, enterprises, trade unions and higher education institutions. Furthermore, the Government aims to increase the participation of German companies in Germany's vocational education.

2.4. Service industry

Services are crucial to the German economy. Consumer spending in Germany remained stable due to low levels of private debt and unemployment. In terms of population and purchasing power, the country is the largest producer and market of consumer goods in Europe. Textiles, clothing and shoes are the second largest consumer industry after food and beverage. Germany ranks fourth in the world in terms of clothing and textile exports. Although Germany has become an economic structure in which the tertiary industry accounts for an important proportion, different from other developed countries, Germany's service industry is separated from the real economy, even squeezing the development space of the real economy and distorting the development of enterprises to the real economy. Germany's service industry and manufacturing industry have formed an interdependent and jointly promoted relationship. In the financial field, the tradition of cross shareholding between large insurance companies and global banks in Germany and industry giants can be traced back to the German Empire. The financial and manufacturing industries have formed a community of interests. The former provides financing or loan support to the latter, solves the manufacturing industry's more concerns about R&D investment and business expansion, and can also help enterprises survive the financial crisis, Prevent bankruptcy and reorganization due to financial problems.

3. External Reasons

After 2000, Germany gradually became the most influential economy in Europe and the world. Interestingly, Germany's economic growth did not lead to a significant improvement in living standards at the very beginning as the inhabitants did not enjoy the same level of merits as they have worked for since a large proportion of the products produced were exported to other countries. Therefore, numerous research studies were conducted to find the reasons behind Germany's outstanding economic performance, especially after the 2000s [5]. Regarding the reasons behind the success, as a member country in European Union EU, the impact brought by the EU and the member countries are significant, and the effective measures and reforms took internally [6].

3.1. Free trade

As mentioned, Germany is an export-oriented economy which means trading with other countries would be extremely important. EU, as a monetary and economic union, its trading policies usually involve the removal of barriers or tariffs reduction in sectors including aircraft, automotive. As a result, Germany benefited greatly from it since these policies help it to keep the competitiveness of exports, especially when a great number of exports is demanded. The actions include the elimination of Recognition of safety standards used by the EU machinery industry in Brazil's new safety legislation and administrative barriers for services in Argentina.

EU's effort to promote free trade has increased its extent to an international level. Commissioner for Trade Cecilia Malmström said: "In the complex context we have today with a growing number of trade tensions and protectionist measures, the EU must keep defending the interests of its companies in the global markets. Making sure that the existing rules are respected is of utmost importance. Thanks to our successful interventions, 123 barriers hindering EU exports opportunities have been removed since I took office in late 2014. Working on specific problems reported by our companies, we manage to deliver economic benefits equivalent in value to those brought by the EU's trade agreements. Those efforts certainly must continue." [7] The EU's efforts to enforce the existing international trade rules are providing clear results. The Commission eliminated up to 35 trade barriers and measures spanned across eight key EU export and investment sectors, including agriculture and fisheries, cars, textiles and leather, wines and spirits, cosmetics, mineral products, aircraft parts, and ICT equipment. Germany, as an economic power in Europe, has certainly benefited from it.

3.2. The use of Euro

Germany is an export-dependent country. Therefore, the value of the currency used in relation to other currencies in the market, i.e., the exchange rate, greatly influences how competitive exports are. From a theoretical point of view, if the exchange rate of a currency is too high, the price of the corresponding product will be high for consumers in other countries, which is clearly detrimental. In most cases, foreign consumers will probably choose alternatives of similar quality but at a lower price. Therefore, keeping the exchange rate relatively low or stable is an important factor in maintaining Germany's export competitiveness and economic growth. But this is a difficult task because when the demand for exports is high, this also means that there is a high demand for the corresponding currency, which gives it a high probability of appreciation. Therefore, Germany needs a large number of foreign reserves and other policies such as controls on interest rates and imports and exports to stabilise the exchange rate. Before Germany used the euro, which was before 2002, it used a currency that had already undergone significant appreciation. We can see from the graph that the trend towards currency appreciation is becoming more and more pronounced.

Therefore, it can be said that the use of the euro has helped Germany's economic development, especially in terms of exports, enormously. The relative stability of the euro is mainly due to the fact that many EU countries use it; even those EU countries that do not use the euro choose to link their currency to the euro and thus maintain stability. This is called the Euro Bliss later on.

3.3. Regulations on trade and resources

As the member country in the EU, Germany does not have independent policies and needs to abide by the regulations. This means the regulations on trade plied by the EU would have significant impacts on members. However, Germany has actually benefited from the regulation as the EU constantly assesses the regional and global economic conditions. Therefore if, in fact, adopt the regulations that suit the current conditions the most.

The European Commission, the EU's politically independent executive arm [7], presented a new strategy on trade called "Trade for all" on 25 October 2015. The Commission revises and updates its "Global Europe" trade strategy from 2006 (which implemented the EU's Market Access Strategy) and the trade policy elements included in its general economic policy strategy entitled "Europe 2020" from 2010. The regulations, as introduced, have five focuses. Firstly, since the EU has noticed that global growth would be mainly prompted by trade and investment in the following decades and happen in place outside Europe. To benefit from this growth and avoid the feeling of being left behind, the EU needs open markets. This, again, would benefit Germany as it relies relatively heavily on export and international trade. Secondly, new trade policies have aimed to focus on services, digital trade, raw materials, innovation, and small and medium-sized enterprises (SMEs). Most of the products are of comparative advantage in Germany. As data shows, more than 99 percent of all companies are SMEs which form the backbone of the economy and make the domestic economy highly competitive. Thirdly, such regulations provide greater trade and investment transparency in terms of relevant policy, including making TTIP negotiations more transparent to the public and working more closely with other EU institutions, the Member States, and civil society. Fourthly, the European Commission has presented its plans for reforming the investment protection chapters in free trade agreements based on the actual value. A particular focus will be placed on whether trade policy upholds high sustainability, human rights, and democracy standards. Hence, even though Germany exports greatly, the resources and other economic factors are less likely to be depleted. Finally, their trade regulations have used a tool to shape globalization. The European Commission stresses the importance of WTO and taking a multilateral approach to trade policy and develops proposals for reviving multilateral negotiations.

Apart from that, the regulations regarding economic resources within Europe also bring benefit to Germany as they allow Germany to settle factories easily in other parts of Europe, seeking the comparative advantages and the lowest fixed costs. Besides, the free movement of labour within the European region also supports Germany's mass production with a sufficient skilled workforce with lower labour costs. Accordingly, Germany can keep the competitiveness of the product and keep developing.

3.4. The EU member countries

Some European countries, particularly in Central and Eastern Europe, are relatively less developed, and there is an asymmetry in monetary power between Germany and other EU countries. As a result, the less developed countries would encourage the developed countries, such as Germany, to build factories in their own countries, increasing local employment, boosting the local economy, and raising living standards. In the opposite direction, these friendly policies are also beneficial, as they alleviate the rising wage rates within Germany. Moreover, by locating factories in other countries, wage costs are reduced, and exports are made easier [8].

The European region was one of the main consumers when Germany was exporting in large quantities, mainly because the otherwise relatively less developed Central and Eastern European region was also developing rapidly at that stage. These countries concentrated on producing products in which they had an advantage and which were different, while at the same time-consuming large quantities of German imports. The rapid development of Europe also led to the economic development of Germany. Germany mainly produces and exports technological products, which are not simple products. Some countries are not suited to producing these products, or the technology is not yet mature, so they choose to rely on products made in Germany and invest their money in other industries. This is the reason for the stability of German exports.

For cultural reasons, some European countries would live beyond their means-borrow more and consuming more-from Germany-help the development. This has not been fully confirmed. Some experts believe that consumers have different consumer behavior due to the different cultures and philosophies held by consumers in some regions [9]. Some countries choose to spend more than they earn, so more German exports are in demand.

In addition, it also includes non economic assistance provided by the EU. The benefits brought by the EU have gone beyond the economic aspect, for example, democracy, human rights, consumer and environmental protection. It ensures the standards of living and individual development opportunities in Europe [10]. The most important aspect, however, is the preservation of peace.

4. Conclusion

The success of the German economy does not depend on a specific reason but the result of the interaction of multiple factors. In Germany, the permeability between vocational education and academic education has been greatly improved. The development of science and technology, globalization, and the changes of the times are changing in demand. At the same time, the integration of university academic education and vocational education is a pragmatic response to a non-centralized education system, which provided huge support for the development of German industry and contributed a lot to its reputation. As the largest economy of the EU, Germany is driving the economic development of the EU while also enjoying the huge benefits that the EU brings about. On the one hand, the EU provides Germany with a long-term stable market. On the other hand, it provides policy conveniences such as trade tariffs and regulations. At the same time, talents from many backward EU member states are attracted by Germany, which has injected vitality into Germany's innovation and development. In short, with such potential elements and convenient conditions, Germany's economic success is not surprising. However, in the past two years, Covid-19 has had a great economic impact on the world, and Germany is not an exception. In the following years, it will take some time to verify whether the German economy could continue to maintain such strong momentum and whether it could stabilize the status of the EU's internal economic hegemony.

References

- [1] ICAEW, so what is economic success? Going beyond GDP and profit, 2021.
- [2] Ismael Nafria, Countries with the largest share of EU's GDP, 2018.
- [3] The Federal Government, Economy-Make it in Germany, 2020.
- [4] The chemical industry in Germany: turnover, statistics, background, Research Germany Sector Reports, 2020.
- [5] Dustmann Christian, Bernd Fitzenberger, Uta Schönberg, and Alexandra Spitz-Oener, From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy, *Journal of Economic Perspectives*, 2014, 28 (1), pp.167-188.
- [6] K.Borger & Schoenwald, S., Why Germans benefit from the EU, Kfw.de, A uniquely successful project, 2019.
- [7] Rauh C., EU politicization and policy initiatives of the European Commission: the case of consumer policy, *EconStor Open Access Articles*, 2018, pp.1-22.
- [8] Mir Da La R, J Semaníková, A Ruáková., Determinants of Export and Import Functions in the EU Member Countries, *MPRA Paper*, 2019.
- [9] Ahabab M., Consumer buying behaviour and social responsibility in respect of organic foods: cross-cultural evidence, *International Journal of Agricultural Resources, Governance and Ecology*, 2019, 15(2):145-164.

[10] Skara G., The Role of the EU as a Peacebuilder in the Western Balkans, Romanian Journal of European Affairs, 2014, 14(4), pp.26-43.