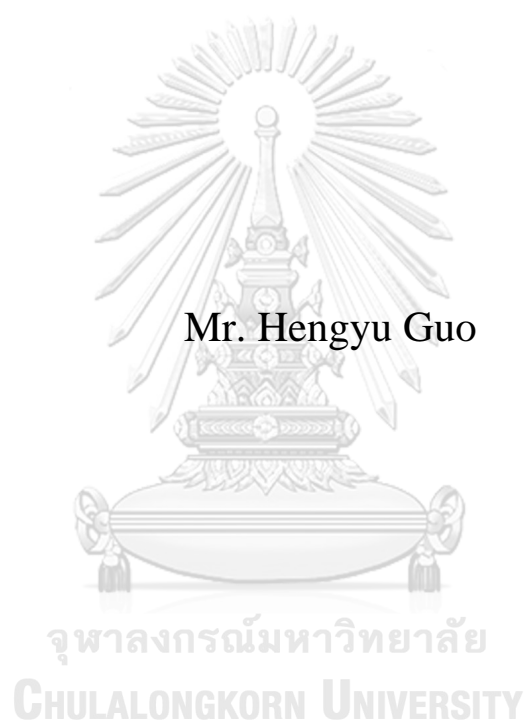


Impact of new coronavirus pneumonia on Chinese import and  
export trade.



Mr. Hengyu Guo

An Independent Study Submitted in Partial Fulfillment of the  
Requirements  
for the Degree of Master of Arts in Business and Managerial Economics  
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ผลกระทบของโรคปอดบวม coronavirus  
ใหม่ต่อการค้านำเข้าและส่งออกของจีน



สารนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตร  
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Independent Study Title	Impact of new coronavirus pneumonia on Chinese import and export trade.
By	Mr. Hengyu Guo
Field of Study	Business and Managerial Economics
Thesis Advisor	DOUNGDAO MAHAKITSIRI

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Accepted by the FACULTY OF ECONOMICS, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Arts

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ธงยูกัว : ผลกระทบของโรคปอดบวม coronavirus ใหม่ต่อการค้านำเข้าและส่งออกของจีน. ( Impact of new coronavirus pneumonia on Chinese import and export trade.) อ.ที่ปรึกษาหลัก : ดวงดา มหากิจศิริ

โรคโคโรนาไวรัส 2019 หรือ COVID-19 เป็นโรคระบาดที่เกิดจากโคโรนาไวรัสกลุ่มอาการทางเดินหายใจเฉียบพลันรุนแรงที่นำไปสู่การระบาดต่อเนื่องจนกลายเป็นหนึ่งในโรคระบาดร้ายแรงในประวัติศาสตร์ของมนุษย์ โรคระบาดส่งผลกระทบอย่างใหญ่หลวงต่อเศรษฐกิจโลกและธุรกิจการค้า ในเบื้องหลังของการระบาดใหญ่ของ COVID-19 วิธีการบรรเทาผลกระทบด้านลบของโรคระบาดและป้องกันผลกระทบของโรคที่คล้ายคลึงกันต่อการค้านำเข้าและส่งออกได้กลายเป็นประเด็นสำคัญที่ประชาคมระหว่างประเทศต้องแก้ไข จากการนำเข้าของจีน, ข้อมูลการค้าส่งออกก่อนการแพร่ระบาด การนำเข้าของจีน, ข้อมูลการค้าส่งออกหลัง covid19 และข้อมูลเกี่ยวกับจำนวนผู้ป่วยและผู้เสียชีวิตจาก COVID-19 เราวิเคราะห์หัตถมดหมู่ที่มีผลกระทบเฉพาะจาก COVID-19 ต่อประเทศจีน การค้าแล้วประเมินดุลยภาพทั่วไปผลกระทบจากการค้าขายภายใต้เงื่อนไข ผลการวิจัยของเราสามารถสรุปได้ดังนี้ (1): การเปรียบเทียบข้อมูลการนำเข้าและส่งออกของจีนรายเดือนก่อนเกิดโรคระบาดจาก 2018 ถึง 2019 และการเปรียบเทียบรายเดือนของข้อมูลการนำเข้าและส่งออกระหว่างโรคระบาดจาก 2020 ถึง 2021 ข้อมูลและการวิเคราะห์ของความสำคัญของโรคระบาด (2) China Severe Acute Respiratory Syndrome ย่อว่า SARS โรคที่เรียกว่า SARS case มีรายงานครั้งแรกในปี 2545 ที่เมือง Shunde มณฑลกว่างตุ้ง ประเทศจีน จากนั้นแพร่กระจายไปยังเอเชียตะวันออกเฉียงใต้และทั่วโลก พิสูจน์แล้วว่าผลกระทบของ SARS การนำเข้าและส่งออกของจีนในปี 2545 มีจำนวนมหาศาล COVID-19 เกี่ยวกับการค้าจีนในปี 2020 (3) บทความวิเคราะห์ผลกระทบของโรคระบาดต่ออุตสาหกรรมนำเข้าและส่งออกที่สำคัญของจีนเพิ่มเติม เอกสารนี้ใช้ข้อมูลอุตสาหกรรมนำเข้าและส่งออกหลักสี่: สถิติรายเดือนเกี่ยวกับการส่งออกและนำเข้าเครื่องใช้ไฟฟ้าด้วยผลิตภัณฑ์เครื่องกล สถิติรายเดือนเกี่ยวกับการนำเข้าและส่งออกสินค้าไฮเทค สถิติการส่งออกรายเดือนไปยังเสื้อผ้า, เครื่องประดับเสื้อผ้า สถิติการส่งออกสินค้าเกษตรรายเดือน. ในหมู่พวกเขา การส่งออกของอุตสาหกรรมไฮเทคและจำนวนผู้ป่วยครอบฟันรายใหม่มีความสำคัญอย่างยิ่ง (0.004). ยอดผู้เสียชีวิต อุตสาหกรรมไฮเทค และเครื่องแต่งกายและเครื่องแต่งกายมีความสำคัญสูงมาก (0.004, 0.009)

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ลายมือชื่อนิสิต .....  
ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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DOUNGDAO MAHAKITSIRI

Coronavirus disease 2019 or COVID-19 is an epidemic caused by a severe acute respiratory syndrome coronavirus that has led to a persistent outbreak that has become one of the terrible epidemics in human history. The epidemic has had a huge impact on the world economy and trade business. In the background of the COVID-19 pandemic, how to mitigate the negative effects of the epidemic and prevent the impact of similar diseases on import and export trade has become a major issue for the international community to address. Based on China's import trade, export trade data before the epidemic, China's import trade, export trade data after covid19, and data on the number of patients and deaths from COVID-19, we analyze the categories with specific impact from COVID-19 on China's trade and then evaluates its general equilibrium. Trade salience effects under conditions. Our research results can be summarized as follows (1): The monthly comparison of China's import and export data before the epidemic from 2018 to 2019 and the monthly comparison of import and export data during the epidemic from 2020 to 2021. The data and analysis of the significance of the epidemic. (2) China Severe Acute Respiratory Syndrome, abbreviated as SARS, The disease, known as the SARS case, first reported in 2002 in Shunde, Guangdong Province, China, and then spread to Southeast Asia and the world, proved that the impact of SARS on China's import and export trade in 2002 was enormous. COVID-19 on Chinese trade in 2020. (3) The article further analyzes the epidemic's impact on China's major import and export industries. This paper uses four primary import and export industry data: Monthly statistics on the export and import of electrical with mechanical products. Monthly statistics on import and export of high-tech products. Monthly export statistics to clothing, clothing accessories. Monthly Export Statistics of Agricultural Products. Among them, the export of high-tech industries and number for new crown patients are particularly significant. (0.004) . The death toll, high-tech industry, and clothing and clothing accessories have very high significance. (0.004, 0.009)



Field of Study:

Business and Managerial Economics

Student's Signature .....

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Advisor's Signature .....

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### *Executive Summary:*

A global public health crisis, the new crown pneumonia epidemic, has wholly affected the pattern of world trade. The sudden outbreak of the new crown epidemic has made the macroeconomic environment full of uncertainty. Global supply chain circulation is blocked, and product circulation is slowed down, the direct investment of foreign capital in various countries has been dramatically affected, and the international trade pattern has undergone profound changes. The COVID-19 pandemic is a major external shock that has impacted trends in the global economy since economic globalization. Compared with 2019, the global connectivity in 2020 will be significantly weakened. The epidemic has had a severe impact on international trade and has not been affected in all parts of the world, and the impact is more severe than during the like the economic or financial crisis. The globalized trade mode has been subject to massive shocks and changes, and digital technology has gradually become the main driving force for transforming the global supply chain. Therefore, this paper selects China's import and export data, the world's second economy, as the analysis object.

This paper chooses to collect the import and export data from 2018 to 2021 issued by the Chinese government as the primary data source and analysis object. The article chooses 2018-2021 because China is in a period of stable development from 2018 to 2019, which can fully reflect the influence of Chinese export and import trade in the world and its market share before the epidemic. 2020-2021 data reflects the impact on Chinese export and import commercial data after this epidemic. Because import and export quota is affected by many factors, we selected the literature on the impact of the 2002 SARS on Chinese export and import business data. We continued to analyze and corroborate that the epidemic did have a vast and far-reaching impact on Chinese export and import data. Therefore, the article can draw the significant impact of Covid19 on Chinese export, import trade in 2020. The article continues the analysis and collects data from China's Monthly statistics on export with import of electrical products, mechanical products, Monthly statistics on import and export of high- technology products, Monthly export business statistics for clothing with clothing accessories, and Monthly Export Statistics of Agricultural Products. We choose to collect the number of COVID-19 cases, deaths, total cases, and deaths in China as independent variables to analyze the impact of covid-19 on trade import and export volume. The article chooses the Sig. (2-tailed) method of SPSS to continue the significance analysis of the above data.

The article draws the following conclusions:

(1) Significant analysis about monthly cumulative quantity of patients: The cumulative quantity of patients dramatically impacts China's trade, monthly Exports, and monthly High-tech products Exports. (Correlation is significantly lower than the 0.01 level (2-tailed)). The monthly total number of patients significantly impacts China's trade, monthly Imports, Monthly electrical products and mechanical product - import, monthly mechanical and electrical products - export, and monthly Clothing

and clothing accessories-Export (Correlation is significantly lowering the 0.05 level (2-tailed). The monthly total number of patients has no significant effect on the monthly High-tech Products-Imports, the monthly Agricultural Products-Imports, and the monthly Agricultural products-Exports.

(2) Analysis of the significance of monthly total deaths: Monthly total deaths were significant only in monthly exports. (Correlation is significantly lower than 0.01 level (2-tailed).). Secondly, the monthly mortality rate is only significantly correlated with the monthly High-tech products—Exports (Correlation is significantly lowered the 0.05 level (2-tailed). Monthly Imports, Monthly Mechanical and electrical products Imports, Monthly Mechanical and electrical products Exports, Monthly High- tech products Imports, monthly Clothing and clothing accessories Export, monthly Agricultural products Imports, and monthly Agricultural products Exports were not significantly associated with monthly total mortality.

(3) Significance analysis of the monthly new number of patients: The monthly new number of patients does not have a substantial significant correlation with the above import and export data (Correlation is significant at the 0.01 level (2-tailed). The monthly new number of patients is only relevant to Exports. Correlation is significant at the 0.05 level (2-tailed). Monthly imports, monthly mechanical and electrical products imports, monthly mechanical and electrical products exports, monthly high-tech products imports, monthly clothing and clothing accessories exports, monthly agricultural products imports, monthly agricultural products exports, and monthly total mortality were significant There was no correlation.

(4) Semantic analysis of monthly new deaths: Monthly new deaths have a significant impact on monthly exports, monthly high-tech products exports, monthly apparel and apparel exports, and other import/export data (significant correlations) at the 0.01 level (two tails). New monthly deaths have a significant impact on monthly imports, monthly mechanical and electrical products imports, and monthly mechanical and electrical products exports. (Correlation is significant at the 0.05 level (two tails). High-tech products imports, agricultural products imports, and agricultural products exports do not significantly affect the number of new deaths per month.

The article hopes that through the analysis of China's monthly import and export data and monthly electrical with mechanical products Imports, monthly electrical with mechanical goods exports, monthly High-tech products Imports, monthly High-tech products Exports, monthly Clothing and clothing accessories Exports monthly Agricultural products Imports, monthly Agricultural products Exports, and China's epidemic infection The significance analysis of the number of people, the number of deaths and other data shows that the epidemic has the most significant impact on import and export industries. Provide time for prevention and adequate preparation for future public health emergencies such as epidemics.

This article aims to help the government and enterprises ensure the liquidity of trade imports and exports in advance. When the government and enterprises are judging the trend of the situation, they can quickly find industries that may damage

the liquidity of imports and exports and avoid them in a targeted manner. Stabilize supply chains: Governments and businesses need to identify what is the risks to their industrial supply chains and inventory risks, risk scope and duration, in areas where the outbreak is spreading. Based on the industries most affected by the epidemic, The government can guarantee the supply of critical parts and components in the industry, reserve railway/air transportation capacity in advance, use pre-work and after-sale inventory, strive for priority supply, and provide support for suppliers to resume work, Etc. Crisis Emergency Drills: Governments and leaders of many businesses lack forward-looking crisis awareness and need to establish “crisis drills” mechanisms and set emergency response trigger points. Governments and businesses simulate how to respond in different epidemic scenarios (including simple emergencies, comprehensive, Etc.). In process, the correlation between the number of patients and deaths caused by the epidemic in the industry is used as the decision criterion. Practicing social responsibility: No one can stay out of the epidemic under the epidemic, and the same is true for the government and enterprises. The government should find a point of contribution, suspend or slow down industries that are less affected by the epidemic, and increase policy support and support for industries significantly affected by the epidemic. The government has helped some companies shift production across borders to produce protective materials such as medical masks and protective clothing.

### *Introduction and Objectives*

At the turn of 2019 and 2020, a global health crisis, Corona Virus Disease 2019, emerged, affecting the lives and safety of all people. From December 2019, several cases of pneumonia of unknown cause with a history of exposure to the South Huanese fish market have been found consecutively in some hospitals in Wuhan City, Hubei Province, and the 2019 novel coronavirus infection was diagnosed as an acute respiratory infection. WHO Director-General Tedros Adhanom Ghebreyesus announced on February 11, 2020, in Geneva, Switzerland, that pneumonia caused by the novel coronavirus will be named 'COVID-19'. On February 28, its global risk level was changed from "high" Further upgrades to "very high." On March 11, the World Health Organization (WHO) determined that the current COVID-19 outbreak could be called a global pandemic, which has brought huge threats and severe challenges to the lives and safety of all human beings. At the same time, the development of the world economy and society has also suffered a considerable impact, and the first one is international trade. In the 2021 Statistical Manual released by UNCTAD on December 9, 2021, during the 2020 new crown pneumonia epidemic, the global merchandise trade volume fell by 7.4% year on year, and the global export value was 17.6 trillion U.S. dollars, which was lower than that in 2019. the annual decrease of \$1.4 trillion.

The decline in global services trade was even more significant, with global services trade in 2020 down 20% from 2019, the most significant decline in services trade since records began. Among them, the tourism industry was the most severely affected, with a sharp decrease of 63% year-on-year in 2020. This seriously affected the tourism-oriented economy, and the import and export industry and globalization

were significantly impacted. As the world economy gradually recovers, the recovery of global commodity trade ushered in the dawn. UNCTAD expects global merchandise trade to grow by 22.4% year-on-year in 2021, which will push global merchandise trade around 15% higher than before the pandemic. It is worth noting, however, that while trade in services is expected to grow by 13.6% in 2021, the value of trade in services will remain below pre-pandemic levels. However, it is worth noting that although global trade generally recovered in 2021, the recovery's momentum has begun to slow. World trade volume fell 0.8% in the third quarter of 2021 after a solid expansion for the fourth straight quarter as supply chain disruptions, production input shortages and rising COVID-19 outbreaks weighed on trade growth, according to the World Trade Organization (WTO). The contrast to trade volumes, global trade volumes continued to climb in the third quarter of 2021 due to sharp increases in import and export prices. In U.S. dollar terms, the value of global trade, measured by average imports and exports, year-on-year in the third quarter of 2021 increased of 24%. The increase in the second quarter was lower than the 46% but higher than the 15%.

How to alleviate the adverse impact from the world problem and thus promote to recovery and development with global trade has become one of the significant issues that the international community needs to work on together. The relationship between epidemics and international trade has always been the focus of attention. However, it is subject to various scientific and technological levels and other subjective and objective factors. For a long time, the field of import and export trade research has not paid enough attention and due attention to the epidemic. Until the 21st century, with a series of major public health emergencies, especially the SARS epidemic, H1N1, H7N9, Middle East respiratory syndrome, and Ebola virus, the new crown pneumonia epidemic occurred one after another. It is only now that the world's prominent organizations are beginning to address the impact of health security events head-on on trade studies are emerging. Therefore, this paper selects the monthly import and export data of China, the second-largest economy in the world, from 2018 to 2021 as the reference object. At the same time, this paper collects many relevant documents to analyze the primary evidence of the epidemic's impact on imports and exports. The relevant literature can be roughly classified into the following three categories.

One is the forecast assessment of the trade shock of the pandemic. After the SARS outbreak, Wen, H. Zhong, Z. Jian, W. Zhen-G, H ((2004) 3 (1): 57–61.) They surveyed Beijing to investigate the economic impact of SARS, and their survey showed that SARS significantly negatively impacted the Chinese economy. The tourism industry has been hit the hardest. Moreover, it estimated the income of foreign and domestic tourists in China in 2003. Chinese GDP growth rate in 2003 was around 2% lower than in the non-SARS outbreak. Lee and Mckibbin (2004) and the research group on SARS on the economic impact of Nankai University (2003) simulated and predicted the trade shock effect of the SARS epidemic, respectively. Lee and Mckibbin (2004) analyzed the SARS epidemic based on the quantitative analysis of the G-Cubed model. The occurrence and spread of the virus have caused severe harm to regional trade. The research group on the economic impact of SARS at Nankai University believes that the SARS epidemic make a decline to the scale and growth rate of Chinese foreign trade in the short term. Kleinman and James L. W.



Stanford: Stanford University Press, (2005) argue that the possible impact of SARS on the Chinese economy is dangerous. Forward-looking forecasts are hazardous for China because of China's large-scale institutional changes and particularly unusual structural elements (such as China's economic restructuring and China's unusual rise in inequality) and because recent growth outcomes are still shrouded in controversy. The economic and institutional observations of Kleinman and James L. W. begin to analyze the dramatic impact of the SARS outbreak. Considering and analyzing the impact on China's economy, Maliszewska et al. (2020) and Li and Lin (2021) conducted a simulated assessment of the operation of international trade under the impact of the COVID-19. They found that the decline in global trade under different recovery scenarios is about 8% ~ 20%. The negative impact on major economic systems, such as the EU, the United States, China, and other economies, is relatively significant.

The second is a normative analysis of the epidemic's impact on trade. Baldwin and Tomiura (2020) analyze the port business impacts of the sick pandemic from historical and study perspectives combined with logical reasoning. Draw the difference in world trade before and after the pandemic. Sforza and Steininger (2020) and Antras et al. (2020) explore the well-being effects of the COVID-19 pandemic and the interactions between globalization and epidemics based on a theoretical framework based on the Ricardian model and human interactions. The impact of the epidemic has deepened, and the impact of the global epidemic has deepened. The pandemic had an effect that significantly weakened trade gains. In China, some scholars have also discussed the impact and countermeasures of the new crown pneumonia epidemic on international trade and our country's foreign trade (Shen Guobing, 2020).

The third is a quantitative analysis of the trade effect of the epidemic. Meanwhile, Huang (2017) investigated the SARS epidemic's impact on Chinese companies' foreign trade activities and found that companies without a diversification strategy were more affected by the epidemic. Fernandes and Tang (2020) investigated the SARS epidemic based on building a quasi-natural experimental framework. They found that during the epidemic period, two years after the epidemic's end, the growth rate of imports and exports of regional enterprises affected by the epidemic was lower than that of regional enterprises not affected by the epidemic. Che et al. (2020) and Büchel et al. (2020) empirical studies at the national level have confirmed that the COVID-19 pandemic has a significant trade deterrent effect. This effect is remarkably heterogeneous across industries and products. In addition, scholars have conducted various investigations into trade impacts of other infectious diseases, such as the Middle East Respiratory Syndrome, influenza A virus, and Ebola virus (Ma et al., 2020).

The existing literature has provided a preliminary discussion of the relationship between historical problem and international business, which provides information for the study of this paper. Then, it still has the following disadvantages: First, historical Experimental results of the trade effect of the new 2020 epidemic in our country is still very rare, and its objects are limited to the local level, and it is challenging to provide extensive empirical evidence based on China's national perspective; second, the relevant research in China is still in its infancy at this stage, and a systematic study is far from established. The system, empirical research is very scarce, and it is

difficult to analyze the economic effects of the epidemic deeply.

We aim to reveal the specific impact of the 2020 crown pneumonia epidemic on Chinese trade and the industries affected and to provide a helpful decision-making reference for China's economy, health governance, and prevention industries in the post-epidemic era. Compared with existing research, this paper may contribute in the following aspects. 1: To a certain extent, it will help promote the research branch's progress in assessing the economic effects of the epidemic and enrich China's domestic research. This has a particular academic value for further promoting the cross-integration of epidemiology, Chinese economics, and other disciplines and deepening the understanding of the mechanical relationship between the impact of the public health crisis and China's trade.

Second, at the methodological level, using the incidence of mortality as a variable and performing two-stage least squares (2SLS) estimation is helpful to make up for the fact that existing empirical studies generally ignore the possible endogeneity between epidemics and China's import and export trade. Relationship flaws. This provides further empirical evidence for the interpretation of the trade welfare effect of the new crown pneumonia epidemic.

The third is the practical level. This paper has specific practical implications for policy issues such as the prevention and control of public health crises and the promotion of the recovery and development of Chinese import with export business, which can provide scientific reference for the decision-making and planning of macro and micro-economic entities such as the government and enterprises.

## Methodology and Data Gathering Process:

This article first collects Chinese monthly export and import trade in 2018-2021 from China Customs. Customs data refers to customs information on export and import transactions of goods, which mainly come from accurate document records such as customs bills, bills of lading, and commodity inspections. This data information is the most direct basis for the country to control changes in international trade and formulate trade policies. It is also an efficient and accurate resource for enterprise market research, international market development, and foreign trade enterprises to carry out foreign trade business. China's customs data is divided into Chinese export and import statistics and customs data. Here we select Chinese custom import and export statistics.

From annual, monthly import, and export data are counted. They are export and import amount data, export with import amount month-on-month data, import and export cumulative amount, import amount, import amount month-on-month, cumulative import amount, export amount, month-on-month, and cumulative export amount. (From 2019-2021. The second-level data is from Monthly statistics on port data of electrical products with mechanical product, Monthly import and export statistics of the high technology products, Monthly import and export statistics of agricultural products, and Monthly import and export statistics of clothing and clothing accessories. The above data is subdivided into Exports (billion US dollars), Cumulative number of exports (billion US dollars), and Cumulative year-on-year



export (%). Imports (billion US dollars), Cumulative number of imports (billion US dollars), Cumulative year-on-year imports (%) At the same time, this article selects the total number of patients in China, the cumulative number of deaths per month, the per month cumulative number of new deaths, and the number of new deaths per month are used as variable data in this article. Four data sets are used to analyze the total import and export data and the specific four major import and export industries. Classify the above data using SPSS's principal roles and analytical methods. We are the two-sided p-values computed using the t distribution. That is, the hypothesized probability of observing a better absolute value of t. The p-value is assumed to be less than a predetermined alpha level (usually 0.05 or 0.01, in this case the former). In this case, we can conclude that the mean difference between the write score and the read score is statistically significantly different from zero. For example, the p-value for the difference between two variables is more significant than 0.05, so you conclude that the mean difference is not statistically significant at 0.

### *Findings:*

First, the article analyzes Chinese monthly export and import trade value information from 2018 to 2021. We can find that from 2018 to 2021, the amount of import and export trade will drop sharply in February every year because the Chinese lunar new year has caused the Chinese import and export market to be closed for seven days. The epidemic significantly impacted foreign trade at the beginning of 2020. After the second quarter, imports and exports rebounded significantly. The foreign trade for the whole year fell and then rose far more than expected. The sudden outbreak of the novel coronavirus pneumonia in early 2020 caused a significant impact on China's economy in the short term. In the first quarter, foreign trade declined significantly, with imports and exports down 6.4% year-on-year and exports down 11.4% year-on-year. There were signs of recovery in March, and the decline in exports was 4.8 percentage points lower than that in January-February. Exports and imports recorded growth for seven consecutive months since June. Throughout the year, total import and export volume reached an all-time high, and international market share reached an all-time high. China became the only major economy in the world to achieve growth in commodity trade. Throughout the year, China's foreign trade has shown a positive quarterly trend of "a substantial drop in the amount in the first quarter, a stop in the second quarter, an overall rebound in the third quarter, and an increase in the consolidated amount in the fourth quarter." According to data from the General Administration of Customs, in 2020, the total import and export of goods trade in China was 32.16 trillion yuan, an increase of 1.9% compared to 2019. Among them, exports increased by 4% to 17.93 trillion yuan, imports decreased by 0.7% to 14.23 trillion yuan, and the trade surplus reached 3.7 trillion yuan, up 27.4%; trade surplus was 3.7 trillion yuan, up 27.4%, and overall performance exceeded market expectations.

From the perspective of supporting factors, China's economy is strong and resilient, with a complete supply chain. The epidemic was brought under control earlier to ensure orderly progress in the resumption of work and production. In the second half of the year, countries worldwide will restart their economies, and external demand will gradually pick up. Emerging economies such as India have been affected by the epidemic, and their supply chains have been significantly impacted. Many foreign trade orders have been transferred to China, resulting in an export substitution effect. The country has also introduced a set of policies and measures to stabilize foreign trade, including setting up a comprehensive pilot zone for cross-border e-commerce, supporting the development of processing trade, and holding an online Canton Fair. Make sure that the overall situation in foreign trade is improving.

We also found huge fluctuations from January to March 2018 to January to March 2019 in comparing imports and exports. Among them, the month-on-month decrease in February 2020 was -16.7%, and the month-on-month increase in February 2021 was 67.9%. In March, the epidemic ended, and the gap between China's imports and exports gradually narrowed. Back to positive in June. The difference can also be found in the port business trade volume data in 2021. The end of China's domestic epidemic in 2021 will allow Chinese trade to resume. The number of its imports and exports rose steadily month-on-month. 2018-2021 - Monthly import and export amount data We can also clearly find that China's import and export trade amount fluctuated violently during the outbreak and the end of the epidemic.

Second, the article collects China's monthly export data from 2018 to 2021 and month-on-month data over the same period. Through the bar chart, we can find the overall trend of China's exports rising steadily. However, during February and March 2020, the export value fluctuated sharply, and the reason for the fluctuation was the spread and spread of the epidemic. We found a short gap between February 2020 and February 2021 year-on-year difference. This is because the epidemic outbreak in China in March 2020 makes a big drop in exports. By the epidemic in China in March 2021, China will fully resume work. The year-on-year export data in March of the same year and the export data in March of the following year changed from -40.6% to +154.6%. The vast data gap reflects the changes in the epidemic. From the year-on-year export data in 2020, we can see that the epidemic severely affected economic development in the first half of 2020. Its export value data and export month-on-month data are surprisingly similar to the curve of the number of patients and deaths from the epidemic.

Finally, we can see this in the analysis of export data. Through bar charts and graphs, we found that the import amount fluctuated wildly, and its import data, the spread of the domestic epidemic, and the impact of control were relatively small. Among them, the import amount fluctuates mainly at two nodes: the outbreak stage of the epidemic in China from February to March 2020. 2: The worldwide spread of the epidemic from April to May 2020. At the same time, we found from the line chart that the year-on-year data of China's imports fluctuated wildly because imports were affected by factors such as many other countries and the world's macro economy.

The article faces the difference between import and export data, import and export data, and we further analyze the import and export data. We collected Monthly statistics on port data of electrical products, mechanical products, Monthly import and export statistics of new technology products, Monthly port trade statistics of agricultural goods, and Monthly trade business statistics from January 2018 to September 2020 for clothing and clothing accessories. These four significant industries can reflect the changes in China's imports and exports, which is why we choose them as representative industries. At the same time, we also collected and calculated the monthly data of each industry. The article will make a specific analysis of the chain data.

The first is Monthly statistics on the port trade of electrical products, mechanical goods. The bar chart reflects the significant impact to China's Monthly statistics on the import and export of mechanical and electrical products during February 2020, which is much lower than last year. This conclusion can also be drawn from the monthly data on the trade of electrical products with mechanical goods. In February 2020, the month-on-month export of electrical products with mechanical goods was -51.8%. This is also a record high. Importing mechanical and electrical products is -26.1% month-on-month, which is also the enormous month-on-month gap in import of mechanical and electrical products.

Followed monthly import and export statistics of high-tech products import and export data and import and export chain ratio. Through the data of Monthly export statistics of high-tech products, we found that the export amount in February 2020 fluctuated significantly. The Monthly export statistics of high-tech products were half the same in 2019 or one-third in January 2020. Monthly export statistics for high-tech products amounted to only \$2.426 billion. Monthly import statistics of high-tech products amount is only half of the same period. When we converted the data to Monthly import and export statistics of high-tech products year-on-year data, we found that Monthly export statistics of high-tech products changed dramatically in March 2020. In February 2020, the data for Monthly export and import statistics of high-tech products were -43.42% and -21.9%, respectively, which was much higher than the typical situation in the same period. Among them, the year-on-year export data in March 2020 was -7.19%, and the year-on-year export data in April 2020 was 11.3%. This data highly overlaps with the spread of the epidemic. We will analyze the specific correlation later.

Then this article collects Monthly import and export statistics of agricultural products. The line chart of agricultural imports and export also reflects a series of fluctuations in agricultural imports and export affected by the epidemic. The following two reasons have mitigated the impact of the outbreak on agriculture. 1. China's February is the winter period, and the export and import of grain are affected by the weather. 2. The Chinese New Year has softened the impact of the epidemic. Although both imports and exports fluctuate, from the month-on-month analysis of Monthly import and export statistics of agricultural products, we find that exports are much more volatile than imports. The outbreak period is from February to March 2020. Monthly import statistics of agricultural products in February 2020 was -48.2% month-on-month, but after the epidemic was brought under control, it rose significantly to 22.9% month-on-month in March. The month-on-month comparison of Monthly import statistics of agricultural products in 2020 also has significant

features. The month-on-month ratio of Monthly import and export statistics of agricultural products in February 2020 was -12.82%, and the month-on-month ratio of Monthly import and export statistics of agricultural products in March 2020 was 17.37%. This is highly coincident with the situation in China. The following section will analyze the relationship between China's epidemic and its.

Lastly is the Monthly import and export statistics of clothing and clothing accessories. This article collects China's Monthly import and export statistics of clothing and clothing accessories and month-on-month data from January 2018 to September 2020. From February to May 2020, China's Monthly import and export statistics for clothing and clothing accessories were significantly lower than the data for the same period. From February to June 2020, Monthly import and export statistics for clothing and clothing accessories were \$22.2, \$65.3, \$67.4, and \$890 million, respectively. The year-on-year data from February to June 2020 were -68.82%, -24.60%, -30.23%, -26.99%, and -10.19%. The month-on-month ratio of its Monthly import and export statistics of clothing and clothing accessories is highly coincident with the speed of the epidemic.

Detail of each part

1. By comparing China's monthly import and export value chart from 2018 to 2021 and China's monthly bar chart from 2018 to 2021, we found that China's import and export value in 2020 and 2021 was affected by covid19. Exports were the most affected by the epidemic's impact, and the amount fell the most. In contrast, the impact on the import value is relatively small because China started a trade war with the United States in 2019, and the world was affected by the epidemic in the third and fourth quarters of 2020. Currently, the covid19 epidemic in mainland China has been lifted. Moreover, we found that the worst hit was in February 2020.

2. We collected the import and export data and month-on-month data of Mechanical and electrical products from January 2018 to September 2020, the import and export data and month-on-month data of high-tech products from January 2018 to September 2020, and the month-to-month data from January 2018 to Import and export data and month-on-month data of agricultural products in September 2020, import and export data and month-on-month data of clothing and clothing accessories from January 2018 to September 2020.

2.1. Mechanical and electrical products: We found the port data of electrical products with mechanical goods and in February 2020 suffered huge fluctuations, which was the lowest import and export value in three years. The export value in February of the same year was also the lowest in three years. The article found through the month-on-month comparison that among the month-on-month comparisons in February, the month-on-month comparisons in 2020 were the lowest. In March 2020, both imports and exports increased significantly month-on-month. Affected by the global epidemic, China's import value has a trend of a substantial increase in July 2020.

2.2 Monthly import and export statistics of high-tech products: We found that the export data of Monthly import and export statistics of high-tech products in February 2020 suffered huge fluctuations. The March 2020 figures were the lowest in three years. The import and export value in February of the same year was also the lowest in three years. There is a massive gap between exports in February 2020 and February 2019. The article found through the month-on-month comparison that in June 2020,

the exports of Monthly import and export statistics of high-tech products increased significantly month-on-month. High-tech products are affected by the spread of the global epidemic and need to be imported in large quantities.

Meanwhile, the outbreak in China was brought under control by the Chinese government in June. So this is the reason for the substantial increase from port oversea value of Chinese high-tech goods, plus China itself dominates the high-tech products industry. Therefore, the month-on-month change in the import of high-tech products after June 2020 is not apparent.

**2.3 Monthly export statistics of agricultural products:** We found that the export data of Monthly export statistics of agricultural products in February 2020 were affected. The February 2020 figures were the lowest in three years. The import and export value in February of the same year was also the lowest in three years. Imports and exports in March 2020 rebounded sharply month-on-month, and the previous year saw a significant overtake. The article also found that the export of agricultural products in May 2020 decreased significantly from the previous month. Agricultural products have been affected by the spread of the global epidemic and the food crisis, and the Chinese government's grain exports have been significantly reduced. At the same time, the epidemic in China was controlled by the Chinese government in June, but because China is the world's most populous country, coupled with the global epidemic, the import of agricultural goods get affected by multiple factors like domestic, other countries, weather, and harvest time. Therefore, the import of agricultural products can be analyzed in three stages: February-March, June-July, and September 2020. This result is also one of the industries not significantly affected by the epidemic.

**2.4 Monthly export statistics of clothing and clothing accessories:** Through Monthly export statistics of clothing and clothing accessories, we found that the monthly export was hit hard in February, and its export quota was less than one-third of the previous month's export value. In the line chart from 2019 to 2020, we can find that the month-on-month ratio in February 2020 was negative 50%. In March of the same year, the month-on-month export increased by 22%. Monthly export statistics of clothing and clothing accessories the export amount is huge Differences, and the impact of epidemic transmission are highly overlapping.

SPSS's detailed analysis of the results. The annual, monthly import, and export data are counted. They are import and export amount data, import and export amount month-on-month data, import and export cumulative amount, import amount, import amount month-on-month, cumulative import amount, export amount, month-on-month, and cumulative export amount. (From 2019-2021. The second level of data is from Monthly statistics on port of electrical goods mechanical goods , Monthly import and export statistics of new tech products, Monthly port statistics of agricultural goods and Monthly import and export statistics of clothing and clothing accessories. The above data is subdivided into Exports (billion US dollars), Cumulative number of exports (billion US dollars), and Cumulative year-on-year export (%). Imports (billion US dollars), Cumulative amount of imports (billion US dollars), Cumulative year-on-year imports (%) At the same time, this paper selects the total number of patients in China, the total number of per month deaths people, the number of per month new deaths people, and the number of new deaths per month were used as independent variable data in this paper. Four data sets analyze total port



data and four specific port primary industries. Classify the above data using SPSS's principal roles and analytical methods.

Finally, we use Gretl to use all significant related import and export data as variable data, the total number of patients in China, the total number of per month deaths people, the number of new deaths per month, and the number of new deaths per month as independent variable data. Furthermore, the above data are analyzed. The article draws the following conclusions through the significance analysis of the correlation: the export of new technology industries and the number of new crown patients are particularly significant. The death toll, high-tech industry, and clothing and clothing accessories have very high significance.

As independent variables for OLS regression analysis and robust standard error regression analysis, the monthly number of COVID-19 patients, the monthly total number of COVID-19 patients, the monthly number of COVID-19 deaths, and the monthly total number of COVID-19 deaths were introduced as independent variables.

1. Import: As we can see from the table, the R-squared value of the model is 0.8365, which is the number of covid19 patients per month, the number of covid19 patients per month, the number of covid19 deaths per month, and the total number of deaths from COVID-19 per month in the income (USD) of the reason for the change. 83.65% can be explained. When an F-test was performed on the model, the model was F-tested ( $F=3.74$ ), i.e., the number of COVID-19 patients per month, the total number of COVID-19 patients per month, the total number of covid19 deaths per month and the total number of covid19 deaths per month had at least one effect. receive import(dollar) creates an influence relationship and the model formula is:  $\text{import} = 843.167 + 0.100 * \text{covid19 total patients monthly} + 0.1006 * \text{covid19 monthly patients} - 1.204 * \text{covid19 total monthly deaths} - 3.309 * \text{covid19 monthly deaths}$ . The summary analysis found a positive correlation between the number of COVID-19 patients per month and the total number of COVID-19 patients per month. In addition to the number of covid19 deaths per month, the number of covid19 deaths per month also had a negative impact. จพาลงกรณ์มหาวิทยาลัย

2. Export: As shown in the table, the R-squared value of the export model is 0.986, which represents the number of COVID-19 patients per month, the total number of COVID-19 patients, and the number of COVID-19 deaths per month. Monthly covid19 deaths could explain 98.6% of the reason for the change in income (USD). When an F-test was performed on the model, it was found that the model passed the F-test ( $F=56.012$ ): number of covid19 patients per month, the total number of covid19 patients per month, and number of deaths. Monthly covid19 cases and monthly covid19 deaths are affected by at least one impact. Export (USD) has an impact relationship, and the model formula is  $\text{Export} = 1262.78 + 0.0861 * \text{total number of COVID-19 patients per month} + 0.1373 * \text{monthly number of COVID-19 patients} - 1.456 * \text{total number of COVID-19 deaths per month} - 4.884 * \text{total number of deaths per month}$ . COVID-19 death. The summary analysis found a significant positive correlation between the number of COVID-19 patients per month and the total number of COVID-19 patients per month. As with monthly covid19 deaths, the number of monthly total covid19 deaths has a significant negative impact.

3. The new-tech products import and export: As can be seen from the table, our

model for the R-squared value is 0.994, meaning the number of covid19 patients per month, the total number of covid19 patients per month, and the number and number of covid19 deaths per month. This could account for 99.4 of the monthly covid19 deaths. % (USD) The percentage change in exports. If the model is F-tested, then the model is F-tested (F=130.0156). That is, monthly covid19 patients, monthly covid19 patients, monthly covid19 deaths, and monthly covid19 deaths are affected by one or more items. Exports of high-tech goods (USD) were affected, and the model formula is high-tech products export=368.379+0.0259\* total number of covid19 monthly patients + 0.0401\*covid19 monthly number of patients-0.4359\*covid19 total monthly deaths -1.424\* covid19 deaths per month. The summary analysis shows a significant positive relationship between the number of covid19 patients per month and the total number of covid19 patients per month. As well as covid19 monthly deaths, covid19 monthly total deaths have a significant negative impact relationship. The R-squared value of the imported model is 0.9868, which means that the number of covid19 cases per month, the total number of covid19 cases per month, the number of covid19 deaths per month, and the total number of covid19 deaths per month can explain 98.6% of the changes in imports (USD). When the F-test was performed on the model, it was found that the model passed the F-test (F=56.079), which means that the number of covid19 patients per month, the total number of covid19 patients per month, the number of covid19 deaths per month, and the total number of covid19 deaths per month will be affected by at least one item. The high-tech products import (USD) has an impact relationship, and the model formula is high-tech products import=395.591+0.0187\* covid19 monthly total number of patients + 0.0226\* covid19 monthly number of patients - 0.3252 \* total monthly covid19 deaths - 0.8554\* covid19 monthly deaths. The summary analysis shows that the total number of covid19 patients per month has a significant positive relationship, and the number of covid19 patients per month has a positive relationship. As well as covid19 monthly deaths, covid19 monthly total deaths have a significant negative impact relationship.

4. Agricultural products import and export: we can find from the table, R-square value in export model is 0.987, this is means that the number of covid19 patients per month, the total number of covid19 patients per month, the number of covid19 deaths per month, and the total number of covid19 deaths per month can be explained Reasons for 98.7% change in exports (USD). The F-test was performed on the model, it was found that the model passed the F-test (F=60.99), which means that the number of covid19 patients every month, the accumulate covid19 patients number in per month, the number of covid19 deaths per month, and the accumulate number of covid19 deaths every month will not affect agricultural Products export (USD) has an impact relationship. The model formula is: agricultural products export=78.725-9.802\*covid19 monthly total number of the patients-0.0009\*covid19 monthly number of patients-0.0012\*covid19 total monthly deaths+0.0095\*covid19 per month monthly deaths. Summary analysis showed that the number of covid19 patients per month, the total number of covid19 patients, the number of covid19 deaths in the month and the number of covid19 deaths in the month do not affect agricultural exports.

The R-squared value of the income model is 0.9803, which represents the number of confirmed COVID-19 cases per month, and the total number of confirmed cases, COVID-19 deaths, and total COVID-19 deaths account for 98.03% of the change in income (USD). An F-test was performed on the model and it was found that the model passed the F-test ( $F=37.329$ ), which means that the number of covid19 patients per month, the total number of covid19 patients per month, the number of covid19 deaths every month, and the total number of covid19 deaths every month will not affect Agricultural products. The impact relationship is generated, and the model formula is Mechanical and electrical products import= $193.874-0.0018*$  covid19 monthly total number of patients -  $0.0028*$  covid19 monthly number of patients +  $0.031*$  covid19 monthly total deaths +  $0.211*$  covid19 monthly deaths. The summary analysis shows that: the number of covid19 patients each month, the accumulate number of covid19 patients per month, the total number of covid19 deaths per month, and the monthly number of covid19 deaths will not have an effect on the import of Chinese agricultural goods.

5. Mechanical and electrical products import and export: As we can find from the table, the R-square value of the export model is 0.98414, This means that the number of COVID-19 patients per month, the total number of COVID-19 patients per month, the number of COVID-19 deaths per month, and the total number of COVID-19 deaths per month can account for 98.4% (USD) of the change in exports. An F-test was performed on the model and the model passed the F-test ( $F=46.55$ ), which means that the monthly death toll of covid19 will have an impact on high-tech products export (USD), and the model formula is: Mechanical and electrical products= $1013.87+0.03364*$  total monthly covid19 cases +  $0.0557*$  covid19 monthly cases -  $0.5919*$  covid19 total monthly deaths -  $2.091*$  covid19 monthly deaths. The summary analysis shows that covid19 has a negative impact on the number of monthly deaths. The number of covid19 patients each month, the total people of covid19 patients every month, and the accumulate number of covid19 deaths people in each month will not impact the export of electrical goods with mechanical product and .The R-square value of the imported model is 0.9842, which means that the number of covid19 cases per month, the total number of covid19 cases per month, the number of covid19 deaths per month, and the covid19 total deaths per month can explain 98.4% of the changes in imports (USD). When the F test was performed on the model, it was found that the model passed the F test ( $F=46.73$ ), which means that the number of covid19 patients per month, the total number of covid19 patients per month, the number of covid19 deaths per month, and the total number of covid19 deaths per month will be affected by at least one item. Mechanical and electrical products (USD) produce an impact relationship, and the model formula is Mechanical and electrical products= $338.049+0.0478*$  total monthly covid19 cases +  $0.0665*$  covid19 monthly cases -  $0.8215*$  covid19 total monthly deaths -  $2.29936*$  monthly covid19 deaths. The summary analysis shows that the total number of covid19 patients per month has a significant positive relationship, and the number of covid19 patients per month has a positive relationship. As well as covid19 monthly deaths, covid19 monthly total deaths have a significant negative impact relationship.



6: clothing and clothing accessories export: we can find from the table that the R-square of the export OLS is 0.8748, This is means that the number of covid19 patients every month, the total people of covid19 patients in every month, the number of covid19 deaths people in each month, and the accumulate people's number of covid19 deaths per month can be Explain the reasons for the 87.48% change in exports (USD). The F test was performed on the OLS, it was found that the model passed the F test (F=5.24), which means that the number of covid19 patients per month, the total number of covid19 patients per month, the number of covid19 deaths per month, and the total number of covid19 deaths per month will be affected by at least one item. Clothing and clothing accessories export (USD) has an impact relationship, and the model formula is clothing and clothing accessories export=-83.702+0.02004\* covid19 monthly total number of patients + 0.03375\* covid19 a monthly number of patients - 0.3415\* total monthly covid19 deaths Number of people - 1.0910 \* covid19 deaths per month. The summary analysis shows that the number of covid19 patients per month positively correlates with the total number of covid19 patients per month. As well to the people of covid19 deaths each month, the accumulate number of covid19 deaths each month has a negative impact.

### Summary:

The Covid19 epidemic has hugely impacted China's trade import and export industry. We analyzed the export of new technology industries and the number of new crown patients through SPSS correlation analysis, which is particularly significant. The death toll, high-tech industry, and clothing and clothing accessories have very high significance.

Gretl's OLS regression analysis analyzes the new cases of the epidemic, the people of new deaths, the cumulative number of this situation, and the cumulative number of deaths significantly impact of export industry. The import industry is affected. The export industry has been hit the hardest. Regarding the analysis of specific industries, we draw the following conclusions:

1. high-tech products import and export: new covid19 cases, new deaths people, cumulative people cases, and cumulative deaths number have a significant impact on the high-tech products export industry. The new deaths of the epidemic, the cumulative number of patients, and the cumulative number of deaths significantly impact the high-tech products import industry. New cases of illness impact the high-tech products importing industry.

2. Agricultural products import and export: new covid19 add cases, new covid19 deaths people, cumulative covid19 cases, and cumulative deaths people of the epidemic have no impact on the agricultural products export industry new cases, new deaths cumulative cases, cumulative deaths. The death toll has no impact on the Agricultural products import industry.

3. Electrical good and mechanical product import with export: The new death cases have an impact on the Electrical good and mechanical product export industry. The number of new add cases, new add deaths people, cumulative covid19 cases, and new deaths people of the epidemic significantly impact the high-tech products import industry.

4. Clothing and clothing accessories export situation new cases of illness, new

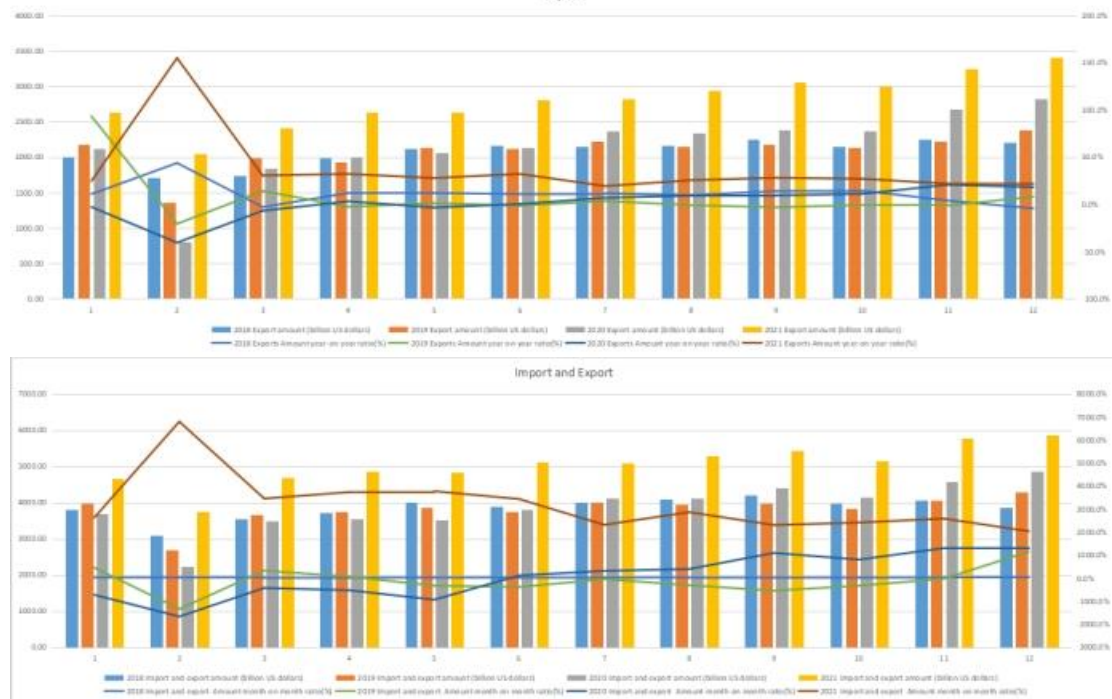
death cases, the cumulative number of getting covid19 cases, and the cumulative people of deaths impact for clothing and clothing accessories export industry.

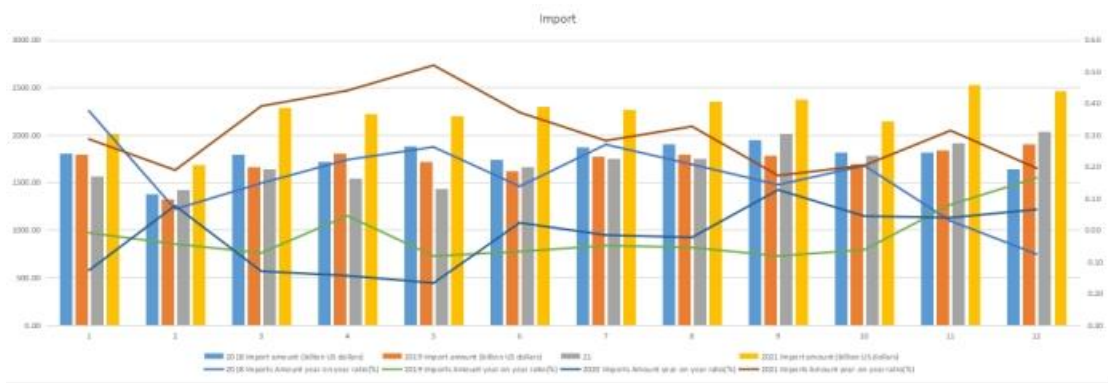
**Recommendations:**

The data for the analysis data independent variables of the article should be increased. The data on the number of patients and deaths from the epidemic in China is too simple, and the article should add more independent variables, such as the number of patients who have recovered from the disease, the number of monthly global patients, and the global monthly number of deaths. At the same time, the distance between countries, the number of patients, and the percentage of China's import and export value can also be used as reference controls.

This article focuses more on the impact on imports and exports caused by the epidemic in China. Moreover, the specific industries affected. Its purpose is to help better China's rapid recovery from the impact of the epidemic and to prevent the impact of the next global health epidemic on import and export trade.

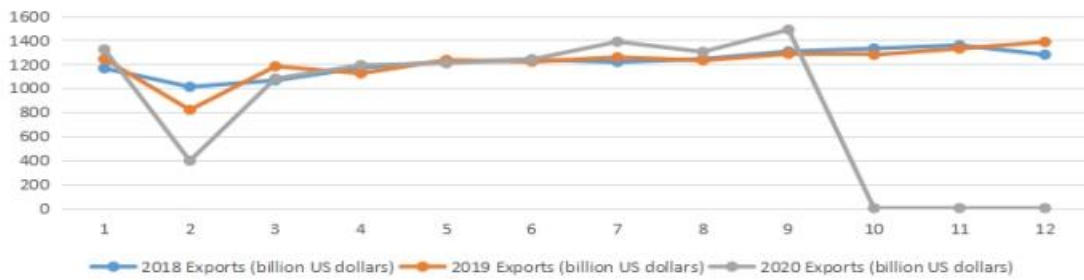
**Appendix:**



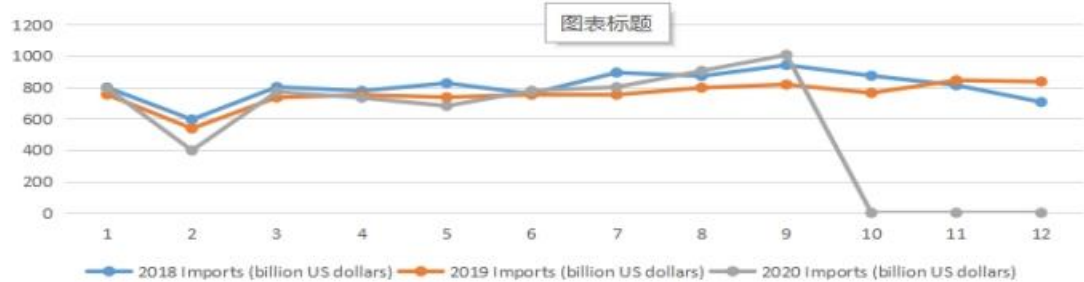


## DEATIL DATA

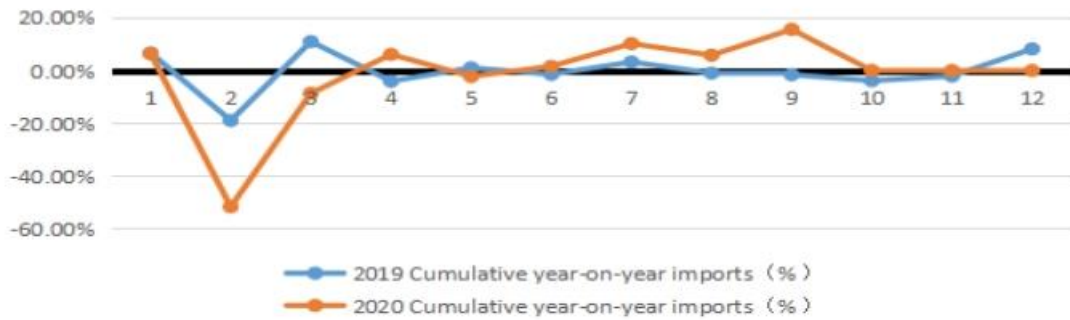
Monthly statistics on export of mechanical and electrical products (billion US dollars)



Monthly statistics on import of mechanical and electrical products (billion US dollars)



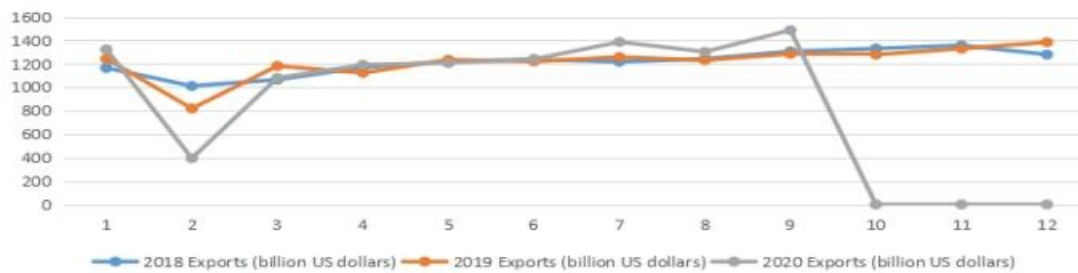
Monthly statistics on export of mechanical and electrical products  
Cumulative year-on-year export (%)



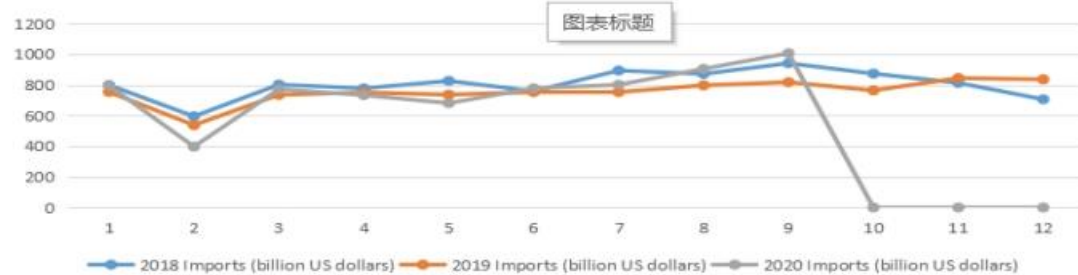
Mechanical and electrical products  
Cumulative year-on-year import (%)



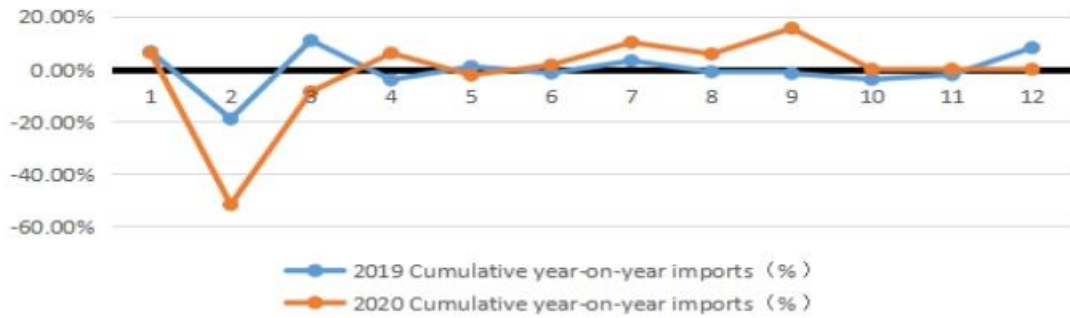
Monthly statistics on export of mechanical and electrical products (billion US dollars)



Monthly statistics on import of mechanical and electrical products (billion US dollars)



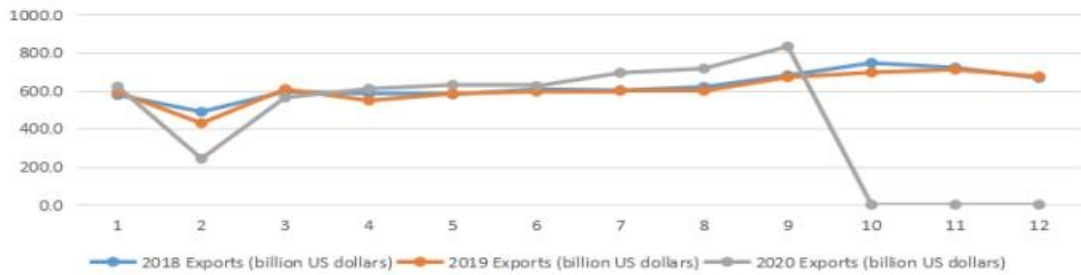
Monthly statistics on export of mechanical and electrical products  
Cumulative year-on-year export (%)



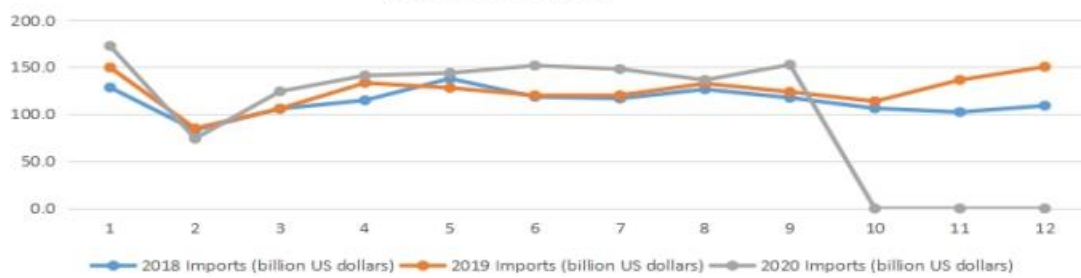
Mechanical and electrical products  
Cumulative year-on-year import (%)



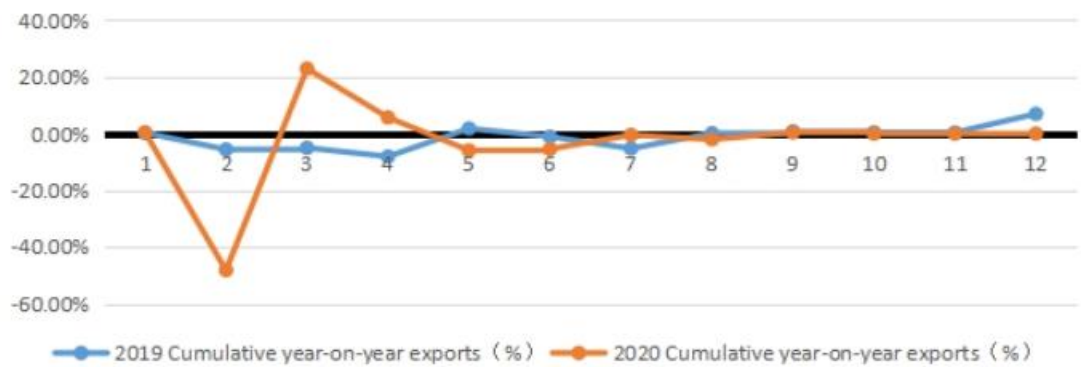
Monthly export statistics of agricultural products  
(billion US dollars)



Monthly import statistics of agricultural products  
(billion US dollars)



Monthly export statistics of agricultural products  
Cumulative year-on-year export (%)

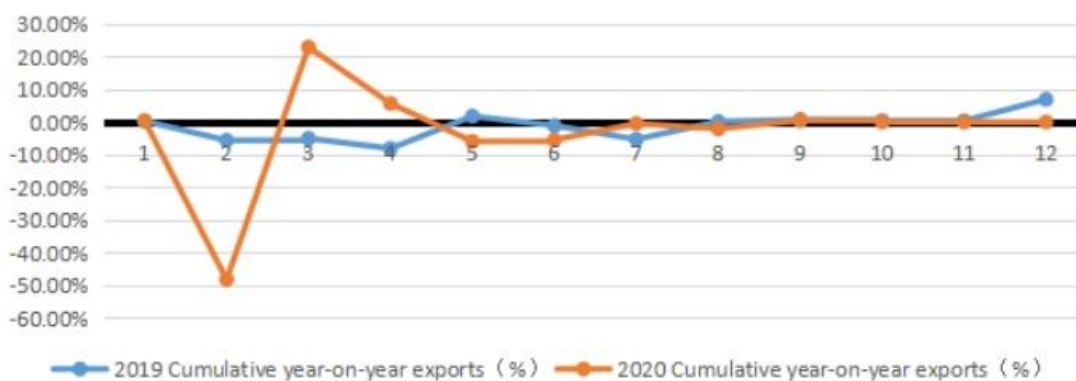


Monthly import statistics of agricultural products  
Cumulative year-on-year import (%)

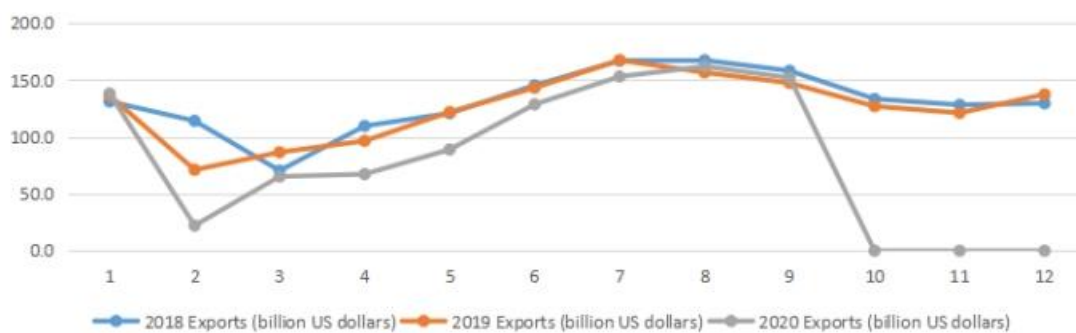




Monthly export statistics of clothing and clothing accessories: Cumulative year-on-year export (%)



Monthly export statistics of clothing and clothing accessories (billion US dollars)



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## SPSS

			Total_cases
Kendall's tau_b	Total_cases	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	9
	Imports (billion US dollars)	Correlation Coefficient	.667*
		Sig. (2-tailed)	.012
		N	9
Exports (billion US dollars)	Correlation Coefficient	.944**	
	Sig. (2-tailed)	.000	

		N	9
Mechanical and electrical products Imports (billion US dollars)	Correlation Coefficient		.556*
	Sig. (2-tailed)		.037
	N		9
Mechanical and electrical products Exports (billion US dollars)	Correlation Coefficient		.611*
	Sig. (2-tailed)		.022
	N		9
High-tech products Imports (billion US dollars)	Correlation Coefficient		.500
	Sig. (2-tailed)		.061
	N		9
High-tech products Exports (billion US dollars)	Correlation Coefficient		.778**
	Sig. (2-tailed)		.004
	N		9
Clothing and clothing accessories Exports (billion US dollars)	Correlation Coefficient		.611*
	Sig. (2-tailed)		.022
	N		9
Agricultural products Imports (billion US dollars)	Correlation Coefficient		.278
	Sig. (2-tailed)		.297
	N		9
Agricultural products Exports (billion US dollars)	Correlation Coefficient		-.167
	Sig. (2-tailed)		.532
	N		9

		Total deaths	
Kendall's tau_b	Total deaths	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	9
	Imports (billion US dollars)	Correlation Coefficient	.458
		Sig. (2-tailed)	.107
		N	9
	Exports (billion US dollars)	Correlation Coefficient	.784**
		Sig. (2-tailed)	.006
		N	9
	Mechanical and electrical products Imports (billion US dollars)	Correlation Coefficient	.327
		Sig. (2-tailed)	.249
		N	9
	Mechanical and electrical products Exports (billion US dollars)	Correlation Coefficient	.458
		Sig. (2-tailed)	.107



		N	9
High-tech products Imports (billion US dollars)	Correlation Coefficient		.327
	Sig. (2-tailed)		.249
	N		9
High-tech products Exports (billion US dollars)	Correlation Coefficient		.654*
	Sig. (2-tailed)		.021
	N		9
Clothing and clothing accessories Exports (billion US dollars)	Correlation Coefficient		.523
	Sig. (2-tailed)		.065
	N		9
Agricultural products Imports (billion US dollars)	Correlation Coefficient		.261
	Sig. (2-tailed)		.357
	N		9
Agricultural products Exports (billion US dollars)	Correlation Coefficient		-.327
	Sig. (2-tailed)		.249
	N		9

		New cases	
Kendall's tau_b	New cases	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	9
	Imports (billion US dollars)	Correlation Coefficient	-.278
		Sig. (2-tailed)	.297
		N	9
	Exports (billion US dollars)	Correlation Coefficient	-.556*
		Sig. (2-tailed)	.037
		N	9
	Mechanical and electrical products Imports (billion US dollars)	Correlation Coefficient	-.167
		Sig. (2-tailed)	.532
		N	9
	Mechanical and electrical products Exports (billion US dollars)	Correlation Coefficient	-.333
		Sig. (2-tailed)	.211
		N	9
	High-tech products Imports (billion US dollars)	Correlation Coefficient	-.111
		Sig. (2-tailed)	.677
		N	9

	High-tech products Exports (billion US dollars)	Correlation Coefficient	-.500
		Sig. (2-tailed)	.061
		N	9
	Clothing and clothing accessories Exports (billion US dollars)	Correlation Coefficient	-.222
		Sig. (2-tailed)	.404
		N	9
	Agricultural products Imports (billion US dollars)	Correlation Coefficient	-.333
		Sig. (2-tailed)	.211
		N	9
	Agricultural products Exports (billion US dollars)	Correlation Coefficient	.222
		Sig. (2-tailed)	.404
		N	9

		New deaths	
Kendall's tau_b	New_deaths	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	9
	Imports (billion US dollars)	Correlation Coefficient	-.548*
		Sig. (2-tailed)	.049
		N	9
	Exports (billion US dollars)	Correlation Coefficient	-.852**
		Sig. (2-tailed)	.002
		N	9
	Mechanical and electrical products Imports (billion US dollars)	Correlation Coefficient	-.548*
		Sig. (2-tailed)	.049
		N	9
	Mechanical and electrical products Exports (billion US dollars)	Correlation Coefficient	-.669*
		Sig. (2-tailed)	.016
		N	9
	High-tech products Imports (billion US dollars)	Correlation Coefficient	-.426
		Sig. (2-tailed)	.125
		N	9
	High-tech products Exports (billion US dollars)	Correlation Coefficient	-.791**
		Sig. (2-tailed)	.004
		N	9
	Clothing and clothing accessories Exports (billion US dollars)	Correlation Coefficient	-.730**
		Sig. (2-tailed)	.009
		N	9

Agricultural products Imports (billion US dollars)	Correlation Coefficient	-0.426
	Sig. (2-tailed)	.125
	N	9
Agricultural products Exports (billion US dollars)	Correlation Coefficient	.183
	Sig. (2-tailed)	.511
	N	9

## GRETLM(export and import)

(Dependent variable): 2020 Export amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	1262.78	294.942	4.281	0.0234	**
total_cases	0.0861902	0.0262231	3.287	0.0462	**
new_cases	0.137331	0.0398814	3.444	0.0411	**
total_deaths	-1.45694	0.443415	-3.286	0.0462	**
new_deaths	-4.84441	1.25838	-3.850	0.0309	**
Mean dependent var	1958.450		S.D. dependent var	497.0769	
Sum squared resid	22853.13		S.E. of regression	87.27949	
R-squared	0.986787		Adjusted R-squared	0.969170	
F(4, 3)	56.01241		P-value(F)	0.003767	
Log-likelihood	-43.18112		Akaike criterion	96.36223	
Schwarz criterion	96.75944		Hannan-Quinn	93.68322	
rho	-0.226737		Durbin-Watson	2.282887	

(Dependent variable): 2020 Import amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	843.167	270.415	3.118	0.0526	*
total_cases	0.0717134	0.0240424	2.983	0.0585	*
new_cases	0.100604	0.0365649	2.751	0.0707	*

total_deaths	-1.20406	0.406541	-2.962	0.0595	*
new_deaths	-3.30936	1.15373	-2.868	0.0641	*
Mean dependent var	1600.276		S.D. dependent var	128.1909	
Sum squared resid	19210.29		S.E. of regression	80.02144	
R-squared	0.832998		Adjusted R-squared	0.610329	
F(4, 3)	3.740963		P-value(F)	0.153521	
Log-likelihood	-42.48655		Akaike criterion	94.97310	
Schwarz criterion	95.37030		Hannan-Quinn	92.29409	
rho	-0.240780		Durbin-Watson	2.310338	



GRET

Mechanical and electrical products port amount (billion US dollars)

(Dependent variable): 2020 Mechanical and electrical products export amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	1013.87	205.156	4.942	0.0159	**
total_cases	0.0336457	0.0182403	1.845	0.1623	
new_cases	0.0557713	0.0277407	2.010	0.1379	
total_deaths	-0.591912	0.308431	-1.919	0.1508	
new_deaths	-2.09112	0.875303	-2.389	0.0968	*
Mean dependent var	1140.775		S.D. dependent var	315.6342	
Sum squared resid	11057.09		S.E. of regression	60.70994	
R-squared	0.984145		Adjusted R-	0.963004	

		squared	
F(4, 3)	46.55278	P-value(F)	0.004944
Log-likelihood	-40.27705	Akaike criterion	90.55410
Schwarz criterion	90.95131	Hannan-Quinn	87.87509
rho	-0.445846	Durbin-Watson	2.485245

(Dependent variable): 2020 Mechanical and electrical products import amount (billion US dollars)					
	coefficient	std. error	t	p-value	**
const	338.049	97.0964	3.482	00.0400	**
total cases	0.0478545	0.00863278	5.543	0.0116	**
new cases	0.0665730	0.0131291	5.071	0.0148	**
total deaths	-0.821520	0.145974	-5.628	0.0111	**
new deaths	-2.29936	0.414264	-5.550	0.0115	**
Mean dependent var	732.5875		S.D. dependent var	149.676	
Sum squared resid	2476.728		S.E. of regression	28.73284	
R-squared	0.984207		Adjusted R-squared	0.963149	
F(4, 3)	46.73858		P-value(F)	0.004915	
Log-likelihood	-34.29252		Akaike criterion	78.58503	
Schwarz criterion	78.98224		Hannan-Quinn	75.90603	
rho	-0.839629		Durbin-Watson	3.613156	

GRET

High-tech products port amount (billion US dollars)

(Dependent variable): 2020 High-tech products export amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	368.379	57.6447	6.391	0.0078	***
total_cases	0.0259380	0.00512515	5.061	0.0149	**
new_cases	0.0401668	0.00779457	5.153	0.0142	**
total_deaths	-0.435933	0.0866627	-5.030	0.0151	**
new_deaths	-1.42498	0.245942	-5.794	0.0102	**
Mean dependent var	587.7875		S.D. dependent var	147.4560	
Sum squared resid	872.9524		S.E. of regression	17.05826	
R-squared	0.994265		Adjusted R-squared	0.001082	
F(4, 3)	130.0156		P-value(F)	0.004944	
Log-likelihood	-30.12127		Akaike criterion	70.24253	
Schwarz criterion	70.63974		Hannan-Quinn	67.56353	
rho	-0.727993		Durbin-Watson	3.425065	

(Dependent variable): 2020 High-tech products import amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	395.591	57.2919	6.905	0.0062	***
total_cases	0.0187876	0.00509379	3.688	0.0346	**
new_cases	0.0226245	0.00774688	2.920	0.0615	*
total_deaths	-0.325235	0.0861325	-3.776	0.0325	**
new_deaths	-0.855426	0.244437	-3.500	0.0395	**
Mean dependent var	521.1250		S.D. dependent var	96.61336	
Sum squared resid	862.3019		S.E. of regression	16.95388	
R-squared	0.986803		Adjusted R-squared	0.969206	
F(4, 3)	56.07957		P-value(F)	0.003760	
Log-likelihood	-30.12127		Akaike	70.14433	

		critierion	
Schwarz criterion	70.54154	Hannan-Quinn	67.46532
rho	-0.780458	Durbin-Watson	3.560830



**GRET**  
agricultural products port amount (billion US dollars)

(Dependent variable): 2020 agricultural products products export amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	78.7254	8.28452	9.503	0.0025	***
total cases	-9.80226e-05	0.000736572	-0.1331	0.9026	
new cases	-0.000976506	0.00112021	-0.8717	0.4475	
total deaths	-0.00124636	0.0124549	-0.1001	0.9266	
new deaths	0.00953336	0.0353461	0.2697	0.8049	
Mean dependent var	559.77500		S.D. dependent var	14.56167	
Sum squared resid	18.03048		S.E. of regression	2.451563	
R-squared	0.987852		Adjusted R-squared	0.971656	
F(4, 3)	60.99109		P-value(F)	0.003323	
Log-likelihood	-14.60200		Akaike criterion	39.20399	
Schwarz criterion	39.60120		Hannan-Quinn	36.52499	
rho	-0.201498		Durbin-Watson	2.371071	

(Dependent variable): 2020 agricultural products import amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	193.874	20.8103	9.316	0.0026	***
total_cases	-0.00185807	0.00185023	-1.004	0.3893	
new_cases	-0.00132145	0.00281392	-0.4696	0.6707	
total_deaths	0.0246349	0.0312861	0.7874	0.4885	
new_deaths	0.0188005	0.0887876	0.2117	0.8459	
Mean dependent var	136.4875		S.D. dependent var	28.72617	
Sum squared resid	113.7702		S.E. of regression	6.158198	
R-squared	0.980304		Adjusted R-squared	0.954043	
F(4, 3)	37.32905		P-value(F)	0.006829	
Log-likelihood	-21.97046		Akaike criterion	53.94093	
Schwarz criterion	54.33814		Hannan-Quinn	51.26192	
rho	0.112678		Durbin-Watson	1.679413	

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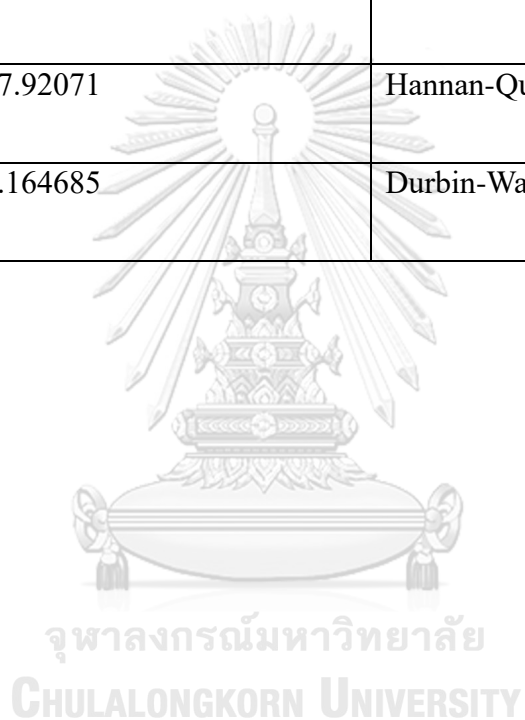
## GRET

clothing and clothing accessories products port amount (billion US dollars)

(Dependent variable): 2020 clothing and clothing accessories products export amount (billion US dollars)					
	coefficient	std. error	t	p-value	
const	-83.7020	90.8635	-0.9212	0.4249	
total_cases	0.0200475	0.00807862	2.482	0.0891	*
new_cases	0.0337575	0.0122863	2.748	0.0709	*
total_deaths	-0.341558	0.136604	-2.500	0.0877	*



new_deaths	-1.09103	0.387671	-2.814	0.0671	*
Mean dependent var	103.2625		S.D. dependent var	49.74954	
Sum squared resid	2168.959		S.E. of regression	26.88840	
R-squared	0.874808		Adjusted R-squared	0.971656	
F(4, 3)	5.240819		P-value(F)	0.707886	
Log-likelihood	-33.76175		Akaike criterion	0.102421	
Schwarz criterion	77.92071		Hannan-Quinn	74.84450	
rho	0.164685		Durbin-Watson	1.652212	



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