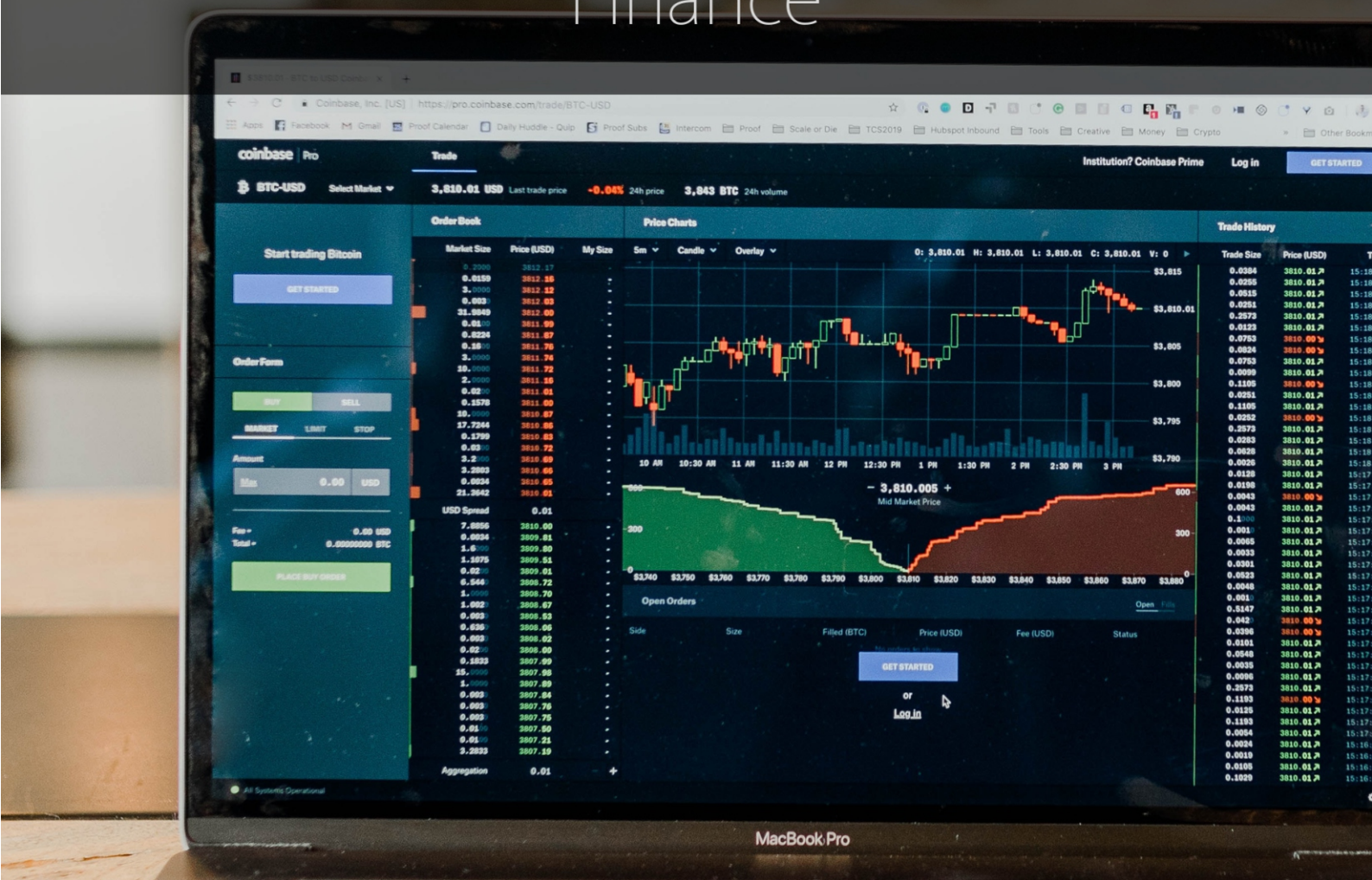
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Macroanalysis on Sino-America

Impact of the COVID-19 Pandemic

Highlights

Threats to the Global Economy

Reflecting Leasing Transactions

Discovering Thoughts, Inventing Future

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Threats to the Global Economy in the Context of the COVID Pandemic on the Example of Russia and China

By Zemskov Vladimir Vasilevich & Prasolov, Valeriy Ivanovich

Annotation- In a crisis, different economic systems react differently to the emergence of imbalances. If the state regulation of economic processes is minimized in the market economic system, then in the command and administrative system the state has many tools for regulating the economy. The purpose of the study is to empirically demonstrate the co-directional and opposite dynamics of the development of modern economic systems in order to assess the conjuncture of socio-economic development in the conditions of the COVID pandemic. In the course of the study, it was revealed that the market economic system and the command and administrative system have both co-directional and multi-vector dynamics of economic development, which is reflected in the dynamics of the values of economic indicators. The study of empirical data showed that the co-directional vector of development has GDP, GDP per capita, gross savings, consumer spending, the share of income of 20% of the poorest population. A multidirectional vector of development of the economic systems of Russia and China is observed for such indicators as the level of inflation, imports of goods and services, external debt, and unemployment. It is worth noting that the indicators of co-directional dynamics are effective. GDP, GDP per capita, gross savings are the result of economic activity.

Keywords: *economic system, market economy, command and administrative economy, russia, china.*

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Threats to the Global Economy in the Context of the COVID Pandemic on the Example of Russia and China

Zemskov Vladimir Vasilevich [α] & Prasolov, Valeriy Ivanovich [σ]

Annotation- In a crisis, different economic systems react differently to the emergence of imbalances. If the state regulation of economic processes is minimized in the market economic system, then in the command and administrative system the state has many tools for regulating the economy. The purpose of the study is to empirically demonstrate the co-directional and opposite dynamics of the development of modern economic systems in order to assess the conjuncture of socio-economic development in the conditions of the COVID pandemic. In the course of the study, it was revealed that the market economic system and the command and administrative system have both co-directional and multi-vector dynamics of economic development, which is reflected in the dynamics of the values of economic indicators. The study of empirical data showed that the co-directional vector of development has GDP, GDP per capita, gross savings, consumer spending, the share of income of 20% of the poorest population. A multidirectional vector of development of the economic systems of Russia and China is observed for such indicators as the level of inflation, imports of goods and services, external debt, and unemployment. It is worth noting that the indicators of co-directional dynamics are effective. GDP, GDP per capita, gross savings are the result of economic activity. At the same time, indicators of multidirectional dynamics are factors of the internal economic environment and the object of regulation by state bodies. The results of the study show that the command and administrative system is more stable in times of crisis, characterized by greater stability of inflation, reduced dependence on imports and increased equity of income distribution. It is on these indicators of socio-economic development that the state has an influence. A system with a market economy is more susceptible to the volatility of inflation, but it is characterized by a decrease in unemployment, as the market reacts to an increase in inflation.

Keywords: economic system, market economy, command and administrative economy, russia, china.

I. Introduction

In modern different economic systems, the state role in regulating economic processes is significantly different. In market economies the state role is to ensure common rules for all economic actors and to protect competition. In countries with a command and administrative economy, the state acts as the main regulator of all economic processes. But in crisis times in both types of economic systems, the state main task is to minimize the negative socio-economic consequences for the national economy.

The economic crisis provoked by the COVID-19 pandemic is unprecedented in the consequences scale. In such conditions, state governments must ensure the development and implementation of socio-economic programs to support business and population. Countries with different types and mechanisms of economic systems will respond differently and at different speeds to emerging challenges. In addition, in the pandemic crisis context when imbalances in the economic system development are manifested and the need arises to correct their elimination [10, 12], one of the fundamental economic issues is actualized - which economic system model is more successful: market or command and administrative?

The market economic system is based on principles such as granting private property rights, free market economy and competition without state intervention or with minimal state intervention. Such a system has the great advantage that each economic entity is free in its activities and is limited only by the scope of the law. In such economic system, economic laws function quite well, and therefore such a system state can be predicted, and government intervention in the economy is limited. However the market economy main problem is income distribution inequality and external environment risks of the companies functioning.

The command and administrative economic system is an alternative to the market economic system. In the command and administrative system the state has unlimited influence on the economy, and economic laws may not operate in such a system in connection with directive regulation. Most commonly the state has tools and opportunities to influence the market, and competition in such a system does not play a decisive role in markets design shaping. Meanwhile, in crises times it is in the command and administrative economy that state intervention in economic processes can be maximized to correct market failures.

Author α: Doctor of Economic Sciences, Professor, Department «Economic security and risk management», Financial University under the Government of the Russian Federation. e-mail: vvzemskov@fa.ru
Author σ: PhD of political Sciences, Assistant Professor, assistant professor, Department of Economic Security and Risk Management, Financial University under the Government of the Russian Federation, Moscow.

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Due to the fact that these economic systems function differently, the question arises of how this affects their socio-economic development indicators. Is such a situation possible when one economic system development makes it more resistant to crises? This issue is more relevant than ever in the existing challenges of the COVID-19 pandemic, when countries of the world are faced with the problem of their national economies unpreposition before problems of this scale.

II. Literature Review

This study section is devoted to the results search of comparing different economic systems and determining the approach to comparing them. The main task at this stage of our research is to find criteria for comparing market and command and administrative economic systems and determine by what indicators of socio-economic development they differ. The ECLAC report [11] affirms that the pandemic has affected the economies of South America and the Caribbean through the effects of external and internal factors. External factors are represented by global economic activity falling, especially in the United States, China and Europe, adversely affected trade volumes and prices in Latin America and the Caribbean, especially commodities. At the same time, this report does not consider the issue that the economic system of the United States and China are significantly different. The economic systems of Latin America countries are also different. Some key manufacturing sectors in the region's countries form part of the global value chains in which the United States and China play key roles, the report found. Furthermore Mexico and Central America are subject to a downturn in the United States economy due to a reduction in remittances from migrants; in Mexico's case this is compounded by falling oil prices. Internal factors are mainly provoked by external factors and the economies accumulated problems of the region countries. At the same time, the report does not consider the reasons for the dependence of Latin American countries on the United States, although this is one of the main countries economic systems characteristics in this region.

Other impact studies of the COVID-19 pandemic [26, 20] on the global economy consider its impact in the context of the economic and social effect on different countries. This does not take into account the differences between countries in their socio-economic systems. The report provides statistical information on the change in the economic parameters of different countries' economies, while the differences in management systems in these countries are not considered, which does not allow to determine the differences between economic systems of different countries on the indicators of their socio-economic development.

A study of the pandemic global economic effect [18] examines countries in Europe, the United States, China and Japan. But when comparing the pandemic impact the factor of different economic systems of these countries is not considered. Since economic systems are organized and function differently, the pandemic effect and governments' response of these countries will be different both in their essence and in the form of measures implementation to reduce negative economic effects. Consequently by missing such a difference between countries, we cannot fully assess the development conjuncture of the socio-economic systems of these countries.

The UNCTAD study [30] examines the pandemic impact on international trade. The study demonstrates a volume decrease of international trade transactions in all countries, with an emphasis on different dynamics in different groups of goods. China's foreign trade is considered separately as the most significant player in the international market, but the countries' conditions in terms of economic systems are not compared. At the same time different economic systems provide a different response speed degree from the state to the global economic situation deterioration, which was not reflected in the study.

Particularly interesting from the point of view of the COVID-19 pandemic consequences is the study of the International Labor Organization [13]. Given the fact that countries with different economic models regulate the labor market differently, the study of the International Labor Organization does not take this factor into account when assessing the pandemic consequences on the countries of the world labor markets. We believe that differences in economic systems and their regulation types are an important factor that determines the development parameters of socio-economic systems of different countries and requires careful research.

In the COVID-19 potential effects study on GDP and trade [22, 4], the authors also do not take into account the differences in the economic systems of different countries. In this study the authors consider the pandemic consequences through a macroeconomic model, which includes the market for goods, market for resources, as well as the main economic agents- firms, households and the state. In doing so the distinction in the different countries economic systems also does not take into consideration, although this factor is important, since state policy directly affects the country's market.

In a study of a pandemic effects on the Irish economy [9], the authors use a modeling process to determine possible consequences. The influence model factors include production shock, consumption shock, labor market shock, trade shock, shock in the energy market, income shock. It should be noted that this approach generally takes into account the specifics of the Ireland economic system, since the model is based

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on its economy indicators, but there is no comparison with other economic systems. We believe that it is the comparison of different economic systems that will assess the situation of socio-economic development of different countries most reliably in the context of the COVID-19 pandemic crisis.

In other study the pandemic impact for Asian countries was assessed [1]. The research compares the economic indicators of the Asian countries development during a pandemic, but the whole comparison is limited directly by the dynamics of the socio-economic development values indicators. In so doing the difference in economic systems between Asian countries, which are significantly different and are an important factor in socio-economic development, is not considered.

The definition of the economic pandemic impact on the ASEAN countries economies [2] considers the forecast values of the main macroeconomic indicators. This also does not take into account the difference in economic systems, although at certain points the Chinese economy is compared with other countries. Apparently such a comparison is justified by the size of the country's economy on the scale of global markets. But the study authors do not compare the economies of countries with different economic systems and do not determine the differences in the consequences of a pandemic for such countries.

The pandemic impact study on the gender inequality [29] also does not take into account the difference in economic systems between countries. At the same time different economic systems have varying inclusivity and extractiveness degrees, which directly affects the development degree and efficiency of the human capital use. In our opinion the pandemic consequences assessment on the socio-economic development conjuncture should be considered through the distinctions prism in the economic systems of different countries.

The studies we provided insight into consider determining the economic pandemic effect without taking into account the differences between countries with different economic systems. Comparing countries with different economic systems is extremely difficult, since the mechanisms and conditions of their functioning differ. Moreover, as a rule, such countries are located in different economic regions, are different integration associations' members and have different foreign policy vectors. In this regard, it is difficult to find two similar countries with different economic systems to compare the dynamics of their development. However, the economic crisis caused by the COVID-19 pandemic, as well as the EU and US sanctions against Russia, together formed similar conditions for the external environment for Russia and China (Table 1), which are a prerequisite for comparing the economic systems of these countries. Russia and China are leaders in socio-economic development in their regions. In addition, they have close economic relations and a common border, which in general makes the countries' economic systems comparable for our study purposes. Both economic systems entered an active growth phase not so long ago - since the end of the 20th century, as a result of which they are both equally influenced by the world crisis and world economic upswings that were being established on their internal development cycles. Also, the economic systems of Russia and China are under external restrictions: Russia under the conditions of EU and US sanctions; China under US protectionism.

Russia and China have a large population and territory, are endowed with many natural resources, which is an important component of socio-economic development. Given all the listed characteristics of the countries selected for the study, it is difficult to find another pair of countries with such comparable parameters, but different economic systems. A number of studies [7, 6] consider Russia and China as part of the BRICS as countries that increase their influence in the world and form a counterweight to economically developed countries with liberal systems [21].

Table 1: Prerequisites for Comparing the Socio-Economic Development of Russia and China in the Context of the COVID-19 Pandemic

Economic Systems Similarity Criterion	Russia	China
Sanctions or protectionism influence on the other countries economy	The EU and United States Sanctions	US protectionism
Regional Economic Centers	Regional Economic Center in the Post-Soviet Space	Regional Economic Center in Southeast Asia
Impact on global market conjuncture	Energy market	Commodity market
The UN classification of the country development level	Emerging economy country	Emerging economy country
Countries' territorial proximity	It has a common border with China, located in Asia	It has a common border with Russia, located in Asia

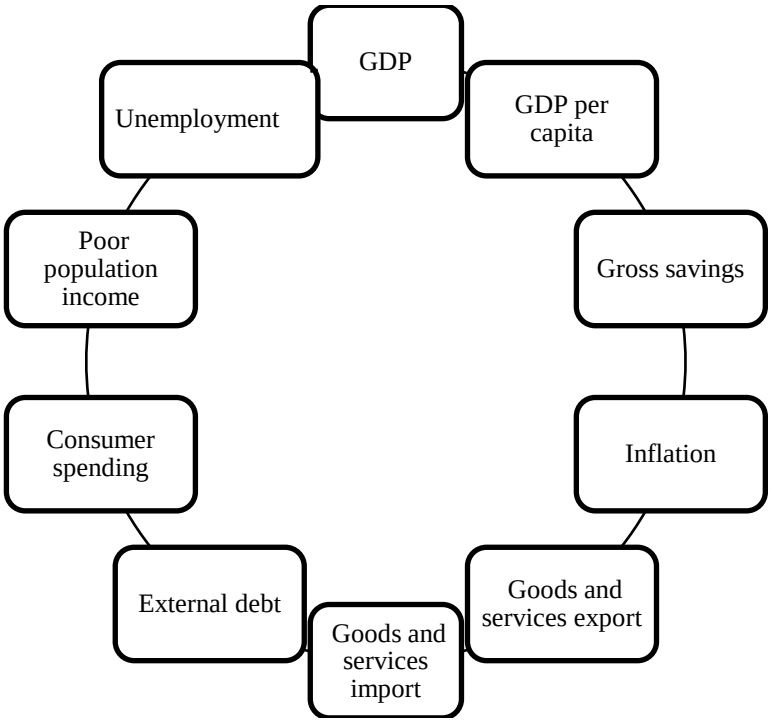
At the same time, having a number of similar characteristics, Russia is a country with a market economy, China has a command and administrative economic system. Given the fact that both countries are subject to the COVID-19 pandemic economic consequences, the purpose of our study is to

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empirically demonstrate the co-directed and opposite dynamics of modern economic systems development in order to assess the socio-economic development situation in the COVID-19 pandemic context using Russia and China example.

III. Methods and Materials

To determine the differences between market and command and control economic systems, we will analyze empirical data that characterize the economic development of Russia and China. We use such indicators to perform this task (Fig.1).



Source: Developed by the Authors

Fig. 1: Economic System Development Indicators

The GDP dynamics analysis will allow to estimate the volume growth of goods and services production in absolute volumes. GDP per capita is a more informative indicator in the context of the two economic systems comparing, as it shows how much goods and services the economy produced per person. Since GDP is currently one of the main economic indicators, we also use it for our research purposes.

One of the important economic systems characteristics is the income distribution. In our study we use several economic indicators to estimate the income distribution in economic systems. The gross savings indicator makes it possible to assess the degree of wealth of the economy and its potential for development. Total income is allocated to consumption and savings, which can be further transformed into internal investments. Thus, gross savings show an unused income portion. The share measure of the 20% poorest population income shows how much income is fairly distributed in the economic system. It is the indicator that is the stumbling block of the two economic systems. In the market system, the state practically does not redistribute income with the exception of social programs, and in the command and administrative redistribution of income it is advisable and is an advantage of this economic system, according to its supporters. Consumer spending shows the portion of income that households use to meet their needs. The greater the value of this indicator, the more households purchase goods and services.

The inflation indicator shows the effectiveness and the national monetary unit stability. Stable and low inflation allows you to ensure real economic growth and stimulate economic activity. In addition, stable inflation indicators show the economy condition in the market economic model. In the command and administrative system, inflation is almost entirely under state control. Economic factors affect the monetary unit stability much less than in the market system, and the main channel for inflation is the price of imported goods and resources.

The imports and exports volume shows the economy openness degree. The larger the GDP volume, the more the economy can export goods and services and the more it can purchase goods and services from

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other countries. The imports growth allows to increase the goods and services choice for the country population, which is regarded as an increase in wealth.

Foreign debt shows how much the country lent money in international financial markets. It is generally accepted that the smaller the external debt amount, the more financially independent the economy is. But in the modern world, the more important role is played not by the volume of external debt, but by its price. For example, Japan's external debt is almost equal to the GDP (91.9% of GDP [28]), but the borrowed funds cost is relatively low, which allows the Japanese economy to develop successfully.

Having analyzed the values dynamics of the described economic indicators, we will determine their trends. On the basis of the information received we will be able to compare Russian and Chinese economic systems and determine their co-directivity and multi-directivity development vectors. To determine these countries socio-economic development conjuncture during the COVID-19 pandemic, we will make a values forecast of the analyzed indicators of the economic systems development for 2021, 2022, 2023. Our study hypothesis is that a more stable and strong economic system is less susceptible to the crisis influence, which means it will have better indicators of socio-economic development in a pandemic. Consequently, we assume that the average trend in economic dynamics will be observed for the forecast period 2021-2023, given that in 2020 the economies of Russia and China as a whole adapted to crisis conditions and there was an economic activity resumption at the end of 2020.

For analysis, we use economic indicators data for the period from 1988 to 2020. For some indicators (gross savings, inflation, external debt, household consumption, 20% of the poorest population income share, unemployment rate), values will be taken for the period after 1988 due to the fact that there is no data for an earlier period. All data were taken from the World Bank official website [27], statistics section. All calculations, chart construction and indicator values forecasting were carried out in the Microsoft Excel software product.

IV. Results

Our study results description we will begin with the dynamics analysis of the economic systems indicators of Russia and China and for each indicator we will calculate the forecast values. Figure 2 shows that the GDP growth dynamics in countries has an upward trend, as evidenced by the trend lines.

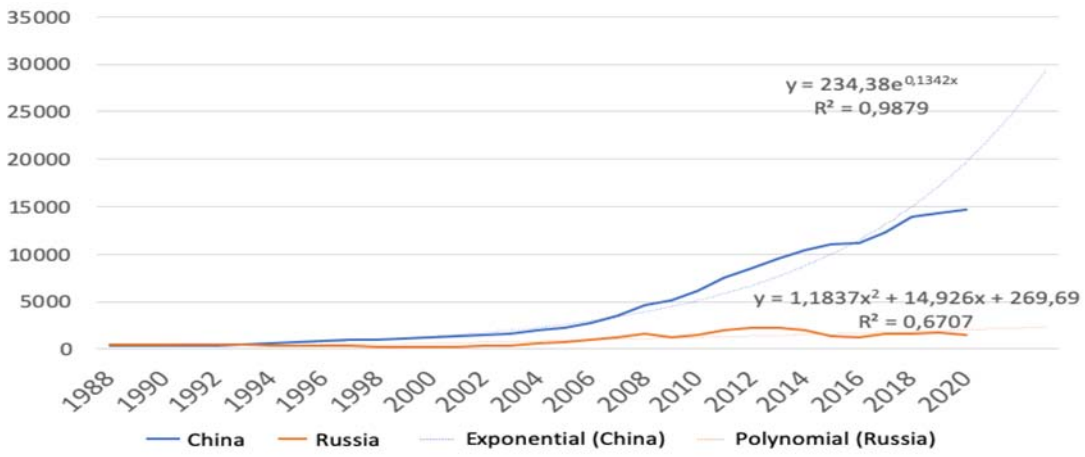


Fig. 2: GDP Growth Dynamics in Russia and China, 1988-2020, Billion US Dollars [Compiled by the Authors on the Basis of 27]

In addition, the calculated correlation coefficient between the GDP of Russia and China is 0.83. This means that the countries' GDP dynamics is co-directed. It is possible that there is a certain GDP growth dependence of the studied economic systems on each other, but in this case we assume that such co-orientation is due to the general dynamics of global GDP growth. The GDP indicators forecast values for Russia and China are calculated on the exponential average basis with a reliability of 98% and predicts further growth. In general, the forecast shows a significant gap in GDP growth rates, but the key is that in the COVID-19 pandemic context, GDP is predicted to increase in both economic systems, which is a positive trend. Figure 3 shows the GDP growth dynamics per capita.

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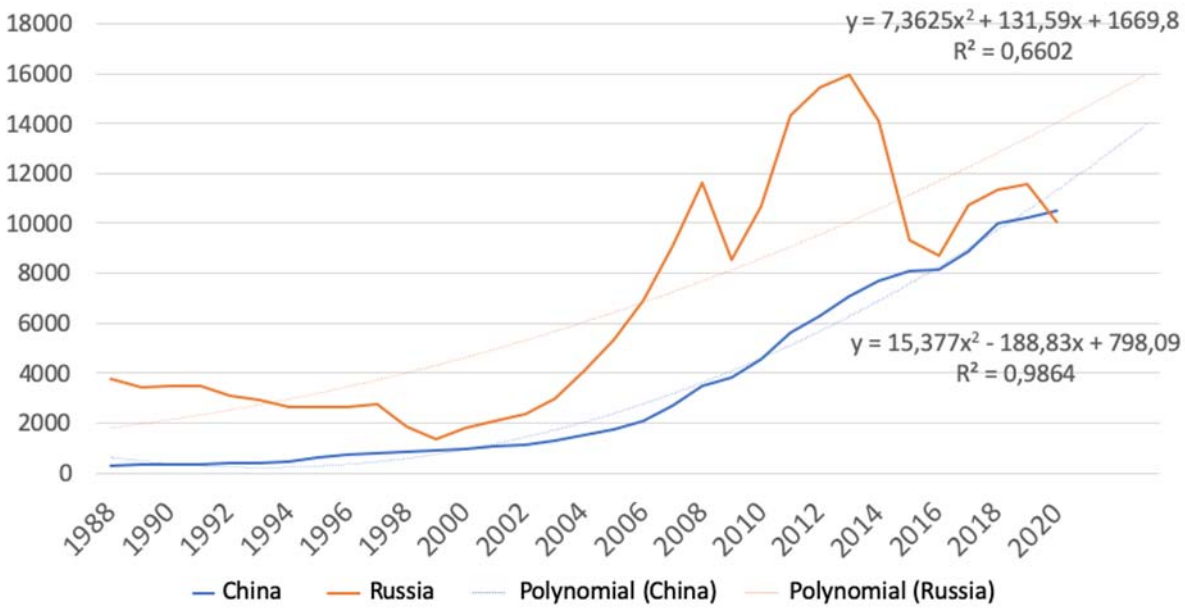


Fig. 3: Dynamics of GDP Growth per Capita in Russia and China, 1988-2020, US $ [Compiled by the Authors on the Basis of 27]

Per capita GDP growth predictably has the same trend as the GDP absolute value. For the studied economic systems, co-directed GDP growth per capita is characteristic. The correlation coefficient between them is 0.83, which is also typical for the GDP correlation of these countries. But if China has more GDP in actual prices, then Russia has more GDP per capita. This is primarily due to the fact that the China population significantly exceeds the population of Russia. Also an economic systems hallmark is that China has a more robust trend towards GDP and GDP per capita growth. For Russia, GDP fell in 1998, 2008 and 2014 is on sight, which was due to crisis phenomena. At the same time, the Chinese economy was also exposed to the 2008 crisis and US sanctions, but there was no decrease in GDP. This suggests that China's economic system is more resilient to crisis events and has domestic reserves for growth.

Analyzing the GDP per capita forecast values, this indicator value is expected to grow for Russia with a reliability of 66% and for China 98%. In general, such forecast dynamic is consistent with the dynamics of GDP growth and is a positive trend in the socio-economic situation development of the studied economic systems. Figure 4 shows the growth dynamics of gross savings in Russia and China.

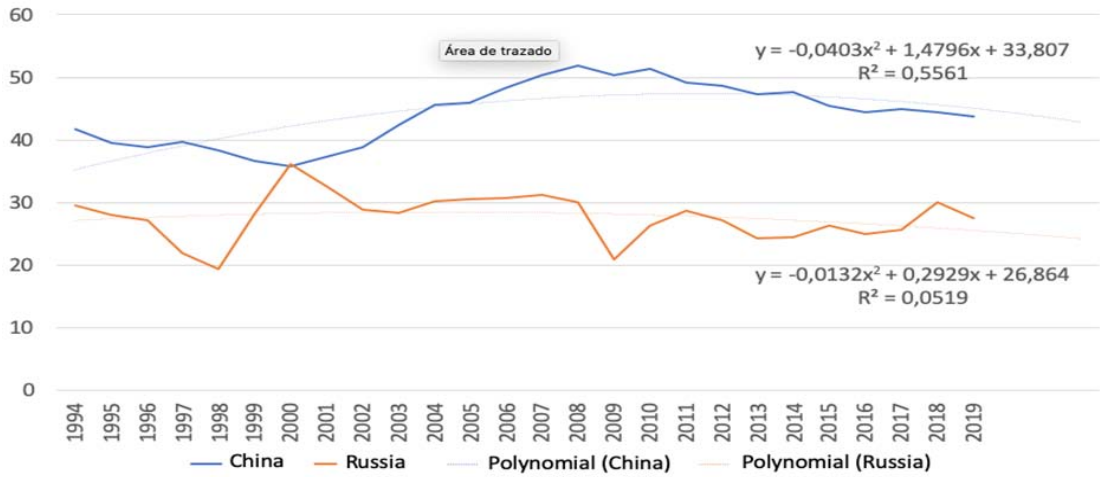


Fig. 4: Gross Savings Growth Dynamics in Russia and China, 1994-2019, % of GDP [Compiled by the Authors on the Basis of 27]

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Gross savings are an internal factor in economic growth, as they can transform into domestic investment. We are seeing an upward trend in gross savings in China, with them averaging 40% to 50% of GDP. At the same time, in Russia there is a tendency to reduce gross savings, which on average amount to less than 30% of GDP. According to this indicator, we see multidirectional vectors for the Russia and China economic systems development. It is important to note that the trend towards a decrease in gross savings in Russia is negative in the long term. We can assume that it is the decrease in gross savings that weakens the economy, which is especially evident in times of crises (1998, 2008, and 2014) and reduces the ability to neutralize external economic shocks.

This indicator value forecast shows its fall in 2021-2023. For China, this trend is reliable by 55%, and for Russia by only 5%. It is worth noting that the R^2low level for the Russia forecast is due to a significant deviation of the actual indicators of gross savings from the trend value, which indicates other factors strong influence.

Inflation is one of the key indicators of the economy state and its development prerequisites. Inflation dynamics in Russia and China is shown in Figure 5.

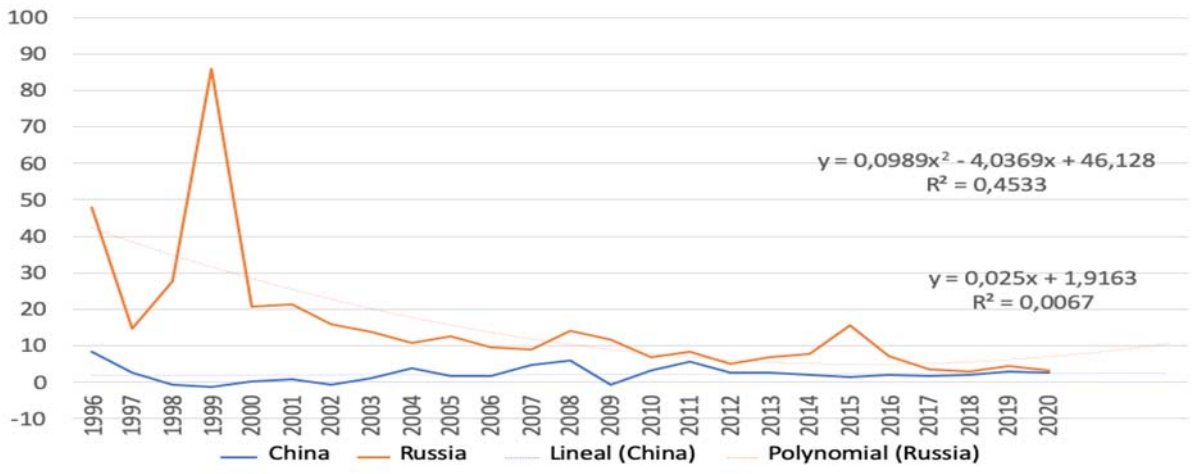


Fig. 5: Inflation Dynamics in Russia and China, 1996-2020, % of GDP [Compiled by the Authors on the Basis of 27]

The economic systems of Russia and China are characterized by different dynamics of inflation rates in the period 1996-2019. For China, the annual inflation rate did not exceed 10% and on average there is a trend towards its stability below 5%, which is a very good indicator for the developing economy. Inflation at this level provides growth in gross output and at the same time real income growth in the economy. For Russia, inflation indicators are on average about 10% since 2003-2004. Prior to this period, hyperinflation was observed, which in general created a downtrend of this indicator. In general, it can be argued that after 2004 inflation dynamics, although it has a weak downtrend, inflation indicators remain relatively stable.

The forecast inflation trend for Russia has an upward trend and by 2023 the inflation rate is predicted at 10%. The forecast reliability is 45%, but if we analyze the period of 2009 and 2015, we can see that after the crisis periods, the resumption of economic activity was carried out by increasing inflation. Thus, the expected inflation increase in 2021-2023 is somewhat cyclical for the Russian economic system. In China, the inflation dynamics forecast is also comparable to the last 10 years trend and a significant change in its dynamics is not expected.

Goods and services exports and imports are one of the main indicators of the economy openness and ensure the implementation of gross output produced. The dynamics of exports of goods and services is shown in Figure 6.

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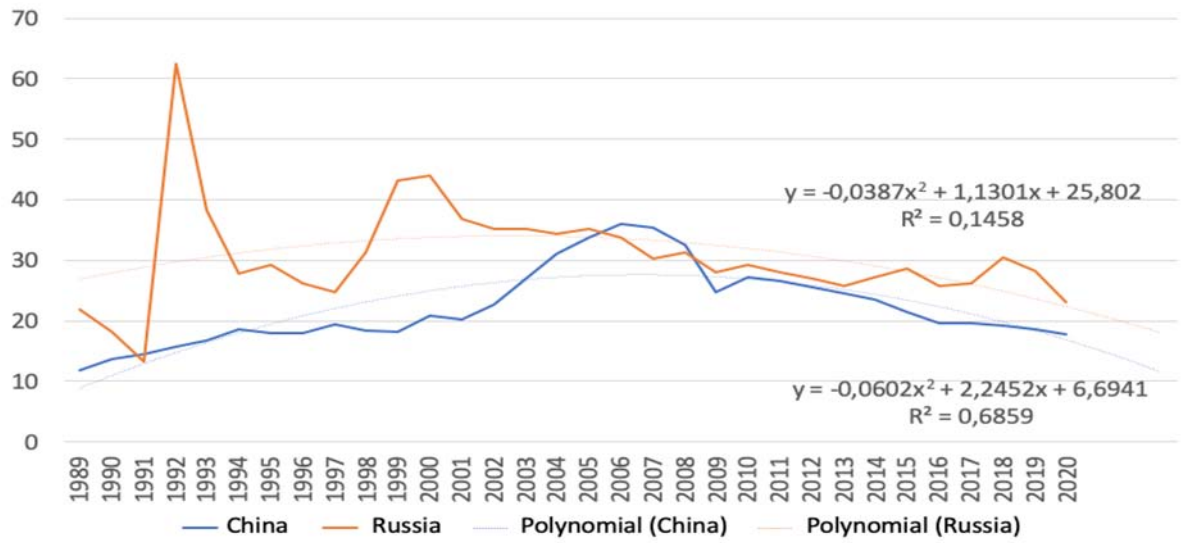


Fig. 6: Goods and Services Export Dynamics in Russia and China, 1989-2020, % of GDP [Compiled by the Authors on the Basis of 27]

Long-term trends in the goods and services exports dynamics of Russia and China are similar: until 2006 there was an increase in exports, and then a fall. But if we consider goods' and services exports dynamics of Russia and China more carefully, we can see that in general they are asynchronous. In those years when the exports share in Russia's GDP has increased, China has fallen. This is also confirmed by the correlation coefficient 0.11, which indicates that goods and services export dynamics vectors are multidirectional.

According to the forecast, a further significant downfall in the goods and services exports volume in Russia and China is expected. This trend is very expected in the context of crisis phenomena spread in the countries of the world and a decrease in the population purchasing power. In such conditions, the exports reduction is highly expected. Moreover, the economic development of national economic systems in a crisis is focused on the exports absorption by the domestic economy. A similar trend is observed in the goods and services import (Fig.7).

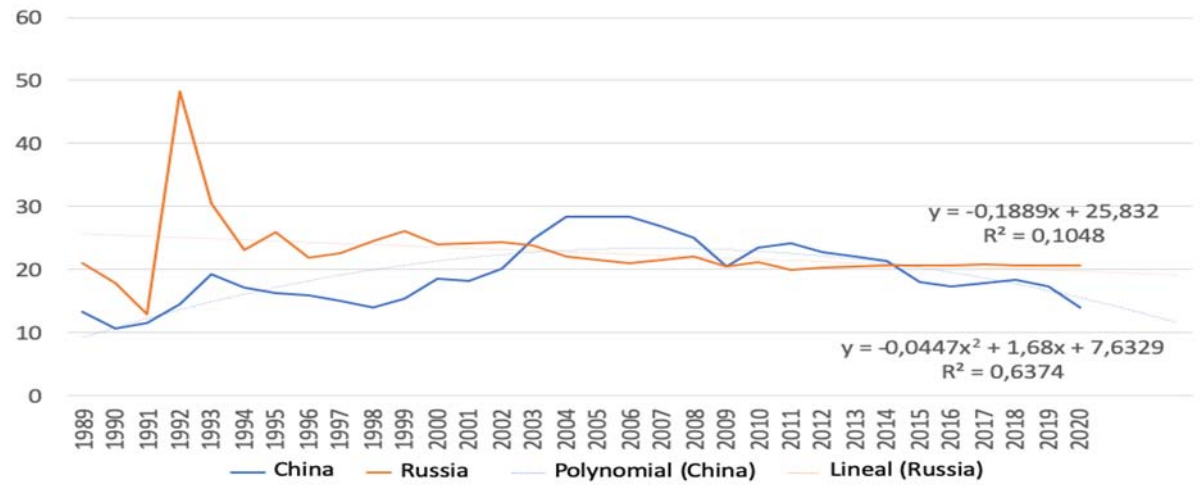


Fig. 7: Goods and Services imports Dynamics in Russia and China, 1989-2020, % of GDP [Compiled by the Authors on the Basis of 27]

The goods and services imports dynamics for Russia and China is multidirectional. If Russia is characterized by a decrease in the GDP imports share, then China is characterized by an increase in it. At the same time, for both economic systems, the imports share in GDP is less than the exports share, which indicates a positive trade balance of countries. It is also important to indicate that after 2009, Russia is characterized by a practically stable share of imports in GDP with practically the same GDP dynamics (Fig. 2), and for China there is a tendency to reduce the imports share in GDP with significant GDP growth. From this we

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can conclude that the Chinese economy is more independent of imports than the Russian economy. As for exports, there is also a decrease in the exports share relative to GDP for China. This means that the entire output gross volume is absorbed by the Chinese economy itself. The imports dynamics forecast of goods and services for Russia and China also indicates a trend towards its fall. This is partly due to the recent years' trend, on which basis the forecast was carried out, and partly due to restrictions and irregularities in global supply chains, which significantly complicates the goods movement in the global market.

As for external debt, this indicator has a unidirectional dynamics vector for the Russian and Chinese economic systems (Fig. 8).

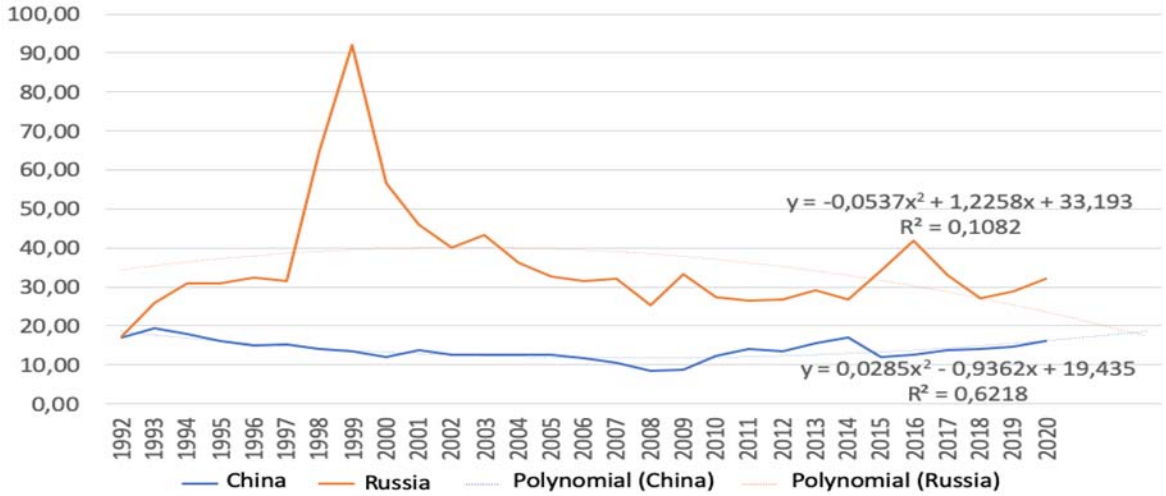


Fig. 8: External Debt Dynamics in Russia and China, 1992-2020, % of GDP [Compiled by the Authors on the Basis of 27]

China has significantly less external debt and averages 12% of GDP. For Russia, this figure averages 35% over the past 15 years. In general, the external debt dynamics for Russian and Chinese economies is similar and is characterized by the fact that in crises times the debt share relative to GDP is growing. In Russia, this trend was observed in 1997, 2008, 2014, and in China in 2008. We can conclude that the external debt indicator dynamics is co-directed in the economic systems of Russia and China, since on average there is a tendency towards an external debt decrease, but in crisis times it increases.

The external debt volume forecast dynamics indicates its decrease for Russia and an increase for China. Since Russia is under international sanctions, which, among other things, restrict access to international financial markets, we highly expect such a forecast. For China, a slight increase in external debt to GDP is predicted, which may be associated with China entering international markets to increase the economy capitalization in the post-crisis period.

An important indicator for assessing the country socio-economic development is household consumption, which dynamics is shown in Fig. 9.

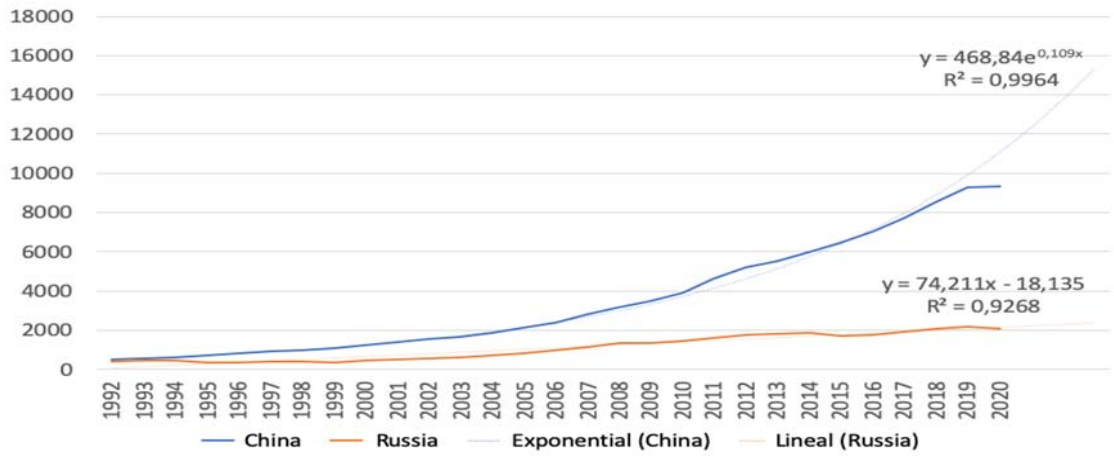


Fig. 9: Household Consumption Dynamics in Russia and China, 1992-2020, Billion US Dollars [Compiled by the Authors on the Basis of 27]

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The household consumption dynamics has a co-directed upward trend vector for both Russia and China. Consumption growth is generally interpreted as a positive characteristic for describing the economic system, because households have the opportunity to consume more goods and services. This implies both an increase in the produced goods volume and an increase in the population income. At the same time, this indicator is important to consider in the context of indicators such as inflation and income distribution. Consumption growth with relatively stable inflation is evidence of real income growth, which is typical for both studied economic systems. Positive point is the positive forecast dynamics of increasing household consumption in Russia and China. The forecast accuracy is 98% for China and 93% for Russia. This dynamics indicates the withdrawal of economic systems from the crisis and an improvement in the socio-economic situation. But an extremely important indicator of the socio-economic system development is the poorest population 20% income share (Fig. 10).

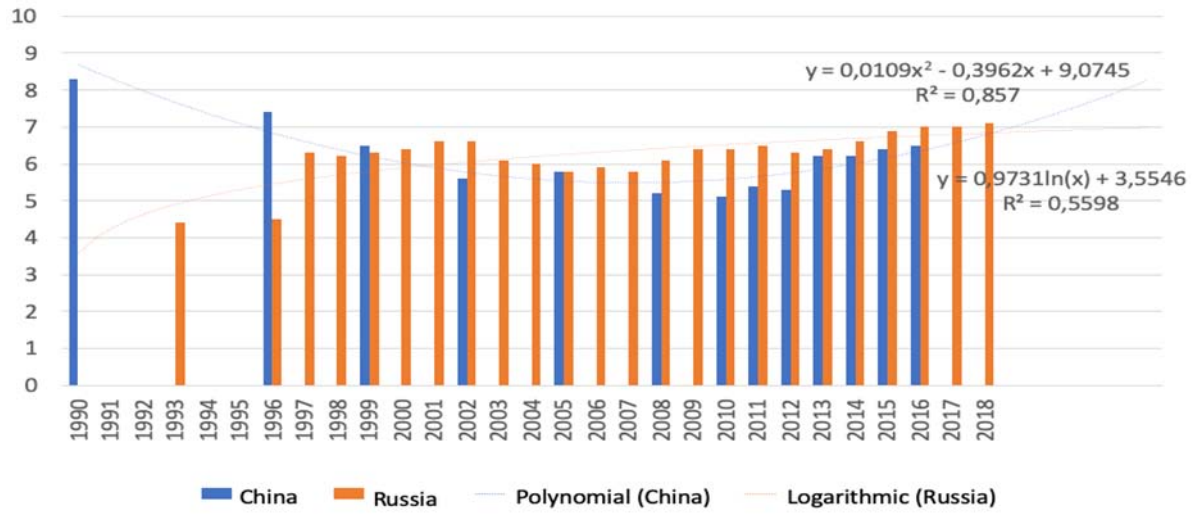


Fig. 10: Income Share Dynamics of the 20% Poorest Population in Russia and China, 1990-2019, Population %
[Compiled by the Authors on the Basis of 27]

Information on Figure 10 shows that a more socially equitable income distribution is observed in Russia, where the income share of the 20 % poorest population tends to increase. In China, on the contrary, this indicator tends to decrease until 2020 and after 2011 an increase trend begins. This conclusion is quite unexpected, since Russia belongs to countries with a market economic system, and China - to planned-administrative, where, in addition, a one-party political system with the ruling Communist Party. Ideological influence in China was supposed to contribute to a greater trend in income redistribution. In general, analyzing the last 10 years, we can argue that economic systems have a co-directed vector in the redistribution of income in favor of the 20% of the poorest population. After a significant drop in the income distribution in China in the period 1990-2010, a significant increase is predicted in 2021-2023. We can assume that this trend will be due to significant growth in GDP and GDP per capita. The reliability of such a forecast is 86%. At the same time, for Russia there is a forecast trend towards a decrease in this indicator dynamics and in fact its fixation at the level of 7%. In general, this trend characterizes the socio-economic situation deterioration. In this context, it is important to consider the unemployment dynamics, which is always a significant negative factor in the development of the country's economy (Fig. 11).

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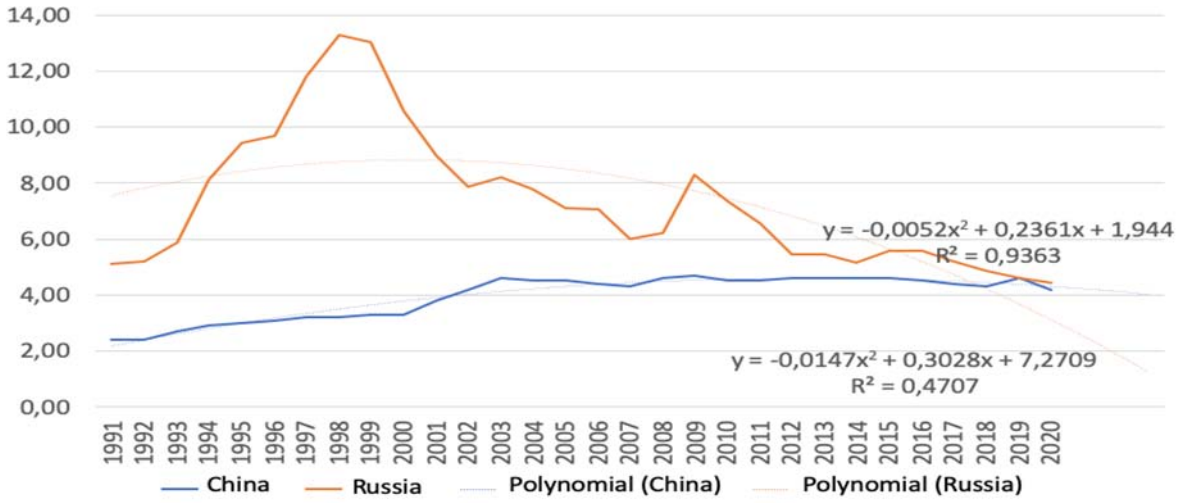


Fig. 11: The Unemployment Rate Dynamics in Russia and China, 1990-2020, % of the labor Force [Compiled by the Authors on the Basis of 27]

For China, there is a trend of an unemployment rate increase, while for Russia - an unemployment decrease trend. In this case, it is important to take into account the fact of the China population increase, which puts additional pressure on the labor market. There is no such factor in Russia, which contributes to the unemployment decrease rate after the crisis period of the 1990s. Thus, the unemployment rate dynamics for Russia and China is multidirectional. The unemployment dynamics forecast in Russia shows that it will decrease significantly. The reliability of such a forecast is 47%. It is important to underline that this forecast is statistical, that does not take into consideration many factors affecting the labor market. It is more likely that unemployment, if it continues to decline, is at a much slower pace than the forecast shows. In China, an unemployment slight decrease is also expected with a reliability of 94%. On average, unemployment in China is expected at 4% in 2021-2023, which is a very real forecast.

Having analyzed the indicators values dynamics of the economic systems socio-economic development of Russia and China, we can present the results obtained in Table 2.

Table 2: Significance Dynamics Co-directivity and Multidirectionality of the Russia and China Economic Systems Development Indicators

№	Indicator	Actual indicators directional vector		Forecast indicators directional vector	
		China	Russia	China	Russia
1	GDP	↑	↑	↑	↑
2	GDP per capita	↑	↑	↑	↑
3	Grosssavings	↓	↓	↓	↓
4	Inflation	~	~	↓	↑
5	Goods and Services Export	↓	↓	↓	↓
6	Goods and Services Import	↓	↓	~	~
7	External Debt	↑	↑	↓	↓
8	Consumer Spending	↑	↑	↑	↑
9	20% Poorest Population Income Share	↑	↑	↑	~
10	Unemployment	~	~	↓	↓

Note: Indicators with a Multidirectional Vector of Value Dynamics are Highlighted in Color

↑ - Indicator Value Increase;
↓ - Indicator Value Decrease;
~ - Trend Towards the Indicator Value Stability.

The obtained study results indicate that inflation, goods and services imports and exports, external debt, all income share of the 20% poorest population, unemployment rate have a multidirectional trend in the indicators values in the long term. This indicates significant differences between the economic

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systems of Russia (with a market economy system) and China (with a command and administrative economic system). The study results indicate that China's economic system is stronger in the forecast period 2021-2023, as evidenced by the declining inflation expected dynamics, and an increase in the income share of the 20% poorest population. It is these indicators that distinguish the forecast of the socio-economic situation of the Chinese economy from the Russian economy in 2021-2023. In general, positive dynamics of socio-economic conditions indicators in Russia and China is expected. Apparently, in the next three years, in both countries with different economic systems an economic activity and economic growth resumption will be observed.

V. Discussion

Our study results indicate an exit forecast from the economic downturn of countries with different economic systems - Russia and China. We compare the obtained results with the other studies results dedicated to the socio-economic development assessment of countries in the COVID-19 pandemic post-crisis period.

First of all, it is worth mentioning two International Monetary Fund studies, which assessed the economic resumption trend of the global economy after the pandemic. The first study [15] predicted a 3% drop in global economic growth in 2020, while the second study [14] predicted a decline that worsened to 4.9%. In the 2021 study, the IMF predicts global economic growth in 2021 by 6%, in 2022 4.4% [16]. The results of our study also predict the studied economic systems economies growth, which is generally determined by the global dynamics.

Analyzing the ASEAN countries economic growth forecasts [3], it should be noted that there is also forecast economic growth at the level of 6.2% for developed countries of Asia, 6.7% for developing and new industrial countries of Asia, 7.3% for the Chinese economy, and 4.7% for countries of Southeast Asia. Such results are comparable to those of our study, in which we also forecast China's economic growth in 2021-2023.

In a study of the economic renewal effect plan based on the post-Keynesian approach [24], the authors conclude that both plans under consideration will lead to economic growth. According to their forecast, excluding the pandemic, global economic growth would average 7% per year. In the post-pandemic context, depending on the impact scenario on the economy in different countries, the global economy forecast growth ranges from 2% to 3.5% per year. In addition, the plans under consideration for the economy resumption assume a decrease in consumption from 4.2% to 6.3% in 2022. According to our study results, consumption is predicted to grow both in Russia and in China.

The study [17] affirms that the COVID-19 pandemic represents a unique shock to the economy, combining supply, demand and financial shocks and, therefore, requiring a political response that exceeds the standard set of monetary, tax and social protection measures that respond to shock. The study focuses on public policy and government programs as a response to the pandemic. But more detailed differences in the policies types of different economic systems are not considered in the study. In our study we also investigated different economic systems to determine their socio-economic conjuncture in a pandemic period. Our conclusions indicate that China economic system has a better socio-economic situation in a pandemic.

Another study [25] also does not address the question of the difference in economic systems and their socio-economic development in a pandemic. The author predicts the global GDP growth, but does not consider the economic growth dynamics in the different economic systems context. And Klein and Pettis [19] consider the role of trade wars without taking into account the distinctions in the different countries economic systems. Milanovich [23] views the capitalism future as an economic system, but does not compare it with other economic systems.

Various authors consider the same economic parameters of the economic systems functioning as we do. Using transaction-level household data, the authors [5] found that during the initial period, households dramatically increased their spending in certain sectors, such as retail and food spending. However, this increase was followed by a decline in overall spending. In our study, we forecast an increase in consumer spending in 2021-2023.

Binder [8] conducted an online survey of 500 consumers in the United States to understand their concerns and responses related to COVID-19, which indicates the consumption items on which they spend more or less. It found that 28% of survey respondents had delayed or cancelled future travel plans and that 40% had abandoned food purchases. Consumers tend to attribute heightened concerns about COVID-19 to higher inflation expectations, a sentiment that has emerged to be an indicator of "pessimism" or "bad times". In our study we predict an inflation increase in Russia and its invariability in China. At the same time the authors do not consider differences in consumer reactions depending on the economic system type.

Comparing the obtained results with the other studies results, it is quite difficult to find common points of intersection. The studies we analyzed focus on possible scenarios for post-pandemic economic development while our study focuses on differences in economic systems. At the same time, we see that our

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indicators forecast values are supported by other studies. An important scientific result of our study is that the planned and administrative economic system of China will more rapidly emerge from the crisis in the post-pandemic period than the Russia market economic system.

Our study results may be applicable in several areas. Firstly, our results show that in a crisis, the government powers expansion in the economic regulation field can have a positive effect and reduce the economic recession period. This conclusion can be used in the economic regulation practice at the ministries and governments' level. Secondly, our study results open up opportunities for further investigation of the economic systems multidirectional development, including social and environmental effects.

VI. Conclusions

The study results figured that the market economic system and the command and administrative system have both co-directional and multi-vector dynamics of economic development, which is displayed in the economic indicators dynamics. An empirical data study indicated that the co-directed development vector has GDP, GDP per capita, gross savings, consumer spending, and the income share of 20% of the poorest population. According to these indicators, the Russian economy and the Chinese economy have the same trends towards a decrease or increase in indicators. A multidirectional development vector of Russia and China economic systems is observed for such indicators as inflation rate, imports of goods and services, external debt, unemployment rate. It is worth mentioning that the co-directed dynamics indicators are effective. GDP, GDP per capita, gross savings are the result of economic activity. While the multidirectional dynamics indicators are the internal economic environment factors and the regulation by state bodies. Inflation is targeted by the central bank, external debt is determined by the government, and the unemployment rate is also a tool associated with inflation (according to Phillips law). The study results indicated that China's economic system is more stable and resistant to crisis phenomena. If the inflation forecast for Russia is an increase, then for China there is no change with a low inflation rate on average. For China, an increase in the specific weight of income is predicted, which is owned by 20% of the poorest population, then for Russia, the invariability of this indicator is predicted.

The study conducted has limitations. The methodological limitation is that the study looked at only two countries and the sample size could be increased. In addition, an important limitation is that there are much more market economies than countries with other economic models. As a result of this, it is difficult to form a sufficiently representative sample for the study. The disparity of the economies of Russia and China can also be considered as a limitation due to the significant prevalence of China's absolute indicators over Russia's. In this regard, we tried to use not absolute indicators, but relative ones, which allow us to level this difference in the scale of economies.

The implementation limitation is that our results study can be applied to the developing countries' economies. The main prerequisite for applying our results is the economy market laws functioning. In addition, we cannot univocally assert that the obtained results may be applicable to countries that are in a state of military conflict or state of emergency, in which a state has expanded powers in regulating economic processes in a country.

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Impact of the COVID-19 Pandemic on SME Debt in a Sub-Saharan Context: The Case of Cameroon

By Guetsop Sateu Fabrice Arnaud

Abstract- Following the lockdown imposed by the Cameroonian authorities after the contamination of some people by the Coronavirus, several enterprises in general and SMEs in particular have experienced great difficulties due to a partial or total cessation of their activities. The objective of this study is to evaluate the impact of the Covid-19 pandemic on the indebtedness of Cameroonian SMEs. Through statistical and econometric analyses carried out on a sample of 450 Cameroonian SMEs, the results obtained highlight the significant influence of the Covid-19 health crisis on the better development of Cameroonian SMEs' activities. This suggests that the Cameroonian government and/or financial partners should provide financial assistance to SMEs in order to alleviate the cash flow difficulties caused by the Covid-19 pandemic.

Keywords: *pandemic; debt; covid-19; containment; SMEs.*

GJMBR-C Classification: *DDC Code: 614.5 LCC Code: RA644.S17*



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Keywords: pandemic; debt; covid-19; containment; SMEs.

I. Introduction

Since the first infections in Wuhan, China, Covid-19 has continued to spread around the world. According to simulations by the International Monetary Fund (IMF), global economic growth will be grossly insufficient and the world economy will be in negative territory as early as the first half of 2020. This global health crisis will lead to partial or total lockdowns, land, sea and air border closures, business closures and significant trade restrictions in some more developed to less developed countries, with serious negative consequences for their overall economic activity.

As Cameroon has not been spared by the covid-19 pandemic, many companies have been weakened. According to studies conducted by the Interpatronal Group of Cameroon (GICAM), on more than 250 companies surveyed between May 22 and June 22, 2020, i.e. 25% of large companies and 75% of SMEs, it appears that the incidence of the covid-19 pandemic has brutally affected 61.5% of companies and left about 10.8% of companies regardless of their size. A careful analysis of the consequences of this pandemic reveals that the most affected sectors are: accommodation and food services (88.9%), agri-food (80.0%), financial services and insurance (71.4%) and computer and telecommunication services (70.0%).

Author: e-mail: fguetsop@yahoo.com

Difficulties in accessing finance remain one of the main obstacles to the creation, survival and growth of SMEs in general, and innovative SMEs in particular. The Covid-19 health crisis poses enormous difficulties for SMEs to be able to carry out their activities serenely. As a result, these SMEs and many entrepreneurs are facing a double shock: a dramatic fall in demand for goods and services, and a tightening of credit conditions that is severely affecting their cash flow.

While the financing structure, and more specifically the debt ratio of a company, is influenced by many factors, its size, growth, industry or collateral are examples of factors that can influence a company's debt ratio (Laura, 2015). This makes it more difficult for smaller companies with less collateral to borrow, especially if the economic environment is not favorable. The more collateral a business has to provide to banks, the more likely it is to be able to take on debt.

Speaking of debt, Traoré (2005) theoretically defines it as all the aid requested by a government from partners (bilateral, multilateral, financial institutions, financial markets, etc.) to finance development actions that could not be covered by the national budget.

For Honoré and Royer (2003), the indebtedness of the enterprise corresponds to all the capital brought by its financial, industrial or commercial partners and which it uses for its investments in fixed assets and its working capital requirements (WCR). The analysis of indebtedness is based on distinctions between long and short term, limited or unlimited duration, operating or financial debt (Abor, 2007; Colot et al., 2010).

The objective of this study is to assess the impact of the Covid-19 pandemic on the indebtedness of Cameroonian SMEs. Thanks to statistical and econometric analyses conducted on a sample of 450 Cameroonian SMEs, the results obtained highlight the significant influence of the Covid-19 health crisis on the better development of the activities of Cameroonian SMEs.

In this article, we will first examine the literature review and the elaboration of the hypothesis, then the methodology used in this study and finally, we will comment and discuss the results obtained and end with a conclusion.

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II. Covid-19 Pandemic and SME Debt: A Review of the Literature and Formulation of the Hypothesis

A health crisis is an epidemic that spreads over a large geographical area and affects a significant proportion of the population: among the many parameters that transform a disease into a pandemic, one must consider the incubation time before the first symptoms, the time before the contagious phase, the intensity of the contagiousness of the biological agent, the degree of immunity of the population and the mode of transmission (Nkoa, 2020).

To avoid contagion in Covid-19, several measures have been taken to this effect, namely: border closure; containment; barrier measures; wearing of masks; social distancing; working remotely through information and communication technologies; etc.

According to Ntererwa and Lukundji (2020), financial leverage refers to the impact of the financial structure of the firm on the profitability of equity. Under certain conditions, the use of debt can increase the return on equity through a so-called "leverage" effect. It is therefore necessary to show the part of the return on equity that comes from the economic activity of the company (ROI) and the part that is attributable to the method of financing (financial leverage). Leverage can be defined as the positive impact that the judicious use of debt can have on the financial profitability of the company. The leverage effect is all the more important as the debt/equity ratio (called the Gearing ratio) amplifies the profitability differential (economic profitability-cost of debt) (Modigliani and Miller, 1958).

Indeed, it appears that in the long run, only sufficient economic profitability guarantees a satisfactory level of return on equity, because if the debts contracted to invest cost less (interest rate) than they yield (economic profitability), the financial profitability is impacted upwards. If a company can borrow capital at a cost of 6% and, thanks to this financing, its activity grows and it achieves a profitability of 9%, the leverage effect is positive (Modigliani and Miller, 1958).

If this is not the case, it is called a sledgehammer effect. The interest of the leverage effect is to highlight the origin of the profitability of equity, to know if it is a favorable financial construction or a true operational/economic performance born of a judicious exploitation of the production tool (Stiglitz, 1972; Modigliani and Miller, 1958). This being the case, it should not be forgotten that while debt can be a source of improvement in the profitability of equity capital, it can also be a source of weakening the solvency of the company, or even of jeopardizing the continuity of its operations.

As a reminder, the more guarantees a company provides to banks for access to credit, the more likely it is to be able to incur debt.

Indebtedness refers to a situation marked by an accumulation of debts (Imane, 2016). In the business world, debt is often directly related to investments made, which require a certain amount of long-term debt (Modigliani and Miller, 1958; Laura, 2015). Debt can be obtained through loans or bank credits (Stiglitz, 1972). SMEs rely heavily on debt despite measures to facilitate their access to capital markets.

Since the work of Modigliani and Miller (1958), there have been many theoretical debates and empirical works on the issue of debt. Arbitrage theory is one of the first lines of progress of this school, known as neoclassical. This theory puts forward the following idea: the firm substitutes equity for debt or debt for equity until the value of the firm is maximized.

A firm always seeks the level of debt that allows it to minimize its cost of capital, and thus maximize its value (Laura, 2015). This debt ratio is, according to the trade-off theory, the one that balances the fiscal benefits of any additional debt (perpetual rent from tax savings) with the costs of potential financial distress (bankruptcy costs caused by debt). We have: EV = VNE + tD - VA, where EV = Value of the indebted firm; VNE = Value of the non-indebted firm; tD = Tax savings and VA = Amount of bankruptcy costs.

The analysis of the impact of the Covid-19 health crisis on SME debt has so far received relatively little empirical attention. In this sense, many existing studies have first focused on the digital mechanisms in the management of the Covid-19 health crisis and the challenges to bridge the digital divide in the world (Thiam and Ndiaye, 2020); on the spillover effects of the health crisis (Oudda et al., 2020). The others address the health and/or financial crisis aspect either on credit rationing or on the behavior of financial intermediaries (Achibane and Chakir, 2019; Hervé, 2010; Aissata, 2012; Akilimali, et al., 2020).

Hence the almost total absence of studies on the impact of the Covid-19 health crisis on the indebtedness of Cameroonian SMEs. In view of this situation, which weighs on the activities of SMEs, this study will focus on the following question: what is the impact of the Covid-19 health crisis on the indebtedness of Cameroonian SMEs?

The objective of this study is to assess the impact of the Covid-19 pandemic on the indebtedness of Cameroonian SMEs. In order to answer our research question formulated above, we opted for a hypothetical-deductive approach, as it consists in formulating a research hypothesis in order to deduce its observable future consequences, as well as its past consequences, in order to highlight its validity. To answer our research question above, we used a research hypothesis.

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Hypothesis: The covid-19 pandemic has a positive influence on the indebtedness of Cameroonian SMEs.

III. Covid-19 Pandemic and SME Debt: Empirical Validation in the Cameroonian Context

In this section, we will first describe the sampling, the data collection procedure, then define the variables selected for the study and finally specify the estimation method selected.

a) Sampling and Data Collection

The population of this study is composed of Cameroonian Small and Medium Enterprises (SMEs). The official definition of the SME in the Cameroonian context comes from Law n°2015/010 of 16 July 2015 modifying and completing certain provisions of Law n°2010/001 of 13 April 2010 on the promotion of SMEs. This text sets out references that make it possible to divide enterprises into different groups: Very Small Enterprise (VSE); Small Enterprise (SE) and Medium Enterprise (ME). According to these references, the SME group includes enterprises with a permanent workforce of between 21 and 100 people and an annual turnover excluding tax of no more than three (03) billion CFA francs.

Table 1: Regional Ranking of the 450 SMEs in the Study Sample

Regions	Littoral	Centre	West	Adamaoua	North	East	Total
Questionnaires Administered	207	130	45	40	39	37	498
Questionnaires Received	203	117	42	36	37	35	470
Usable Questionnaires	201	110	40	34	33	32	450

Source: From the Author based on the Survey

For data collection, we used a research questionnaire administered to the managers of Cameroonian SMEs. We selected the regions of: Littoral; Centre; West; Adamaoua; North and East for the distribution of the research questionnaire. The survey started in May 2020 and ended in December of the same year. Out of the four hundred and ninety-eight (498) questionnaires randomly proposed to SME managers, only four hundred and seventy (470) were sent to us, i. e. a return rate of 94.37%. Of this number, twenty (20) questionnaires had to be discarded for various reasons (indecipherable, incomprehensible, etc.). It is clear that 95.74% of the questionnaires that arrived were usable. In sum, 450 SMEs belonging to the primary, secondary and tertiary sectors were validated in the framework of our study.

b) Definitions and Measures of Variables

We used some variables to analyze the link between the Covid-19 pandemic and the indebtedness of Cameroonian SMEs. Control variables were also introduced to test the relationship between the Covid-19 pandemic and these control variables.

i. *The Endogenous Variable*

The covid-19 pandemic is the dependent variable. The measure of this variable is evaluated through the speed of sales of SMEs. This variable is binary and takes the value 1 if the speed of sales of SMEs is increasing at the time of the covid-19 pandemic and 0 otherwise.

ii. *The Exogenous Variable*

The indebtedness (X_1) of SMEs is the independent variable. A quantitative variable, it expresses the weight of external capital committed by the firm's creditors. For this study, and according to Cassar and Holmes (2003), the indebtedness of SMEs is measured by the short-term debts (STD) on the total of the balance sheet (STD/Total of the balance sheet).

iii. *Control Variables*

We retained three (03) control variables, namely: the age of the SME; the sector of activity; and the manager-shareholder/owner network.

- The age of the SME (X_2), is a quantitative variable and is measured by the Neperian Logarithm of the age of the SME expressed in number of years (M'hamid et al., 2011).
- The sector of activity (X_3), is a dichotomous variable that takes the value of 1 if the SME operates in a high-tech sector and 0 otherwise (Amal and Faten, 2010).
- The manager-shareholder/owner network (X_4), is a dichotomous variable that takes the value of 1 if the manager belongs to the same religious, cultural and professional networks as the owner or shareholders and 0 otherwise (Moungou and Niyonsaba, 2015).

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Table 2: Presentation of the Variables Selected for the Study

Variables	Abbreviations	Measures of Variables
The Covid-19 Pandemic	Y	Variable is binary taking the value 1 if the speed of sale of SMEs is increasing at the time of the covid-19 pandemic and 0 otherwise.
SME Debt	X_1	The indebtedness of SMEs is measured by short-term debt (STD) to total assets (STD/Total assets).
The Age of the SME	X_2	Quantitative variable measured by the Neperian Logarithm of the age of the SME expressed in number of years.
The Sector of Activity	X_3	Quantitative variable measured by the Neperian Logarithm of the age of the SME expressed in number of years.
X_4 = The Manager-shareholder/owner network	X_4	Quantitative variable measured by the Neperian Logarithm of the age of the SME expressed in number of years.

Source: From the Author based on the Literature

c) Econometric Model

For our study, we used the logistic regression model. The choice of this model is justified by the fact that the variable Y to be predicted is dichotomous (1 or 0) and not continuous. The most distinctive point of this regression is the fact that the relationship between the predictor variables, X_1, X_2, X_3,…,X_n and the variable Y to be predicted is non-linear. Logistic regression analysis allows the prediction of group membership probability using the maximum likelihood method, as it provides better estimators when the distribution of disturbances is known. The use of SPSS version 20 and Stata/SE version 15.1 will be useful for the analysis of the collected data. Thus, the following research model is selected.

Model: Test of the relationship between the covid-19 pandemic; SME debt and control variables.

As our logistic regression model has several predictors, it is therefore formulated as follows:

$$P(Y) = \frac{e^{(\alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4)}}{1 + e^{(\alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4)}} \text{ or } P(Y) = \frac{1}{1 + e^{-(\alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4)}}$$

Where:

P(Y) is the probability that Y happens;

e is the base of natural logarithms;

Y = The covid-19 pandemic; α_0 = The constant; X_1 = The indebtedness; X_2 = Age of the SME; X_3 = The sector of activity; X_4 = The manager-shareholder/owner network.

The coefficients α_0, α_1, α_2, α_3, α_4 represent the constant and the linear combination of the predictors.

d) Presentation and Interpretation of Results

The objective here is to present, on one hand, the correlation matrix between the dependent variable and the exogenous variables, and on the other hand, the results of the logistic regression between the dependent variable and the exogenous variables.

Table 3: Correlation Matrix between Study Variables

			Y	X1	X2	X3	X4
Spearman's Rho	Y	Correlation Coefficient	1,000	,680**	,056	,569**	,518**
		Sig. (2-tailed)	.	,000	,235	,000	,000
		N	450	450	450	450	450
	X1	Correlation Coefficient	,680**	1,000	,024	,787**	,695**
		Sig. (2-tailed)	,000	.	,618	,000	,000
		N	450	450	450	450	450
	X2	Correlation Coefficient	,056	,024	1,000	,055	,087
		Sig. (2-tailed)	,235	,618	.	,241	,064
		N	450	450	450	450	450
	X3	Correlation Coefficient	,569**	,787**	,055	1,000	,584**
		Sig. (2-tailed)	,000	,000	,241	.	,000
		N	450	450	450	450	450

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	X4	Correlation Coefficient	,518**	,695**	,087	,584**	1,000
		Sig. (2-tailed)	,000	,000	,064	,000	.
		N	450	450	450	450	450
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: From the Author based on the Survey

The table above shows that there is a positive and significant correlation at 1% level between the Covid-19 health crisis and the indebtedness of Cameroonian SMEs. Similarly, there is a positive and significant correlation at 1% level between the sector of activity and the Covid-19 health crisis, and a positive and significant correlation at 1% level with the manager-shareholder/owner network.

Table 4: Logistic Regression Results

```
Logistic regression                             Number of obs     =        450
                                                LR chi2(4)        =     224.09
                                                Prob > chi2       =     0.0000
Log likelihood = -183.67542                     Pseudo R2         =     0.3789

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |    3.22012   .5617775     5.73   0.000     2.119057    4.321184
          x2 |   .0345872   .0405794     0.85   0.394    -.0449468    .1141213
          x3 |   .6373508   .4693088     1.36   0.174    -.2824777    1.557179
          x4 |   .5789432   .3678293     1.57   0.116    -.1419889    1.299875
       _cons |  -3.013282   .4645408    -6.49   0.000    -3.923765   -2.102799
------------------------------------------------------------------------------

. mfx

Marginal effects after logit
      y  = Pr(y)  (predict)
         =  .62535163

------------------------------------------------------------------------------
variable |      dy/dx    Std. Err.      z    P>|z|   [    95% C.I.   ]       X
---------+--------------------------------------------------------------------
      x1 |    .7544322      .13998     5.39   0.000    .480078   1.02879   .753333
      x2 |    .0081033       .0095     0.85   0.394   -.010517   .026723   6.36222
      x3*|    .1532052      .11427     1.34   0.180   -.070757   .377167   .744444
      x4*|    .1383376      .08877     1.56   0.119   -.035643   .312318        .7
------------------------------------------------------------------------------
(*) dy/dx is for discrete change of dummy variable from 0 to 1
```

Source: From the Author based on the Survey

According to the results obtained above, the LAMBDA likelihood ratio statistic is equal to 224.09. The associated critical probability is 0. The associated critical probability is 0. The model is therefore globally significant, as there is indeed a relationship between one or more explanatory variables and the explained variable.

As the data are individual and not aggregated, the pseudo-R^2 does not need to be close to 1 (or 100%) to be excellent. Its value of 37.89% is already satisfactory.

Our regression model as discussed above is as follows:

$$P(Y) = \frac{1}{1+e^{-(-3{,}013282 + 3{,}22012\ X_1 + 0{,}0345872\ X_2 + 0{,}6373508\ X_3 + 0{,}5789432\ X_4)}}$$

e is the base of natural logarithms; Y = The covid-19 pandemic; α_0 = The constant; X_1 = The indebtedness; X_2 = Age of the SME; X_3 = The sector of activity; X_4 = The manager-shareholder/owner network.

We conducted a binary logistic regression on the impact of the Covid-19 health crisis on the indebtedness of Cameroonian SMEs. The results of this regression show that the Covid-19 health crisis has a positive and significant influence on the indebtedness

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of Cameroonian SMEs, hence the validation of our research hypothesis: "the Covid-19 pandemic has a positive influence on the indebtedness of Cameroonian SMEs".

The results of this study remind us that the Covid-19 health crisis caused a number of problems that prevented businesses from operating effectively. These problems include: border closures; containment; barrier measures; wearing masks; social distancing; working remotely through information and communication technologies; etc.

Our results are in line with those found by Ntererwa and Lukundji (2020), who show that the advent of the Covid-19 health crisis led SME owner-managers to go into debt to cope with the various fluctuations in their business.

These results show that despite the Covid-19 health crisis, Cameroonian SMEs have encountered enormous difficulties in repaying their debts to financial institutions, which are unfortunately not contractual.

Following this Covid-19 health crisis situation, the SMEs that were forced to respect the barrier measures by closing down their activities, notably: bars, restaurants, party halls, etc., and having the credit outstanding, showed us that they had been forced to liquidate some of their assets to repay the credit in order to avoid the strong repression.

As for the other variables (the age of the SME; the sector of activity; and the manager-shareholder /owner network), we note that the Covid-19 health crisis does not significantly influence them.

IV. Conclusion

The objective of this study was to assess the impact of the Covid-19 pandemic on the indebtedness of Cameroonian SMEs. Through statistical and econometric analyses carried out on a sample of 450 Cameroonian SMEs, the results obtained show a positive and significant influence of the Covid-19 health crisis on the better development of Cameroonian SMEs' activities. Hence the acceptance of our research hypothesis.

The results of this study reveal that the Covid-19 health crisis was the cause of several problems that prevented businesses from operating as they should, namely: border closure; containment; barrier measures; wearing of masks; social distancing; etc.

Through this study we can suggest to financial institutions, after having noted the delay in the repayment of credits granted to SMEs, to use certain strategies to make them more solvent.

Through this study we can suggest that financial institutions, after having noticed the delay in the repayment of credits granted to SMEs, should use certain strategies to make them more creditworthy.

If, despite this, nothing is paid, they should take more effective collection measures, such as sending reminders or using external collection services. If there is still no proof of good faith, these financial institutions must take more binding legal measures.

In terms of managerial implications, it would be interesting for the government to provide more subsidies to SMEs during the Covid-19 health crisis. For example, the state should consider a policy of supporting SMEs by exempting them from taxes due to the Covid-19 health crisis. The Cameroonian government should also respond to certain measures aimed at supporting sales and combating the depletion of SMEs' working capital, then improve SMEs' access to liquidity, and finally help SMEs to maintain their level of activity.

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La Volatilité Du Marché Boursier Marocain: Un Comportement Hors Norme

By Isam Mouallim & Kerkri Abdelmounaim

Abstract- This paper aims to model the volatility of Moroccan Stock Exchange and evaluate the predictive performance of volatility models during 2005-2020. Through an empirical study, we show that the closing price of MADEX and MASI index has some empirical characteristics known as "stylized facts" which make the standard models of volatility unable to replicate their characteristics. We use the GARCH, EGARCH, APARCH, FIGARCH and FIEGARCH models to estimate the volatility of the Moroccan Stock Exchange. The first result shows that the volatility of the Moroccan stock market does not behave similarly to the volatility of the international stock markets because she reacts to negative shocks and positive shocks. A second result shows that the FIGARCH and FIEGARCH models provide superior performance than the other GARCH volatility models which is an indicator of the presence of a long memory in the volatility process.

Keywords: *stylized facts, volatility, GARCH models, long memory.*

GJMBR-C Classification: *JEL Code: H54*



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La Volatilité Du Marché Boursier Marocain: Un Comportement Hors Norme

Isam Mouallim [α] & Kerkri Abdelmounaim [σ]

Résumé- Cet article vise à modéliser la volatilité du marché boursier marocain et d'évaluer la qualité prédictive des modèles de volatilité utilisés au cours de la période 2005-2019. Nous montrons à travers une étude empirique que la réalité des mouvements du cours boursier des indices MASI flottant et MADEX flottant possèdent certaines caractéristiques empiriques connues sous le nom de « faits stylisés », qui rendent les modèles usuels de la volatilité incapables de reproduire ces caractéristiques. Nous proposons des modèles déterministes à schéma autorégressif de type GARCH, EGARCH, APARCH, FIGARCH et FIEGARCH pour estimer la volatilité des marchés boursiers marocains. Un premier résultat obtenu montre que la volatilité du marché boursier marocain ne se comporte pas de la même manière que la volatilité des marchés boursiers internationaux du fait qu'elle réagit de même ampleur aux chocs négatifs qu'aux chocs positifs. Un deuxième résultat montre une nette surperformance des modèles FIGARCH et FIEGARCH par rapport aux autres modèles de volatilité ce qui est un indicateur de la présence d'une mémoire longue dans le processus déterminant la volatilité.

Mots-clés: faits stylisés, volatilité, modèles GARCH, mémoire longue.

Abstract- This paper aims to model the volatility of Moroccan Stock Exchange and evaluate the predictive performance of volatility models during 2005-2020. Through an empirical study, we show that the closing price of MADEX and MASI index has some empirical characteristics known as "stylized facts" which make the standard models of volatility unable to replicate their characteristics. We use the GARCH, EGARCH, APARCH, FIGARCH and FIEGARCH models to estimate the volatility of the Moroccan Stock Exchange. The first result shows that the volatility of the Moroccan stock market does not behave similarly to the volatility of the international stock markets because she reacts to negative shocks and positive shocks. A second result shows that the FIGARCH and FIEGARCH models provide superior performance than the other GARCH volatility models which is an indicator of the presence of a long memory in the volatility process.

Keywords: stylized facts, volatility, GARCH models, long memory.

I. Introduction

La crise financière de 2007-2008 a conduit les universitaires et les praticiens à réévaluer la pertinence des modèles d'évaluation de la volatilité des marchés boursiers. La flambée des volatilités de différentes classes d'actifs financiers a fait qu'il est particulièrement important de savoir dans quelle mesure les méthodes standards d'évaluation de la volatilité sont capables de reproduire les forts mouvements des prix des actifs dans les marchés financiers. En effet, l'approche la plus simple pour estimer la volatilité via l'écart type historique n'est pas conçue à capturer les événements « improbables » comme les crises financières. L'écart type historique ne peut être une bonne approximation que si les prix des actifs financiers suivent une loi normale comme le suppose la théorie financière ce qui est un cas très particulier dans la réalité des mouvements des prix des actifs financiers dans les marchés financiers. Par conséquent, une bonne évaluation de la volatilité doit être capable de prendre en considération certaines caractéristiques empiriques du mouvement des prix des actifs financiers, connues et résumées sous le nom de « faits stylisés », qui baisent l'estimation de la volatilité théorique.

L'objectif principal de ce travail est de modéliser la volatilité du marché boursier marocain, à savoir le cours des indices boursiers MADEX et MASI, via l'utilisation des modèles de la volatilité capables de reproduire les faits stylisés exhibés par la variation de prix d'actifs financiers du marché boursier marocain en vue d'examiner leurs qualités prédictives. À travers une étude empirique sur des données réelles des cours des indices boursiers Marocains MADEX flottant et MASI flottant, nous utilisons les modèles GARCH symétriques (modèle GARCH), les modèles GARCH asymétriques (modèles EGARCH et APARCH) et le modèle GARCH à mémoire longue (modèles FIGARCH et FIEGARCH) pour modéliser la volatilité des marchés boursiers marocains. Ensuite, nous étudions la performance prédictive des modèles de volatilité afin de repérer le modèle de volatilité le plus adapté au marché boursier marocain.

La suite de cet article est structurée de la manière suivante: La section 2 fournit une revue de littérature sur les modèles d'évaluation de la volatilité des marchés boursiers. La section 3 fournit une description des différents modèles de volatilité GARCH dont nous cherchons à tester la pertinence. La section 4 présente les résultats de l'étude empirique.

Author α: (Professeur HDR) École Nationale de Commerce et de Gestion de Tanger. e-mail: isam.mouallim@uae.ac.ma
Author σ: (Professeur assistant) École Nationale des Sciences Appliquées d'Oujda. e-mail: a.kerkri@ump.ac.ma

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II. Revue De Littérature

Il existe de nombreux travaux dans la théorie financière décrivant d'une manière quantitative la volatilité des actifs financiers. Les premiers travaux n'ont vu le jour avec Markowitz (1952) qui a avancé sa célèbre théorie de la diversification de portefeuille où il utilise l'écart-type statistique comme indicateur de quantification de la volatilité. Cependant, même si elle est fréquemment utilisée en pratique, cette mesure a certains inconvénients: elle manque de fiabilité à capturer les faits stylisés des rentabilités financières tels que « volatilité clustering », phénomène leptokurtique et asymétrie de la volatilité (Mandelbrot (1963); Perdersen et Satchell (1998); Munenzon (2010)). Par définition, l'écart-type statistique n'est pas conçu pour reproduire les forts mouvements des marchés financiers. Comme alternative, Engle (1982) et par la suite Bollerslev (1986) ont développé les modèles ARCH et GARCH afin de permettre à la variance conditionnelle de capturer les faits stylisés qui biaisent l'estimation de l'écart-type statistique. Le principe général consiste à remettre en cause la propriété d'homoscédasticité en faveur d'une propriété d'hétéroscédasticité. Les modèles GARCH sont les modèles le plus utilisés pour capturer la dynamique de la volatilité des marchés boursiers. A la suite de ces deux articles, plusieurs formes d'extension des modèles GARCH ont été développées: les modèles GARCH symétriques, les modèles GARCH asymétriques et les modèles GARCH à mémoire longue. La première famille repose sur une spécification quadratique de la variance conditionnelle des perturbations: modèles ARCH, GARCH et IGARCH. La deuxième famille tient compte des spécifications asymétriques des perturbations: EGARCH (Nelson (1991)), NGARCH (Higgins and Bera, 1992), TGARCH (Glosten et al. (1993)), AGARCH (Engle and Ng (1993)), APARCH (Ding, Engle et Granger (1993)), QGARCH (Sentana (1995)) etc. La troisième famille détecte l'existence d'une composante de mémoire longue dans le processus de la volatilité conditionnelle: modèle FIGARCH (Baillie et al. (1996)). Les différents modèles visent à améliorer la qualité prédictive des méthodes d'évaluation de la variance conditionnelle. Cependant, il n'y a pas de consensus sur le meilleur modèle d'estimation de la volatilité des marchés financiers.

III. Méthodologie

Les modèles GARCH ont été développés pour la première fois par Engle (1982) afin de permettre à la variance conditionnelle de dépendre de l'ensemble d'information disponible en fonction du temps. L'intérêt de ces modèles vient principalement de leur capacité à reproduire les faits stylisés observés dans le comportement des distributions empiriques des rentabilités des actifs financiers. Dans la littérature, plusieurs types des modèles GARCH ont été proposés afin de donner une meilleure évaluation et prévision de la volatilité.

- Modèle *GARCH (1,1)*

Dans la théorie financière, le processus stochastique que suivent les rentabilités d'un actif financier est spécifié de la manière suivante:

$$rt=\mu+t$$

Avec $\varepsilon_t = z_t\sqrt{h_t}$ est un bruit blanc, le processus zt de moyenne zéro, variance 1 et non corrélé et ht est la variance du processus t.

Le modèle GARCH (1,1), introduit par Bollerslev (1986), définit la variance conditionnelle (ht) comme processus symétrique par l'équation suivante:

$$h_t = \alpha_0 + \alpha_1\varepsilon_{t-1}^2 + \beta h_{t-1}$$

Avec ε_{t-1} le résidu passé et ht-1 la volatilité passée captant les effets de persistance sur la volatilité. 0 est un paramètre réel; 1 et 1 Reflète l'effet du retard de la rentabilité et de la variance conditionnelle d'un jour sur la variance conditionnelle instantanée, telle que $\alpha+\beta<1$.

À la suite du modèle GARCH de Bollerslev, une littérature considérable s'est développée afin de donner une meilleure estimation de la dynamique de la volatilité des marchés financiers. En effet, la volatilité des marchés financiers présente souvent le phénomène « d'asymétrie de la volatilité » où la volatilité augmente plus après un choc négatif qu'après un choc positif. Dans la famille des modèles GARCH qui prennent en considération le phénomène « d'asymétrie de la volatilité » nous utilisons dans notre étude empirique les modèles EGARCH de Nelson (1991), TARCH de Zakoian (1994) et APARCH de Ding et al. (1993).

- Modèle *EGARCH (1,1,1)*

Le modèle *EGARCH (1,1,1)* est caractérisé par une spécification asymétrique des perturbations. L'équation de la variance conditionnelle d'un processus *EGARCH (1,1,1)* s'écrit

$$\ln(h_t) = \alpha_0 + \alpha_1[|z_{t-1}| - E(|z_{t-1}|)] + \gamma z_{t-1} + \beta\ln(h_{t-1})$$

Avec $z_{t-1} = \frac{\varepsilon_{t-1}}{\sqrt{h_{t-1}}}$et le coefficient 1 mesure l'effet d'amplitude du terme d'erreur passé. Le coefficient capte l'effet du signe d'erreur. La présence de l'effet de levier est testée par l'hypothèse $\gamma<0$. reflète l'effet du retard de la variance conditionnelle d'un jour.

- Modèle *APARCH (1,1,1)*

Ding, Engle et Granger (1993) ont introduit le modèle APARCH (Asymmetric Power ARCH Model)

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pour modéliser l'asymétrie de la volatilité. Dans le cas d'un processus APARCH (1,1,1) on a:

$$\sigma_t^{\delta} = \alpha_0 + \alpha_1(|\varepsilon_{t-1}| - \gamma_1\varepsilon_{t-1})^{\delta} + \beta_1\sigma_{t-1}^{\delta}$$

Où$\alpha_0, \alpha_1, \gamma_1, \beta_1$ *et* δ sont des paramètres à estimer, t est l'écart-type conditionnel de t, capte la présence de l'effet de levier et joue le rôle de la transformation Box-Cox deσ_t.

- Modèle *FIGARCH (1,d,1)*

Les modèles de volatilité GARCH présentés ci-dessus sont des processus à mémoire courte qui ne prend pas en considération la dépendance à long terme, connu sous le nom de la propriété de la mémoire longue, dans le comportement de la variance conditionnelle.

Le modèle FIGARCH(1,*d*,1) a été développé pour détecter la présence de mémoire courte et de mémoire longue dans le comportement de la volatilité des marchés boursiers. Le comportement à court terme est pris en compte par le modèle GARCH alors que le comportement à long terme est capturé par le paramètre d'intégration fractionnaire (*d*). Le modèle FIGARCH (1,*d*,1) définit la variance conditionnelle comme suit:

$$h_t = \alpha_0[1-\beta(L)]^{-1} + \{1 - [1-\beta(L)]^{-1}\Phi(L)(1-L)^d\}\varepsilon_t^2$$

Avec *L* dénote l'opérateur de retard. 0, Φ et *d* sont les paramètres à estimer. La dynamique long terme des chocs de volatilité est prise en compte à travers le paramètre d'intégration fractionnaire (*d*).

Dans le processus FIGARCH (1,*d*,1), Baillie, Bollerslev et Mikkelsen (1996) note que la présence des chocs durables sur la variance conditionnelle qui diminuent très lentement à un taux hyperbolique sont observés lorsque $0 \leq d < 1$.

- Modèle *FIEGARCH (1,d,1)*

Bollerslev et Mikkelsen (1996) ont introduit *FIEGARCH (p, d, q)* afin de rendre compte à la fois le processus à mémoire longue et de l'asymétrie des chocs des rentabilités sur la dynamique de la volatilité conditionnelle. Le modèle FIEGARCH spécifie la variance conditionnelle de la manière suivante:

$$\ln(h_t) = \omega + \Phi(L)^{-1}(1-L)^d[1-\varphi(L)]\left[\gamma z_{t-1} + \alpha[|z_{t-1}| - E(|z_{t-1}|)]\right]$$

Où *L* dénote l'opérateur de retard. , Φ, *d, et* sont des paramètres à estimer. présente l'effet d'amplitude du terme d'erreur passé, capte la présence de l'effet de levier et *d* le paramètre d'intégration fractionnaire.

IV. Données & Résultats Empiriques

Pour réaliser notre étude empirique, nous disposons un historique des cours de clôture de 3703 observations des deux principaux indices boursiers marocains: l'indice MADEX flottant (MADEX) et l'indice MASI flottant (MASI). L'ensemble des données sont exprimées en valeurs journalières. La période de l'étude s'étend du 05 janvier 2005 au 29 novembre 2019. Ces cours étaient fournis par la base de données de Bloomberg.

L'analyse statistique des rentabilités des indices boursiers MASI flottant et MADEX flottant, tableau (1), montre que le coefficient du kurtosis est très élevé (kurtosis>3) ce qui signifie que les distributions empiriques présentent des queues plus épaisses que celles de la loi normale, elles sont dites leptokurtique ce qui implique que dans la distribution empirique il y a une forte probabilité d'avoir des événements extrêmes que la distribution gaussienne. Les valeurs empiriques du skewness, mesurant le degré d'asymétrie de la distribution empirique, sont différentes de zéro, ce qui illustre la présence de l'asymétrie dans la distribution des rentabilités des indices boursiers MASI flottant et MADEX flottant. L'asymétrie est négative indiquant que la distribution des rentabilités des indices possède plus de rentabilités inférieures à leur moyenne. Contrairement à ce que suppose la théorie financière, ces résultats suggèrent que les distributions empiriques des rentabilités du marché boursier marocain ne suivent pas une loi normale. Ceci est confirmé par le test de Jarque-Bera (test de normalité) qui montre que les séries des rentabilités ne suivent pas une loi normale, ce qui est une spécificité générale des séries financières.

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Tableau (1): Statistiques Des Rentabilités Journalières Des Indices

	Indice Masi	Indice Madex
Moyenne	0,000288	0,000300
Volatilité	0,007799	0,008150
Minimum	-0,088183	-0,090384
Maximum	0,054486	0,055970
Kurtosis	13,7611	13,2799
Skewness	-0,6480	-0,5926
Jarque-Bera	20671,81	18841,87

L'étude de la fonction d'autocorrélation des rentabilités des indices boursiers MASI flottant et MADEX flottant, figure (1), montre des autocorrélations trop faibles, ce qui veut dire que les séries de rentabilités sont stationnaires en moyenne. En revanche, l'étude d'autocorrélation des rentabilités au carré montre des valeurs très élevées d'autocorrélation qui décroissent très lentement ce qui signifie que les rentabilités au carré sont fortement aurtocorrélées. Ces résultats montrent la présence d'une variance conditionnelle qui varie en fonction du temps dans les séries des rentabilités des indices boursiers étudiés.

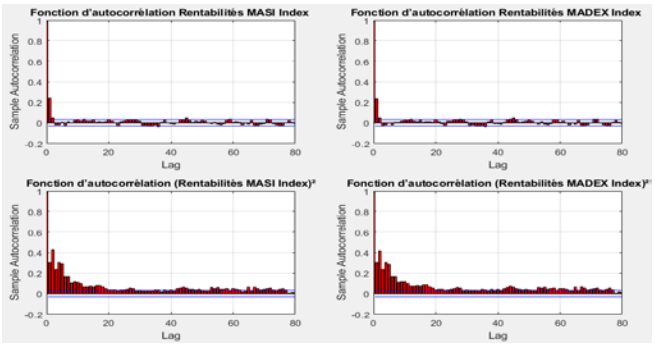


Figure (1): Fonction D'autocorrélation Des Séries Des Rentabilités

Pour tester l'hypothèse d'hétéroscédasticité c'est-à-dire le fait que la volatilité ne soit pas constante au cours du temps, nous effectuons le test Lagrange Multiplicateur (LM) d'effet ARCH proposé par Engle (1982) afin de valider l'utilisation des modèles GARCH dans notre étude empirique. Les résultats du test LM, tableau (2), montrent que la probabilité associée à la statistique de LM test (P-Value) est nulle au seuil de 5% pour les différentes valeurs: on rejette donc l'hypothèse nulle d'homoscédasticité en faveur de l'alternative d'hétéroscédasticité ce qui signifie qu'il existe un effet ARCH dans la réalité l'évolution des rentabilités des indices boursiers MASI flottant et MADEX flottant. Ces résultats justifient la nécessité d'utiliser des modèles d'hétéroscédasticité conditionnelle.

Tableau (2): Résultats Du Test Effet ARCH

LM Test		
	Stat	P-Value
Indice Masi	1066,99	0,0000
Indice Madex	1028,59	0,0000

Pour tester l'hypothèse d'absence d'effet d'asymétrie dans la variance conditionnelle, nous effectuons le test de Engle & Ng (1993). Le phénomène d'effet d'asymétrie s'explique par l'existence d'une corrélation négative entre la volatilité et les variations du cours de l'actif sous-jacent. Les principaux résultats du test sont représentés dans le tableau (3). Les résultats obtenus montrent des effets asymétriques de la volatilité dans le comportement des marchés boursiers marocain. Ce résultat indique que la volatilité des indices MADEX flottant et MASI flottant a réagi aux chocs négatifs et aux chocs positifs ce qui signifie que les chocs positifs et les chocs négatifs ont le même impact sur ces marchés, résultats en contradictoire avec la majorité des travaux de recherche réalisés dans ce domaine qui indique que la volatilité augmente lorsque

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les cours boursiers des marchés actions baissent. En effet, les travaux de recherche réaliser sur la plupart des marchés boursiers internationaux ont montré que lorsque les mauvaises nouvelles frappent les marchés financiers, les cours boursiers des marchés actions s'effondrent et par conséquent le risque des actions augmente en raison de mécanisme d'effet asymétrique, ce qui se traduit par une volatilité élevée sauf que ce constat est n'est pas observé sur le marché boursier marocain où la volatilité augmente de même ampleur après un choc négatif et après un choc positif. En effet, les résultats du *negative size bias test* et du *positive size bias test* sont significatifs en termes du test de Student ce qui signifie que l'hypothèse d'asymétrie négative et positive est acceptée pour les des indices boursiers MADEX et MASI.

Tableau (3): Résultats Du Test Effet Asymétrique

Test D'effet Asymétrie		
	Indice Masi	Indice Madex
Sign Bias Test (b1) (t-stat)	2,0013	2,0668
Negative Size Bias Test (b2) (t-stat)	-5,5211	-5,5672
Positive Size Bias Test (b3) (t-stat)	4,6162	4,7216
Joint Test (F-stat)	158,99	157,11

Note: le tableau montre les valeurs des T-Stat du test de Student et F-Stat du test de Fisher

L'ensemble des résultats obtenus montre que des phénomènes tels que le caractère leptokurtique, l'excès de kurtosis, l'autocorrélation des rentabilités au carré, l'asymétrie de la volatilité et la présence d'hétéroscédasticité dans la distribution empirique des rentabilités sont omniprésents dans la réalité du marché boursier marocain par conséquent, ces résultats justifient la nécessité d'utiliser des modèles de volatilité conditionnelle de type GARCH capables de prendre en compte les faits stylisés présentés ci-dessus.

Les tableaux (4) et (5) présentent les résultats d'estimation des paramètres des modèles GARCH(1,1), EGARCH(1,1,1), APARCH(1,1,1), FIGARCH (1,d,1) et FIEGARCH (1,d,1). L'ensemble des calculs ont été effectués par le logiciel Matlab.

Tableau (4): Résultats D'estimation Des Paramètres Des Modèles Des Volatilités GARCH

	GARCH (1,1)			EGARCH (1,1,1)				APARCH (1,1,1)				
	α_0	α_1	β_1	α_0	α_1	γ	β_1	α_0	α_1	γ	β_1	δ
Masi	0.000	0.207	0.722	-0.985	0.3543	-0.003	0.9280	0.000	0.207	-0.019	0.740	1.772
	(2.78)	(4.23)	(10.17)	(-16.2)	(23.75)	(-0.46)	(163.5)	(0.17)	(5.70)	(0.162)	(25.70)	(-1.59)
Madex	0.000	0.205	0.729	-0.872	0.3329	-0.002	0.9370	0.000	0.203	-0.016	0.746	1.793
	(2.35)	(3.66)	(8.993)	(-16.9)	(24.04)	(-0.35)	(193.3)	(1.197)	(9.816)	(0.32)	(24.82)	(10.30)

Note: Le Tableau Montre Les Valeurs Des Paramètres Estimés Et Les Résultats Du Test De Student

Les résultats obtenus montrent une capacité des modèles de volatilité à capturer non seulement les moments d'ordre un et deux, mais aussi le skewness et le kurtosis. D'après les résultats du tableau (4), les trios premiers coefficients de la variance conditionnelle: et sont statistiquement significatifs au regard du test de Student. La stabilité des estimations de la volatilité est bien obtenue. En effet, à l'exception des coefficients du modèle EGARCH qui sont surestimés, la persistance de la volatilité, exprimée par la somme de 1+1 pour les modèles GARCH et APARCH, est toujours assez proche de 1 ce qui signifie que le caractère leptokurtique des distributions empiriques des rentabilités et la volatilité clustering sont des phénomènes omniprésents dans la réalité du marché boursier marocain. Le phénomène d'asymétrie de la volatilité qui tient compte l'effet des

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chocs négatifs des rentabilités sur la volatilité du marché boursier marocain est traduit par le coefficient dans les modèles EGARCH et APARCH. Les résultats obtenus montrent une grande capacité du modèle GARCH à capturer le phénomène de volatility clustering et le caractère leptokurtique. En revanche, l'utilisation des modèles GARCH asymétriques semble n'est pas justifiée. Dans les modèles EGARCH et APARCH le coefficient γ n'est pas statistiquement significatif au regard du test de Student ce qui signifie que le phénomène d'asymétrie négative de la volatilité n'est pas capturé par les modèles EGARCH et APARCH.

Tableau (4): Résultats D'estimation Des Paramètres Des Modèles Figarch Et Fiegarch

	FIGARCH (1,d,1)				FIEGARCH (1,d,1)					
							Φ	d		
Masi	0.0000 (6.2592)	0.0739 (0.7077)	0.3071 (9.109)	0.0737 (0.563)	0.0000 (0.000)	-0.997 (-1447)	0.999 (1025)	0.3651 (5.181)	0.509 (22.68)	-0.01102 (-1.007)
Madex	0.0000 (6.2713)	0.0727 (3.004)	0.3129 (7.2691)	0.0759 (4.1706)	0.0000 (0.000)	-0.997 (-1342)	0.9993 (1031)	0.3648 (5.161)	0.5097 (22.52)	-0.0121 (-1.1038)

Note: Le Tableau Montre Les Valeurs Des Paramètres Estimés Et Les Résultats Du Test De Student

Le tableau (5) présente les résultats d'estimation des modèles FIGARCH et FIEGARCH qui vise à détecter le comportement de mémoire longue dans la variance conditionnelle des indices boursiers MASI et MADEX. Le paramètre d'intégration fractionnaire, *d*, implique la présence de la propriété de mémoire longue dans la dynamique de volatilité conditionnelle du marché boursier marocain. Les résultats obtenus montrent que le coefficient de mémoire longue, *d*, se trouve dans une fourchette comprise entre $0<d<1$ ce qui est un indicateur de la présence des chocs durables sur la variance conditionnelle du marché boursier marocain. Le paramètre d'intégration fractionnaire est statistiquement significatif au regard du test de Student pour les modèles FIGARCH et FIEGARCH. Ces résultats montrent clairement la présence d'une mémoire longue dans le processus générateur de la volatilité des indices boursiers MASI et MADEX du marché boursier marocain. Une autre caractéristique intéressante du modèle FIEGARCH est sa capacité de capturer à la fois le comportement de mémoire longue et le phénomène d'asymétrie de la volatilité. Le coefficient d'asymétrie de volatilité dans FIEGARCH est négatif, mais n'est pas atistiquement significatif en termes du test de Student. Les résultats sont cohérents avec ceux obtenus par les modèles EGARCH et APARCH dans la première partie de notre étude.

L'évolution du niveau des volatilités estimées par les modèles GARCH, EGARCH, APARCH, FIGARCH et FIEGARCH est présentée dans la figure (2). Les résultats obtenus montrent que les effets de la crise financière de 2007-2008 et 2010-2011 sont bien présents dans la dynamique des différents modèles de volatilité. Les modèles GARCH estimés montrent une grande capacité à capturer les faits stylisés observés dans le comportement des marchés boursiers marocain. En revanche, les modèles FIGARCH et FIEGARCH montrent une capacité à mieux capturer les faits stylisés.

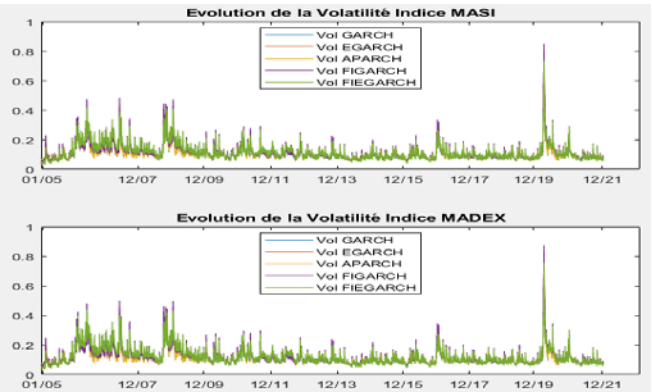


Figure (2): Évolution Des Volatilités GARCH

Pour évaluer la qualité prédictive des modèles utilisés en matière de prévision de la volatilité conditionnelle, plusieurs critères sont utilisés tels que la valeur du log-vraisemblance à l'optimum (*LL*) et les critères d'information d'Akaiki (1969) (*AIC*) et de Schwarz (1978) (*SIC*). Le tableau (6) présente l'ensemble des résultats obtenus. Il s'agit de retenir le modèle qui maximise la valeur *LL* et qui minimise les critères *AIC* et *SIC*.

La comparaison des différents modèles de volatilité estimés montre que les valeurs du log-vraisemblance à l'optimum (*LL*) et les critères d'information d'Akaiki (*AIC*) et de Schwarz (*SIC*) sont proches les uns des autres dans les différents modèles. Cependant, la valeur du log-vraisemblance du modèle

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FIGARCH est supérieure à celles des autres modèles et les valeurs des critères d'information d'Akaiki et de Schwarz du modèle FIGARCH sont minimes, suivies ensuite par le modèle GARCH. Par conséquent, la comparaison des modèles présentés ci-dessus, nous conduit à choisir les modèles FIGARCH (1,*d*,1) et FIEGARCH (1,*d*,1) pour la modélisation de la dynamique de la volatilité des rentabilités des indices MADEX et MASI ce qui est indicatif de l'existence d'effet de mémoire longue dans le comportement de la volatilité du marché boursier marocain. Le modèle GARCH fournit des résultats satisfaisants tandis que les modèles EGARCH et APARCH fournissent des prévisions de volatilité plus faibles.

Tableau (6): Critères De Choix Des Modèles De Volatilité

	Masi			Madex		
	LL	AIC	SIC	LL	AIC	SIC
Garch (1,1)	15290,23	-3,6193	-3,6148	15109,48	-3,5765	-3,5719
Egarch (1,1,1)	15284,78	-3,6175	-3,6115	15102,35	-3,5743	-3,5683
Aparch (1,1,1)	15291,71	-3,6187	-3,6112	15110	-3,5758	-3,5683
Figarch (1,d,1)	15342,84*	-3,6313*	-3,6252*	15163,87*	-3,5889*	-3,5829*
Fiegarch (1,d,1)	15311,6*	-3,6229*	-3,6139*	15132,22*	-3,5804*	-3,5714*

V. Conclusion

La volatilité est un paramètre clé dans la théorie de la finance moderne. Elle constitue l'indicateur « vital » sur lequel repose toute décision d'investissement financier, de gestion de portefeuilles des actifs financiers et de quantification des risques financiers. En ce sens, trouver une bonne mesure de volatilité reste l'un des domaines privilégiés de la recherche dans la finance. Dans cette perspective, nous avons cherché de modéliser la dynamique de la volatilité du marché boursier marocain. Ainsi, nous avons proposé des modèles d'estimation de la volatilité capables de reproduire certains faits stylisés observés dans la réalité des séries de rentabilités du marché boursier marocain. Plus précisément, nous avons effectué une étude empirique comparative en utilisant les modèles GARCH, EGARCH, APARCH, FIGARCH et FIEGARCH pour modéliser la volatilité des indices MASI flottant et MADEX flottant et en vue d'examiner leurs qualités prédictives.

Les résultats de l'étude empirique montrent que la volatilité du marché boursier marocain se comporte de manière différente de volatilité des marchés financiers internationaux et que les méthodes d'estimation de la volatilité utilisées dans le marché boursier marocain ne sont pas nécessairement celles appliquées dans d'autres marchés boursiers internationaux. Il est clair que le marché boursier marocain à ces propres caractéristiques au niveau du comportement de la volatilité qui doivent être prises en compte dans le processus de la décision financière. Un premier résultat important dégagé montre une présence évidente des effets asymétriques négatifs et positifs dans le comportement de la volatilité du marché boursier marocain indiquant que les chocs négatifs (« bad news») et chocs positifs (« good news») ont le même impact sur la volatilité des indices MASI et MADEX ce qui signifie que la volatilité du marché boursier marocain a réagi de même ampleur aux chocs négatifs qu'aux chocs positifs. Ce résultat est incompatible avec la majorité des travaux de recherche réalisés dans ce domaine qui montre que la volatilité des marchés actions augmente plus après un choc négatif qu'après un choc positif. Ce constat implique que les investisseurs en bourse de Casablanca réagissent de la même manière aux mauvaises nouvelles et aux bonnes nouvelles en provoquant une augmentation de la volatilité. Cela peut être expliqué par le problème de liquidité, de la faible profondeur du marché casablancais par rapport aux marchés boursiers des pays développés ainsi qu'au degré plus élevé d'insider trading qui rend le marché boursier marocain plus volatil. Il y a également de signes de l'inefficience au sens faible en termes d'information du marché boursier marocain, à cause d'une information de mauvaise qualité, de coûts de transaction élevés et d'une faible concurrence.

Un deuxième résultat important trouvé montre la présence de la dynamique long terme dans le comportement de la volatilité du marché boursier marocain. En effet, les résultats trouvés montrent que les modèles FIGARCH et FIEGARCH surperforment nettement les modèles GARCH symétriques et GARCH asymétriques.

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The Practice of Reflecting Leasing Transactions in Financial Statements

By Aliyev Adalat Zeynal
Azerbaijan State University of Economics

Summary- The subject of the article is the analysis of the practice of reflecting leasing operations in financial statements. The object of the study is the existing system in Azerbaijan of accounting for financial lease agreements between the parties to the lease agreement on accounting accounts. At the same time, serious attention is paid to the activities of Azerbaijani leasing organizations engaged in financial leasing. The theoretical and practical basis of the study was the fundamental concepts and approaches presented in the works of both domestic and foreign authors, scientists in the field of legal and accounting regulation of transactions under lease agreements, legislative and regulatory acts of the Republic of Azerbaijan. Statistical and analytical materials, periodicals, monographs, dissertations, Internet publications of official sites were used as a research database. The practical significance of the study lies in the development of practical provisions and recommendations for accounting and reporting by the lessee of operations under financial lease agreements, aimed at solving the problems of ensuring the reliability of financial statements and adapting them to international accounting standards.

Keywords: leasing, international financial reporting standards, reporting change, accounting operations.

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The Practice of Reflecting Leasing Transactions in Financial Statements

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Keywords: leasing, international financial reporting standards, reporting change, accounting operations.

I. Introduction

In last few decades we witnessed major changes in the international capital markets, the financial products that major financial institutions and banks provided, have been multiplied in order to attract investors and satisfy the loanees. The major financial institutions have expanded their activities offering new services and products. This was the main reason that the worldwide economic crisis begun. Leasing was one of those new products that banks offered in order to help businesses to renew or buy equipment such as real estate, machinery, professional vehicles etc. Leasing was a product that market needed in order to solve a major problem, this problem was that the business, without the use of leasing should cover a major part of the total cost of the investment. Many banks have successfully responded to the new conditions of the market and started lending in order to expand their activities. Consequently banking sector has a major contribution to a country's development. Via banking institutions businesses cover a wide range of their needs. Financing programs that are issued by banks are used to cover the needs of various enterprises in order to proceed with their investment activity or even support their productive activities. Banks adjust their long term lending according to the need of the companies that invest in the acquirement or the renewal of their fixed equipment. Concerning the needs that arise from the standard production activity, banks also provide the appropriate funding adjusted to each company. The question that arises at this point is how can a business decide which type of financing is suitable for its needs?[1] Leasing or loan?[2] And if the choice is lease, what type of lease would serves the best in the interest of the business? Through accounting examples there will be a comparison between leasing and loan in the financial statements of companies. The past few years, banking system has suffered the consequences that have derived from the economic crisis that occurs in the country. The alternative ways of funding that are considered to be more efficient than the traditional methods and are provided by banking sector in Greece, have also been affected.

In this uncertain environment, is there any way for banks to predict their needs in the leasing market in order for them to be better prepared?

The most widespread of the alternative methods of financing provided by banks is leasing, the concept of which will be analyzed throughout this dissertation as well as the utility that it provides to a company as alternative way of financing. We will also attempt to predict the future penetration of leasing in the various fields of use, using linear regressions, something that could be of great interest for banks' executives and administration in order to redesign the structure of institution and individual departments in order to be

Author: Azerbaijan State University of Economics (UNRC). Economics major. e-mail: ismayilova2002@internet.ru

[1] An Yan (2006), Leasing and Debt Financing: Substitutes or Complements? Journal of Financial an Quantitative Analysis, vol. 41, No 3, September 2006

[2] John R. Ezzell, Premal P. Vora (2001), Leasing versus purchasing: direct evidence on a corporations motivations for leasing and consequences of leasing, The Quarterly Review of Economics and Finance, Volume 41, issue 1, pg. 33-47

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consistent with the commands of the economic conditions.

a) Introduction in Leasing

The only common definition existing for lease, on a European level, is the one provided by the international accounting standard for leases IAS 17, where lease is defined as "an agreement whereby the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time" [3] . Leasing is an international term that is used to describe the transfer of the right to use a fixed asset from the lessor to the lessee for a certain payment for a specific number of years in the form of lease. Lessor is the owner of an asset that is leased under an agreement, while the lessee is the person who rents the asset from the lessor and is legally bounded towards the lessor to uphold specific obligations that are defined in the leasing agreement and by the law. In general, leasing is a form of medium to long term funding of businesses and professionals in order for them to acquire fixed assets such as building and machinery that are of great significance to the continuing of their professional activities. The institution of leasing has been introduced in the Greek market in two stages. During the first stage, through the law 1665/86 was introduced the portable property leasing, which covers the need to lease any mobile asset that can be used for professional usage. During the second stage through the laws 2367/95 and 2682/99 the institution of leasing was expanded to the lease of real estate that is also used for professional usage.

b) Types of Leasing

The IAS 17 effectively accounts for the economic substance of the two major types of leasing that are:

Economics lease that transfers substantially all the risks and rewards incidental to ownership of an asset with title that may or may not be transferred eventually. Operationallease that is a lease other than finance lease. The first indication that proves weather a lease is finance or operating is to assess the risk and rewards of ownership have been transferred to the lessee.

c) Commercial Leasing

In a commercial lease, the lessor capitalizes the total amount of quality or attributes and then the lessee, who needs the equipment or machinery, uses it in exchange for fixed payments. This particular type of lease is also known as a full-payment agreement, in which there is a complete transfer of all risks and benefits associated with the asset from the lessor to the lessee. Ownership of the asset passes to the lessee at the end of its life. Typically, the term of the contract extends over most of the economic life of the asset. In this type of lease, the lessor plays the role of financier only. Large business equipment is a public example of a finance lease. When the contract period ends, it is often possible to continue the lease at a reduced rate or even to purchase the leased asset at a reduced price. Under IAS 17, a lease can be considered commercial if one or more of the following conditions exist.

- Ownership passes to the lessee at the end of the lease term, as it does in lease-purchase transactions.
- The lessee has an option to purchase the asset at a bargain price, such that the option is almost certain to be exercised.
- The lease term, which may even include a secondary term, is for most of the life of the asset.
- As of the lease commencement date, the present value of the minimum lease payments (MLP), including any down payment, is at least substantially all of the fair value of the asset (at least 90%).
- The leased asset is specific in nature, such that only a resident can use it without the need for significant modifications.
- The lessee pays compensation to the lessor if the lease is terminated.
- Gains or losses from fluctuations in the fair value of the asset are borne by the lessee.
- The lease is not subject to cancellation or is cancelled only with a penalty to the lessee.
- The lessee has the option to keep the lease for a secondary period at a rent that is substantially less than the market rent, such as a nominal rent.

If at any time the terms of the lease change, resulting in a different classification at the start of the lease, the lease is cancelled and the revised lease is treated as a new lease.

d) Operational Leasing

In an operational lease, the term is much shorter than the full economic life of the asset. The lessee does not bear the full burden of all the risks associated with the investment and is not responsible for financing its full value, but neither does the lessee acquire all the benefits derived from the asset. The leaseholder bears ownership along with all of the risks and benefits and depends on many different lessees to recoup the value of the investment. In this type of lease, the lessor provides not only financing, but also any other additional services that will be necessitated by the use of the asset. This form of lease is commonly used by companies that need to update or replace equipment frequently, such as music systems, vehicle fleets, and aircraft fleets. Assets in operating leases usually have a resale value.

[3] ACCA (2012), "Financial Reporting (FR)", Kaplan publishing, pg. 276

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When the lessor enters into an operating lease, the lessor continues to recognize the leased asset. The leased asset is recorded on the statement of commercial position and depreciated in the normal manner. Lease income is recognized in the income statement on a straight-line basis over the lease term. If a difference arises between the amounts accrued and paid, it is adjusted as a receivable or deferred income. If the lessor is a manufacturer or dealer, a gain on sale should not be recognized at the inception of an operating lease because the risks and rewards are not transferred to the lessee, it is not treated as a sale.

A reverse lease is a form of lease agreement in which the owner of an asset sells it to another party, usually a financial institution or leasing company, and then immediately enters into a lease of the asset with the buyer for a specified term. The seller, while losing ownership of the asset, retains the right to use it for the agreed-upon term of the lease. On the other hand, the buyer has a guaranteed immediate and long-term income on the asset from the lease payments. This type of lease is usually used when the entrepreneur wants to purchase capital that has been tied up in long-term equipment. Reverse leasing is used as an alternative to loans when the value of the payments is lower than the cost of the loan or even when the company wants to show less debt on its balance sheet (off-balance sheet financing). Reverse leasing transactions are often used for commercial vehicles, commercial real estate and other types of property.

Vendor leasing, also known as asset leasing, is a type of lease based on the creation of an economic agreement between retailers who supply stationary and mobile equipment and their business customers. It requires the retailer to make a deal with a funding source, such as a leasing company, so that the seller can offer leases to customers. By offering financing, the seller makes a cash sale while obtaining financing from a commercial institution. Through leasing, the vendor fully or partially replaces the leasing company because the vendor can be responsible for signing contracts and collecting rents. Depending on the deal, the supplier may also collect the lease payments and pass them on to the financing institution, or the customer may pay the financing company directly. The financing company usually handles the customer's credit check and operational administration. The seller then presents the financing option to the customer, and if the customer accepts it, the seller receives the money from the financing company. Through the vendor, leasing companies are able to fulfill their orders and get the financing they need to do so without having to apply for a bank loan first. There is a huge variety of equipment that can be used through vendor leasing, such as trucks and cars, computers, forklifts, medical printers, and there is the option of signing or repurchasing under warranty from the vendor. Vendor leasing helps drive vendor sales and creates a stronger vendor-customer relationship. Lessee and lessor accounting depends on the classification of the lease, whether it is a finance lease or an operating lease.

In this type of lease, the lessor borrows the amount of financing needed to purchase the asset. Unlike other types of leases where there are two parties involved (lessor and lessee), a leveraged lease has another party. The third party plays the role of a lender who helps with the financing needed to purchase the asset to be leased. The lessor plays the same role as in the previous types of leases. The loan is secured by a mortgage on the asset as well as the legal transfer of the lease and payments. In addition, the lessor can guarantee repayment of the debt. In some lease terms, the lessee issues bills of exchange that are guaranteed from the lessor. This guaranty reduces the risk in which the byers of the bills of exchange (borrowers) are exposed reducing therefore the cost of borrowing.

e) Purpose of Leasing

Leasing constitutes an alternative and flexible way of financing businesses activity compared to the traditional ways of medium-long term bank loans. Therefore, leasing constitutes a mechanism that provides the business the chance to acquire, complete, renew or expand its productive equipment avoiding the usage of the company's capital. Leasing as a form of finance has advantages for the lessor, the lessee and for the national economy as well. The lessee is being financed with the total amount of the investment from the leasing company without the need of disbursement and the participation of the lessor. The procedures are quick and simple while the tax and other motives that the investor has been able to achieve through the various development laws are not jeopardized. Leasing does not require additional safeguards such as mortgages or permutations. As the time schedule of payments is concerned, it is appeared to be very flexible, something that is very important especially for the businesses, which present seasonality in cash, flows. A very important aspect for the company is the tax deduction of the total amount of the lease that is combined to the shorter duration of the contract from the useful life of the equipment. Moreover, the business is protected from the technological depreciation of the equipment while the liquidity of the lessee is increased with the use of sale and leaseback possibility. Through leasing procedure the lessee is able to obtain capital equipment without charging the credit limit that is preserved in the banks and without the use of own equity. In addition, the lessee is given the possibility of preserving his liquidity, as he does not have to use his own capital in order to acquire the asset.

According to international experience, the cost of leasing is usually slightly higher than the cost of the equivalent banking lending. Therefore, the choice

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between leasing or using bank loan should be based in analyzing each case separately, as data (cost of capital, depreciation e. c. t) differ in each case. The interest rate used differs between leasing companies and between times periods. Additionally, interest rate changes according to the conditions that exist in the market consequently having an effect on the lease payments. Therefore, the lease payment is not stable or independent from the changes in bank interest rates. As the commercial institution (lessor) is concerned, has to face less danger than the issue of a loan, given the fact that the lessor preserves the ownership of the fixed asset as opposed to the lessee, who in case of danger has to deal with the cost and delay in order to acquire the possession of the assets that has financed. Therefore, leasing company obtains insurance of tangible nature due to the right of high ownership, which provides a high mean of protection and in the same time a significant advantage over the rest of the collateral types. Leasing as a new mean of finance has expanded the banking clientele and is offering new chances of business activities.

f) Leasing Development and Influence in the Economy of Azerbaijan

In the Azerbaijan market, the asset finance and equipment leasing are controlled by the banking sector, since banks are in charge of leasing companies and there are no captive lessors. Every bank that has a leasing department is a member of the Association of Azerbaijan Leasing Companies (AGLC), which in turn is a member of Leaseurope. Over the past few years, Azerbaijan's economy has been severely damaged by the global economic crisis, a leading banking system under pressure and major restructuring that will inevitably lead to fewer leasing companies. Until 2002, leasing was mainly used to finance movables all types of equipment except naval vessels but including aircraft. In 2002, the legislation was changed to include real estate, from then until 2007, Azerbaijan's leasing market experienced steady growth, but that was when the first signs appeared, an impending crisis appeared.

During 2007 and 2011, new business declined each year, but during 2009-2010, leasing companies were still supported by their parent banks. Commercial leasing in Azerbaijan was not seriously affected in 2008, when the economic crisis in the United States and Europe was evident, and it worsened in 2009 and 2010 appeared, but in 2011 there was a serious decrease in the commercial leasing market. The ongoing uncertainty and instability in the Azerbaijani economy has a negative impact on the investment initiatives of both lessors and lessees. These conditions are best expected to change after the recapitalization of the banks, which will provide liquidity in their leasing subsidiaries and in turn drain it. to the market that helps the economy progress.

In Azerbaijan leasing is particularly preferred in financing oil, liquid gas and real estate, since it presents the highest amounts since 2005 that are followed by a very steep decrease from 2007 until 2011. Machinery, having much less volume than oil, liquid gas and real estate, comes in second place, also having decreasing trend from 2006 until 2011, with a small increase in 2008. The percentages of equipment and other types of leasing are not very widespread in Azerbaijan, since they are presenting the lowest figures since 2005 with a small increase in 2008 that is followed by a decrease until 2011.

II. Methodology

As contemplating on other papers mentioned above, we believe that there is a linear relation between some factors such as profitability, growth rate, profit volatility etc., and the total leasing activity. Our inspiration is that, although Greek economy is struggling in an unstable and uncertain economic environment, we will be able to provide banking sector with a tool that predicts the future needs for leasing in the different fields of use, in order for them to be prepared for the market needs. Linear models are based on the relation $y=ax + b$, where y is the predicted values and x are the independent variables, b is the steady term which shows the starting point of the graphical presentation and is directly connected to the magnitude of each model.

III. Conclusions

In Azerbaijan, the entrance of leasing activity took place later on than the rest of the European community, but the growth rates for the years 2001 to 2008 were even higher than the rates in Germany and Great Britain. This can be explained by the huge expand of lease in the oil, liquid gas and real estate sector and the reliefs in transfer taxes that were provided. Azerbaijan has been suffering for almost three years now, from an economic crisis that affects every prospect of economic activity. As a result, leasing activity has also been affected. We believe that the decrease of the leasing percentages in the market reflects equally the total shrunk of Azerbaijan economy. In the third chapter of our thesis, we try to provide the information necessary for an entrepreneur in order for him to decide if leasing is the appropriate way of financing of his business. In the fourth chapter of our thesis, we examine with the data available from Bank of Azerbaijan and from Association of Azerbaijan Leasing Companies, and with the tools of linear regression, to see if there is any connection between the total economic activity of the country for each year and the amount of money concerning leasing sector in the country. Linear regression is a simple model to predict future behavior

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of the market. The preciseness and value of the model itself has a direct connection with the number of independent variables of the model and the quality characteristics of them. Our single independent variable, which was the previous years, represents the total economic activity in leasing sector and we demonstrate that there is good fit using the data for the years 2007 to 2011, having linear relation with a decreasing trend. The results we present are decreased as expected and comply with the total economic conditions in Azerbaijan. There are also other tools in order to examine and work with the available data, such as Markov chains. Another very useful tool commonly used in this area from leasing companies in order to estimate the risk of loses for an investment using leasing is the simplex method with tables. These two methods need data with various quality data. Adding more variables in the model and refining it for further accuracy could be a future work.

We could say that results that derive from regressions as the one we have used can help banks and commercial institutions to better reorganize and structure their leasing departments in order to keep up with the demands of the market. We strongly believe that for the year 2012 the leasing market will continue to shrink down to minimum level, as companies will have neither the sufficient funds to continue the leasing nor the need to expand their activities. This will affect the market with a decrease of the prices in equipment (including real estate) which will trigger actions from investors to lease again equipment in new lower prices. Consequently, this state of the market will set the minimum level of leasing activity for every sector. In some cases, as we saw in machinery leasing, this can be predicted. Finally, we believe that these conditions could be reversed by giving motivation in entrepreneurs of other sectors of the Azerbaijan economy third party financing, technology performance financing and energy service companies, the last is expected to have great growth in the next few years.

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Realpolitik or a New Space Race?– Macroanalysis on Sino-America Geopolitics

By Yang I. Pachankis

Abstract- The research analyzes into PRC's strategic intensions behind the militarization of the South China Sea. It is hypothesized that the geopolitical and realpolitik statures in the South China Sea is signatory to a new Space Race. The analysis obtained positive results to the hypothesis, and type I and type II errors are discussed. The research holds the possible type I error as inevitable, and its implications relevant to the mapping of problem solutions. The supply advantage in the natural gas hydrate market is cognized to be the strategic leverage in the totalitarian and dictatorial power frameworks in the global institutions.

Keywords: *methane hydrate; propulsion fuel; south china sea; sustainable development; trade war.*

GJMBR-C Classification: *JEL Codes: F13, F18, F64, K32, N75, O13, P28, P48*



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Realpolitik or a New Space Race?— Macroanalysis on Sino-America Geopolitics

Yang I. Pachankis

Abstract- The research analyzes into PRC's strategic intensions behind the militarization of the South China Sea. It is hypothesized that the geopolitical and realpolitik statures in the South China Sea is signatory to a new Space Race. The analysis obtained positive results to the hypothesis, and type I and type II errors are discussed. The research holds the possible type I error as inevitable, and its implications relevant to the mapping of problem solutions. The supply advantage in the natural gas hydrate market is cognized to be the strategic leverage in the totalitarian and dictatorial power frameworks in the global institutions.

Keywords: methane hydrate; propulsion fuel; south china sea; sustainable development; trade war.

I. Introduction

Strategic behaviors are complex phenomena. In the multilateral framework, strategic intentions can be hidden deep in the neomercantilist market incrementalism [1]. Even though strategic intentions can reveal with key strategic actions, its implications can often be neglected due to reactive preparedness and sunken costs.

Global structural readjustment further complicates strategic behaviors with mass psychology and decision mechanisms. The short-term structural change was signified by the 2018 Sino-America Trade War, and Brexit two years prior further signified the depth of the global multi-player strategic readjustments. Moreover, SARS-CoV-2 broke the global pace by the economic constraints with the humanitarian disasters from the bottom up.

Hindsight analysis on the strategic point can be the most complicated process and least easy to achieve due to strategic defense [2]. With a paradigm-shift from the author's human rights and humanitarian researches, relative advantage contributed by field research experience and intercultural comprehensions informed the research design. The research seeks to answer the question on the global structural change's nature being on geopolitics only, or constitute a new Space Race.

The research is purposed to obtain some strategic clarity in U.S.-China relationship with the energy sector's supply chain interlinkage in military and civil economy. The pilot research obtained from the World Bank data in 2018 on the macro money indicators for U.S.-China comparative studies. Fig. 1 presents the preliminary results that informed the objective of the research.

A mixed method of quantitative economics and qualitative strategic analysis have been adopted. With the differences in decision mechanisms between the U. S. and PRC, human rights and humanitarian perspectives have been strictly adhered to during the Trade War, with the researcher's diagnostic involvement in the cyber warfare [3, 4].

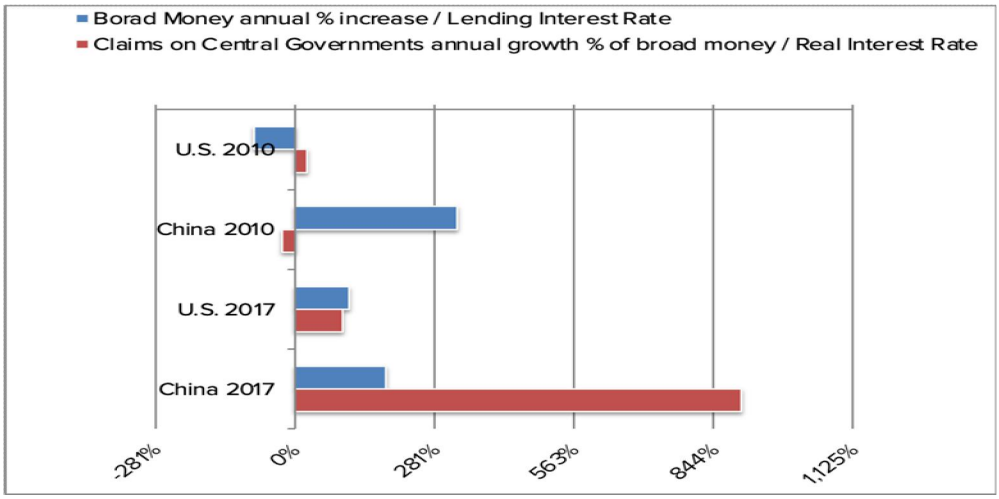


Fig. 1: Broad Money and Central Banking Comparison between U. S. and China with 2010 and 2017 Levels.

Author: e-mail: ypach@yangpachankis.us

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After the field researches in the U.S., the methodology shifted from anthropological and sociological disciplines to intentional analysis from structural behaviors. The methodology adopted is a counter-measurement on the torture environment with threats structurally conducted from the top down [5-7]. Information gathering has been used to collect empirical evidence. In another sense, the information and cyber sphere have been used as a field research method to supplement the traditional sociological and anthropological methods.

The research focuses on the structural consequences from the militarization of the South China Sea [8]. The geopolitical coverage of the South China Sea intersects with the third island chain, linking the western Pacific, Into-Pacific, and the South Pacific, apart from PRC's "reunification" discourse on Taiwan and coercions on Hong Kong and Macau (SAR) [9]. The scope of the research focuses on the political economic consequences from PRC's strategic behaviors, and hypothesizes that PRC's strategic ambitions are on outer space from the globalized economic and supply chains.

Due to the covert strategy effects and globalized economy, military and intelligence operations are intertwined with economic activities [10]. The differentiations of time between military & intelligence actions and economic & financial behaviors have been the limitation of the research design. Furthermore, quantitative data in strategic reserve and distribution are lacking in the research for more precise analysis and evaluation of the strategic situations and severity.

Clarifying the strategic intentions in the responsive phase of strategic transitions and global readjustments from the hindsight perspective better informs strategic [dis] engagement and long-term preparedness. The research not only takes the strategic judgments into consideration, but also the global sustainable development goals so that humanitarian perspectives can be accounted for in the strategic counter-actions. The significance and novelty of the work lie with the industrial structures and industry-academics relationships that need to be [re] adjusted in the power political global structures.

The methods will first take an overview of the post-pandemic global economy with samples from the United Nations permanent five member countries and World Bank data [11]. Afterwards, analyses on the industry and scientific community are provided in proving that the geopolitical behaviors are not realpolitik in nature, but signify a new Space Race. The results suggest PRC's strategic behaviors not only harm the Chinese population & natural environment, but are also unscientific in its paradigms of outer space development. Russia's suspension of the New START treaty signifies Russia's potential support in PRC's regional dominance from the "Belt Road" [12]. The industrial analysis with technical details have evidenced that Russia's role in the South China Sea has been associated with outer space [13].

II. Materials and Methods

The economic analysis data have been obtained from the World Bank's World Development Indicators [11]. The data have been updated to 2021, and some data have been discontinued since around 2017. For clarity of the analysis with major statistical gaps and upheavals since 2018, standard deviation has been plotted with σ_1 between 2010 and 2017, and σ_2 between 2018 and 2021. Confidence intervals (CI) take $p = 0.01$ in the two phase spans, and are integrated into the CI ($p = 0.01$) of the two spans. Military correlates of spending are separated from the civil economy by the formula:

$$M = \textit{adjusted net national income per capita}: \frac{\textit{military expenditure}}{\textit{GDP}}.$$

Fig. 2 gives an overview of the global economic stability and upheavals between 2018 and 2020 with $PE = \frac{GDP}{\textit{adjusted savings: energy depletion}}$ plotted against adjusted net national income per capita (annual % growth) (data in 2021 incomplete for all the countries). It is seen that even though France has been the most energy efficient in economic growth, there is an inverse trend of energy efficiency in economic growth to adjusted net national income per capita, especially after the pandemic. The trend is inverted between China and Russia, indicating to the bilateral source of sustainable development disruptions in economic equality. The relative stability of China against Russia in the negative growth trend further suggests the disruptive source originates from China. Possible bias exists with the contribution of effects from broad money seen in Fig. 1, but does not affect the negative factor between energy efficiency and adjusted net national income per capita. From an industrial perspective, the energy sector is seen as being in a steady state despite of the contribution of geopolitical conflicts, and the possibilities that the above phenomenon is contributed by maintenance costs in the energy sector are low.

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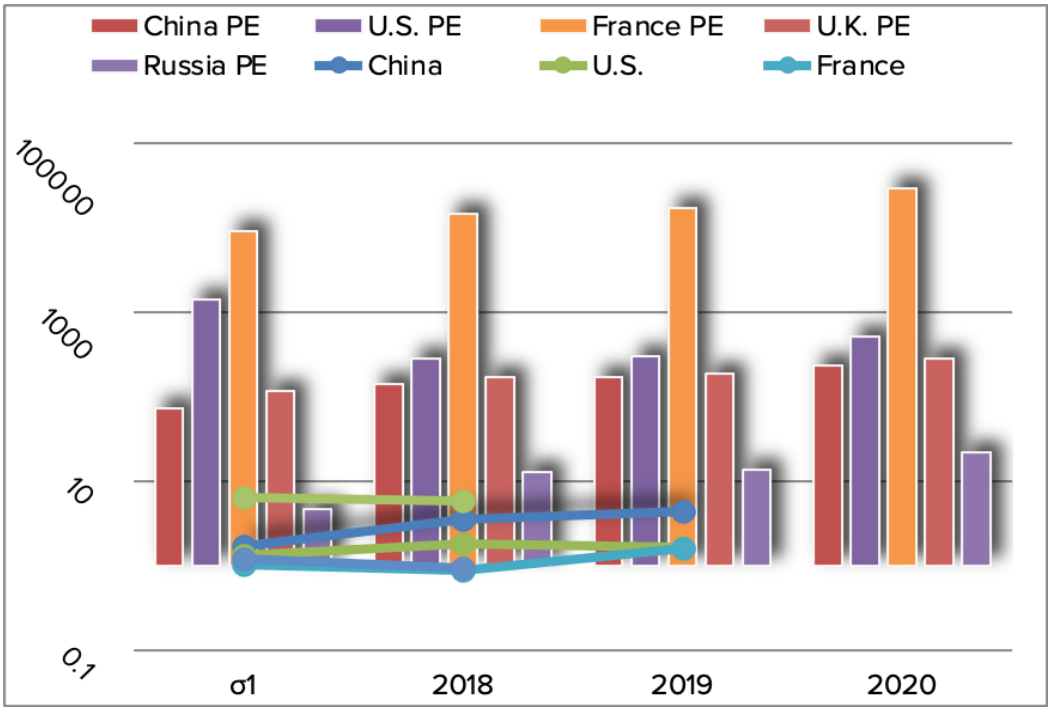


Fig. 2: Comparison of the P5's Energy Depletion Ratio in GDP Against Adjusted Net National Income Per Capita.

With the heat island effects, pollutants primarily impact on agriculture and food production, and lead to complex impacts on human security and determinants of health. To obtain the actual human living conditions, human security is factorized with energy and technology accessibility for cooking, agriculture, and emissions. For the human security factor, minimum value of access to clean fuels and technologies for cooking and access to electricity has been used for population coefficient (value taken as their reciprocal). The value of "*agricultural raw materials exports – imports*" is used for the economic and industrial coefficient, and "*agriculturl* N_2O *emissions* $\times \frac{agricultural\ land}{arable\ land}$" is used as the sustainable agriculture coefficient. The products of the coefficients are used as the human security factor and plotted in Fig. 3. There is a direct correlation between fertilizer consumption and N_2O emissions.

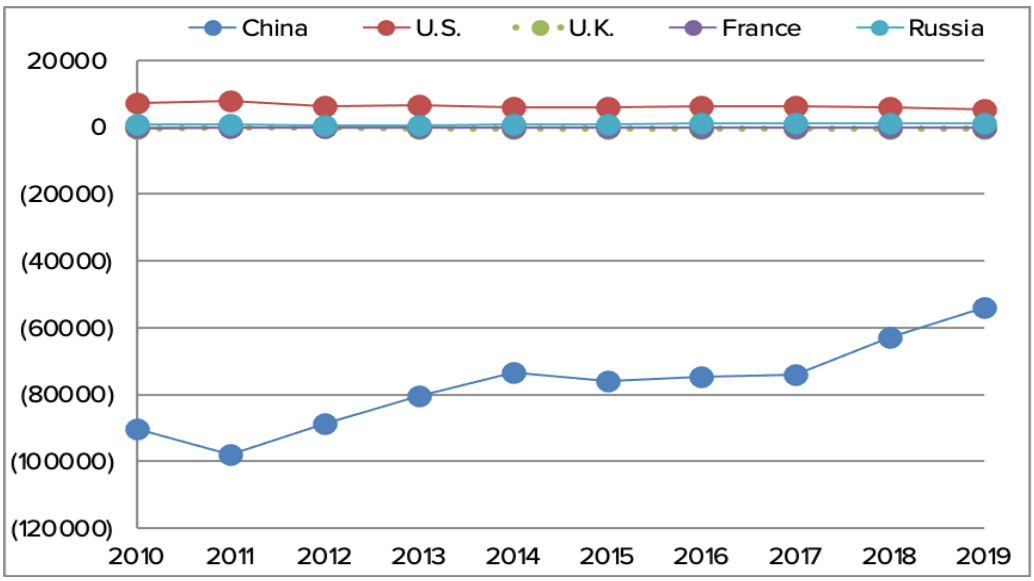


Fig. 3: Comparison of the P5's Human Security In Food Sustainability.

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For the research question, qualitative analysis focused on industrial supplies of PRC's Natural Gas Hydrate (NGH) productions. The research did not limit the scope of source information, and Google was used for associated terms in information scouting. Due to the current location of the researcher in mainland China, Virtual Private Network is used to access Google and other websites. The search terms used are "Methane Hydrate yearly production China", "China Methane Hydrate export", and "natural gas hydrite liquid propulsion". First three pages of information were reviewed and analyzed, with a total round 90 pieces. No substantial quantitative evidence were obtained, but positive results already appeared with the limited information under the analytic framework. The saturation may be contributed by the author's overestimation on PRC's technological reserves and its strategic planning's reliance on the global economy performance. With the news sources, citations are mainly attributed to the main source from the news industry's circulation.

To demonstrate the top-down nature of the Chinese militarism development with the economic sectors, the introduced M factor is plotted in the P5 comparisons in Fig. 4. It is seen that the inverse trend in clean energy returns is slightly correlated with the M factor for the U.S. and France. U.K.'s militant development is hedged against China and Russia's militant developments, indicating to the maritime geopolitical factors in macroeconomy.

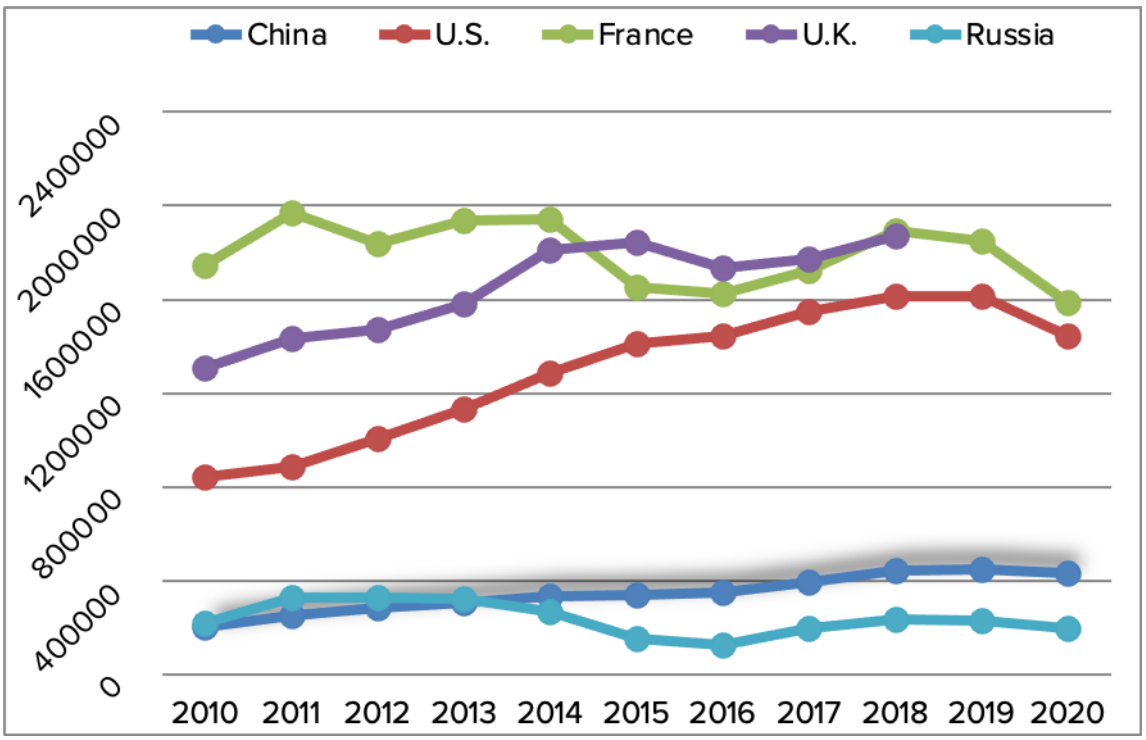


Fig. 4: Comparison of the P5's Militarism Developments Against Civil Economy. Only China and Russia Have Data on use of IMF Credit.

The ratios of sovereignty debts' contribution to civil economy is briefly plotted with the equation $SD = \frac{use\ of\ IMF\ credit}{GNI,\ PPP}$ seen in Fig. 5. Due to the lack of data in the U.S., U.K., and France's use of IMF credit, only China and Russia have been compared with the militarism development trends. The trend suggests China and Russia's decreased reliance on the IMF credits for economic development has contributed to militarist developments since 2016 seen in Fig. 4. And the timeline is in proximity with the South China Sea NGH productions.

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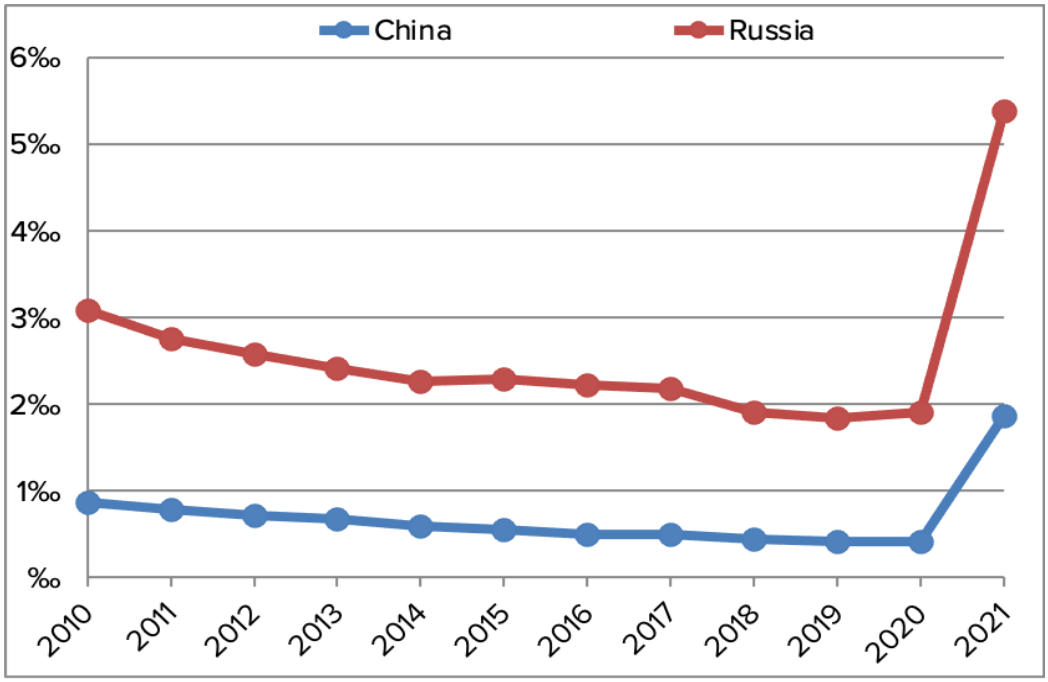


Fig. 5: China and Russia's IMF Credit use with Relation to Civil Economy Performance.

Fig. 4 and Fig. 5 corroborate that top-down designs for NGH exploitation is present, and the South China Sea contains 78% of reservoir within PRC's reach, amounting to 64.96 trillion cubic meters [14]. Similar to the building of the Three Gorges Dam for nuclear production, academic literature unified the proclaimed purpose to be on clean energy and calls for multilateral mercantilism cooperations [14-16]. Even though propositions were made on the excuses of carbon emission, the propulsion ambitions in the space race are revealed in the solid fluidization exploitation of marine NGH [15].

NGH in the industrial chain can be processed for liquid propulsion systems, either by chemical extraction for fusion method or solid fuel crystalline composition for fission method [17-19]. Both Chinese and Russian scientists have been focusing on the technologies in the fusion method, possibly for its relatively low technological requirements and flexibilities in returnable space missions [20, 21]. PRC's gas hydrate expedition originated from 2007, and started production in the South China Sea in 2017, with a 309,000 cubic meters productivity in a 60-day period [14, 22]. Its monthly output increased to 861,400 cubic meters in 2020 [23].

Per the CO_2 emissions (kg per PPP $ of GDP) and methane emissions in energy sector (thousand metric tons of CO2 equivalent) indicators compared to nitrous oxide emissions in energy sector, China and Russia should have cared more for the energy sector's impact on sustainable development than the other P5 members. The inverse bottom-up incentive in micro-economic perspective with the macroeconomic performance data in Fig. 2 further evidences the energy sector's industrial chains have been compromised from real economy. Carbon dioxide damage from the militarist developments has not properly reflected in the macroeconomic data [11].

Two possible explanations exist: 1) discrepancies in the price market in the global economy influenced the international settlements in the data structures; and 2) underground economy and black markets, such as the semi-black-market offshore realm [24], have been contributing to the data structures' integrity. For example, the Communist Party of China (CPC) used its military to plant opium poppy before occupying Beijing for financial advantage against the Kuomintang (KMT) [25]. With the research design, evidence have mainly been collected for the first explanation.

From an economic and industrial perspective, liquid NGH's potentials for rocket propulsion cannot be fully realized without extracting methane from the crystalized condensates, apart from methane emissions during exploitation by depressurizing the seabeds [17, 26]. Fig. 6 shows the standard deviation and CI ($p=0.01$) of the P5's methane emissions in energy sector. The correlations quantitatively suggest a trilateral relationship among the U.S., Russia, and China in the energy-related methane emissions, regardless of the scales of territories.

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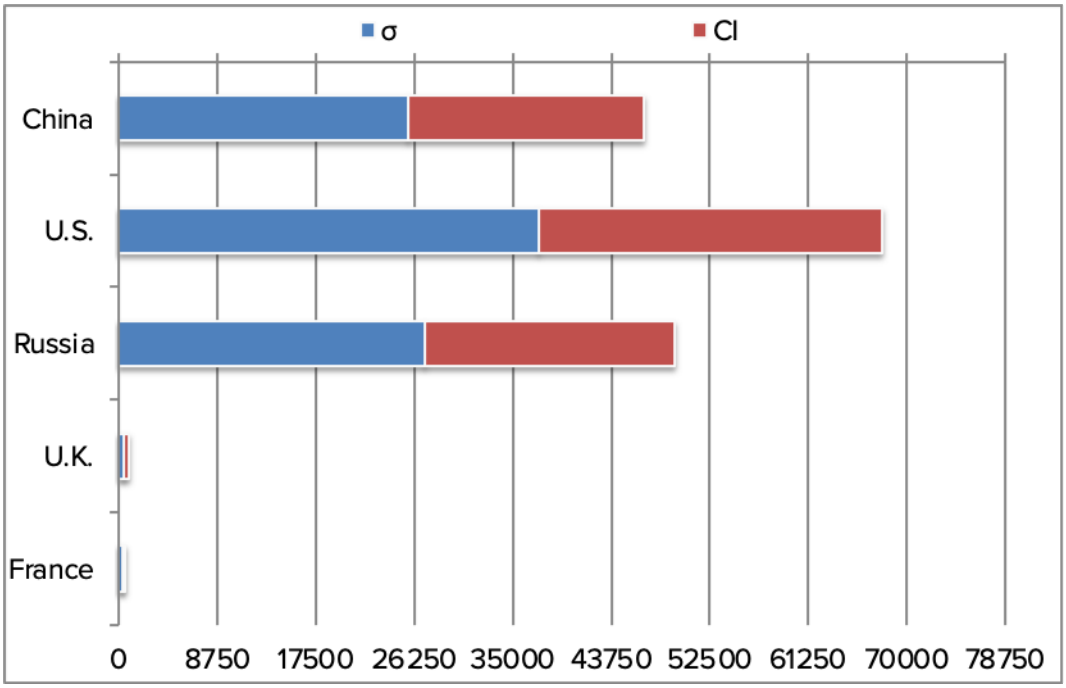


Fig. 6: The P5's Methane Emissions in Energy Sector

Albeit the space industry is a strategic niche market, its total market values in monetary terms have been substantially low [27]. With a cross-sector comparison in the U.S. national healthcare expenditure and the sustainable food security indicators in Fig. 3, the U. S. does not have a space fever in the free market economy [28]. The U. S. Congress and Commerce in space industry have inherited the Cold War policies, making the trilateral correlations less likely originating from strategic behaviors [29, 30].

Further possibilities have been located with the price market. Supply advantage is present in the NGH market mainly in the form of liquified natural gas (LNG) price. With projected global demand of 4.9 trillion cubic meters by 2040, PRC's strategic output margins with LNG reserve refills in price peaks in the mass market [31]. This further indicates to China's covert strategic operations in the energy price market.

The fusion method for manned and returnable space flight has been cognized to be the strategic purpose of China's behavior with the NGH [18, 21]. Strategic planning flexibility room is present with the mass market for niche market development, depending on: 1) income cash reserves in marginal interests in the mass market, and 2) technology access for exploitation optimization in energy returns and for niche products in optimization of storage and refinement [32, 33]. The top-down industry-specific strategy with command economy price bargaining is prone to the limitations of the vertical NGH distributions below the seafloor [31, 34].

III. Results

The research has evidenced that China's strategic behaviors in the South China Sea are not only a geopolitical design, but are purposed for a new Space Race. The fission method that the U.S. has pertained to in outer space development is consistent with the scientific exploration paradigm, in contrast to the USSR in the Cold War, and China in the new Space Race [35].

The proclaims of clean energy and CO_2 emission reduction on NGH exploitation by PRC's command economy are falsified. The misleading proclaims are not only political, but also impact on the novelty, credibilities, and integrities of science and academic freedom, increasing subjective biases in science communication. The root problem can be simplified as the national political economy's impact on the liberal international multilateral globalization and global political economy.

The allied economic defenses in the geopolitical conflicts have further marginalized the civil economy under dictatorial structure. Not dissimilar to the USSR in the Cold War, the nature of PRC's ambitions are geopolitical, but only projected to the celestial sphere. Its macroeconomic behaviors with strategic mandates have been the source of low market values of the space industry through the energy sector, and impact on the market development of commercial space. Due to the lack of data on energy import and export, only partial inference was made with the energy import data between 2010 and 2015; the U.S.'s acceptance on

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China's covert strategic offense behaviors has been present in the energy sector [11, 36].

Real economic setbacks and disruptions on sustainable development from macroeconomy make China's strategic behaviors a global negative sum game. Not only the top-down design's strategic rooms are frail to uncertainties in global economy, humanitarian disasters from the geopolitical and economic conflicts further made the negative sum game a certain result. The strategic response of supply chain decoupling will further complicate macroeconomy, and influence the industrial sectors.

Apart from the earth's internal heat budget associated with the drills, CH_4–CO_2 exchange for recovering methane from gas hydrates does not support the proposition of NGH's potentials as alternative energy in solving climate change [21]. In the upper industrial chains, technical propositions on solid fluidization and formation fluid extraction correspond with the strategic intention analysis for propulsion technologies with China's NGH exploitation [21, 37].

IV. Discussion

Democratization has always been the simplest solution to the complex problems behind the research, while the solution has failed time and time again in history with the Chinese [9]. With the strategic cooperation possibilities ruled out on the South China Sea, the U.S.'s mutual participation with the Chinese expedition in NGH can be out of benign engagement and market necessities, if not profit-seeking from the private sector and misinformation in the scientific community. The complexities in human rights and humanitarian values in dealing with strategic threats are present in the circumstances between conflicts and peaceful transition.

Increased costs in cyber security to preserve democratic decision mechanism from autocratic influences have been an economic consequence from the strategic stand-off. Due to the nature of geopolitical ambitions behind the new Space Race, with Russia's refusal in renewing the NEW START treaty in the Communist block, efforts in scientific outreach can see no substantial results without ensuring academic freedom in the suppressed regions. Therefore, sustaining the scientific values rigorously in the industrial sectors is necessary in preventing the economic and financial incentives being maliciously utilized to illicit strategic ends.

Pricing up the space sector's economic entry thresholds may be a solution to preserve the free market economy. Military deterrence in geopolitical conflicts is not the optimal solution to uphold the values in sustainable development. New civil energy innovations are still needed even when the military sector can be most intensive in environmental pollution. The deterrence through economic and financial means is not unprecedented, but the PRC's militarization of civil economy such as with the communication and internet sector makes the choice a type II error with the proven hypothesis.

There is a possibility for type I error in the research that PRC's strategic behaviors are only out of economic and financial purposes, and geopolitics is only a phenomenon of the ends. If the type I error is true, the structural power of the PRC is then falsified in the global realm. This falsification is not unsupported by the facts of legitimacy issues of the CPC reign. As the abuse of power is consistent with the lack of legitimacy, the deviation between facts and truth lingers in the realm of power politics.

The existence of type I error in the research derived from the technical definition of realpolitik. As Space Race is evidenced in the purposes behind the geopolitical strategies, realpolitik is only means to the end hypothesized. This implies that room for negotiation is present in conflict resolution, with the costs of value depreciation in technological advantages. However, this still does not guarantee the peaceful development of outer space due to the decision mechanisms and incentive inertia in the Chinese crave for space. The strategic denials of the PRC system are seen for the personal developmental psychology's projection contributed by the strictly top-down decision mechanisms. Therefore, the type I error is unavoidable but its analysis not irrelevant to the research problem.

The only solution left for the structural problems is not in the structural framework. The global pressures and mandates in human rights have *de facto* influenced the PRC to a constitutionalmonarchy. Instead of a royal family, it is a single party. The development in modern China was signified by the Separation of Party and Government, and its fiasco failure contemporary [38]. If global diplomatic persuasions do not work, the structural premises return to the same last resort with Putin and his transgressions against Ukraine [39, 40].

V. Conclusions

PRC's current strategies in the NGH are not in the interests of sustainable development. Even though literature in the scientific publishing industry proclaim it as a goal, its functions only serve for political misinformation with the propaganda agendas in the scientific community. Its strategic proliferation is only recently being noticed by the U.S. and acted upon with the Trade War.

Power political issues in the Asian sphere are revealed in the energy sector. PRC's militant geopolitical ambitions in the energy sector are consistent and are aiming for outer space. Albeit the U.S.'s Cold War policies are still in action, deceitful strategies in the

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scientific community can trespass the technological barriers.

Bottom-up democratic decision formation is intricately vulnerable to the economic, political, and misinformation factors. The negative sum game is being leveraged from the top down, and the responsive factors leveraged from the bottom up. A choice between structural anarchy and anarchy in a *de jure* sense is presented in the situation and circumstance.

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Introduction

FMBRC/AMBRC is the most prestigious membership of Global Journals accredited by Open Association of Research Society, U.S.A (OARS). The credentials of Fellow and Associate designations signify that the researcher has gained the knowledge of the fundamental and high-level concepts, and is a subject matter expert, proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice. The credentials are designated only to the researchers, scientists, and professionals that have been selected by a rigorous process by our Editorial Board and Management Board.

Associates of FMBRC/AMBRC are scientists and researchers from around the world are working on projects/researches that have huge potentials. Members support Global Journals' mission to advance technology for humanity and the profession.

FMBRC

Fellow of Management and Business Research Council

FELLOW OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL is the most prestigious membership of Global Journals. It is an award and membership granted to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Fellows are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Fellow Members.

Benefit

To the institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.



Exclusive Network

Get access to a closed network

A FMBRC member gets access to a closed network of Tier 1 researchers and scientists with direct communication channel through our website. Fellows can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation



Certificate

Certificate, LoR and Laser-Momento

Fellows receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation



Designation

Get honored title of membership

Fellows can use the honored title of membership. The “FMBRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FMBRC or William Walldroff, M.S., FMBRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Fellow members of FMBRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation. All fellows get a dedicated page on the website with their biography.

Career | Credibility | Reputation

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Future Work

Get discounts on the future publications

Fellows receive discounts on future publications with Global Journals up to 60%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career | Financial



GJ Account

Unlimited forward of Emails

Fellows get secure and fast GJ work emails with unlimited forward of emails that they may use them as their primary email. For example,
john [AT] globaljournals [DOT] org.

Career | Credibility | Reputation



Premium Tools

Access to all the premium tools

To take future researches to the zenith, fellows receive access to all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

Conferences & Events

Organize seminar/conference

Fellows are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

Career | Credibility | Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All fellows receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

Exclusive



Publishing Articles & Books

Earn 60% of sales proceeds

Fellows can publish articles (limited) without any fees. Also, they can earn up to 70% of sales proceeds from the sale of reference/review books/literature/publishing of research paper. The FMBRC member can decide its price and we can help in making the right decision.

Exclusive | Financial

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Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

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Become a member of the Editorial Board

Fellows may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. Additionally, Fellows get a chance to nominate other members for Editorial Board.

Career | Credibility | Exclusive | Reputation

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 5 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 10 GB free secure cloud access for storing research files.

ASSOCIATE OF MANAGEMENT AND BUSINESS RESEARCH COUNCIL

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Exclusive Network

Get access to a closed network

A AMBRC member gets access to a closed network of Tier 2 researchers and scientists with direct communication channel through our website. Associates can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation



Certificate

Certificate, LoR and Laser-Momento

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Career | Credibility | Exclusive | Reputation



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Career | Credibility | Exclusive | Reputation

Recognition on the Platform

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Career | Credibility | Reputation

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Career | Credibility | Reputation



Premium Tools

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Financial

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Organize seminar/conference

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Career | Credibility | Financial

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Exclusive | Financial

Reviewers

Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

And Much More

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All members get access to 2 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 5 GB free secure cloud access for storing research files.

Associate	Fellow	Research Group	Basic
$4800 **lifetime designation**	$6800 **lifetime designation**	$12500.00 **organizational**	APC **per article**
Certificate, LoR and Momento **2** discounted publishing/year **Gradation** of Research **10** research contacts/day **1 GB** Cloud Storage **GJ** Community Access	**Certificate,** LoR and Momento **Unlimited** discounted publishing/year **Gradation** of Research **Unlimited** research contacts/day **5 GB** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**Certificates,** LoRs and Momentos **Unlimited** free publishing/year **Gradation** of Research **Unlimited** research contacts/day **Unlimited** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**GJ** Community Access

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Management Research Paper

Techniques for writing a good quality management and business research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of management and business then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.
Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.



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- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

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As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.



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Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

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Put figures and tables, appropriately numbered, in order at the end of the report.

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If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

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Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

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- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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