

CHINA ECONOMY RECOVERY AND GROWTH DURING THE COVID – 19 PANDEMIC

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ABSTRACT

This study examines how China's economy recovered and evolved during the COVID-19 Pandemic, with a focus on 2020. To achieve the main goal, the study used basic linear regression in conjunction with a theoretical and empirical methodology. The conclusions of the study looked at how China's economic process helped the country's economy recover and evolve in the face of the COVID-19 pandemic, notably in 2020. The main new economic engine during the COVID-19 Pandemic is rapid reaction; it produces a decrease in COVID-19 pandemic cases and leads to robust economic recovery and evolution during the COVID-19 Pandemic.

China's Economy; COVID-19 Pandemic; Rapid Response; Economic Recovery; Economic Evolving

Introduction & Theoretical Background

In early January 2020, the Chinese Government declared that a new coronavirus naturally caused a pneumonia outbreak in Wuhan (The-World-Health-Organization-Report 2020). From that declaration, the Chinese authorities announced strict containment measures for responding to and eliminating the COVID-19 Pandemic, including the extension of the February 2020 Lunar New Year Festival, a total lockdown in Hubei province, countrywide mobility restrictions, social distancing, and a 14-day quarantine period for returning immigrant workers (The-World-Health-Organization-Report 2020). As a consequence of these containment measures, the China economy contracted by 6.8 percent in the first quarter of 2020 (OECD-Quarterly-Report 2020).

China's Re-Opening of the Economy Measures

In the Q2 of 2020, following lockdown accompanied by other rapid speed measures undertaken by the China Government in early 2020, the COVID – 19 Pandemic cases declined. As a result, the economy instantly began a V-shaped recovery and evolved in 2020 (CRS-Report 2021). Beginning in mid-February 2020, the government terminated mobility and business restrictions, prioritising crucial sectors, industries, regions, and population groups based on the risk assessments currently underway (Imf-Report 2020). As a result, most businesses and schools

have re-opened domestically, but social distancing rules remain at the micro-level, and entry abroad remains limited to contain imported cases. In addition, localised movement restrictions were re-introduced in new hotspots but subsequently taken out. Instead, individualised screening and health QR codes are used to evaluate the trajectory of the virus and contain outbreaks. Furthermore, the administrations encouraged a reduction in intercity travel during the 2021 Lunar New Year holiday while imposing strict testing and quarantine requirements (Imf-Report 2020).

China's Government Fiscal and Monetary Measures

The China government's rapid fiscal and monetary measures significantly accelerated the response to the COVID-19 Pandemic. As a result, they led to the decline of the COVID-19 pandemic cases while the economy is recovering and evolving resiliently (Imf-Report 2020). The China government's fiscal and monetary policy measures implemented in response to the COVID-19 Pandemic include:

Around RMB 4.9 trillion (or 4.7% of GDP) of discretionary fiscal measures were announced in 2020, and RMB 4.2 trillion announced in 2020. Key steps include: (i) increased expenditure on the prevention and control of outbreaks (Imf-Report 2020). The PBC has supported monetary policy and has taken steps to maintain financial market stability. (i) liquidity injection into the banking system via open market transactions (reverse repurchase agreements and medium-term credit facilities) (Imf-Report 2020).

The Theoretical Background of the Study

The study applied Newton's third law of motion to describe why and what enabled China's economy to recover and evolve during the COVID-19 Pandemic resiliently. Newton's Third Law of Motion states that there must be the repercussion of the opposite and equal reaction for each action undertaken (Sharma 2017). The study applied Newton's Third Law of Motion theoretical constructs of "Actions" and "Reactions" to analyse the notion of what and why the China economy has recovered and evolved resiliently during the COVID-19 Pandemic as follows;

The theoretical "Actions" are such as the China Government COVID – 19 pandemic policies and strategies. These "Actions" are the fundamental source of the speed response to the COVID-19 Pandemic (Escap 2020). The theoretical "reactions" are the outcome of the rapid speed in response to the COVID-19 Pandemic. The result of the speed in response to the COVI – 19 Pandemic is the decline of the COVID – 19 Pandemic cases while the economy resiliently recovers and evolves during the COVID – 19 Pandemic (CRS-Report 2021).

The Motivation of the Study

Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient

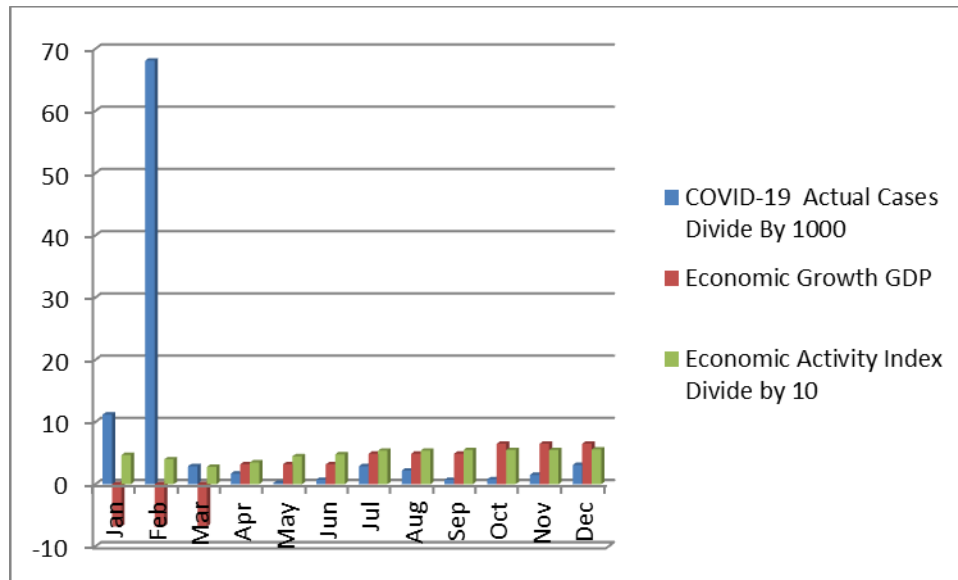
economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). Therefore, rapid response to the COVID-19 Pandemic is vital to mitigate and eliminate the COVID-19 Pandemic (Coccia 2021). In a practical example, China's economy rapidly recovered and evolved due to the rapid response to the COVID-19 Pandemic. Thus, the quick response to the COVID-19 pandemic triggered the decline in COVID-19 pandemic cases as the economy recovers and evolves resiliently (WorldBankGroup 2020).

Economic resilient recovery is the ability of the economy to typically adapt, recover, and reconstruct from the detrimental impacts of emergence and, consequently, mitigate the accelerated losses of emergence (GFDRR-Report 2015). For example, global economic statistics indicate that China's economy resiliently recovered from the COVID-19 pandemic impacts, particularly from the First Quarter to the Second Quarter of 2020. In a practical example, during the First Quarter of the year 2020, China recorded a GDP of -6.8, and the second quarter recorded a GDP of 3.2 during the COVID – 19 Pandemic (WorldBankGroup 2020). This economic improvement from a negative to a positive position is known as resilient economic recovery (WorldBankGroup 2020).

Economic evolving is the Economy's continuous enlargement in the aspects of the developments, productions, and management of material wealth (United-Nations-Report 1967). Global economic statistics indicate that China's economy is evolving despite the COVID-19 pandemic impacts, particularly from April to December of the year 2020. China's GDP for 2020 is as follows; Quarter 1 recorded -6.8, Quarter 2 recorded 3.2, Quarter 3 recorded 4.9, and Quarter 4 recorded 6.5. The new insights into evolution observed from Quarter 2 to Quarter 4 The continuous increases and improvement of the GDP are known as the economy evolving (WorldBankGroup 2020).

The graph statistics below demonstrate the unique insights of the resilient Chinese economy during 2020. In a practical example, from January up to April, the graph displays the new insights into China's resilient economy. While the graph shows the unique insights of China's evolving economy from April to December 2020 (Graph – 1 below), These new insights into China's economy, resiliently recovering and evolving, are fundamentally driven by the rapid speed of its response to the COVID-19 Pandemic.

Graph – 1



Source: Appendix – 6

Significance of the Study

Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). Thus, the study results will alter and modify the Global COVID – 19 pandemic policies and strategies, particularly to enable global countries' economies to recover and evolve in a resilient manner during the COVID-19 Pandemic.

Research Questions and Methodology

Research Questions

1. How China's Economy rapidly recovered and evolves during the COVID -19 pandemic?
2. What enabled China's Economy to rapidly recovered and evolved during the COVID – 19 pandemic? And Why?
3. What are the relationships and movement direction between the COVID – 19 Pandemic cases and the study's economic variables (GDP and Economic Activity Index)?

Methodology

The study applied the simple linear regression methodology to examine the relationships and the movement direction between the COVID – 19 pandemic cases and the study's economic variables (GDP and Economic Activity Index) during 2020. In addition, the study applied the economic model, the Normal distribution Curve, the graphs, and empirical literature review economic statistics data to analyze how the China economy rapidly resiliently recovered during the COVID – 19 pandemic in the particular year 2020. Finally, theoretically, the study applied Newton's third law of motion to address why and what enabled China's Economy to recover and evolve during the COVID – 19 Pandemic rapidly.

Findings of the Study and Practical Implications in the Economy

The study's findings analyzed how China's economic process enabled the Economy to recover and evolve resiliently during the COVID-19 Pandemic, particularly in 2020. Thus, rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic.

The study results will alter and modify the Global COVID – 19 pandemic policies and strategies, particularly to enable global countries' economies to recover and evolve in a resilient manner during the COVID-19 Pandemic.

The objective of the study

This paper explores how China's Economy has recovered and evolved during the COVID-19 Pandemic, particularly in 2020.

Chapter Summary

The following chapters made significant contributions to the accomplishments of this study; 1. Theoretical insight into why and what enabled China's Economy to recover and evolve during the COVID-19 Pandemic. 2. How the China economy rapidly recovered and evolved during the COVID-19 Pandemic. 3. Methodology. 4. Findings of the study and practical implications in the Economy. 5. Conclusions and Recommendations of the study

Theoretical insight into why and what enabled China's Economy to recover and evolve during the COVID-19 Pandemic

Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). That is the answer about why and what enabled China's Economy to recover and evolve during the COVID – 19 Pandemic.

The study's analysis of why and what has enabled the China economy to recover and evolve resilient during the COVID-19 Pandemic will focus on state and discuss Newton's Third Law of Motion to understand the entire theoretical concept of the study. Secondly, using the economic model, analyze the economic process to determine why and what has enabled the China economy to recover and evolve in a resilient manner during the COVID-19 Pandemic. Third, theoretical condition: to guide why and what allowed the China economy to recover and grow during the COVID-19 Pandemic. Fourth, the application of Newton's Third Law of Motion to analyze what and why China's Economy has recovered and evolved sustainably during the COVID-19 Pandemic. Fifthly, The Literature review supporting the application of Newton's Third Law of Motion in economic perspectives.

Newton's Third Law of Motion

Newton's Third Law of Motion states that there must be the repercussion of the opposite and equal reaction for each action undertaken (Sharma 2017). The study applied Newton's Third Law of Motion theoretical constructs of "Actions" and "Reactions" to analyze the notion of what and why the China economy has recovered and evolved resiliently during the COVID-19 Pandemic as follows;

The theoretical "Actions" are such as the China Government COVID – 19 pandemic policies and strategies. These "Actions" are the fundamental source of the speed response to the COVID-19 Pandemic (Escap 2020).

The theoretical "Reactions" are the outcome of the rapid speed in response to the COVID – 19 Pandemic. The result of the speed in response to the COVID – 19 Pandemic is the decline of the COVID – 19 Pandemic cases while the Economy resiliently recovered and evolving during the COVID – 19 Pandemic (CRS-Report 2021).

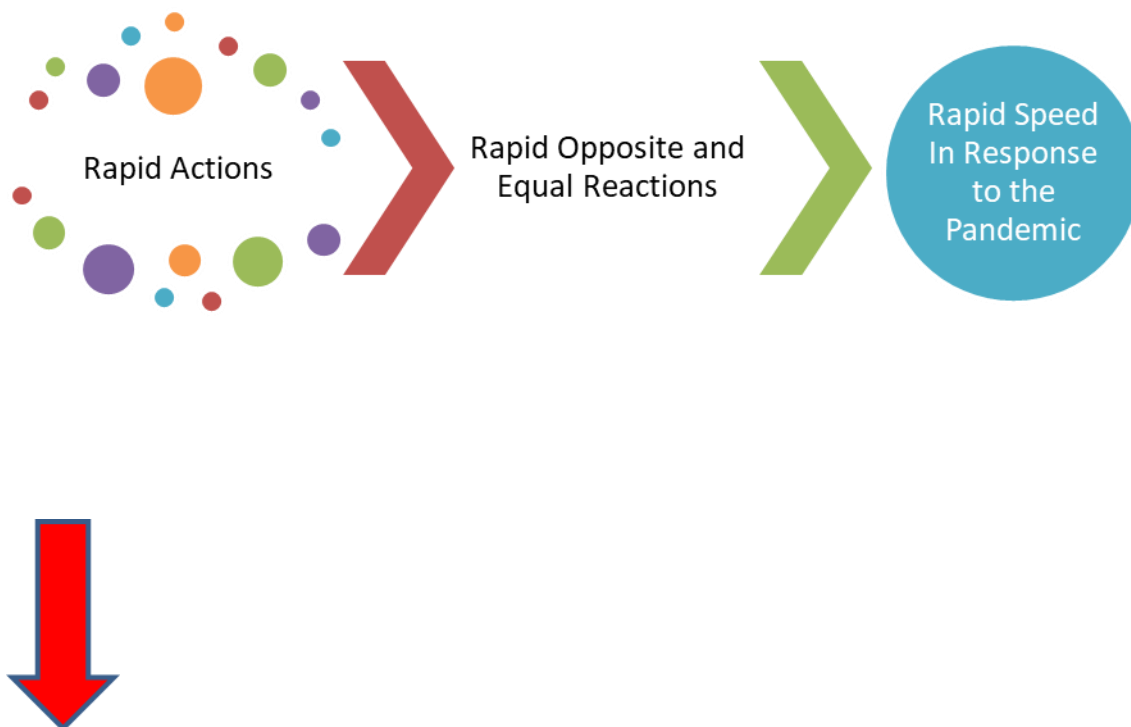
The Economic Model

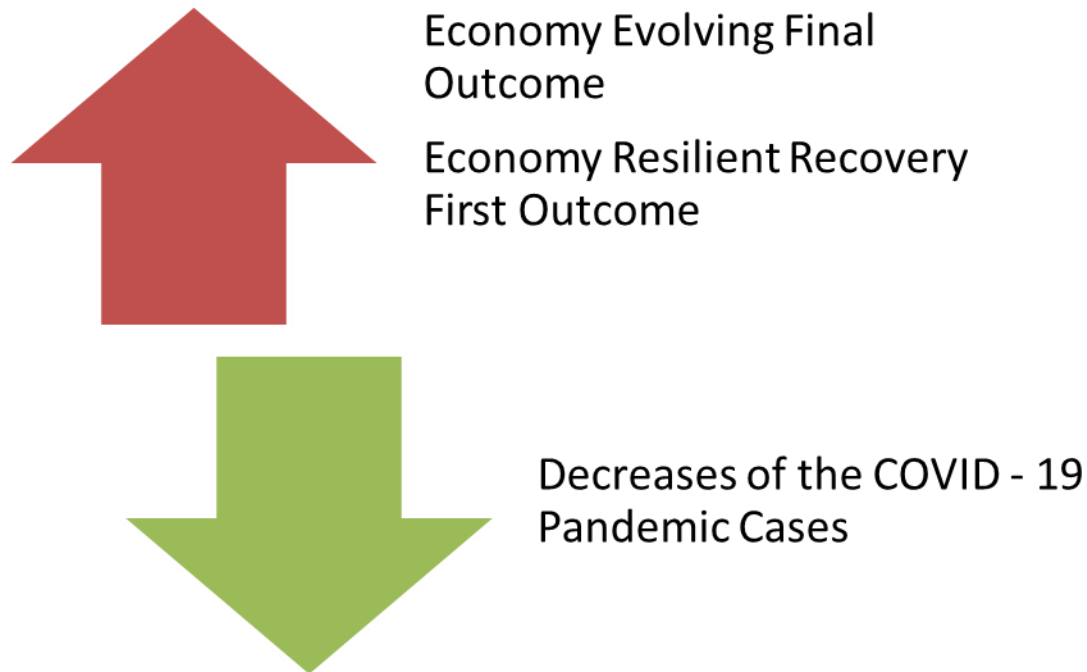
The economic model indicates the economic process that enabled China's Economy to recover and evolve during the COVID-19 Pandemic. In addition, the economic model addresses why and what makes China's Economy resiliently recovered and grows during the COVID – 19 Pandemic.

The first and fundamental driver of recovery and evolves is the actions taken by the Government of China, namely the Government of China's COVID-19 pandemic policies and strategies (Gisela 2020). These China governments' COVID-19 policies and strategies make it possible to respond quickly to the COVID-19 Pandemic (OECD-Report 2002). Ultimately, the rapid response to the COVID-19 Pandemic leads to a decline in COVID-19 pandemic cases while the Economy is recovering and evolving (CRS-REPORT 2021).

The rapid response to the COVID – 19 Pandemic is the answer to what makes the China economy resiliently recovered and evolving during the COVID – 19 Pandemic (CRS-REPORT

2021). Why it made the China economy resiliently recovered and evolving during the COVID – 19 Pandemic? Because when applicable, it causes the decline of the COVID – 19 Pandemic cases while the Economy is resiliently recovered and evolving (Liu, Yue, and Tchounwou 2020).





Source: Author Design

Theoretical condition

Focus on Newton's Third Law of Motion, which states that there must be equal and opposite reactions for every undertaken action (Datta 2009).

The theoretical condition for the study assumes:

The China Government's COVID – 19 Policies and strategies are the theoretical "Actions." The rapid response to the COVID – 19 Pandemic is the theoretical "Reactions.". Ultimately, the quick response to the COVID-19 Pandemic is driving the decline of the COVID-19 pandemic cases as the Economy has rebounded and evolved resiliently (Yu, Li, and Dong 2021).

The application of Newton's Third Law of Motion of What and Why China's Economy resiliently recovered and evolving during the COVID – 19 Pandemic

The study will apply the Newton Third Law of Motion theoretical constructs of "Actions" and "Reactions" to discuss the notion of what and why China's Economy resiliently recovered and evolving during the COVID – 19 Pandemic. The study assumes that; The China Government's COVID – 19 Policies and strategies are the theoretical "Actions." The rapid response to the

COVID – 19 Pandemic is the theoretical "Reactions.". Ultimately, the quick response to the COVID-19 Pandemic is driving the decline of the COVID-19 pandemic cases as the Economy has rebounded and evolved resiliently.

The following is the discussion of what and why china economy resiliently recovered and evolving through the applications of Newton's Third Law of Motion theoretical constructs of "Actions" and "Reactions";

Actions

The China government's rapid fiscal and monetary measures significantly accelerated the response to the COVID-19 Pandemic. As a result, they led to the decline of the 19 COVID-19 pandemic cases while the Economy is recovering and evolving resiliently (Imf-Report 2020).

The China government's fiscal and monetary policy measures implemented in response to the COVID-19 Pandemic include:

Fiscal Policies Measures; Around RMB 4.9 trillion (or 4.7% of GDP) of discretionary fiscal measures and RMB 4.2 trillion announced in 2020. Key steps include: (i) increased expenditure on the prevention and control of outbreaks (Imf-Report 2020).

Monetary Policies Measures; The PBC has supported monetary policy and has taken steps to maintain financial market stability. Key initiatives include; (i) Liquidity injection in the banking system through open market transactions (reverse repurchase agreements and medium-term credit facilities) (Imf-Report 2020).

Reactions

The China Government's rapid response to the COVID – 19 Pandemic and the substantial budgetary support has resulted in a quick rebound in economic activities and growth. In contrast, COVID-19 pandemic cases have declined significantly across China's provinces (WorldBankGroup 2020). In a practical example; Real GDP rebounded to 3.2% over 12 months in Q2 after a contraction of 6.8% in Q1. During the second half of 2020, economic activity has continued to strengthen. The Economy grew 4.9% over 12 months in the third quarter, bringing growth to 0.7% over 12 months in the first three quarters (WorldBankGroup 2020).

The literature review supporting the implementation of Newton's Third Law in the economic outlook

Newton's Third Law of Motion states that there must be the repercussion of the opposite and equal reaction for every action undertaken (Clyne 2020).

The reaction which catches my attention is the rise of the stock markets (Clyne 2020). The strength of market growth comes mainly from capital government expenditures worldwide to support their economies and the equity and bond markets since last March (Clyne 2020).

The severity of the situation prompted the U.S. Federal Reserve to buy junk, individual bonds, and municipal bonds, which it had never done before (Clyne 2020).

The steps taken to buy assets for market stabilization are equivalent to Newton's third law of motion theoretical construct "Actions." (Clyne 2020).

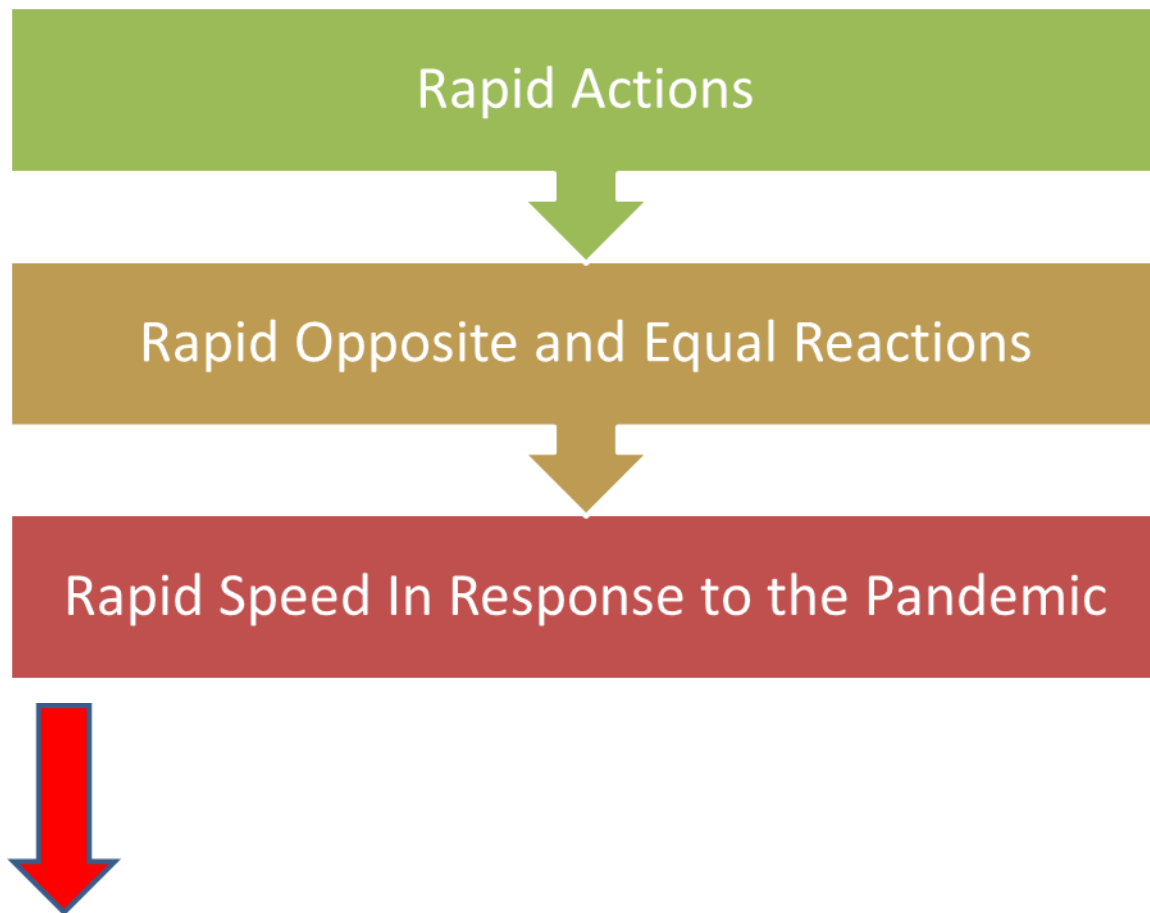
How the China economy rapidly recovered and evolved during the COVID-19 Pandemic

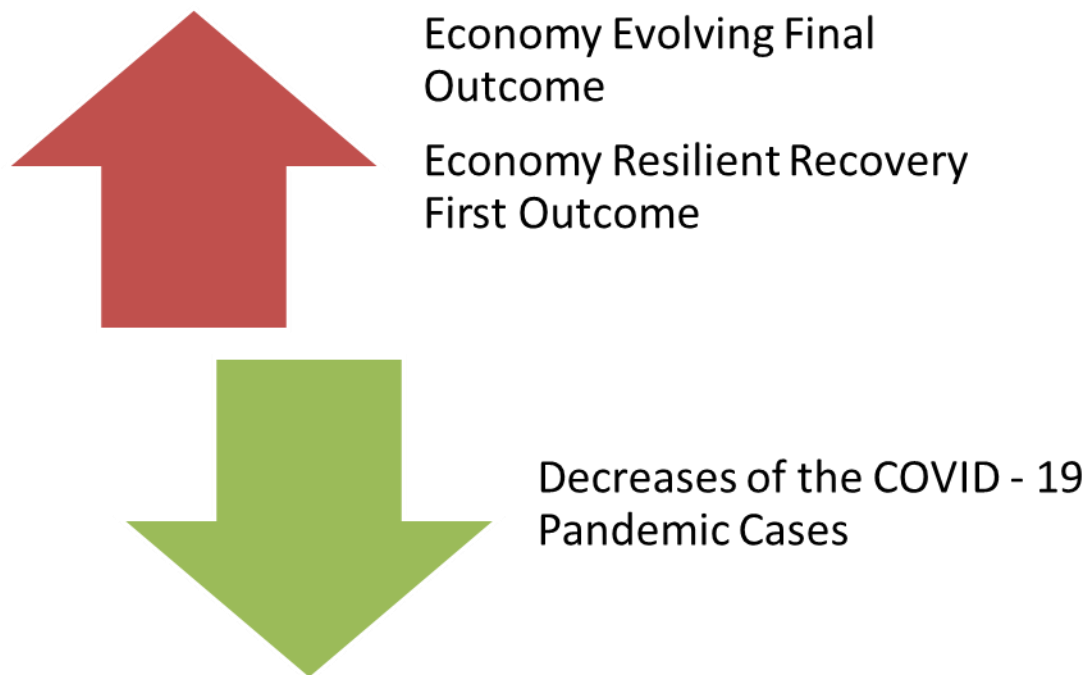
The study's analysis of how the China economy has recovered and is evolving resilient during the COVID-19 Pandemic will focus on: first, the economic model demonstrates how China's Economy is recovering and evolving during the COVID – 19 Pandemic. Second, through the Normal Distribution Curve, to measure China's Rapid Speed in responding to the COVID – 19 Pandemic. Also, using the Normal distribution curve, the relationships and directions between COVID-19 pandemic cases and the economic variables of the study are shown. Third, through a graph, the relationships and movement between the COVID – 19 Pandemic cases and the economic variables of the study indicated. Fourth is the analysis of China's government COVID – 19 pandemic policies and strategies. These China Governments COVID – 19 Pandemic policies and strategies are fundamental drivers of the rapid response to the COVID – 19 Pandemic. Fifth, documentation statistics and sub-graphs justify how China's Economy has recovered and evolved resiliently during the COVID-19 Pandemic.

The Economic Model

The economic model indicates the economic process that enabled China's Economy to recover and evolve during the COVID-19 Pandemic. In addition, the economic model addresses how China's Economy resiliently recovered and grows during the COVID – 19 Pandemic.

The first and fundamental driver of recovery and evolves is the actions taken by the Government of China, namely the Government of China's COVID-19 pandemic policies and strategies (ILO-Report 2020). These China governments' COVID-19 policies and strategies make it possible to respond quickly to the COVID-19 Pandemic. Ultimately, the rapid response to the COVID-19 Pandemic leads to a decline in COVID-19 pandemic cases while the Economy is recovering and evolving (Islam et al. 2020).





Source: Author Design

The Normal Distribution Curve

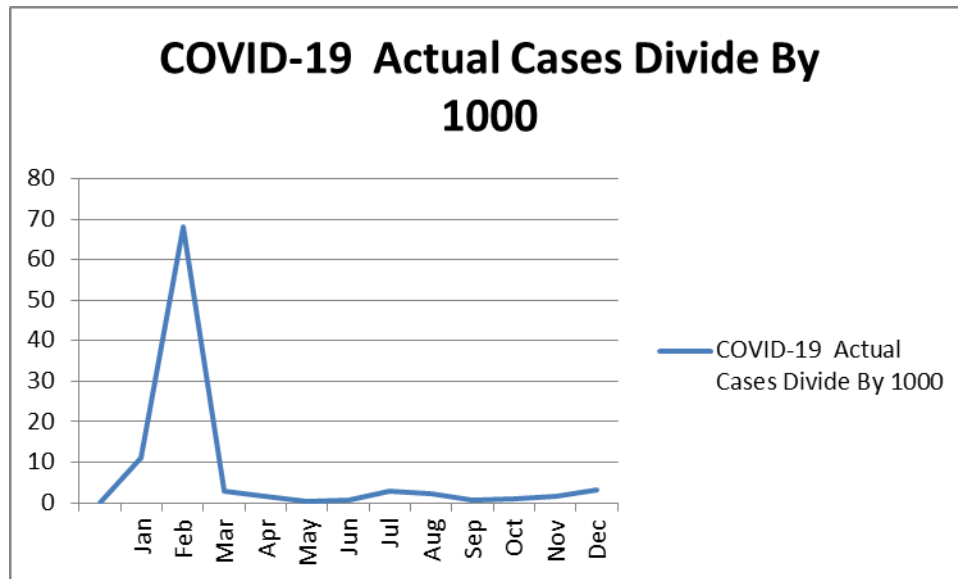
The Normal distribution curve addresses three fundamental roles in the study. The first is measuring China's speed of response to the COVID-19 Pandemic (Brophy and Wood 1989). Second is exhibiting the relationships and movements of China's COVID – 19 Pandemic cases and economic indicators subject to the speed in response to the COVID – 19 Pandemic. The third is analyzing China's economic recovery and growth during the COVID – 19 Pandemic.

The Normal Distribution Curve 1

The Normal Distribution Curve 1 is measuring China's speed of response to the COVID – 19 Pandemic. To measure the speed of response to the COVID – 19 Pandemic; Focus on observing the movement of the Curve line from the original point to the top and bending point of the Curve. The Curve's top and bending points reveal the exact speed used in response and start recovering from the COVID – 19 Pandemic.

Consider the Normal Distribution Curve below; China reaches the top and bending point of the Curve during mid of February 2020. Therefore, China spent almost 45 days rapid responding and

started recovering from the COVID – 19 Pandemic. Thus, from the Curve, the blue curved line indicates China's COVID – 19 Pandemic cases movements.



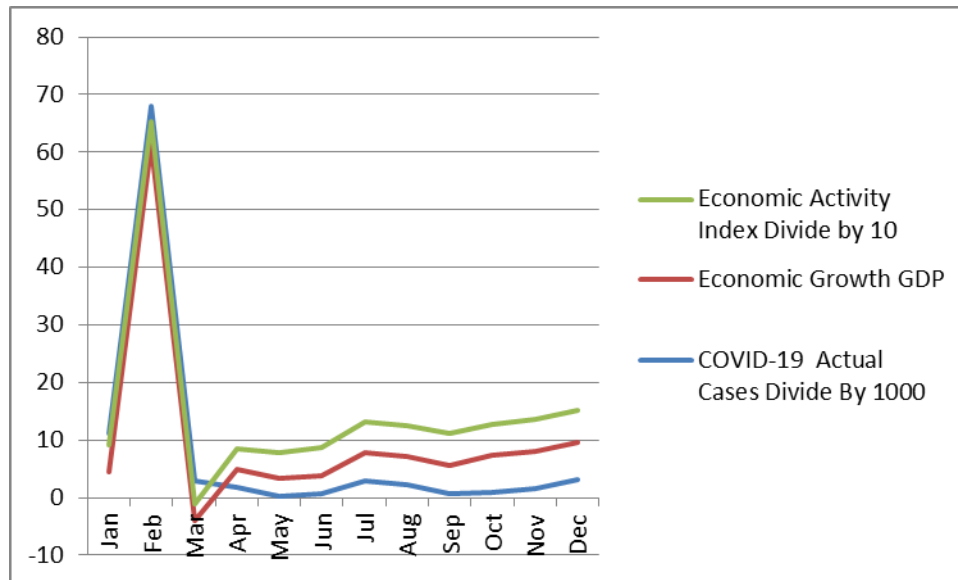
Source: Appendix – 6

The Normal Distribution Curve 2

The Normal Distribution Curve - 2 shows China's economic recovery and evolving during the COVID – 19 pandemic. First, the Curve shows the economic recovery from January to April of the year 2020. Second, the Curve shows the Economy evolving from April to December 2020.

The Normal Distribution Curve 2 exhibits the relationships and movements of China's COVID – 19 Pandemic cases and the stud's economic indicators subject to the speed in response to the COVID – 19 Pandemic.

The Curve shows that the relationships between the COVID – 19 Pandemic cases and economic variables are negative and moving in different and opposite directions. That means when the COVID – 19 Pandemic cases are higher the GDP, and Economic activities become lower, and vice versa. The curves blue line shows the Pandemic's speed and represents the COVID – 19 Pandemic cases. The red curve line represents the GDP, and the yellow curve line represents the Economic activity index for China during the year 2020.

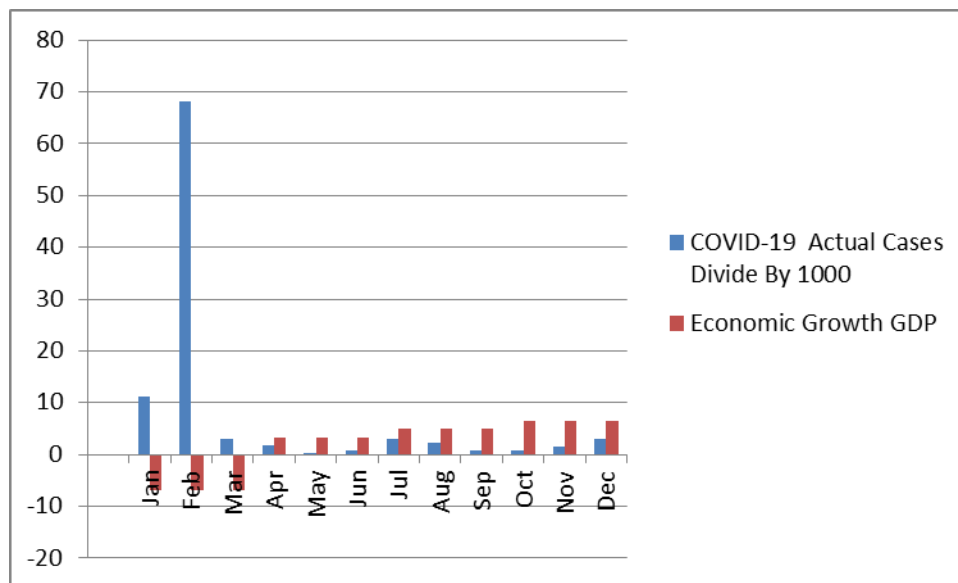


Source: Appendix – 6

Graph – 1

The Graph shows China's economic recovery and evolving during the COVID – 19 Pandemic. First, the Graph shows the recovery during the period from January to April of the year 2020. Second, the Graph shows the Economy evolving from April to December 2020.

The Graph shows that the relationships between the COVID – 19 Pandemic cases and GDP are negative and moving in different and opposite directions. That means when the COVID – 19 Pandemic cases are higher, the GDP becomes lower, and vice versa. The blue graph line represents the COVID – 19 Pandemic cases. The red graph line represents the GDP for China during the year 2020.



Source: Appendix – 3

The China Government Fiscal and Monetary Policies and Strategies

The China government's rapid fiscal and monetary measures significantly accelerated the response to the COVID-19 Pandemic (Imf-Report 2020). As a result, they led to the decline of the 19 COVID-19 pandemic cases while the Economy is recovering and evolving resiliently (Imf-Report 2020). The China government's fiscal and monetary policy measures implemented in response to the COVID-19 Pandemic include:

Fiscal Policies Measures

Around RMB 4.9 trillion (or 4.7% of GDP) of discretionary fiscal measures and RMB 4.2 trillion announced in 2020. Key steps include: (i) increased expenditure on the prevention and control of outbreaks, (ii) manufacture of medical equipment, and (iii) accelerated payment of unemployment insurance and extension for migrant workers, (iv) Tax reductions and waiver of social security contributions, and, (v) Additional government investment. In addition, automatic stabilizers increase budget support even more (vi). Thus, overall, government support changed to be higher. For example, out-of-budget support includes additional guarantees for SMEs of RMB 400 billion (0.4 percent of GDP), (vii) and tariff reductions of more than RMB 900 billion (0.9 percent of GDP) on items such as roads, ports, and electricity (Imf-Report 2020).

Monetary Policies Measures

The PBC has supported monetary policy and has taken steps to maintain financial market stability. Key initiatives include; (i) Liquidity injection in the banking system through open market transactions (reverse repurchase agreements and medium-term credit facilities). [ii] The expansion of RMB 1.8 trillion refinancings and rebate equipment to enhance manufacturers of medical supplies and staples, micro-enterprises, small and medium-sized enterprises, and the agricultural sector. (iii) Reducing the 7-day and 14-day repurchase rate by 30bps,[iv] Targeted RRR reductions of 50bps to 100bps for large and medium-sized banks that meet inclusive financing criteria for micro and small enterprises (SMEs), (v) Reduction of interest on excess reserves from 72 to 35 bps, (vi) expansion of the line of credit of business banks to private companies and SMEs (RMB 350 billion), and, (vi) The introduction of new instruments to support loans to SMEs, including a zero-rate (RMB 400 billion) "financing-loan" scheme to finance 40% of new unsecured loans from local banks (Imf-Report 2020). The authority has also taken numerous measures to limit tighter financial conditions, including measured forbearance to provide financial relief to households, businesses, and regions impacted by repayment difficulties (Imf-Report 2020).

Literature Discussion on China's Economy Recovery and Evolving during the COVID – 19 Pandemic

The following are the literature statistics data discussion for China's resilient recovery and evolving caused by the rapid speed in response to the Pandemic during the year 2020. The economic recovery and evolving analysis will be through China's economic process of developments, production, and material wealth management. The study will analyze China's economic recovery and evolving mainly through China's GDP, China's economic activities, and other economic factors as follows;

China's GDP Resiliently Recovery & Evolving

Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). The China Government's rapid response to the COVID – 19 Pandemic and the substantial budgetary support has resulted in a quick rebound in economic activities and growth. In contrast, COVID-19 pandemic cases have declined significantly across China's provinces (WorldBankGroup 2020). In a practical example; Real GDP rebounded to 3.2% over 12 months in Q2 after a contraction of 6.8% in Q1. During the second half of 2020, economic activity has continued to strengthen. The Economy grew 4.9% over 12 months in the third quarter, bringing

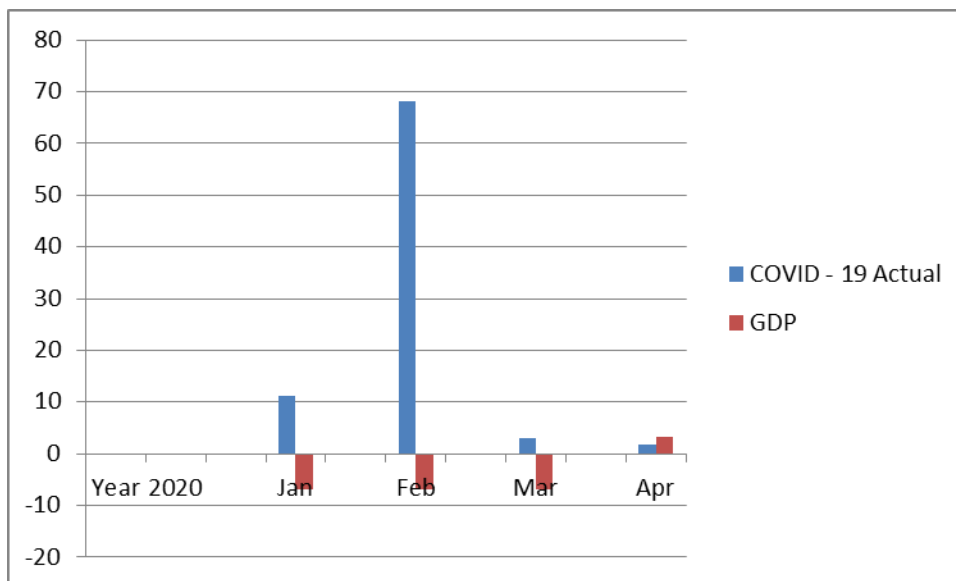
growth to 0.7% over 12 months in the first three quarters (WorldBankGroup 2020). China's robust health system and rapid COVID – 19 Pandemic policies pose the quick economic recovery and evolving for China amid the Pandemic (AlTakarli 2020). In a practical example, GDP in Q1 recorded -6.8, Q2 up to Q4 recovered and growing to 3.2, 4.9, and 6.5 consecutively in the year 2020 (AlTakarli 2020). In April, China's economic recovery and evolving realized where GDP increased from -6.8 in March to 3.2 in April and a continuous recovery and improvement in Q3 and Q4 in 2020 (Gong et al. 2020).

The following graphs show the China economy recovery and evolving during the COVID – 19 Pandemic

China's Economic Resilient Recovery Graph

The Graph shows the economic recovery from March to April during the year 2020. For example, the Graph shows that China recorded a GDP of -6.8 in January, February, and March 2020. However, the following month of April 2020, China recorded a positive GDP of 3.2. This fundamental shift of GDP from a negative position to a positive during the COVID – 19 Pandemic is known as resilient economy recovery.

From the Graph, the red line represents China's GDP while the blue line represents China's COVID – 19 Pandemic cases during the year 2020.



Source: Appendix – 7

Appendix – 7

Month	COVID - 19 Actual	GDP

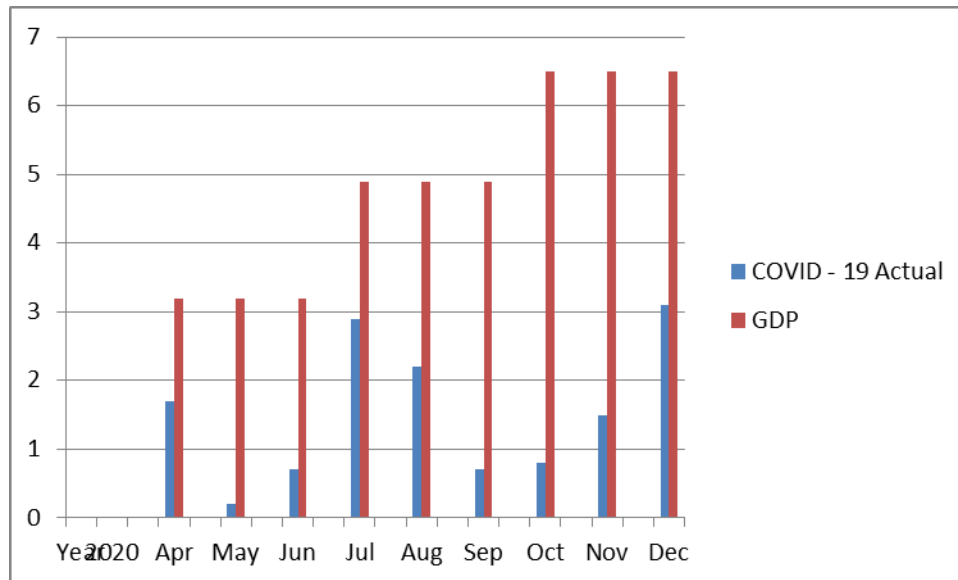
Year	Cases	
2020	Divided by 1000	
Jan	11.2	-6.8
Feb	68.1	-6.8
Mar	2.9	-6.8
Apr	1.7	3.2
Total	83.9	-17.2

Source: Appendix – 1

China's Economic Evolving Graph

The Graph indicates the new insight of China's Economy evolving during the COVID – 19 Pandemic, particularly from April to December during the year 2020. The trend of China's Economy evolving from the Graph is as follows; China's GDP Q2 is 3.2, Q3 is 4.9, and Q3 is 6.5. The continuous increase of China's GDP from April to December is known as the Economy evolving.

From the Graph, the red line represents China's GDP while the blue line represents the COVID – 19 Pandemic cases for China during the year 2020.



Source: Appendix – 8

Appendix - 8

Month	COVID - 19 Actual	GDP
Year	Cases	
2020	Divided by 1000	
Apr	1.7	3.2
May	0.2	3.2
Jun	0.7	3.2
Jul	2.9	4.9
Aug	2.2	4.9
Sep	0.7	4.9

Oct	0.8	6.5
Nov	1.5	6.5
Dec	3.1	6.5
Total	13.8	43.8

Source: Appendix – 1

China's Economic Activities Resiliently Recovery & Evolving

China's merchandise export has been resiliently recovered and evolving during the Pandemic. In a practical example, in early 2020, Jan, Feb, and March, China recorded negative merchandise export figures; Jan - -2.5, Feb - -40.4, March -6.8. However, in the Third Quarter of the year 2020, there was a significant recovery and evolving for merchandise exports, recording positive figures of; July 7.3, August 9.5, and September 9.9 (Tanjungco et al. 2020). Employment has recovered unevenly across regions and industries. In the eastern coastal areas, labor market conditions experienced more rapid recovery and improved faster than in the central and western regions (WorldBankGroup 2020). Manufacturing employment rebounded above all to pre-COVID levels. In addition, as containment measures reduced, the number of migrant workers, which account for 30% of the urban labor population, continued to rise to 180 million in the third quarter, compared to approximately 120 million in the first quarter (WorldBankGroup 2020). As a result, the recovery in manufacturing is accelerating. However, the recovery in the service sector is likely to be slower. Overall, China's underlying growth trend remains unchanged, despite increasing risks from a global recession (UNDP 2020). Considering China's economic contraction in the first quarter of 2020, economic activities in China normalized more rapidly than expected through effective pandemic policies and economic strategy, active political support, and resilient exports (WorldBankGroup 2020). As a result of the rapid response to the Pandemic, China's commercial activity has been resilient, benefit from the growing global demand for medical goods and electronics during the COVID-19 Pandemic (WorldBankGroup 2020). As a result, trade flows have rebounded strongly cyclically after the recession since the second quarter of 2020, a temporary departure from the long-term structural slowdown trend (WorldBankGroup 2020).

China's Other Economic Factors Resiliently Recovery & Evolving

Carefully consider the rapid speed in response to the Pandemic On the supply side and industrial production recovery and evolving for China. Industrial production continued to get bigger more quickly than services. As a result, industrial production growth typically exceeded its pre-pandemic growth rate, increasing 6.0% Y/Y in the third quarter of 2020 (WorldBankGroup 2020). Considering the rapid response on the demand side for China in 2020, Public and property investment boosted the recovery and evolution of economic growth in China in 2020. In a practical example, Considering the contraction of capital formation in the First Quarter of 2020, gross capital formation rapidly increased in subsequent quarters. For instance, the second quarter increased by 11.6%, while the Third Quarter of 2020 increased by 6.1% (WorldBankGroup 2020). The economic recovery of private Consumption has been more prolonged, decelerated by household income losses and persistent behavioral effects of the Pandemic. Following a severe contraction in Q1 2020, Consumption typically started a gradual recovery in the next quarters and grew 3.1% Y/Y in 2020Q3. It contributed positively to economic growth for the first time this year in the third quarter at 1.7 percent, progressively improving the labor market, rising household income, reducing precautionary savings, and strengthening consumer confidence (WorldBankGroup 2020). Household incomes are picking up, but at an unequal rate. Real disposable income per capita growth increased 2.5% Y/Y to 4.5% in Q3 compared to the last Q2 of 2020 (WorldBankGroup 2020). Tax revenues started to improve following a recovery in the Economy. Following an 8.6% Y/Y decline in revenues from consolidated public finance and public funds budgets in the first half of 2020, revenues grew by 6.7% year-on-year on average from July to November 2020 (WorldBankGroup 2020).

Methodology

The study applied a Simple Linear Regression Model for estimating the relationships and the Direction between the COVID – 19 Pandemic cases and the Economic Growth (GDP) for China during the year 2020. Furthermore, through the simple linear regression model, the study further evaluated the relationships and Direction of China's COVID – 19 Pandemic cases and Economic Activity Index during the year 2020. The simple regression model in double log and semi-linear models tested the relationships and the Direction between the COVID – 19 Pandemic cases and the study's economic indicators (Benoit 2011).

Through the Normal Distribution Curve, the study measured China's speed in response to the COVID- 19 Pandemic (Brophy and Wood 1989). Apart from that, the study measured China's speed in response to the COVID – 19 Pandemic and exhibits the relationships and the directions of China's COVID – 19 Pandemic cases, Economic Growth (GDP), and Economic Activity Index subject to the speed in response the Pandemic during the year of 2020. The study's data sources were the World Health Organization (WHO), Trading Economics, and Statista.com for the research period of the year 2020. The study design is descriptive and analytical, applied econometric and statistical tools, tables, graphs, and curves to investigate and present the potential findings of the study.

The study's methodology will cover the following; first, estimating the relationships and the Direction between the COVID – 19 Pandemic cases and the study's economic variables (Economic Growth (GDP) and Economic Activity Index). The second is the simple linear regression model. The third is the Determination of the relationship and Direction of the COVID– 19 Pandemic cases and study's economic variables (Economic Growth (GDP) and Economic Activity Index) in particular for China during the year 2020. Fourth is Measuring China's Speed Response to the COVID – 19 Pandemic, and Exhibiting the Movement Direction of China's COVID – 19 Pandemic cases and the study's economic variables (Economic Growth (GDP), and Economic Activity Index) subject to the rapid speed in response to the COVID – 19 Pandemic during the year 2020. Fifthly, Methodology Conclusion & Literature evidence supporting methodological findings of the study.

Estimating the relationships and the Direction between the COVID – 19 Pandemic cases and Economic Growth (GDP) and Economic Activity Index

In determining the relationships and the Direction of the China's COVID – 19 Pandemic cases and the Economic Growth (GDP), the study assumed the COVID – 19 Pandemic cases to be the independent variable while the Economic Growth (GDP) to be the dependent variable of the study. While, in determining the relationships and the directions between the China's COVID – 19 Pandemic cases and the Economic Activity, the study considers the COVID – 19 Pandemic cases to be the independent variable and the Economic Activity Index to the dependent variable of the study.

The linear regression results are the fundamental basis for guiding the relationships and the directions between the study variables (He et al. 2010). In a practical example, for the positive linear regression results, the stud's variable possesses positive relationships and maintains to move in the same Direction. While, for the results of negative linear regressions, the study variables have negative relationships and keep moving in opposite and different directions.

The simple linear regression model

The simple linear regression model possesses only two variables known as independent and dependent variables of the study (Benoit 2011).

The linear model

The following equation stands for the linear regression model

$$Y = \beta_0 + \beta_1 X + \alpha \dots \dots \dots (1)$$

From the above equation

Y is the dependent variable of the study

X is the independent variable of the study

The denominations β_0 and β_1 are the parameters of the model

The parameter β_0 is an intercept term, and the parameter β_1 is called the slope parameter (Benoit 2011).

Determination of the relationship and Direction of the COVID– 19 Pandemic cases and Economic Growth (GDP) and Economic Activity Index for China

The study will apply linear regression results for exhibiting the relationships and the Direction of the study's variables. The study furthermore will employ the graphical presentation to prove and justify the study's findings.

This part of the study possess two different segments to be analyzed; First, Determining the relationships and Direction of the COVID – 19 Pandemic cases and Economic Growth (GDP) and second, Determining the relationships and Direction of the COVID – 19 Pandemic cases and Economic activity index for China during 2020.

Determination of the relationship and Direction of the COVID– 19 Pandemic cases and Economic Growth (GDP) for China

Regarding the regression computation, the COVID – 19 Pandemic cases are independent variables, while the Economic Growth (GDP) is considered the study's dependent variable. China's COVID – 19 Pandemic cases and Economic Growth (GDP) possess negative relationships and opposite Direction during the year of 2020. The regression results exhibit -0.00016719562 as the value for the slope of the regression line. Having the negative relationships means that when the COVID– 19 Pandemic cases increases, China's economic growth decreases and moves in the opposite Direction by the rate of -0.00016719562, and vice versa.

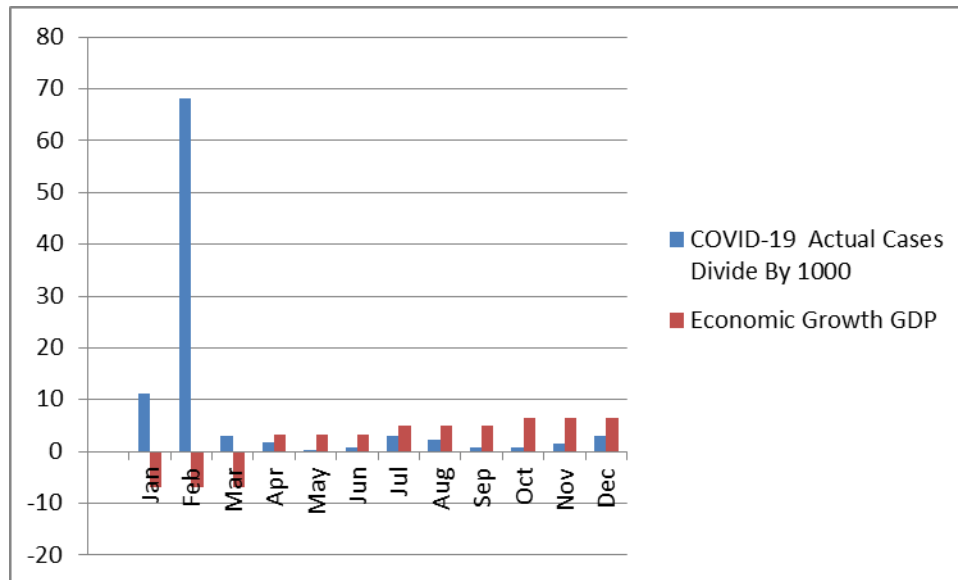
Graphical Proof

The Graph shows the negative relationships between China's COVID – 19 Pandemic cases and GDP.

For a practical graphical demonstration example, consider the month of January, February, and March, the COVID – 19 Pandemic cases were higher while the Economic Growth (GDP) were lower. On the opposite face, consider the months of April up to December, the COVID – 19 Pandemic cases were lower while the Economic Growth (GDP) was lower.

Graph – 1

The Graph below shows China's COVID – 19 Pandemic cases and Economic Growth (GDP) during 2020. The blue line represents the COVID – 19 Pandemic cases, while the red line represents the Economic Growth (GDP) for China during 2020.



Source: Appendix – 3

Regression Results

The following is the regression results table between China's COVID – 19 Pandemic cases and the Economic Growth (GDP) during the year 2020.

Variables	Coefficient	Standard Error Estimated	T-Statistic	Probability
Slope Regression line	-0.00016719562	4.562779854	-2.327104858	0
Constant	3.28756496			
R- Squared	0.349494251			
Correlation Coefficient – r	0.591180388			
Standard Deviation	0.00007184705			
Number of Experiments	12			

Source: Appendix – 2

Appendix – 1

Date	COVID-19 Cases (Accumulated)	Actual Cases	Economic Growth (GDP)	Investments (Accumulated)	Actual Investments	Economic Activity Index
Jan	11,200	11,200	-6.80	137.20	137.20	47.1
Feb	79,300	68,100	-6.80	274.40	137.20	40
Mar	82,200	2,900	-6.80	312	37.60	28
Apr	83,900	1,700	3.20	413.40	101.40	35.1
May	84,100	200	3.20	512.10	98.70	45.3
Jun	84,800	700	3.20	679.30	167.20	48.4
Jul	87,700	2,900	4.90	769.80	90.50	54.1
Aug	89,900	2,200	4.90	890	120.20	54.5
Sep	90,600	700	4.90	1,032.60	142.60	55.1
Oct	91,400	800	6.50	1,150.90	118.30	55.3
Nov	92,900	1,500	6.50	1294.70	143.80	55.7
Dec	96,000	3,100	6.50	1,443.70	149	55.1
Total	974,000	96,000	23.40	1,443.70	1,443.70	573.70

Source: Trading Economics - <https://tradingeconomics.com/china/indicators>

World Bank - <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CN>

& Statista.com - <https://www.statista.com/statistics/1016973/china-foreign-direct-investment-inflows/>

Appendix – 2

Month	COVID- 19	GDP	XX	YY	XY
	Actual Cases				
	(X)	(Y)			
Jan	11200	-6.8	125440000	46.24	-76160
Feb	68100	-6.8	4637610000	46.24	-463080
Mar	2900	-6.8	8410000	46.24	-19720
Apr	1700	3.2	2890000	10.24	5440
May	200	3.2	40000	10.24	640
Jun	700	3.2	490000	10.24	2240
Jul	2900	4.9	8410000	24.01	14210
Aug	2200	4.9	4840000	24.01	10780
Sep	700	4.9	490000	24.01	3430
Oct	800	6.5	640000	42.25	5200
Nov	1500	6.5	2250000	42.25	9750

Dec	3100	6.5	9610000	42.25	20150
Total	96000	23.4	4801120000	368.22	-487120

Source: Appendix – 1 – Regression Run

Appendix -3

Month	COVID-19	Economic
Year	Actual Cases	Growth
2020	Divide By 1000	GDP
Jan	11.2	-6.8
Feb	68.1	-6.8
Mar	2.9	-6.8
Apr	1.7	3.2
May	0.2	3.2
Jun	0.7	3.2
Jul	2.9	4.9
Aug	2.2	4.9
Sep	0.7	4.9
Oct	0.8	6.5
Nov	1.5	6.5
Dec	3.1	6.5
Total	96	23.4

Source: Appendix – 1

Determination of the relationship and Direction of the COVID– 19 Pandemic cases and Economic Activity Index for China

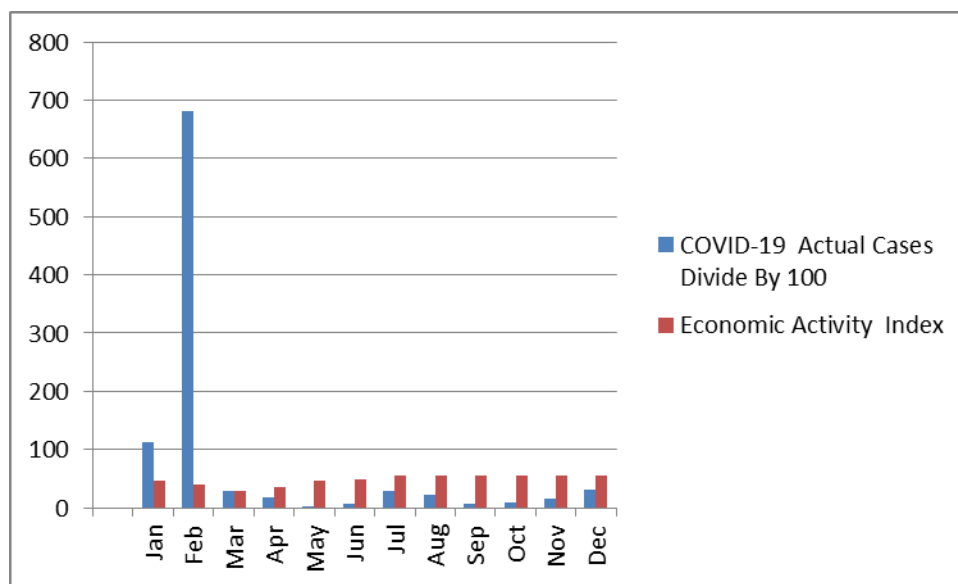
Regarding the regression computation, the COVID – 19 Pandemic cases are the independent variable, while the Economic Activity Index was considered the study's dependent variable. As a result, China's COVID – 19 Pandemic and Economic Activity Indexes possess negative relationships and opposite Direction during the year 2020. The regression results exhibits-0.00013396824 as the value for the slope of the regression line. Having the negative relationships means that when the COVID– 19 Pandemic cases increases, China's economic Activity Index decreases and moves in the opposite Direction by the rate of -0.00013396824, and vice versa.

Graphical Proof

The Graph below shows China's COVID – 19 Pandemic cases and Economic Activity Index are negatively related and moving in different directions throughout 2020.

Graph – 1

The Graph below shows China's COVID – 19 Pandemic cases and Economic Activity during 2020. The blue line represents the COVID – 19 Pandemic cases, while the red line represents the Economic Activity for China during 2020.



Source: Appendix – 5

Regression Results

The following is the regression results table between China's COVID – 19 Pandemic cases and the Economic Activity Index during the year 2020.

Variables	Coefficient	Standard Error Estimated	T-Statistic	Probability
Slope Regression line	-0.00013396824	9.179769605	-0.926809873	0
Constant	48.88			
R- Squared	0.777416212			

Correlation Coefficient – r	0.881712091			
Standard Deviation	0.000144547707			
Number of Experiments	12			

Source: Appendix - 4

Appendix – 4

Month	COVID- 19	Economic	XX	YY	XY
Year	Actual Cases	Activity			
2020	(X)	(Y)			
Jan	11200	47.1	125440000	2218.41	527520
Feb	68100	40	4637610000	1600	2724000
Mar	2900	28	8410000	784	81200
Apr	1700	35.1	2890000	1232.01	59670
May	200	45.3	40000	2052.09	9060
Jun	700	48.4	490000	2342.56	33880
Jul	2900	54.1	8410000	2926.81	156890
Aug	2200	54.5	4840000	2970.25	119900
Sep	700	55.1	490000	3036.01	38570
Oct	800	55.3	640000	3058.09	44240
Nov	1500	55.7	2250000	3102.49	83550
Dec	3100	55.1	9610000	3036.01	170810
Total	96000	573.7	4801120000	28358.73	4049290

Source: Regression Run from Appendix – 1

Appendix – 5

Month	COVID-19	Economic
Year	Actual Cases	Activity
2020	Divide By 100	Index
Jan	112	47.1
Feb	681	40
Mar	29	28
Apr	17	35.1
May	2	45.3
Jun	7	48.4
Jul	29	54.1
Aug	22	54.5
Sep	7	55.1
Oct	8	55.3
Nov	15	55.7
Dec	31	55.1
Total	960	573.7

Source: Appendix – 1

Measuring China's Speed Response to the COVID – 19 Pandemic and Exhibiting the Movement Direction of China's COVID – 19 Pandemic cases, Economic Growth (GDP), and Economic Activity Index

The study employed the Normal Distribution Curve to measure China's rapid speed in response to the COVID – 19 Pandemic during the year 2020. Furthermore, the study used a Normal Distribution Curve and graphical presentations for exhibiting the directions of China's COVID – 19 Pandemic cases, Economic Growth (GDP), and Economic Activity Index for China during the year 2020.

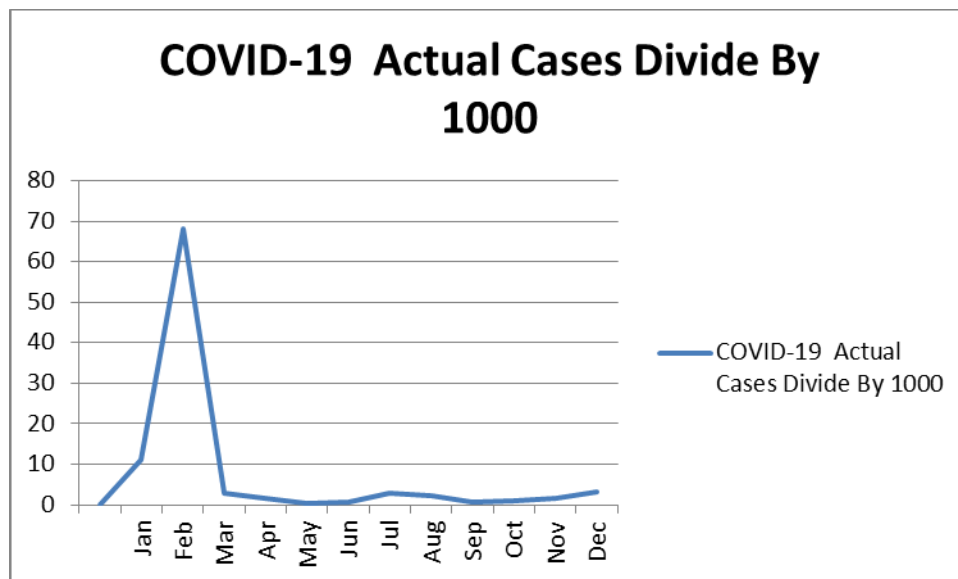
Through the Normal Distribution Curve, the measurement focusing on observing the movement of the Curve's line from the first date the case of the COVID – 19 Pandemic recorded to the top and bending point of the Curve. The top and bending point of the Curve exhibits the time spent in responding and start recovering from the COVID – 19 Pandemic.

Consider the Normal Distribution Curve – 1; China reaches the top and bending point of the Curve dated 15 February 2020. China spent 45 days responding and started recovering from the COVID-19 Pandemic.

The Normal Distribution Curve – 1

The Normal Distribution Curve 1 measures China's response speed to the COVID – 19 Pandemic (Brophy and Wood 1989). To calculate the speed of response to the COVID – 19 Pandemic; Focus on observing the movement of the Curve line from the original point to the top and bending point of the Curve. The Curve's top and bending points reveal the exact speed used in response and start recovering from the COVID – 19 Pandemic.

Consider the Normal Distribution Curve below; China reaches the top and bending point of the Curve during mid of February 2020. Therefore, China spent almost 45 days rapid responding and started recovering from the COVID – 19 Pandemic. Thus, from the Curve, the blue curved line indicates China's COVID – 19 Pandemic cases movements.



Source: Appendix – 6

The Direction of the COVID – 19 Pandemic cases, Economic Growth (GDP), and Economic Activity Index subject to the Rapid Speed in Response to the COVID – 19 Pandemic

The study employed the Normal Distribution Curve and the Graphical presentation for exhibiting the Direction of the COVID – 19 Pandemic cases, Economic Growth (GDP), and the Economic Activity Index subject to the rapid speed employed in response to the COVID – 19 Pandemic by China during the year of 2020.

Determination of the Direction through a Normal Distribution Curve Demonstration

Through the Normal Distribution Curve – 2 below, the Curve exhibits the opposite direction relationships between the COVID – 19 Pandemic cases and the two study's economic variables indicators; Economic Growth (GDP) and the Economic Activity Index. For a practical example, the Curve exhibits that the occasion the COVID – 19 Pandemic cases are higher; China's Economic Growth (GDP) and the Economic Activity Index become lower. Conversely, while the COVID – 19 Pandemic cases are lower, China's Economic Growth (GDP) and Economic Activity become higher during 2020.

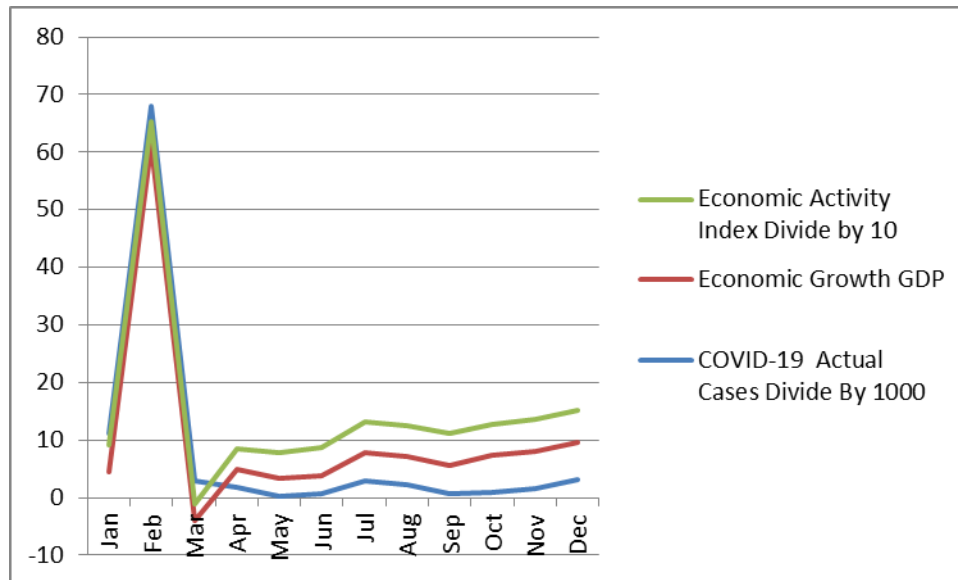
Determination of the Direction through Graphical Presentation Demonstration

Through Graph – 2 below, the Graph exhibits the opposite direction relationships between the COVID – 19 Pandemic cases and the two study's economic variables indicators; Economic Growth (GDP) and the Economic Activity Index. For a practical example, the Graph exhibits that the occasion the COVID – 19 Pandemic cases are higher; China's Economic Growth (GDP) and the Economic Activity Index become lower. Conversely, while the COVID – 19 Pandemic cases are lower, China's Economic Growth (GDP) and Economic Activity become higher during 2020.

The Normal Distribution Curve – 2

The Curve shows that the relationships between the COVID – 19 Pandemic cases and economic variables are negative and moving in different and opposite directions. The Normal Distribution Curve 2 exhibits the relationships and movements of China's COVID – 19 Pandemic cases and economic indicators subject to the speed in response to the COVID – 19 Pandemic. The Normal Distribution Curve – 2 indicates the relationships and movement directions between the COVID – 19 Pandemic cases and economic variables of the study subject to the speed in response to the COVID – 19 Pandemic.

The Curve shows that the relationships between the COVID – 19 Pandemic cases and economic variables are negative and moving in different and opposite directions. That means when the COVID – 19 Pandemic cases are higher the GDP, and Economic activities become lower, and vice versa. The curves blue line shows the Pandemic's speed and represents the COVID – 19 Pandemic cases. The red curve line represents the GDP, and the yellow curve line represents the Economic activity index for China during the year 2020.

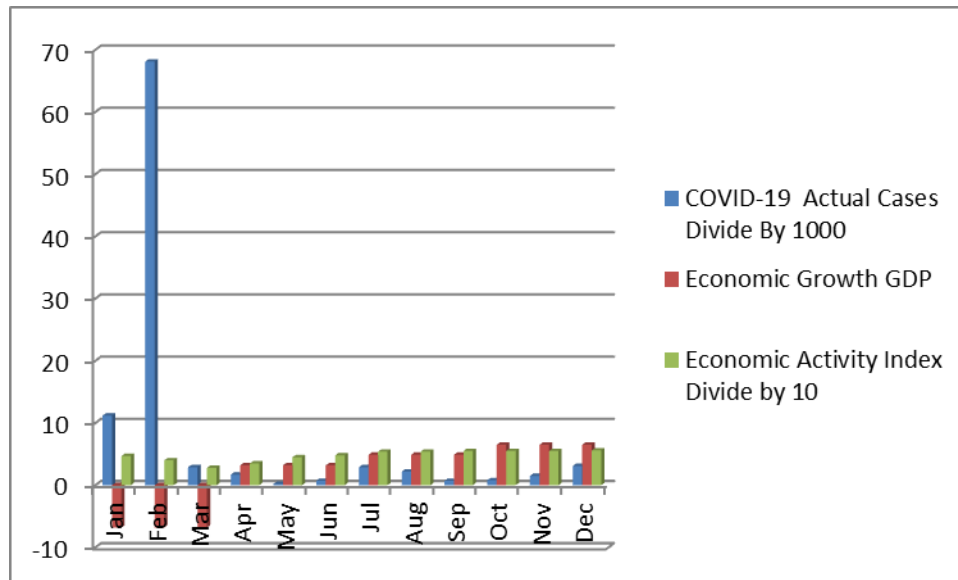


Source: Appendix – 6

The Graph – 2

The Graph shows the negative relationships between the COVID – 19 Pandemic cases and the economic variables of the study (GDP and Economic Activity Index), while the movement directions between the COVID – 19 Pandemic cases and the economic variables is opposite and indifferent Direction.

The blue line represents the COVID – 19 Pandemic cases; the red line represents the Economic Growth (GDP), and the yellow line represents the Economic Activity Index for China during 2020.



Source: Appendix – 6

Appendix - 6

Month	COVID-19	Economic	Economic
Year	Actual Cases	Growth	Activity
2020	Divide By 1000	GDP	Index
			Divide by 10
Jan	11.2	-6.8	4.7
Feb	68.1	-6.8	4
Mar	2.9	-6.8	2.8
Apr	1.7	3.2	3.5
May	0.2	3.2	4.5
Jun	0.7	3.2	4.8
Jul	2.9	4.9	5.4
Aug	2.2	4.9	5.4
Sep	0.7	4.9	5.5
Oct	0.8	6.5	5.5
Nov	1.5	6.5	5.5
Dec	3.1	6.5	5.6
Total	96	23.4	57.2

Appendix – 1

Methodology Conclusion & Literature evidence supporting methodological findings of the study

Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). The study's findings reveal that China demonstrated rapid response to the COVID – 19 Pandemic. Furthermore, China's fast speed in response to the COVID – 19 Pandemic causes the decreases of the COVID – 19 Pandemic cases. At the same time, the economic growth and economic activity index rapidly recovered and evolving during the year 2020.

The relationship and the Direction between the China's COVID – 19 Pandemic cases and Economic Growth (GDP) are negative. For the negative association, China's COVID – 19 Pandemic cases and Economic Growth (GDP) maintain different and opposite directions in movements. From that ground, when the COVID – 19 Pandemic cases increases, the Economic Growth (GDP) decreases, and vice versa is true.

Likewise, to the relationship and the Direction between China's COVID – 19 Pandemic cases and Economic Activity Index, the relationships among the variables happen to be negative relationships, with different and opposite direction movements for the variables.

Literature evidence supporting methodological findings of the study

Through the regression analysis, China's GDP and the COVID – 19 Pandemic cases have negative relationships, meaning that when the COVID – 19 Pandemic cases increase, China's GDP decreases, and vice versa (Mo et al. 2021). The study's findings of the research on the Progress on COVID-19 and Government Action in China stated that the COVID – 19 Pandemic has negative impacts on China's GDP, while the relationships of the COVID – 19 cases and GDP is negative throughout the year 2020 (Hu et al. 2021). The influence of the COVID – 19 Pandemic on China's economic growth might be in the scenario where the increases of the COVID – 19 Pandemic cases led to the contraction of the GDP and vice versa across all China's provinces (Pan et al. 2021).

Findings of the study and Practical Implications in the Economy

The study's findings analyzed how China's economic process enabled the Economy to recover and evolve resiliently during the COVID-19 Pandemic, particularly in 2020. Thus, rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the

COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic.

The study results will alter and modify the Global COVID – 19 pandemic policies and strategies, particularly to enable global countries' economies to recover and evolve in a resilient manner during the COVID-19 Pandemic.

Conclusions and Recommendations of the Study

Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). Therefore, rapid response to the COVID-19 Pandemic is vital to mitigate and eliminate the COVID-19 Pandemic (Coccia 2021). In a practical example, China's Economy rapidly recovered and evolved due to the rapid response to the COVID-19 Pandemic. Thus, the quick response to the COVID-19 Pandemic triggers the decline of COVID-19 pandemic cases as the Economy recovers and evolves resiliently (WorldBankGroup 2020).

The study's findings analyzed how China's economic process enabled the Economy to recover and evolve resiliently during the COVID-19 Pandemic, particularly in 2020. Rapid response to the COVID-19 Pandemic is the fundamental new economic driver during the COVID-19 Pandemic; it causes the decline in COVID-19 pandemic cases and leads to resilient economic recovery and evolving during the COVID-19 Pandemic (The-World-Bank-Report 2021). Thus, the study results will alter and modify the Global COVID – 19 pandemic policies and strategies, particularly to enable global countries' economies to recover and evolve in a resilient manner during the COVID-19 Pandemic.

Recommendations for further research

Further research might focus on how other economic drivers enabled the China region to eliminate the COVID – 19 Pandemic cases and enhance the economic recovery and evolving (Rodriguez-Anton and Alonso-Almeida 2020). These economic drivers include digital technology, industrial policies, health system, COVID – 19 Pandemic policies and strategies, Vaccination, Robot technology, Fiscal and Monetary Policies, Financial Technology, and Government political style and administration.

Recommendation for the Global Economy

Global countries should focus on rapid response to the COVID – 19 pandemic response strategies because the strategy causes the decline of the COVID – 19 Pandemic cases. At the same time, the Economy resiliently recovered and evolving (Rodriguez-Anton and Alonso-Almeida 2020).

Acknowledgments

Non

Statement of Research Interest

Non

Reference

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