

ENVIRONMENTAL, SOCIAL, AND  
GOVERNANCE PERSPECTIVES  
ON ECONOMIC DEVELOPMENT  
IN ASIA

# INTERNATIONAL SYMPOSIA IN ECONOMIC THEORY AND ECONOMETRICS

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INTERNATIONAL SYMPOSIA IN ECONOMIC THEORY AND  
ECONOMETRICS VOLUME 29 B

**ENVIRONMENTAL, SOCIAL,  
AND GOVERNANCE  
PERSPECTIVES ON  
ECONOMIC DEVELOPMENT  
IN ASIA**

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# CONTENTS

<i>List of Figures</i>	vii
<i>List of Tables</i>	ix
<i>About the Contributors</i>	xii
<b>Chapter 1 The Economic Performance of China in Trade War: The Case Study of Three Global Economic Crises in 1997–2020</b> <i>Budi Sasongko, Suryaning Bawono and Bambang Hadi Prabowo</i>	1
<b>Chapter 2 Identifying Neighborhood Reinforcement Method to Enhancing Socioeconomic Development in Indonesia: A Quintuple Helix Perspective</b> <i>Vidya Purnamasari, Ermita Yusida, Vika Annisa Qurrata, Santi Merlinda, Linda Seprillina and Wen-Chi Huang</i>	13
<b>Chapter 3 Materiality Analysis and CSR in Micro, Small, and Medium Enterprises</b> <i>Erwin Saraswati</i>	23
<b>Chapter 4 Green Supply Chain Integration and Environmental Uncertainty on Performance: The Mediating Role of Green Innovation</b> <i>Siti Aisjah and Sri Palupi Prabandari</i>	39
<b>Chapter 5 Entrepreneurial Perspective on Firm’s Environmental Activities</b> <i>Duangporn Puttawong and Anusorn Kunanusorn</i>	63
<b>Chapter 6 Facing International Environmental Challenges by Enhancing Employee Engagement</b> <i>Reny Diana and B. Medina Nilasari</i>	81
<b>Chapter 7 Innovation Orientation, Marketing Capability, Dynamic Capability, and Performance</b> <i>Bahrin Borahima, Noermijati Noermijati, Djumilah Hadiwidjojo and Ainur Rofiq</i>	93

<b>Chapter 8 The Interactive Effect of Ethical Leadership and Employee Citizenship Behavior on Organizational Success: Do Lenses of Corporate Governance Matter?</b> <i>Amy Yeo Chu May, Carmen Teoh Chia Wen and Jeffton Low Boon Tiong</i>	105
<b>Chapter 9 Entrepreneurship in the Tourism Industry: Implication on Sustainable Economic Development</b> <i>Murniati Murniati, Ghozali Maski, Iswan Noor and Marlina Ekawaty</i>	137
<b>Chapter 10 Investigation of Taxation Knowledge, Services, and Sanctions of the Head of Village Government Financial Affairs of Gunung Kidul Regency in Indonesia</b> <i>Sang Ayu Putu Piastini Gunaasih</i>	157
<b>Chapter 11 Impact of COVID-19 Pandemic Risk and Lockdown on the Indian Economy</b> <i>Soumya Bhadury, Vidya Kamate and Siddhartha Nath</i>	169
<b>Chapter 12 The Impacts of Electronic Word of Mouth on the Intention of Patients to Join “In Vitro Fertilization” Program</b> <i>Muhammad Rizal, Endang Ruswanti and Moehammad Unggul Januarko</i>	189
<b>Chapter 13 Model of Increasing Tourists Revisit Intention: Utilizing the Environment as an Ecotourism Area</b> <i>Dani Dagustani, Gatot Iwan Kurniawan, Heppy Agustiana Vidyastuti and Rediawan Miharja</i>	207
<i>Index</i>	221

# LIST OF FIGURES

## Chapter 1

Fig. 1.	Forecast of Estimation Results of China's GDP.	7
Fig. 2.	Forecast of Estimation Results of the United States' GDP.	9
Fig. 3.	China and US GDP Comparison Chart.	10

## Chapter 2

Fig. 1.	Conceptual Framework.	17
Fig. 2.	Data Analysis Using SEM.	18

## Chapter 3

Fig. 1.	Material Issues for Service and Manufacturing Industries MSMEs.	32
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## Chapter 4

Fig. 1.	Structural Model (Inner Model).	53
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## Chapter 5

Fig. 1.	Conceptual Framework.	70
Fig. 2.	Path Results of the Structural Model (Partial Mediation Model).	74
Fig. 3.	Path Results of the Structural Model (Full Mediation Model).	74

## Chapter 6

Fig. 1.	Conceptual Framework.	85
---------	-----------------------	----

## Chapter 7

Fig. 1.	Framework.	97
Fig. 2.	Regression Coefficient for SOE.	99
Fig. 3.	The Regression Coefficient for Non-SOE.	100
Fig. 4.	Regression Coefficient for a Combination of SOE and Non-SOE.	101

## Chapter 8

Fig. 1.	Proposed Conceptual Framework.	112
Fig. 2.	First-order Measurement Model.	117
Fig. 3.	Second-order Measurement Model.	122

**Chapter 9**

Fig. 1. Number of Tourist Trips by Province in Indonesia, 2015–2019.	140
Fig. 2. Data of Indonesian Tourist Arrivals in 2015–2019.	141
Fig. 3. BPS-IFLS Data Collection Steps.	145
Fig. 4. Job Field in Indonesia.	148
Fig. 5. Frequency of Entrepreneurs in Indonesia.	149
Fig. 6. Entrepreneurs' Education Level in Indonesia.	149
Fig. 7. Age of Entrepreneurs in Indonesia.	150
Fig. 8. Entrepreneurs' Origin in Indonesia.	150
Fig. 9. Entrepreneurs in Indonesia, by Gender.	150
Fig. 10. Frequency of Entrepreneurs' Marriage Status in Indonesia.	151

**Chapter 10**

Fig. 1. Research Model.	161
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**Chapter 11**

Chart 1. Path of Economic Activities in India: Under COVID-19 and Scenario Without COVID-19.	178
Chart 2. Contribution in Momentum by Indicator: Post-lockdown.	179
Chart 3. Cumulative Stock Market Returns for BSE Sensex and Bankex Index January 1, 2020–January 31, 2021.	180
Chart 4. Holding Period Return for Different Sectoral Indices for January 1, 2020–June 5, 2020.	180

**Chapter 12**

Fig. 1. Conceptual Framework.	195
Fig. 2. Path Diagram <i>t</i> -Value.	198

**Chapter 13**

Fig. 1. The Strategic Ecotourism Area, South Coast of West Java, Indonesia	208
Fig. 2. Research Model.	212
Fig. 3. Full Structural Model of Increasing Tourist Revisit Intention.	214

# LIST OF TABLES

## Chapter 1

Table 1.	Variables and Description.	5
Table 2.	Estimation Results of China's GDP.	6
Table 3.	Estimated Results of the United States' GDP.	8

## Chapter 3

Table 1.	Classification of Company Size.	26
Table 2.	Final Sample Selection Process.	28
Table 3.	Descriptive Statistic Service Industry.	29
Table 4.	Descriptive Statistic Manufacturing Industry.	31
Table 5.	Most Relevant Material Issues in Service Industry MSMEs.	32
Table 6.	Most Relevant Material Issues in Manufacturing Industry MSMEs.	33

## Chapter 4

Table 1.	Outer Loadings (Mean, SD, <i>t</i> -Values).	51
Table 2.	Discriminant Validity (Cross-Loading).	51
Table 3.	Goodness of Fit.	52
Table 4.	Path Coefficient (Mean, SD, <i>t</i> -Values).	53
Table 5.	Indirect Effect.	54
Table 6.	Result of SEM-PLS.	54

## Chapter 5

Table 1.	Demographic of Respondents ( $n = 375$ ).	71
Table 2.	Measurement Model Results.	72
Table 3.	Results of SEM.	75

## Chapter 6

Table 1.	Results of the Validity of Employee Engagement Variables.	86
Table 2.	Results of the Validity of Perceived Organizational Support Variables.	87
Table 3.	Results of the Validity of Transformational Leadership Variables.	87
Table 4.	Results of the Validity of Teamwork Variables.	88
Table 5.	Reliability Results.	88
Table 6.	Partial Test Results.	89
Table 7.	Summary of Hypothesis Test Results.	90

**Chapter 7**

Table 1.	Hypothesis Testing Results for SOE.	99
Table 2.	Hypothesis Testing Results for Non-SOE.	99
Table 3.	Hypothesis Testing Results for a Combination of SOE and Non-SOE.	100

**Chapter 8**

Table 1.	Descriptive Analysis of Respondent Profile.	114
Table 2.	Pearson Product-Moment Correlation Coefficient Between Constructs.	115
Table 3.	Cronbach's Alpha, Composite Reliability, and Dijkstra–Henseler's Rho Reliability Coefficient of the Constructs (PLS-SEM).	116
Table 4.	Convergent Validity of First-order Measurement Model.	118
Table 5.	Fornell–Larcker's Criterion for First-order Measurement Model.	119
Table 6.	Cross-Loading's Criterion for First-order Measurement Model.	120
Table 7.	HTMT Criterion for First-order Measurement Model.	121
Table 8.	Convergent Validity of Second-order Measurement Model.	123
Table 9.	Fornell–Larcker's Criterion for Second-order Measurement Model.	124
Table 10.	Cross-Loading's Criterion for Second-order Measurement Model.	125
Table 11.	Latent Multicollinearity Assessment.	126
Table 12.	Assessment of Path Coefficient.	126
Table 13.	Hypotheses Testing on Mediation.	126

**Chapter 9**

Table 1.	Data of Tourist Arrivals by Province in Indonesia 2015–2019.	139
Table 2.	Total Data of Indonesian Tourist Arrivals 2015–2019.	140
Table 3.	Topics of the IFLS Questionnaire in Research.	145
Table 4.	Operational Definition of Variables.	146
Table 5.	Descriptive Analysis Results.	148
Table 6.	Regression Results.	152

**Chapter 10**

Table 1.	Reliability Test Result.	162
Table 2.	Validity Test Result.	163
Table 3.	Statistical Table Description of Research Variables.	164
Table 4.	Hypothesis Testing Results.	164
Table 5.	The <i>F</i> -test Results.	165
Table 6.	Coefficient Test Results.	165

**Chapter 11**

Table 1. Summary of Selected Indicators and Their Sectoral Linkages.	173
Table 2. $\widehat{\Delta\text{CoVaR}}$ Estimates for BSE Sectoral Indices (1% Distress Level).	182

**Chapter 12**

Table 1. Statistical Analysis of Variables Based on the Questionnaire.	197
Table 2. Results of Hypothesis Testing.	198

**Chapter 13**

Table 1. Descriptive Results of 2017 and 2019.	213
Table 2. Hypothesis Testing Result.	215

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# CHAPTER 1

## THE ECONOMIC PERFORMANCE OF CHINA IN TRADE WAR: THE CASE STUDY OF THREE GLOBAL ECONOMIC CRISES IN 1997–2020

Budi Sasongko, Suryaning Bawono and  
Bambang Hadi Prabowo

### ABSTRACT

*This chapter aims to examine the comparative economic performance of the United States versus China in the digital era. This chapter uses the Threshold Autoregressive (TAR) model method in comparing economic performance. The US economy was shaken quite significantly in 2008 due to the subprime mortgage crisis. On the other hand, China's economic performance continues to improve. Based on the estimation results of China's economic performance which continues to increase with faster economic growth than the United States, it is found that China has resistance to shocks from the 1997 crisis, the 2008 subprime mortgage crisis, and the European debt crisis in 2011 and has the potential to compete with the United States as the dominant country in economic terms. China's economic growth is getting faster and faster since 1979. It indicates that China's economy can surpass the US economy, which currently owns the largest gross domestic product (GDP) in the world.*

**Keywords:** Environmental; social; governance; economic development; trade war, economic performance

**JEL classifications:** B2; C0; N4

## 1. INTRODUCTION

Since Chinese President Xi Jinping came to power, China's economy has continued to grow with various Chinese economic policies that are attractive for investors to invest in China. China's economic growth has continued to increase from 1976 to 2019, encouraging China to become economically strong. In 2020, US–China relationship heated up on the issue of a trade war (Shambaugh, 2020).

The United States and China are engaged in a trade war by imposing tariffs on importing both countries' goods. US President Donald Trump considers China to have unfair trade practices. Donald Trump accuses China of intellectual property theft. China thinks the United States has tried to curb China's rise to become stronger economically. The US–China Trade War occurred on July 6, 2018. The trade war impacted China and the United States (Lee & Khor, 2019).

There have been three global financial crises from 1997 to 2013, certainly testing the United States and China's economic resilience. The Asian financial crisis occurred in 1997. This crisis caused the global economy, especially Asia, to experience a slowdown in economic growth. After the Asian financial crisis, 2008 was followed by the subprime mortgage crisis in 2008, which had a global impact. Furthermore, in 2011, there was a financial crisis in Europe.

In 2018, the United States started a trade war with China. The tariff war between the United States and China has caused economic turmoil and fears of a further crisis. In 2020, the American China trade war is still not over. However, the corona virus pandemic has spread globally and has resulted in a global economic slowdown.

It is feared that the trade war between China and the United States will hurt the global economy because both are quite strong countries in terms of the world economy. The existence of an open market economy makes the two countries' economic conditions affect global economic conditions.

## 2. LITERATURE REVIEW

China's economic reforms took place in the 1978–1984 period by improving China's foreign relations and China's agricultural system (Ding, McQuoi, & Karayalcin, 2019; Reynolds, 2014). In that period, China opened up to the outside world, impacting China's foreign exchange income through tourism and trade (Perkins, 2019). China's agricultural reform has proven successful in increasing domestic Chinese farmers' productivity and farmers' per capita income (Zhou, Li, & Liu, 2020).

China builds cooperation with countries in the Asian region, including Russia. Russia is one of the countries that is China's economic partner that strengthens China's financial resources (Barnett & Sergi, 2019). Since 1978, China has opened up to the world, and before the trade war in 2018 broke out, 1978, China and the United States were good partners. One of the partnerships between China and the United States was the Commercial Satellite and Technology Transfer cooperation from 1978 to 2000 (Zhang & Seely, 2019).

Since China's opening to the outside world, China's economic growth has grown rapidly (Lai, Chen, Liu, 2020). Economic growth in China increases the market quantity in China where market quality impacts profitability (Hartono & Sulistiawan, 2019).

The Association of Southeast Asian Nations (ASEAN) region is an area not far from China. The ASEAN region is one of the most attractive regions as a destination for foreign direct investment (FDI) in developing countries (Wong, Fai, Yee, & Cheng, 2019).

China has the potential to become a formidable competitor for the United States in economic growth. The trade war between the United States and China had a bad impact on both countries. It negatively impacted developing countries, especially the two parties' financial performance, which had deteriorated due to the trade war (Li, Balistreri, & Zhang, 2020). The trade war certainly threatens developing countries' financial performance, especially those strategic partners of the United States and China, such as countries in the ASEAN region.

In the period 1960–2020, at least three global crises tested most countries' economies globally, including China and the United States. The three crises were the Asian financial crisis in 1997 (Joe & Oh, 2018), the subprime mortgage crisis in 2008 (Adelino et al., 2017), and the European debt crisis in 2010–2013 (Keddad & Schalck, 2020).

The Asian financial crisis occurred in 1997 on the backdrop of a debt-based financial asset bubble which was not balanced by the real sector as economic support. In the end, the economic bubble burst due to the decline in investment quality, which resulted in a crisis (Posen & Changyong, 2013; Raj & Roy, 2014).

The subprime mortgage financial crisis that occurred in 2008 started in the United States due to default on housing loans. The US government has supported homeownership loans since the 1930s (Zorgati, Lakhali, & Zaabi, 2019). The convenience of mortgages increases home sales that benefit investors and increase the demand for houses, resulting in rising house prices and increasing debt to buy a house. This condition keeps repeating itself until house prices are raised, and the need for housing loans is getting higher; As a result, the debt required to buy a house is getting higher without being matched by an increase in the borrower's income, which in the end is not enough for the borrower's ability to repay the loan. And it happened so massively that it hit the financial industry hard, resulting in a financial crisis (Gredel, 2015). America is a country that is quite influential economically in the world. When the American economy worsens, it affects other countries and spreads globally; it becomes a global crisis (Brem et al., 2020).

The eurozone debt crisis became the world's main threat in 2011 and 2012. The crisis started in 2009 when Greece defaulted on its debt. Greece's debt defaults affect the European Union's finances, and other countries such as Spain, Portugal, and Italy have great potential to default on debt during the eurozone debt crisis. The crisis that occurred in the eurozone certainly had an impact on the global economy.

A crisis is an economic phenomenon that tests the resilience of a country's economy. It also applies to the United States and China. By considering the conditions of economic growth in China and the United States during the crisis, it can be compared with the economic resilience of the two countries so that it can be seen that if the trade war continues, who can win the trade war. Of course, the trade war between the two sides will hurt the economies of the two countries and threaten the global economy.

The trade war started in 2018 by fighting each other on tariffs between the United States and China. Trade wars are not only bad for the two countries but also the world. To illustrate the threat of China's economic growth to the United States' economic growth, which currently dominates the world economy, this chapter uses a realistic purchasing power parity theory approach based on David Ricardo's theory of comparative advantage (Salvatore, 2016).

Theoretically, in the absolute income theory, people's income can be reflected by their consumption or the community's income or a person as big as the community's consumption or person per person. Everyone can choose to spend, save, or invest their income so that investment is also based on income and consumption (Hatirli, 2020). It, of course, can be calculated in aggregate with the indicators of economic growth.

### 3. DATA AND METHODOLOGY

This research method used the Threshold Autoregressive (TAR) model to describe the United States and China's economic growth in a period of three crises. The TAR model is used in several different statistical fields, not just time series. In the TAR model, the autoregressive (AR) model is estimated separately in two or more value intervals (regimes or shocks or change point estimation) as defined.

In writing this study, the scope of research will be discussed, namely analyzing the influence of the consumption variable (X1), government expenditure (X2), on gross domestic product (GDP) (Y1) which is used as a forecasting basis to obtain alternative economic activities that can be carried out in the present and future. Come with a research period from 1960 to 2019. In this study, secondary data were used. Secondary data were obtained and processed from World Bank, as shown in Table 1.

This study focuses on research using aggregate data and secondary data with a sample of all data collected by the World Bank and with a population of all data in reality, either collected or recorded or not collected or recorded by the World Bank.

This research method used the TAR model to describe the United States' and China's economic growth in a period of three crises. In this study using the following regression model:

$$GDP_t = \beta CO_{t1} + \beta G_{t1} + e$$

where GDP is the gross domestic product; CO, consumption; G, government expenditure

**Table 1.** Variables and Description.

Variables	Descriptions	Source
GDP	GDP stands for the gross domestic product obtained from World Bank data	World Bank (processed)
CO	CO is the aggregate consumption of society, which is representative of people's income based on the theory of absolute income	World Bank (processed)
G	G is government expenditure in procuring public goods and running the government based on the policies implemented by the government	World Bank (processed)

The TAR model is used in several different statistical fields not just time series. In the TAR model, the AR model is estimated separately in two or more value intervals (regimes or shocks or change point estimation) as defined. This study adopts the research of [Umer, Sevil, and Sevil \(2018\)](#) in the framework of smooth transition autoregressive (STAR) modeling as follows:

$$\Delta y_t = \Phi x_t + \Upsilon x_t G(\text{St}, \hat{y}, C) + e_t$$

where  $\Delta$  is the symbol of the first difference operator,  $y_t$  is the symbol of the dependent variable;  $x_t = (1, y_{t-1}, y_{t-2}, \dots, y_{t-p})$  be a vector representative of all the explanatory variables on the right;  $\Phi = (a, \Phi_1, \Phi_2, \dots, \Phi_{p-1})$  and  $\Upsilon = (a, \Upsilon_1, \Upsilon_2, \dots, \Upsilon_{p-1})$  is a parameter vector, where the vector is the estimated vector.  $G(\text{St}, \hat{y}, C)$  be a continuous transition function, delimited by 0 and 1, where St becomes a transition variable. The parameter  $\Upsilon$  represents the speed and smoothness of a transition, where  $C$  becomes a symbol that is interpreted as the threshold between the two estimated equation regimes. Moreover,  $e_t$  is a symbol of a model error where  $e_t$  is an error that may occur. Because there are two regimes in the estimated model, this model can be interpreted as a two regime transition model, so that the transition function  $G$  has the chance or possibility dynamically in the model to move between regimes properly.

#### 4. FINDINGS AND DISCUSSION

The United States and China in 2020 will be countries that have strong economies. When the United States and China carry out a trade war, it will undoubtedly impact the global economy. Based on the literature review, this hurts industrial and financial performance in emerging markets. The economic strength of the two can be seen by comparing how strong the economies of the two countries were tested in the economic crisis. Public consumption as a representative of people's income and welfare, government expenditure that represents government spending as a result of government policies and decisions to prosper the community is calculated starting in 1960.18 years before the economic revival of China 1978 to 2019 where the trade war took place. This is done to see and compare the economic resilience of the two countries due to a collection of policies and public financial performance

in the two countries, which is reflected in the aggregate consumption of society and economic growth reflected in the gross domestic product. The following are the estimation results of the Threshold Autoregressive (TAR) model.

Estimated results of China's GDP:

$$\begin{aligned} \text{GDP} = & (3.03231595858 * \text{CO} - 6.86202138166 * G - 114142687564) \\ & + (-2.88331697411 * \text{CO} + 11.6430235638 * G + 1.65874798801\text{E} + 12) * \\ & @ \text{LOGIT}(1.88319698357\text{E} - 12 * (\text{GDP}(-3) - 1.54943903091\text{E} + 12)) \end{aligned}$$

Based on the estimate of China's economic growth in line with Chinese consumption of 3.03231595858 units, which reflects an increase in the income of the Chinese people. So that when China's GDP increases by 1%, people's consumption increases by 3%. However, in the long run, the Chinese people's consumption reverses the direction of GDP of  $-2.88331697411$ . It allocates their income to investment and taxes as reflected in positive government expenditure of 11.6430235638, which means that every 1% increase in GDP, in the long run, reduces consumption by 2.8% allocated to government spending which is a reflection of public investment of 11.6%. Changes or variable behavior for each time series data, in general, are  $1.88319698357\text{E} - 12$  every time there is a change in one unit of GDP, which means that every 1% change in GDP there is a change in the variable in general of 1.8%. The estimation results above are described in [Table 2](#).

The  $R^2$  of 0.999629 means that the estimate for each variable's change is valid at 99% with  $\text{prob}(F\text{-statistic})$  0, which means it is significant with each variable

**Table 2.** Estimation Results of China's GDP.

Variable	Coefficient	Standard Error	t-Statistic	Probability
Threshold variables (linear part)				
CO	3.032316	1.424063	2.129341	0.0383
G	-6.862021	6.532524	-1.050439	0.2987
C	-1.14E+11	1.06E+11	-1.076683	0.2869
Threshold variables (nonlinear part)				
CO	-2.883317	1.521851	-1.894612	0.0641
G	11.64302	6.734073	1.728972	0.0901
C	1.66E+12	2.00E+11	8.285656	0
Slope	1.88E-12	3.01E-13	6.255814	0
Threshold	1.55E+12	3.52E+11	4.403522	0.0001
$R^2$	0.999629	Mean-dependent variable	2.5E+12	
Adjusted $R^2$	0.999576	SD-dependent variable	4.01E+12	
SE of regression	8.26E+10	Akaike information criterion	53.24294	
Sum squared residual	3.35E+23	Schwarz criterion	53.52969	
Log-likelihood	-1,509.424	Hannan-Quinn criteria	53.35438	
F-statistic	18,869.6	Durbin-Watson statistic	1.628526	
Prob(F-statistic)	0			

data listed in the table. With a threshold of 1.55E+12, it means that variable changes during the study period move dynamically in changes of 1.55 for every change in GDP in units, which means that each variable’s dynamic movement for changes in GDP by 1% is 1.55%.

From the constant direction, it can be seen that the CO variables, namely consumption and G, which are positive government expenditures, mean that they both affect the drivers of economic growth as reflected in the GDP variable, namely gross domestic product. To see the resilience of GDP to crisis and how vital the driving factors for consumption and government spending in carrying out postcrisis recovery are, see Fig. 1.

From the forecast results, China’s GDP shows a very sharp increase in the graph and looks very strong to withstand the 1997–2011 crisis. Supported by short-term estimates, where an increase follows each increase in GDP in the welfare of the Chinese population, and the long term in the form of continuous public investment, it becomes a natural thing whether China can survive the crisis and continue to encourage a better economy. To see the resilience of the United States, here are the estimation results of the US GDP TAR model:

Estimated results of the United States’ GDP:

$$\begin{aligned} \text{GDP} = & (2.55207901291 * \text{CO} - 5.47533708369 * G + 565037286441) \\ & + (-1.23090923918 * \text{CO} + 7.05879589476 * G - 7.30051730391\text{E} + 12) * \\ & @ \text{LOGIT}(2.73772250472\text{E} - 13 * (\text{GDP}(-3) - 9.18921822504\text{eE} + 12)) \end{aligned}$$

Like China, in the United States, every increase in economic growth impacts increasing purchasing power or people’s welfare, which is reflected in increased consumption. However, the United States’ increase in consumption or purchasing power is smaller than in China for every unit increase in production. In the United States, the increase in public welfare in each unit of increase in GDP is 2.55207901291 or for every 1% increase in GDP in terms of welfare or people’s

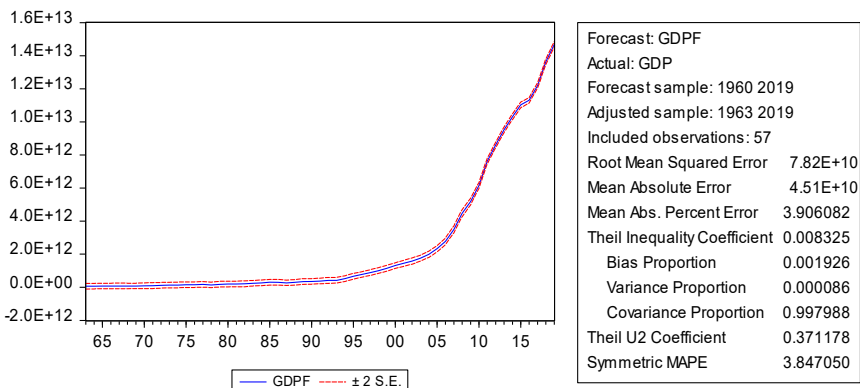


Fig. 1. Forecast of Estimation Results of China’s GDP. Source: Author computing.

income by 2.55%, while in China, every 1% increase in GDP is followed by an increase in public income which is reflected in public consumption by 3%. Of course, this will impact the long run where public investment in the United States is also lower for every increase in GDP by 7.05879589476 or 7% of every 1% increase in GDP. Meanwhile, in China, the increase in public investment was 11.6% for every 1% increase in GDP. However, the threshold for change in each variable for changes in GDP is greater, namely 2.73772250472E-13 or 2.7% for every 1% change in GDP in the United States while in China 1.88319698357E-12 or 1.8%, which means that economic turmoil or changes in the United States are more liquid than in China, while in China, it is more stable in estimation.

The estimation results above are described in [Table 3](#).

Like China, the US estimate has a degree of confidence reflected in the  $R^2$  value of 0.999822 which means that it is very valid with an error of less than 1% and  $\text{prob}(F\text{-statistic})$  0. With a threshold of 9.19E+12 this means the level changes that occurred dynamically in the study period amounted to 9.19% for every 1% change in GDP.

From the constant direction of each variable, it can be seen that consumption is in line with GDP which drives economic growth. However, the variable  $G$  or government expenditure is negative, which means that every US government expenditure does not push GDP but becomes a burden. To see the resilience of the US economy against the crisis, the forecasting is shown in [Fig. 2](#).

The forecast results of the GDP of the United States in the study period look stable, increasing. However, in 2008, there was a severe economic crisis, and it took eight years to return to normal economic growth. It makes the average

**Table 3.** Estimated Results of the United States' GDP.

Variable	Coefficient	Standard Error	$t$ -Statistic	Probability
Threshold variables (linear part)				
CO	2.552079	0.395703	6.44948	0
$G$	-5.475337	1.69085	-3.238215	0.0022
$C$	5.65E+11	3.01E+11	1.87711	0.0665
Threshold variables (nonlinear part)				
CO	-1.230909	0.422148	-2.915824	0.0053
$G$	7.058796	1.861299	3.792404	0.0004
$C$	-7.30E+12	1.46E+12	-4.985675	0
Slope	2.74E-13	2.73E-14	10.01061	0
Threshold	9.19E+12	1.31E+12	7.03859	0
$R^2$	0.999822	Mean-dependent variable	7.82E+12	
Adjusted $R^2$	0.999796	SD-dependent variable	6.26E+12	
SE of regression	8.93E+10	Akaike information criterion	53.39747	
Sum squared residual	3.91E+23	Schwarz criterion	53.68421	
Log-likelihood	-1,513.828	Hannan-Quinn criteria	53.50891	
$F$ -statistic	39,287.22	Durbin-Watson statistic	1.072281	
Prob( $F$ -statistic)	0			