MONETARY, FISCAL AND TRADE POLICIES SERIES

Trade Policy in a Globalizing World

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NOVA

Monetary, Fiscal and Trade Policies Series

TRADE POLICY IN A GLOBALIZING WORLD

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Nova Science Publishers, Inc.
New York

LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA
Trade policy in a globalizing world / editors, Yuki Watanabe and Haruto Yamashitaá.
p. cm.
Includes index.
ISBN 978-1-60456-830-1 (hardcover)
1. Commercial policy. 2. Globalization. I. Watanabe, Yuki. II. Yamashitaá, Haruto.
HF1411.T7132 2009
382'.3--dc22
2009001535

Published by Nova Science Publishers, Inc. † New York

PREFACE

The purpose of this book is to provide information on the alternative futures of fluctuated global economy by global model simulations as well as appropriate trade policies for sustainable development of the interdependent global economy.

Chapter 1 - In the 21st century it is expected that "*global syndromes* "and or global imbalances/ disparities will be appeared in the human society. The global issues seem likely to confront with every country around the world co-existing on the planet Earth. As a matter of fact, trade policy in the globalizing world should be modified in coping with such historical trends for sustainable global economy.

The FUGI (Futures of Global Interdependence) global modeling system has been developed as a scientific policy modeling and simulation tool of providing global information to the human society and finding out possibilities of policy coordination among countries in order to achieve sustainable development of the global economy under the constraints of rapidly changing global environment. The FUGI global model M200 classifies the world into 200 countries/regions where each national/regional model is *globally interdependent* through international trade, oil prices, export/import prices, financial flows, ODA, private foreign direct investment, exchange rates, stock market prices and global policy coordination etc. The purpose of this article is twofold, namely to provide information on the alternative futures of *fluctuated* global economy by *global model simulations* as well as *appropriate trade policies for sustainable development of the interdependent global economy. It is worth noting that not only appropriate harmonized adjustments of international trade but wise cosmic mind to promote human solidarity with the ever changing nature will be desirable to adjust orbit of the fluctuated global economy.*

Chapter 2 - The volatility of energy prices has significant impacts on trade flows, global economic growth and other macroeconomic indicators. Tighter energy markets and rising risk have more than quadrupled crude oil prices since 1999. Fossil fuels will continue to be the dominant source of energy supply during the next few decades. More than 70 percent of the projected energy demand will come from developing countries. China will account for 30 percent of the increase. Unforeseen factors such as, political instability in oil producing countries, severe weather changes, and geopolitics could shift demand and supply patterns in the market. The frequent movements in energy prices and exchange rates, coupled with the nonrenewable nature of crude oil supplies complicate monetary and macroeconomic management in various countries . Rising oil prices could increase inflation and transfer purchasing power from oil consumers to oil producers. Globalisation is facilitated by

technological innovations and excellent information networks, coupled with savings that are directed into commodities and financial instruments across borders. Better financial analysis is required for macroeconomic management because of the growing links between national economies and global financial markets. The failure to integrate trade and monetary policies in a rapidly globalizing world is a mistake because of the problems that confront the world trading system. This paper investigates whether or not long-run purchasing power parity (PPP) holds in the Organization for Economic Cooperation and Development (OECD) countries. Johansen's cointegration technique is used with annual data in analysing the relationship between exchange rates and energy prices during the past six decades. The authors found strong support for long-run PPP in the OECD countries, thus, PPP is a reliable guide for exchange rate determination and exchange rate policy reforms in these countries. There is a wide variability in the speeds of adjustments to exchange rate and energy price shocks across the OECD countries. The speed of adjustments to exchange rates and price shocks take 1.00-6.33 years to return to equilibrium levels.

Chapter 3 - Globalization has facilitated free trade and free market mechanism in the world today. However, unrestricted trade in toxic substances like mercury has caused serious environmental and health hazard and needs to be curtailed and terminated in the long run.

Mercury is a toxic metal known to have several deleterious effects on human health, not withstanding its usefulness for industrial, medical and household applications. A broad range of products and processes consume mercury around the world. The major applications of mercury include chlor-alkali production, batteries, fluorescent light bulbs, electrical switches, catalysts, thermometer, blood pressure monitor, dental amalgam, preservatives, cosmetics, fungicides, and other laboratory/educational uses besides artisanal and small-scale gold mining.

While the global supply of mercury mainly comes from the developed countries, such as the European Union and the United States where the demand of mercury has decreased, its demand in developing countries has greatly increased in recent years. Major sources of mercury are primary mined mercury, secondary mercury recovered as a by-product of mining of other ores and from recycling or waste processing, residual mercury recovered from decommissioned chlor-alkali plants, and mercury released from government stockpiles.

There are a few international treaties, such as the *Rotterdam Convention* on the prior informed consent procedure for certain hazardous chemicals and pesticides including mercury compounds in international trade that aims to control the trade in these hazardous chemicals. However, countries have so far failed to formalize a treaty to curb the production and export of mercury.

A cooperative international effort is required to effectively regulate world trade of mercury. This will include monitoring of trade and movement of mercury, reduction in both demand and supply, sharing of information among countries as well as financial and technical assistance to developing countries to replace mercury based technology.

Chapter 4 - All international trade involves the shipment of commodities from one country to another. Many commodities, before reaching their final destinations, are transshipped through several countries, each having independent authorities to tax commodities in transit. When trade is repeated over time, such "middle" countries may fail to exercise monopoly power over commodities in transit.

Chapter 5 - Central America has succeeded in developing a relatively large number of small hydro projects for Clean Development Mechanism (CDM) emissions reductions.

However, emerging social problems related to these projects and the increasingly difficult challenge of proving the additionality of each of these projects could slow the growth of this sector. Other CDM opportunities for process efficiency and fuel switching are limited by the size of industries in the region, which are too small to justify the CDM project costs. A lack of initiative in the forestry and transport sectors suggests that renewable energy will be the most promising area for development.

While hydro electric projects will most likely continue to dominate the landscape for Certified Emission Reductions, there may also be limited geothermal and wind development. A variety of new renewable energy laws have been passed that will also help promote development in this sector. However, a plethora of technical, financial, social, institutional, and political barriers in the region could prevent the full potential of these projects from being realized.

Chapter 6 - Recent scientific discoveries clearly show that human beings face the challenge of satisfying their economic needs without significantly altering the basic functions of the biosphere. Our survival depends on satisfying those needs while simultaneously respecting the ecological functions: a balance between the level of economic activity and environmental protection should be found.

On the other hand, the world is becoming more and more globalised, and a great share of the satisfaction of needs takes place through international exchanges, i.e., international trade. The authors should wonder whether this current manner to satisfy our needs is compatible with the maintenance of the aforementioned ecological balances.

The relevant literature on this topic is both abundant and it reaches diverse conclusions contradictory. In general terms, three impacts of international trade on the environment have been identified: 1- A technical effect; 2- A composition effect; 3- A scale effect. The aim of this chapter is to shed light on the analysis of the causes and potential consequences of those effects. This would allow us to identify whether the international economic policy regime, whose foundations were established after the end of World War II, and whose philosophy is to gradually eliminate the barriers to trade in order to more efficiently meets human needs, is compatible with the challenge of altering to the lowest extent possible the basic functions of the biosphere.

Chapter 7 - This work aims at assessing the impact of various external shocks on trade exchanges between the euro area and the rest of the world using cointegration techniques for simulation purposes. The main results are: *i*) non-price competitiveness factors and the real exchange rate affect the euro area trade balance in the long-run. Furthermore, the Marshall-Lerner conditions is strongly rejected; *ii*) extending the sample span over the post-EMU period, i.e. accounting for the introduction of the single currency, the results are qualitatively similar in terms of statistical significance and feedback mechanisms; *iii*) changes in foreign demand and in the price of oil do not exert a statistically significant impact on the trade balance; *iv*) domestic demand and price competitiveness play the main role in explaining trade fluctuations. Moreover, the share of volatility attributable to the former increases over time, while the contribution of the latter remains stable and accounts for the biggest proportion.

Chapter 8 - The authors discuss the incentives of a welfare maximizing government to implement strategic trade policy when there may be an uncertainty about the relevant market information (type of competition, demand function, cost function, etc.).The environment of the contest between the firms is specific: there are two firms and the interaction among them

is accompanied by technological spillovers from the domestic firm to the foreign firm. The two bench mark oligopoly models—Bertrand and Cournot—are assumed to be possible types of market competition. We argue that the "informational" criticism of strategic trade policy is less relevant than was previously thought.

Chapter 9 - As the largest and one of the most influential countries in Latin America, Brazil has emerged as a leading voice for developing countries in setting regional and multilateral trade agendas. The United States and Brazil have cultivated a constructive relationship in pursuit of their respective efforts to promote trade liberalization, including attempting to broker a compromise with the European Union in the World Trade Organization (WTO) Doha Round and forming bilateral working groups on trade (and other) issues. Still, they approach trade policy quite differently, are at odds over how to proceed regionally with the Free Trade Area of the Americas (FTAA), and share concerns over specific trade policies and practices.

Brazil's trade strategy can be explained only in part by economic incentives. Its "trade preferences" also reflect deeply embedded macroeconomic, industrial, and foreign policies. Whereas U.S. trade strategy emphasizes the negotiation of comprehensive trade agreements on multiple fronts, Brazil is focused primarily on market access issues as they pertain to its economic dominance in South America. Brazil exercises this priority in all trade arenas, such as pursuing changes to agricultural policies in the WTO, expanding the Southern Common Market (Mercosul) in South America, and resisting the FTAA for lack of a balance conducive to Brazilian interests.

Brazil has a modern, diversified economy in which services account for 53% of GDP, followed by industry and manufacturing at 37%, and agriculture at 9%. Agribusiness (commodity and processed goods) account for some 30% of GDP, explaining Brazil's emphasis on agricultural policies in trade negotiations. Brazil is the world's largest producer of sugar cane, oranges, and coffee, and the second largest of soybean, beef, poultry, and corn. It is also a major producer of steel, aircraft, automobiles, and auto parts, yet surprisingly, a relatively small trader by world standards. The United States is Brazil's largest single-country trading partner.

Brazil is critical of U.S. trade policies such as the Byrd Amendment (repealed, but program in effect until October 1, 2007), which directs duties from trade remedy cases to affected industries, the administration of trade remedy rules, and what it considers to be discriminatory treatment in the U.S. expansion of free trade agreements in Latin America. It also objects to product-specific barriers such as tariff rate quotas on sugar, orange juice, ethanol, and tobacco; subsidies for cotton, ethanol, and soybeans; and prolonged antidumping orders on steel and orange juice. U.S. concerns focus on Brazil's comparatively high tariff structure, especially on industrial goods, Mercosul's common external tariff program, and Brazil's refusal to address issues of critical importance to the United States such as services trade, intellectual property rights, government procurement, and investment.

Despite these differences, both countries recognize the potential for important gains to be had from mutually acceptable trade liberalization at all levels. As a developing country with an opportunity for considerable growth in both exports and imports, however, Brazil may have the most to gain from addressing both foreign barriers to its trade, and unilaterally opening its economy further.

Chapter 10 - This paper aims to explore international trade flows of the countries that are involved in the EU fifth, eastward enlargement. These regional integration effects are handled

as deviations from the trade volume predicted by the baseline gravity equation. From three regions (Baltic Sea region, Central Europe and Mediterranean area) that consist of both old and new member countries of EU-25, as the Baltic Sea region (BSR) can be clearly distinguished. This region provided an interesting case for studying regional integration processes in the new Europe consisting of the developed and post-socialist economies and having historical traditions of cooperation. The estimation results also confirm the significance of cross-border cooperation between the EU-25 countries. The lessons of studying EU enlargement processes and distinguishing the regional trade clusters are valuable for development of EU regional policies and for adjustment to the challenges of globalization.

CONTENTS

In: Trade Policy in Globalizing World
Editor: Yuuki Watanabe and Haruto Yamashita
ISBN: 978-1-60456-830-1

Chapter 1

TRADE POLICY IN THE GLOBALIZING WORLD - POLICY MODELING AND SIMULATIONS OF FUTURES-

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ABSTRACT

In the 21st century it is expected that "*global syndromes* "and or global imbalances/ disparities will be appeared in the human society. The global issues seem likely to confront with every country around the world co-existing on the planet Earth. As a matter of fact, trade policy in the globalizing world should be modified in coping with such historical trends for sustainable global economy.

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This research has been done by financial support of Foundation for Fusion of Science & Technology (FOST).

Keywords: trade policy in globalizing world; appropriate trade policy; FUGI global modeling system; global syndrome, integrated global model for sustainable development; alternative futures of global economy; global model simulation; policy simulations of synergy effects, global cooperation, global coordination of polices

1. INTRODUCTION

In the 21st century it is expected that "global syndromes" and or global imbalances/ disparities will be appeared in the human society. The global issues seem likely to confront with every country around the world co-existing on the planet Earth. As a matter of fact, trade policy in the globalizing world should be modified in coping with such historical trends for sustainable global economy. Green house gas will induce global warming effects that might bring about serious influences on changes in climates and ecological system. Global changes in circulation patterns of atmosphere will cause unusual weather conditions and natural disasters brought in various phenomena such as floods, drought and desertification etc. Permanent Ice Rivers of high land area on Swiss Alps, Kilimanjaro and Himalaya as well as ice shelves of North and South Pole have already started to get melt away. Tropical deceases will spread to the non-tropical zones. Increasing desertification has become key issues in not only Australia but also China and Mongolia. Dry yellow sands produced to large extent in China and Mongolia has threatened even to Japan in monsoon seasons.

It is worth noting that, in the 21st century, integrated progress of science, technology and economic development will be seen in the human society where consists of a globally interdependent complex system. The information technology innovation will give tremendous impacts on economic development, human life and culture. Historically speaking, global climate changes induced by human behaviors in the increasingly interdependent global economy on the planet Earth are a rather new experience and challenge for the human society.

In the globalizing world, globally interdependent trade system structures are getting more and more complex so that nobody might easily percept cause and effect relationships at a first glance. Unfortunately, human intuitions are not so efficient enough to analyze impacts of complex policy mixtures. Therefore, policy makers should largely depend on scientific computer simulations of policy exercises in the globalizing world.

The FUGI (Futures of Global Interdependence) global modeling system has been developed as a scientific policy modeling and simulation tool of providing global information to the human society and finding out possibilities of policy coordination among countries in order to achieve sustainable development of the global economy under the constraints of rapidly changing global environment. The FUGI global modeling system (FGMS 200) classifies the world into 200 countries/regions where each national/regional model is globally interdependent through international trade, oil prices, export/import prices, financial flows, ODA (Official Development Assistance), private foreign direct investment (PFDI), exchange rates, stock market prices and global policy coordination etc. The purpose of this article is twofold, namely to provide information on the alternative futures of fluctuated global economy by global model simulations as well as appropriate trade policies for sustainable development of the interdependent global economy. It is worth noting that not only "appropriate" adjustments of international trade but wise cosmic mind to promote human

solidarity with the ever changing nature will be desirable to adjust orbit of the fluctuated global economy.

On the other hand, it is also expected that the 21st century will be an age of terrorism and refugees, if humankind could not jointly cope with poverty and international per-capita income disparity (IPCID) with common consciousness of living on the planet Earth and humanistic cosmic mind, irrespective of diversification among race, religion and culture coexisting on the same globe.

Project FUGI was started in 1976 with the cooperation of three Japanese institutions, namely, the University of Tokyo, Osaka University and Soka University, under the sponsorship of the National Institute for Research Advancement in Tokyo. The original FUGI model consisted of three parts: a Global Input-Output Model (GIOM), a Global Resources Model (GRM), and a Global Economic Model (GEM), Types I, M15. Yoichi Kaya, Faculty of Engineering, the University of Tokyo, Yutaka Suzuki, Faculty of Engineering, Osaka University, and the author coordinated the designing of these models, respectively (Onishi 1977). Work in progress was reported at the IIASA global modeling symposium in 1977 and the years following. The first generation FUGI global economic model (Type I, M15) designed by the author was the development of the Multi-Nation Economic Model which was originally designed by the author in 1965 and applied the 15 countries in Asia for the purpose of projections of the Asian economy (Onishi 1965). Drawing on experiences with global modeling in the 1970s, the author developed a fourth-generation FUGI global economic model (Type IV, M62) that divided the world into 62 countries/regions and consisted of approximately 30,000 equations. It was first made public at a seminar on comparative simulations of global economic models held at Stanford University, June 25-26, 1981(Onishi 1981). The United Nations Secretariat, Department of International Economic and Social Affairs, Projections and Perspective Studies Branch for the purpose of long-term projections and policy simulations of the world economy soon afterward adopted this model for use. It was used from 1981 to 1991, when it was replaced by the new generation FUGI global model, Type VII, M80.

For the period 1985-86, a new generation of the FUGI global model was designed as a global early warning system for displaced persons (Onishi 1986, 1987, 1990) during the period 1990-95, the FUGI model 7.0 M80 was designed as an integrated global model for sustainable development (Onishi 1993, 1994a, 1994b, 1995).

During the period 1991-1999, the author designed a significant new software system for global modeling. This expert software system, named as FGMS (FUGI Global Modeling System) using an IBM R/S 6000 workstation was researched and developed as a package for specific use in making computations for the FUGI global model 9.0 (Type IX) M200/80 (Onishi 1991,1993,1994a,1994b,1995,1998,1999,2001a) and M200 (0nishi,2000).

In 2000, this expert system has entered the new stage of FUGI global modeling system (FGMS200) using a personal computer (Windows 2000/xp/vista) for running the FUGI global model 9.0, M200PC. This latest M200 model, consisting of more than 150,000 equations, classifies the world into 200 countries/regions so that the model can produce the forecast simulations of the sustainable global development with interdependent 200-national/regional developments (Onishi 2001b, 2001c, 2002a, 2002b, 2003c, 2003b, 2005, 2005, and 2007). The UNCTAD secretariat has officially adopted the FUGI global model project for the projections of the world economy and policy simulations since 2000.

The global model simulation exercises using FGMS200 cover the baseline projection of the global economy, 2001-2020. The model can provide information not only on the baseline projections but also alternative policy scenario simulations.

2. Outline of Fugi Global Modeling System

2.1. Regional Classification

The FUGI global model 9.0 M200 divides the world into 200 countries and regions. For three major groupings there are (1) developed economies or advanced market economies (AME), (2) developing countries or developing economies (DME) and (3) economies in transition (EIT). The AME grouping contains the following sub-groupings; these are Developed Asia-Pacific, North America and Western Europe (including 15 member countries of the EU and EURO area). The DME grouping contains the following sub-groupings as Asia-Pacific (subdivided into East Asia, Southeast Asia, Southwest Asia and Pacific Islands); Middle East; Africa (subdivided into North Africa and Sub-Saharan Africa); Latin America & Caribbean; and Mediterranean. The EIT grouping includes two sub-groupings: (a) Eastern Europe and (b) CIS. Ultimately, this global model divides the world as a whole into 200 countries/regions. Because all most of all developed market economies, developing economies and economies in transition are treated as country units, the model has the advantage of being able to analyze precise country-specific relationships within the framework of global interdependence. (See Table 1). We have designed seven global table formats such as CGM (above-mentioned regional classification), EU (for the European Commission), IMF (for IMF classification), UN (for the United Nations classification), UNCTAD (for UNCTAD classification), UNESCAP (for the United Nations ESCAP classification) and WB (for the World Bank classification). It is worth noting that a user of FGMS200 can easily make his own format, namely, G20 (G-20 countries groups) and CEPAL (UN Committee for Latin America). Such format classifications can be easily made within a few minutes in the FUGI global modeling system (FGMS200).

Table1. Regional classification of FUGI global modeling system (FGMS200)

Regions	No...	Co de	Country name
Developed Economies			
Asia-Pacific	1	JPN	Japan
	2	AUS	Australia
	3	NZL	New Zealand
North America	4	CAN	Canada
	5	USA	United States
Western Europe	6	BEL	Belgium
	7	DNK	Denmark
	8	FRA	France
	9	DEU	Germany
	10	GRC	Greece

Regions	No.	Code	Country name
	56	SLB	Solomon Islands
	57	TON	Tonga
	58	TUV	Tuvalu
	59	WSM	Western Samoa
	60	VUT	Vanuatu
Middle East Asia	61	BHR	Bahrain
	62	IRN	Iran, I.R. of
	63	IRQ	Iraq
	64	ISR	Israel
	65	JOR	Jordan
	66	KWT	Kuwait

Table 1. (Continued)

	11	IRL	Ireland
	12	ITA	Italy
	13	LUX	Luxembourg
	14	NLD	Netherlands
	15	PRT	Portugal
	16	ESP	Spain
	17	GBR	United Kingdom
	18	AUT	Austria
	19	FIN	Finland
	20	ISL	Iceland
	21	NOR	Norway
	22	SWE	Sweden
	23	CHE	Switzerland
Developing Countries			
Far East Asia	24	CHN	China: mainland
	25	HKG	China: Hong Kong
	26	MAC	China: Macau
	27	TWN	Taiwan
	28	KOR	Korea, Republic of
	29	PRK	Korea, North
Southeast Asia	30	BRN	Brunei
	31	IDN	Indonesia
	32	MYS	Malaysia
	33	PHL	Philippines
	34	SGP	Singapore
	35	THA	Thailand
	36	KHM	Kampuchea Dem
	37	LAO	Lao P. D. Rep
	38	BUR	Myanmar (Burma)
	39	VNM	Viet Nam
South West Asia	40	AFG	Afghanistan
	41	BGD	Bangladesh
	42	BTN	Bhutan
	43	IND	India
	44	MNG	Mongolia
	45	NPL	Nepal
	46	PAK	Pakistan
	47	LKA	Sri Lanka
Pacific Islands	48	FJI	Fiji
	49	PYF	French Polynesia
	50	GUM	Guam
	51	KIR	Kiribati, Rep. of
	52	MDV	Maldives
	53	NRU	Nauru
	67	LBN	Lebanon
	68	OMN	Oman
	69	QAT	Qatar
	70	SAU	Saudi Arabia
	71	SYR	Syrian Arab Rep
	72	ARE	United Arab Emirates
	73	YEM	Yemen Rep
North Africa	74	DZA	Algeria
	75	EGY	Egypt
	76	LBY	Libya
	77	MAR	Morocco
	78	TUN	Tunisia
Sub-Saharan Africa	79	AGO	Angola
	80	BEN	Benin
	81	BWA	Botswana
	82	HVO	Burkina Faso
	83	BDI	Burundi
	84	CMR	Cameroon
	85	CPV	Cape Verde
	86	CAF	Central African Rep.
	87	TCD	Chad
	88	COM	Comoros
	89	COG	Congo
	90	DJI	Djibouti
	91	ERI	Eritrea
	92	GNQ	Equatorial Guinea
	93	ETH	Ethiopia
	94	GAB	Gabon
	95	GMB	Gambia, The
	96	GHA	Ghana
	97	GIN	Guinea
	98	GNB	Guinea Bissau
	99	CIV	Ivory Coast
	100	KEN	Kenya
	101	LSO	Lesotho
	102	LBR	Liberia
	103	MDG	Madagascar
	104	MWI	Malawi
	105	MLI	Mali
	106	MRT	Mauritania
	107	MUS	Mauritius
	108	MOZ	Mozambique
	109	NAM	Namibia
	110	NER	Niger

Table 1. (Continued)

Regions	No.	Code	Country name
	54	NCL	New Caledonia
	55	PNG	Papua New Guinea
	113	RWA	Rwanda
	114	SHN	St. Helena
	115	STP	Sao Tome & Principe
	116	SEN	Senegal
	117	SYC	Seychelles
	118	SLE	Sierra Leone
	119	SOM	Somalia
	120	ZAF	South Africa
	121	SDN	Sudan
	122	SWZ	Swaziland
	123	TZR	Tanzania
	124	TGO	Togo
	125	UGA	Uganda
	126	ZAR	Congo, Dem.Republic
	127	ZMB	Zambia
	128	ZWE	Zimbabwe
Latin America & Caribbean	129	ARG	Argentina
	130	ATG	Antigua and Barbuda
	131	BHS	Bahamas The
	132	BRB	Barbados
	133	BLZ	Belize
	134	BMU	Bermuda
	135	BOL	Bolivia
	136	BRA	Brazil
	137	CHL	Chile
	138	COL	Colombia
	139	CRI	Costa Rica
	140	CUB	Cuba
	141	DMA	Dominica
	142	DOM	Dominican Republic
	143	ECU	Ecuador
	144	SLV	El Salvador
	146	GRD	Grenada
	147	GLP	Guadeloupe
	148	GTM	Guatemala
	150	GUY	Guyana
	151	HTI	Haiti
	152	HND	Honduras
	153	JAM	Jamaica
	111	NGA	Nigeria
	112	REU	Reunion
Regions	No	Code	Country name
	158.	NIC	Nicaragua
	159	PAN	Panama
	160	PRY	Paraguay
	161	PER	Peru
	162	PRI	Puerto Rico
	163	KNA	St. Kitts Nevis
	164	LCA	St. Lucia
	165	SPM	St. Pierre Miquelon
	166	VCT	St. Vincent
	167	SUR	Suriname
	168	TTO	Trinidad and Tobago
	169	URY	Uruguay
	170	VEN	Venezuela
Mediterranean	171	CYP	Cyprus
	172	MLT	Malta
	173	TUR	Turkey
	174	BIH	Bosnia and Herzegovina
	175	CRO	Croatia
	176	SVN	Slovenia
	177	MDN	TFYR Macedonia
	178	SIM	Serbia/Montenegro
Economies in Transition			
Eastern Europe	179	ALB	Albania
	180	BGR	Bulgaria
	181	CZE	Czech Republic
	182	HUN	Hungary
	183	POL	Poland
	184	ROM	Romania
	185	SLO	Slovakia
CIS	186	ARM	Armenia
	187	AZE	Azerbaijan
	188	BLS	Belarus
	190	GEO	Georgia
	191	KAZ	Kazakhstan
	192	KYR	Kyrgyzstan
	194	LTU	Lithuania
	195	MOL	Republic of Moldova
	196	RUS	Russian Federation
	197	TJK	Tajikistan

Table 1. (Continued)

154	MTQ	Martinique
155	MEX	Mexico
156	MSR	Montserrat
157	ANT	Netherlands Antilles
198	TKM	Turkmenistan
199	UKR	Ukraine
200	UZB	Uzbekistan

Source; FUGI global modeling system (FGMS 200)

2.2. Design Concept of the FUGI Global Modeling System

The design concept of FUGI global modeling system is based upon an innovational philosophy of humankind living on the planet Earth in the ever-changing dynamic Universe. It is worth noting that Cosmos is an entirely recycling system so that there might be no wastage of resources as seen in the current civilized human societies. In the Cosmic system everything is interdependent and changing forever. In order to adapt with such a dynamic cosmic system, humankind should modify present civilization in the globalizing world. Consciousness of co-existence of human beings with nature and solidarity of humankinds will be needed. The more balanced progress between technological innovations and human minds may be necessary in order to create a desirable trade relationship and life support system of the Earth in the post-modern futures.

Current globalizing world economy has been affected by global syndromes that might not solved by a short-sighted profit maximizing human behavior apt to money worship. Adam Smith (1723-1790) thought that profit maximizing human behavior will eventually create a harmonized wealthy society guided by "invisible hand" of God. Such kind of "belief" has been inherited to even academic disciplines of modern economics, in particular, "free trade". He is well known author of "The Theory of Moral Sentiments" (1759) and "An Inquiry into the Nature and Causes of the Wealth of Nations" (1776).

This myth is not true in the light of experience in a globalizing world economy. We see "global syndromes" such as increasing "miserable wealth gap" between the rich and the poor as well as "digital divides" between the educated people and the non-educated in addition to increasing "ecological destructions of a harmony between the nature and human activities" all over the world. Human beings, in particular, the educated rich peoples should lean a Classical wisdom such as mercy, awaken, aspiration, ascetic self-control, moderate, tolerance and harmonization with nature in order to create a new human solidarity based on cosmic mind toward a global welfare society and peaceful world. Global enterprises also should pay much attention on SRI (socially responsible investing).

The innovational system design concept of FUGI global modeling system has been influenced by the recent advancement of systems engineering, life science, biotechnology, information/communication technology and space technology. The new keywords are given below. (1) Systems science and engineering, (2) Lifeinformatic economics, (3) Global dynamic cooperation and policy coordination among the countries, (4) Self-organization in accordance with changing environment, (5) Brain physiology economics in collaboration with right and left brain, (6) Fluctuation phenomenon (yuragi in Japanese) considering alternative composite policy scenario projections under uncertainty world and (7) Global early warning