

The Impact of the Greater Mekong Subregion East-West Economic Corridor on Cooperative Gross Provincial Product of Mukdahan Province, Thailand

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Abstract

The research objectives were 1) to study the geography, economy, and society of Mukdahan province and 2) to study the impacts of the Greater Mekong Subregion East-West Economic Corridor on Cooperative Gross Provincial Product (GPP) of Mukdahan economy. The secondary data were collected from the official database. These data were analyzed using the theory of economic development which is composed of 1) the measurement of Cooperative GPP of Mukdahan economy 2) the measurement of Cooperative GPP growth and 3) the econometric model to estimate the impacts of the Greater Mekong Subregion East-West Economic Corridor policy on Cooperative Gross Provincial Product (GPP) of Mukdahan economy. The research results found that 1) the Mukdahan's land size is 4,507 square kilometer with the border of Laos People's Republic. The north border connects with Nakhonpanom and Sakonkorn provinces, the south border connects with Yasothorn province, the east border connects with Laos People's Republic which is bordered by the Mekong river while the west border connects with Kalasin and Loi-et provinces. Mukdahan's economy relies upon both agricultural and non-agricultural sectors. The economic structure of Mukdahan is comprised of 5-main subsectors—agriculture, wholesale, detail, education, industry and transportation. For Mukdahan society, Mukdahan's population holds the educational levels ranged from primary to bachelor's degree of 73,348 people with the ratio of students per teacher of 19:1. People are practical with Buddha of 96.80 percent. Also, they still have a strong belief in customs and folkways for their life, and 2) the greater Mekong Subregion East-West Economic Corridor (GMS-EWEC) had the positive impacts on Cooperative GPP of Mukdahan's economy. This led to the continuous growth in GPP of Mukdahan economy.

Keywords: East-West Economic Corridor, Gross Provincial Product, Mukdahan province

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อ 1) ศึกษาสภาพทางภูมิศาสตร์ เศรษฐกิจ และสังคมของจังหวัดมุกดาหาร 2) ศึกษาผลกระทบโครงการระเบียงเศรษฐกิจแนวตะวันออก-ตะวันตกภูมิภาคกลุ่มแม่น้ำโขงต่อผลิตภัณฑ์มวลรวมจังหวัดภาคสหกรณ์ของเศรษฐกิจจังหวัดมุกดาหาร การวิจัยครั้งนี้เก็บข้อมูลทุติยภูมิจากฐานข้อมูลของหน่วยงานราชการต่างๆ การวิเคราะห์ข้อมูลได้ทำการวิเคราะห์ข้อมูลตามหลักการของทฤษฎีพัฒนาการเศรษฐกิจซึ่งประกอบไปด้วย 1) การวัดผลิตภัณฑ์มวลรวมจังหวัดภาคสหกรณ์ของเศรษฐกิจจังหวัดมุกดาหาร 2) การวัดอัตราการเติบโตของผลิตภัณฑ์มวลรวมจังหวัดภาคสหกรณ์ของเศรษฐกิจจังหวัดมุกดาหาร 3) แบบจำลองทางเศรษฐมิติในการประเมินผลกระทบโครงการระเบียงเศรษฐกิจแนวตะวันออก-ตะวันตกภูมิภาคกลุ่มแม่น้ำโขงต่อผลิตภัณฑ์มวลรวมจังหวัดภาคสหกรณ์ของเศรษฐกิจจังหวัดมุกดาหาร ผลการวิจัยพบว่า 1) จังหวัดมุกดาหารมีขนาดพื้นที่ 4,507 ตารางกิโลเมตรติดกับประเทศสาธารณรัฐประชาธิปไตยประชาชนลาวพื้นที่ภาคเหนือของจังหวัดติดต่อกับจังหวัดนครพนมและสกลนครทิศใต้ติดกับจังหวัดยโสธร ทิศตะวันออกติดกับแม่น้ำโขงและเป็นชายแดนติดต่อกับประเทศสาธารณรัฐประชาธิปไตยประชาชนลาว ทิศตะวันตกติดกับจังหวัดกาฬสินธุ์และร้อยเอ็ด เศรษฐกิจของจังหวัดมุกดาหารขึ้นกับเศรษฐกิจภาคการเกษตรและนอกภาคการเกษตรทั้งนี้ระบบเศรษฐกิจจังหวัดมุกดาหารนั้นประกอบด้วยเศรษฐกิจย่อยใน 5 ประเภท ได้แก่ ภาคเศรษฐกิจการเกษตร การค้าส่ง การค้าปลีก การศึกษา อุตสาหกรรม และการขนส่ง ประชากรส่วนใหญ่มีระดับการศึกษาชั้นประถมศึกษาถึงปริญญาตรี สัดส่วนครูต่อนักเรียนที่ระดับ 19:1 ประชากรร้อยละ 96.80 นับถือศาสนาพุทธ ประชากรส่วนใหญ่มีความเชื่อและปฏิบัติตามวิถีชีวิตแบบดั้งเดิม 3) โครงการระเบียงเศรษฐกิจแนวตะวันออก-ตะวันตกภูมิภาคกลุ่มแม่น้ำโขงมีผลกระทบทางบวกต่อผลิตภัณฑ์มวลรวมจังหวัดภาคสหกรณ์ของเศรษฐกิจจังหวัดมุกดาหารและนำไปสู่ผลกระทบทางบวกต่อการเติบโตของผลิตภัณฑ์มวลรวมจังหวัดเศรษฐกิจจังหวัดมุกดาหาร

คำสำคัญ: ระเบียงเศรษฐกิจแนวตะวันออก-ตะวันตก ผลิตภัณฑ์มวลรวมจังหวัด จังหวัดมุกดาหาร

1. Introduction

The Greater Mekong Subregion East-West Economic Corridor (GMS-EWEC) is the 6-country cooperation project---Thailand, Myanmar, Laos, Cambodia, Vietnam, and China. It was launched in 1992 by the Asian Development Bank, the main supporter. The area of GMS-EWEC is about 2.3 million square kilometer which is about all area of western European continent with the population size of 250 million. The GMS-EWEC is still abundant with natural resources and is the center of connectivity in South Asia, East Asia, and South-East Asia (The Division of Economic Cooperation, Department of International Economic, Ministry of Foreign Affair, Thailand, 2016)

The Greater Mekong Subregion East-West Economic Corridor (GMS-EWEC) has the main objectives to promote the trade expansion, industrial investment, agricultural operations and services. It is also to promote the employment, better people's standard of living, develop the technological cooperation as well as the efficiency of natural resource use, and increase the capacity of economic opportunity in the global trade. During 4th -5th of July 2005, China had been the host of the GMS-EWEC conference which was held in Kunming city. This led to the announcement of the Kunming Declaration, which has the goal for embracing and enriching GMS-WEC including the promotion of sustainable development which encourages the intra communication and competition among the member countries of GMS-EWEC in order to deduce the region poverty. Finally, they decided to sign the GMS Cross-Border Transport Agreement. The GMS-EWEC members promote the idea of conserving the biological diversification and protecting ecology, forestry, and rivers in this region under the GMS Bio-diversity Corridor project.

The member countries also have an agreement in several topics such as transportation, energy, trade, animal disease control as well as communication. Laos People's Republic held the host of GMS-EWEC and concluded with the 9-discipline cooperation---communication and transportation, energy, trade, investment, agriculture, environment, tourist, and human resource development. (The Department of International Economic, Ministry of Foreign Affair, 2016)

According to the master plan of Asia Development Bank (ADB), Manila, the Philippines, identified the 9 disciplines of GMS-EWEC project---transportation, communication, energy, trade, investment, environment, tourism, and human resource development and 11 Flagship Programs which were; 1) North-South Economic Corridor, 2) East-West Economic Corridor, 3) Southern Economic Corridor, 4) Telecommunications Backbone, 5) Regional Power Interconnection and Trading Arrangements, 6) Facilitating Cross-Border Trade and Investment, 7) Enhancing Private Sector Participation and Competitiveness, 8) Developing Human Resources and Skills Competencies, 9) Strategic Environment Framework, 10) Flood Control and Water Resource Management, and 11) GMS Tourism Development. (The Asia Development Bank, 2016)

The East-West Economic Corridor is 1 of the 11 plans which had been included in the 11 Flagship Programs and it is very important to implement. This project obviously has brought the development for this region. The result of this project led to the linkage of Myanmar, Thailand, Laos, and the east coast of Vietnam---Mukdahan---Savannakret---DongHous---Vae. There is the Mekong Bridge as the connectivity of the two countries---Thailand and Laos. The construction of this bridge was financially supported by the Japan Bank of International Cooperation (JBIC).

The Mekong Bridge project was founded by JBIC with the budget of 4,700 million yen. The construction started on 3rd December 2003 and finished in 2005. It opened on 23th April 2004. This bridge connects the 9th route of Laos People's Republic and Mukdahan province, Thailand. Nowadays, the bridge still needs a little maintenance. Moreover: the Vietnamese government financially supported the region to build the route of Laos Broud-Dong Ha-Umong Hai One, and develop the deep Danong Harbor. (Asia Development Bank, 2016. Japan Bank for International Cooperation, 2016, and the Division of Economic Relationship, Department of International Economic, Ministry of Foreign Affair, 2016)

It is obviously to say that Mukdahan province, Thailand is one of the areas in the strategic plan of Greater Mekong Subregion East-West Economic Corridor. Moreover, Mukdahan province is now the connected trading points between Laos People's Republic and Socialist Republic of Vietnam. It is known that Mukdahan is a well-known inter bordered trade center. Mukdahan economy has been increasingly grown since 20 years. The Gross Provincial Product (GPP) of Mukdahan economy has been obviously driven by the Greater Mekong Subregion East-West Economic Corridor (GMS-EWEC). A part of GPP of

Mukdahan was primarily generated by cooperative business activities which are comprised of 99 cooperative operations in Mukdahan province. They are 7 types of cooperatives---agricultural, fisheries, land-settlement, consumer, thrift and credit, service, and Credit Union cooperatives (Department of Cooperative promotion, The Ministry of Agriculture and Cooperatives, The Royal Thai Government, 2016). Cooperatives were mainly generated by a group of people who have conducted affairs for socio-economic interests on the basis of self-help and mutual assistance. They, themselves, organized cooperatives for solving common pressing problems they cannot solve separately. They were organized to serve the interests of their members in earning their living much more advantageous than they act individually. Cooperatives are based on the values of self-help, self-responsibility, democracy, equity and solidarity. In the tradition of their founders, cooperative members believed in the ethical values of honesty, openness, social responsibility and caring for others (<http://coop-thailand.com/en/cooperatives-in-thailand>).

According to Krongkaew (2004), Ishida and Isono (2014), and Asian Development Bank (2015), the impacts of the Greater Mekong Subregion West-West Economic Corridor on Gross Domestic Product (GDP) and Gross Regional Domestic Product (GRDP) of Thailand and member countries has been emphasized. Since Mukdahan province is located in the North East of Thailand. Mekong River is a border dividing Mukdahan, Thailand, and Savannakret, Laos People's Republic. Following the previous research, researcher attempted to examine the impacts of Greater Mekong Subregion East-West Economic Corridor (GMS-EWEC) on Mukdahan's Cooperative Gross Provincial Product (GPP) in order to confirm that GMS-EWEC has the positive impacts on Cooperatives GPP. In this research, the researcher examined the impacts of the GMS-EWEC on Cooperative Gross Provincial Product of Mukdahan province. Since, cooperatives have been the community business that concentrated on community benefits in order to make cooperatives' members get wellbeing for their daily standard of life which can lead to the sustainable development eventually.

Since the research topic of the impacts of the Greater Mekong Subregion East-West Economic Corridor on Cooperative Gross Provincial Product of Mukdahan province, Thailand is a new research project for the Mukdahan Chamber of Commerce. There are few literature reviews as follows.

Krongkaew (2004) studied the development of the Greater Mekong Subregion, he found that the Greater Mekong Subregion (GMS) Economic Cooperation was created by six countries sharing the Mekong River namely Cambodia, Lao PDR, Myanmar, Thailand, Vietnam, and the Yunnan province of the People's Republic of China, with the help of the Asian Development Bank in 1992. The nine priority areas of activities in this cooperation include transportation, telecommunication, energy, tourism, human resources development, environment, agriculture, trade, and investment. In the last 10 years, many projects have been completed or are being undertaken including the development of North-South, East-West, and Southern Economic Corridors which are road networks linking many of these six GMS members, the generation of electricity trade between Lao PDR and Thailand, and the agreement to facilitate cross-border movement of goods and people. As these GMS members are market-based open economies, the potential benefits from this cooperation are large. However, there are problems concerning the different levels of development, and the relative lack of political stability in some member countries that may slow down the progress and full benefits of this subregional cooperation. He concluded that there is a need for Thailand to look beyond the confine of this subregional cooperation and perceive this present development in the light of a larger regional and global economic cooperation.

Ishida and Isono (2014) studied the impacts of the major corridors on the economy in East Asia. They introduced the IDE/ERIA Geographical Simulation Model (IDE/ERIA-GSM). It is a simulation model based on spatial economics, also known as a new economic geography (NEG), which has huge dataset and NEG settings, makes it possible to simulate the dynamics of population and industries for a long term and to estimate the effects of infrastructure projects and customs facilitation. NEG, consisting of various elements of agglomeration forces and dispersion forces, tells us why and how economic activities agglomerate or disperse. IDE/ERIA-GSM provides a tool for evaluating various infrastructure development projects so that people can come up with policy measures to choose, prioritize and combine the projects. The simulation model can estimate possible impacts of 7 kinds of trade and transport facilitation measures and other local development measures in the model as follows: 1) raising the speeds of road, air, sea, and rail transport for each section 2) reducing physical transport costs per km for each section 3) reducing

transshipment times at each border, port and airport 4) reducing transshipment costs at each border, port and airport 5) reducing other non-tariff barriers, including: streamlining the official procedures before shipping, simplifying or improving transparency in sanitary and phytosanitary, technical barriers to trade, and intellectual property rights measure, and eliminating trade quotas 6) decreasing or eliminating tariffs, and 7) technological parameters on local economic performance.

According to Asia Development Bank's (ADB) study (2015), the economic corridor concept is presented as a connector to link production, trade and infrastructure within a specific geographical framework. And the economic corridor is expected not only to connect the center of economic activities but also to extend the benefits from developing transport projects to remote areas through linkages of production activities. The ministers of the member countries expressed support for the concept and the conference took note of the 5 potential economic corridors in the GMS within north-south and east-west routes. Some of these corridors could serve as potential transshipment areas for South Asia, Southeast Asia, Mainland China and East Asia by significantly reducing distances between major markets. ADB also stated that the infrastructure developments affect economic activities and Gross Domestic Product (GDP) or Gross Regional Domestic Product (GRDP) in the regions. One typical case is connecting big cities, and another one is connecting rural areas. In principle, an expressway development will induce two kinds of movements of economic activities, i.e. 1) the movement from regions without development to regions with development, because better accessibility attracts firms and workers, and 2) the movement occurring within the regions with the development from peripheral regions to city center. Reducing transport costs accelerates firms' agglomeration into the big clusters because firms in the clusters can sell products at cheaper transport costs to remote areas, and also they enjoy large-scale suppliers, customers and workers within the clusters. Both typical cases mentioned above will see the first and second movements. However, these cases have different implications on economic growth in the whole economy and equality of regions. An expressway development between big cities usually accelerates the agglomeration to the big city and contributes to higher economic growth of the whole economy, while it may devastate the equality of regions. On the other hand, an expressway development in rural areas mitigates strong agglomeration forces and contributes to narrowing the economic gaps between regions, while the contribution to economic growth will be smaller.

Asia Development Bank (ADB) (2016) stated that for economic corridors, some sections of a road were nominated and then disappeared, and others have been newly nominated. On the other hand, there are sections which had once disappeared and then reemerged. It is clear that the completion of the Third Mekong Friendship Bridge will make them outstanding. On the other hand, the Northern and Southern Coastal Sub-corridors of the South East Countries have not been developed yet and they can be potential corridors. In Myanmar, specific regions are developed progressively.

The development of the East-West Economic Corridor makes the positive economic impacts on Thailand's Gross Domestic Product (GDP) while those contribute in reducing the development gaps. Regarding the impacts of improvement in the South East Countries, the Southern Coastal Sub-corridor development and the Northern Sub-corridor development have the positive impacts on Cambodian economy, Sihanoukville, and Koh Kong. On the other hand, the impacts of the Northern Sub-corridor on the Cambodian economy is smaller. And the impacts of these corridors on the Vietnamese economy is smaller, but it also contributes in narrowing the economic gaps.

In sum, the Asia Development Bank (ADB) emphasized that the Greater Mekong Subregion East West Economic Corridor has impacts on Gross Domestic Product (GDP) and Gross Regional Domestic Product of countries' members such as Thailand and others.

2. Objectives

2.1 To study the geography, economic and general society of Mukdahan province

2.2 To study the impacts of Greater Mekong Subregion East-West Economic Corridor on Cooperative Gross Provincial Product of Mukdahan economy

3. Materials and methods

Data collection

In this research, secondary data were collected from the governmental agencies---The Bank of Thailand, The Office of National Economic and Social Development, Asia Development Bank, Japan Bank for International Cooperation, the Mukdahan Committee of Commerce, the Department of International Economic, Ministry of Foreign Affair, and The Royal Thai Government.

The Data Analysis

The data analysis of the impacts of Mekong Greater Subregion East-West Economic Corridor on Cooperative GPP of Mukdahan province following the theory of economic development as followed:

1. The measurement of Cooperative GPP growth level of Mukdahan economy
2. The time trend analysis with time series data applying the time trend econometric growth model for Cooperative GPP of Mukdahan economy
3. The impact analysis of Mekong Greater Subregion East-West Economic Corridor on Cooperative GPP of Mukdahan economy

The data analysis tool was comprised of 3 parts following the research objectives which are 1) a descriptive statistic---arithmetic mean and percentage, 2) a time trend analysis that applied linear time trend analysis and 3) an econometric model for the impact analysis which applied Dummy Variable Regression Model (DVR Model) (Gujarati, D., 2006) which stated that

“Dummy variable can be used in regression analysis just as readily as quantitative variables. As a matter of fact, a regression model may contain only dummy explanatory variables. Regression models that contain only dummy explanatory variables as called analysis-of-variance (ANOVA) models.” (Gujarati, D. 2006, p. 291).

Consider the following equation of ANOVA model:

$$Y_i = B_1 + B_2 D_i + \mu_i$$

Where Y_i = Independent variable

D_i = Dummy variable

μ_i = Disturbances which satisfied the usual assumptions of Classical Linear Regression Model (CLRM)

For data processing, researcher utilized the computer software program of IBM SPSS Statistics 23 as the tool for computation.

4. Results and discussion

The research results following the research objectives were:

4.1 To study the geography, economic and general society of Mukdahan province as follows:

4.1.1 Mukdahan Geography

Mukdahan province has the total area of 4,497 square kilometer, 642 kilometers from Bangkok, the capital city of Thailand. Mekong River is a border dividing Mukdahan, Thailand, from Savannakret, Laos People's Republic with the length of 72 kilometers. The borders of Mukdahan are as follows---Mueang Mukdahan, Wann Yai, and Dontan, Thailand are opposite to Kaisorn Phomvihan, Chaiburi, and Chaiphutong, Laos, respectively.

Mukdahan province has the area connected with the following direction---the north is connected to Nakae district, Nakorn Panom province, and Toangoa district, Skolnakorn province. The south is connected to Langnokkata district, Yasothorn province, Chanuman district, Ubonratchatani province, and Nongpok district, Roiet province. The east is connected to Savannakret, Laos People's Republic. The west is connected to Kuchinarai district, Kalasin province, and Maewadee district, Roiet province. (Figure. 1)



Figure 1 The Map of Mukdahan Province, 2016

Source: <http://www.mukdahan.go.th/gandurntang.htm>

Mukdahan's border crossing points

Mukdahan province has 2 permanent and 8 traditional border crossing points. The permanent border crossing points are 1) the provincial border crossing between Mueang Mukdahan and Kaison Phomvihan, Laos, opened on 20th December of 2006, and 2) the 2nd Thai-Laos relationship bridge which combines the land of Thailand and Laos at Mueang Mukdahan. The traditional border crossing points are 1) Ban Songkon, 2) Ban Wann Yai, 3) Ban Chanod, 4) Ban Bangchainoi, 5) Ban Sompoi, 6) Ban Bangchai yai, 7) Ban Nasrinuean, and 8) Ban Dontan.

Mukdahan's terrain

The north and south of Mukdahan province is a plateau area while the west is mountainous. The east of Mukdahan is a plain area and forest with the Mekong River as a natural border between Thailand and Laos People's Republic. Mukdahan's plain area is about 20 percent of the total land. It is abundant with natural resources. The total forest area is about 953,300 rai accounted for 35.15 percent of the total land.

4.1.2 Mukdahan's economy

Mukdahan's Gross Provincial Product of 2016 was 16,999 million Thai Baht which increased from 2015 for about 1,849 million Baht. This accounted for 12.20 percent of all the Gross Provincial Product resulting from the increase of agricultural economic sector and non-agricultural sector. The Mukdahan Gross Provincial Product per capita (GPP per capita) is 49,416 a year. The 2016 Mukdahan economy structure is relied on 5-main economic subsectors which are 1) agricultural subsector worth of 1,315 Baht, 2) the wholesale and retail subsector worth of 1,173 Baht, 3) the educational subsector worth of 704 Baht, 4) the industrial subsector worth of 596 Baht, and 5) the transportation subsector worth of 481 Baht accounted for 20.49, 18.27, 10.97, 9.38 and 7.50 percent respectively. The main economic drivers of Mukdahan economy were agricultural economic sector which comprised of rice, tapioca, sugarcane, and rubber following by the trade of wholesale and retail.

4.1.3 Mukdahan's society

Education, Mukdahan has 313 educational institutions classified by the regional education office. There are 246 primary schools and 30 secondary schools which belong to Mukdahan government office, 10 private schools, 2 special schools, 8 schools under the Office of Permanent Secretary, Ministry of Education, 1 school under the office National Police Office, 8 universities, 3 vocational schools, 2 schools of Buddhism, and 3 schools under the local government office. The total numbers of student in Mukdahan province are 73,348 with the total number of teacher of 3,831 meanwhile the ratio of student per teacher is 19:1.

Religion Mukdahan's major religion is Buddhism which accounts for 96.80 percent followed by Islam and Christianity which accounts for 0.2 and 3 percent, respectively. There are 349 Buddhist temples where there are 183 temples received the certificate from the office of national religion of Thailand, The

Royal Thai Government. There are 168 temples as the houses of priest, 210 of monk residents. For the Christianity, there are 9 churches while there is only one Muslim Church.

Culture and Tradition, people in Mukdahan province hold the strong beliefs of the folkways. The folks have their good hearts, warm and friendly manners, humbleness, and generosity. According to the documental evidence, there are 8 local tribes of Mukdahan known as 8-local tribe city of Mukdahan which are 1) Phu Thai tribe, 2) Thai Yay tribe, 3) Thai Kha tribe, 4) Thai Choe tribe, 5) Thai Kalay tribe, 6) Thai Sak tribe, 7) Thai Kuloa tribe, and 8) Thai I-san tribe. Most people are Buddhists with the strong beliefs of traditions and continuous practices known as 12-traditional practices and 14-ways of life. From past to present, people are conservative and always promote the local tourism such as the tradition of closed-house, Song-Hua tradition, Khunlon tradition, Sohungpung tradition, Yoa tradition, Baysrisukhaun tradition, Rumtay Hau Dondan dancing, Rum Phu Thai, and Rum Pha Ya. The important tradition of Mukdahan is boat competition for Buddha which is the cooperation between Thailand and Laos starting from 13-15 of December yearly which is a part of Mukdahan provincial festival.

Mukdahan's Public Health Mukdahan has both public and private health institutions of 86 agents which are 7 public hospitals, 1 private hospital, and the 78 sub-district health promotional hospitals. The statistics of public health is composed of 1) 42 doctors, 20 dentists, 26 pharmacists, 457 nurses and medical technicians, and 286 health promotion officers. There are 600 beds for the whole numbers of Mukdahan province. The ratio of population per doctor is 8,056:1, the population per dentist is 16,918: 1, the population per pharmacist is 13,014, population per nurse is 740:1, and population per the health promotion officer is 1,183: 1. For the demographic change of Mukdahan province, there are 1) the birth rate per thousand of population of 10.61, 2) the death rate per thousand of population of 6.18 while the population growth rate is 0.44 percent.

In sum, the geography, economic and general society of Mukdahan province is already for the impact of Graeter Mekhong Subregion Economic Corridor policy either positive or negative impact. This would lead to impact of both economic and society as well.

4.2 The impacts of Greater Mekong Subregion East-West Economic Corridor on Cooperative Gross Provincial Product (GPP) of Mukdahan economy

4.2.1 Cooperative Gross Provincial Product of Mukdahan economy and its growth rate can be expressed as table 1 as follow:

Table 1 Cooperative Gross Provincial Product of Mukdahan Economy and its growth rate from 1982 to 2014

Year	Co-opGPP ¹ (\$)	Growth Rate ²
1982	2.50	
1983	5.00	50.00
1984	7.50	33.33
1985	10.00	25.00
1986	12.50	20.00
1987	15.00	16.67
1988	17.50	14.29
1989	20.00	12.50
1990	22.50	11.11
1991	25.00	10.00
1992	27.50	9.09
1993	30.00	8.33
1994	32.50	7.69
1995	28.39	-14.47
1996	31.42	9.64
1997	31.36	-0.20
1998	31.13	-0.75
1999	31.29	0.53

Year	Co-opGPP ¹ (\$)	Growth Rate ²
2000	34.84	10.18
2001	35.15	0.88
2002	38.34	8.34
2003	42.77	10.34
2004	45.30	5.59
2005	47.94	5.51
2006	54.25	11.62
2007	57.28	5.30
2008	59.88	4.34
2009	68.80	12.97
2010	77.24	10.92
2011	93.92	17.76
2012	96.28	2.45
2013	109.68	12.22
2014	108.23	-1.34
Average	40.94	10.31
Standard Deviation	29.03	11.21

Sources: ¹GPP of Mukdahan from the Bank of Thailand, 2016

²Growth Rate from Calculation

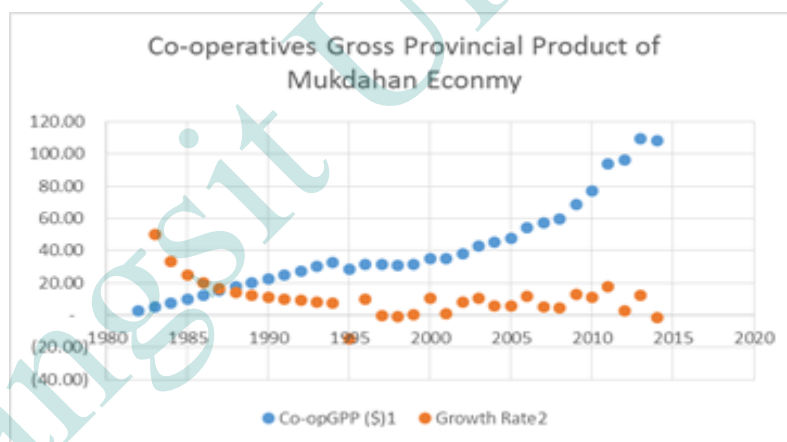


Figure 2. Cooperative Gross Provincial Product of Mukdahan Economy from 1982 to 2014

Source: Calculation

According to Table 1 and Figure 2, the impacts of Greater Mekong Subregion East-West Economic Corridor (GMS-EWEC) on Cooperative Gross Provincial Product (GPP) of Mukdahan province from 1982 to 2014. For the whole picture, it has increased since 33 years over time at the average of \$40.94 Million and its growth rate of 10.31 percent yearly resulted from GMS-WEC.

4.2.2 The forecasting of Cooperative Gross Provincial Product of Mukdahan Economy from 2015 to 2034 estimated by the time trend econometric model over 20 years was expressed by Table 2, as follows:

Table 2 The forecasting of Cooperative Gross Provincial Product of Mukdahan Economy from 2015 to 2034

No	Year	Co-opGPP ¹ (\$)1	Growth Rate ²
1	2015	88.43	
2	2016	91.23	3.06
3	2017	94.02	2.97
4	2018	96.82	2.89
5	2019	99.61	2.80
6	2020	102.40	2.73
7	2021	105.20	2.66
8	2022	107.99	2.59
9	2023	110.79	2.52
10	2024	113.58	2.46
11	2025	116.37	2.40
12	2026	119.17	2.34
13	2027	121.96	2.29
14	2028	124.75	2.24
15	2029	127.55	2.19
16	2030	130.34	2.14
17	2031	133.14	2.10
18	2032	135.93	2.06
19	2033	138.72	2.01
20	2034	141.52	1.97
Average		114.98	2.44
Standard Deviation		16.53	0.34

Sources: ¹GPP of Mukdahan from the Bank of Thailand, 2016

²Growth Rate from Calculation

For the forecasting of Cooperative Gross Provincial Product of Mukdahan Economy from 2015 to 2034, the Cooperative GPP has increased with the average of \$114.98 Million and its growth rate of 2.44 percent annually.

2.3 The Impact analysis of Mekong Greater Subregion East-West Economic Corridor on Cooperatives GPP of Mukdahan economy

The impact analysis was estimated by the econometric model as follow:

$$(\text{Co-op GPP})_t = \beta_0 + \beta_1*(D)_t + \beta_2*\text{time} + \text{error term} \text{-----}(1)$$

Where:

(Co-op GDP)_t = Cooperatives Gross Provincial Product of Mukdahan Economy

D_t = Dummy Variable,

D = 0 from the year of 1982 to 1997, measured Cooperatives Gross Provincial Product before MGS-EWEC

D = 1 from the year of 1998 to 2014, measured Cooperative Gross Provincial Product after MGS-EWEC

Time = 1-33

The estimated equation could be expressed as:

$$(\text{Co-op GPP})_t = -12.007 + 21.170 * (D)_t + 3.756 * \text{Time} + \text{error term} \text{ -----}(2)$$

T-value	(-3.174)**	(3.204)**	(10.832)**
F	134.967		
R ²	0.893		

According to the estimated parameters, it expresses the t-value of dummy variable which demonstrates the impacts of Mekong Greater Subregion East-West Economic Corridor policy since this policy has been implemented in 1998. It shows that the Mekong Greater Subregion East-West Economic Corridor policy has positive impacts on Cooperative GPP of Mukdahan economy. Also, the result shows that the growth rate of Mukdahan Cooperative GPP has increased by 3.76 percent annually because of Mekong Greater Subregion East-West Economic policy. This obviously makes Mukdahan economy enlarge eventually. The Mekong Greater Subregion East-West Economic policy also makes Mukdahan GPP growth lead to the growth of Mukdahan income and employment. The research results get along with the works of (Krongkaew, 2004; Ishida and Isono, 2014; Asian Development Bank, 2015 and Asian Development Bank, 2016)

5. Discussions

The Mekong Greater Subregion East-West Economic Corridor policy has started since 1998 and has positive impacts on Cooperative Gross Provincial Product of Mukdahan economy. The cooperative Gross Provincial Product accounts for 16 percent of the entire Mukdahan GPP. Since the cooperative is one of the ways as economic development which stemmed from a group of people who have conducted affairs for socio-economic interests on the basis of self-help and mutual assistance.

The positive impacts of GMS-WEC on Mukdahan Provincial Product (GPP) matched the policy of Thailand Special Economic Zone launched by Thai government. Since Mukdahan province is one of Special Economic Zone (SEZ) of Thailand. Thai Government pays attention to border areas with neighboring countries to improve trades and investment, quality of life of people in the area, and prepare for AEC integration. There are two phases for the Special Economic Zones. The first phase is composed of 6 provinces - Tak, Nong Khai, Mukdahan, Sa Kaeo, Trad, and Nong Khai and the second phase is composed of 4 provinces – Narathiwat, Chiang Rai, Nakhon Phanom, and Kanchanaburi (Industrial Estate Authority of Thailand, 2017). The industrial estates in 6 provinces in phase 1 will start the development in 2018 and can be operated in 2019. Businesses and industries that can take benefits from incentives and measures in the SEZs include the logistics, border trade business with warehouses, distribution centers for exportation, service business, tourism-related business, labor-intensive factories, manufacturers with raw materials from neighboring countries, and so on

6. Conclusion

Mukdahan province is one of Special Economic Zones (SEZ) of Thailand. Also, Mukdahan province is in the phase stage of SEZ and is developing. From past to present, Mukdahan province has been an international trade city between Thai and Laos. According to the research results of the impact of Greater Mekong Subregion East-West Economic Corridor on Cooperative Gross Provincial Product (GPP) of Mukdahan economy. The GMS-EWEC has positive impacts on that of Mukdahan economy. From the research results, it could be stated that the aims of economic development are emphasized on Cooperative Gross Provincial Product (GPP) as a whole. It could be stated that Cooperative GPP is the crucial part of Mukdahan's economy. So, it could be the way to develop the economic. Since, cooperative operational performance is one of the ways to drive up the whole GPP of Mukdahan economy. Cooperative is stemmed

from a group of people who have conducted affairs for socio-economic interests on the basis of self-help and mutual assistance based on the values of self-help, self-responsibility, democracy, equity and solidarity as well. In addition, the second Thai-Laos friendship bridge which is played the key role as a part of Greater Mekong Subregion East-West Economic Corridor policy in order to not only connect Thai-Laos as land link but also brought Thai-Laos international trade as well as better standard of life of both Thais and Laos. In this research paper as a part of Greater Mekong Subregion East-West Economic Corridor tried to measure only the impact of its impact on Gross Provincial Product (GPP) of Mukdahan province but this research paper did not classified for the impact of individual sector of Mukdahan economy. So, this on-going research would be expressed in the next step of research.

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