

ASSESSING THE SOCIO-ECONOMIC IMPACTS OF CROSS-BORDER TRANSPORT INFRASTRUCTURE: A CASE OF THE SECOND THAI-LAO MEKONG INTERNATIONAL BRIDGE

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ABSTRACT

One of the priority infrastructure projects viewed as an instrument to stimulate economic integration among the Greater Mekong Sub-region (GMS) countries is the construction of the Second Thai-Lao Mekong International Bridge between Mukdahan province in Northeastern Thailand and Savannakhet province in Lao PDR, which was opened to traffic in January 2007. This paper has sought to identify the socio-economic impacts of the bridge after the 3 years of its operation, focusing on the assessment of economic development benefits and negative impacts associated with the bridge in the context of Mukdahan. Recent statistics show that there has been a significant improvement in the health of the Mukdahan economy, while indicating no evidence on the widespread of HIV/AIDS and the smuggling of illegal drugs due to greater mobility at the Mukdahan-Savannakhet border. However, the data and statistical tests indicate a real change in accident risks, leading to dramatic increases in the number of accidents and injuries on major highways connecting the bridge to Mukdahan's neighbouring provinces.

Keywords: Cross-border Transport Infrastructure, Mekong International Bridge, Socio-Economic Impacts, Thailand, Lao PDR

1. INTRODUCTION

The Second Thai-Lao Mekong International Bridge is considered among the core component of transport infrastructure that physically facilitates the international movements of goods and people across the borders of countries in the Greater Mekong Sub-region (GMS) in Indochina. Opened to traffic in January 2007, the bridge is an integral part of the Indochina “East-West Economic Corridor (EWEC)”, which runs through Vietnam, Laos PDR, Thailand, and Myanmar. By removing the significant bottleneck for road transport due to the Mekong River between Mukdahan province in Thailand and Savannakhet province in Lao PDR, the opening of the bridge allows the four GMS countries to be linked by road, thereby making international road transport much easier, strengthening regional linkages, and enabling the economic corridor to display its full potential. Since it is expected to primarily serve as an instrument in boosting the economic integration in the GMS, this cross-border infrastructure building could also bring about economic benefits to different regional and local economies. However, the likely resulting expansion of cross-border traffic may adversely affect border areas and their vicinity, for example, increasing the risk of road traffic injuries, influx of illegal drugs, and facilitating transmission of infectious diseases such as HIV/AIDS and avian influenza.

The objective of this paper is to gain insights into the socio-economic impacts of the Second Thai-Lao Mekong International Bridge after the 3 years of its operation. Given the view that the impacts of much greater accessibility between Thailand and Laos PDR should begin to be felt locally, we focus in this paper on the assessment of economic benefits and negative effects associated with the bridge in the context of Mukdahan. Time series data and statistics compiled several years before the opening of the bridge are compared to those representing the current trends and situations in the expected areas of influence.

This paper is organised as follows. We start in the next section by briefly providing background information of the Second Thai-Lao Mekong International Bridge. In Section 3, we draw upon recent statistics to identify changes in cross-border traffic and trade flows after the bridge opening to traffic. The question of whether the Mukdahan economy is positively influenced by the completion of the bridge is examined in Section 4. This is followed by an investigation of the likely negative effects associated with a greater mobility at the Thai-Lao border in Section 5. Finally, we provide a summary of findings and discuss some implications.

2. OVERVIEW OF THE SECOND THAI-LAO MEKONG INTERNATIONAL BRIDGE

After the opening of the First Thai-Lao Mekong International Bridge linking the Thai province of Nongkhai and the Lao PDR capital of Vientien since 1994, the construction of the Second Thai-Lao Bridge over the Mekong River began in April 2004 and completed in December 2006. The bridge construction project was jointly undertaken by the two countries with Japanese yen loans provided by Japan Bank for International Cooperation (JBIC).

The Second Thai-Lao Mekong International Bridge has a length of approximately 1,600 meters long and crosses the Mekong River at about 7.5 km north of Mukdahan Province in Thailand and 5 km north of Savannakhet Province in Lao PDR. The opening of the bridge to traffic since January 2007 helps to link up the long-awaited East-West Economic Corridor (EWEC), connecting major cities and towns located between the coastal town of Mawlamyine in Myanmar and the port of Danang in Vietnam through Tak, Phisanulok, Khon Kaen, Mukdahan (Thailand) and Savannakhet (Lao PDR).¹ The EWEC has now been completed, forming a 1,450-kilometer-long land bridge between the South China Sea and the Andaman Sea across the Indo-China peninsula (See Figure 1).



Figure 1 – The Indochina “East West Economic Corridor” and the Location of the Second Thai-Lao International Mekong Bridge

¹ The EWEC is one of the nine regional economic corridors identified with an objective of stimulating the effective and efficient growth of investments and production among the Greater Mekong Subregion (GMS) countries, which include Thailand, Lao PDR, Vietnam, Myanmar, Cambodia, and Yunnan Province and Guangxi Zhuang Autonomous Region of the People's Republic of China. The main objectives are to stimulate economic activities and reduce economic disparities among the GMS countries.

Basically, the completion of the Second Thai-Lao Mekong International Bridge is expected to facilitate cross-border movements of goods and people between Thailand and Lao PDR through the Mukdahan-Savannakhet border. These two provinces were previously separated by the Mekong River, but now become more closely integrated with one another. However, the Mukdahan-Savannakhet border is also an important gateway for trade among Thailand, Vietnam, and the People's Republic of China (PRC). A number of interests have converged toward the establishment of new logistics routes for trade with third countries. Particular interest is given to making use of roads for long-distance freight transport between Thailand and Vietnam, particularly between Bangkok and Hanoi as an alternative to maritime shipping that usually takes about 2 weeks. According to several trial runs conducted by logistic companies (JICA, 2007) the land trip between Bangkok and Hanoi currently takes 3 to 4 days passing through the bridge. However, such a significant reduction in travel time comes with more than twice transport costs, compared to those of maritime shipping. The land transport between Bangkok and Hanoi via the Second Mekong International Bridge, despite being less advantageous in bulk transport, is thus attractive to freight movements concerned with its convenience and speed of delivery.

Another breakthrough arising from the opening of the bridge is the improvement of maritime access that could help Lao PDR and northeastern Thailand to trade overseas. The bridge plays a major part in giving landlocked Lao PDR to access the port of Laem Chabang in Thailand, one of Asia's leading ports on the Asia-North American and Asia-Europe shipping network. For businesses in northeastern Thailand, the cross-border road network across the bridge allows them to export their farm products and agricultural goods via the Danang port in Vietnam.

By removing the physical barrier at the Mukdahan-Savannakhet border, the opening of the bridge over the Mekong River allows the four GMS countries to be physically linked by road, thereby making international road transport much easier, strengthening regional linkages, and enabling the economic corridor to display its full potential. To further facilitate cross-border movement of goods and people, nonetheless, it is also necessary to eliminate non-physical barriers such as custom procedures, immigration formalities, transit arrangements, and quarantine inspection. In this regard, the GMS Cross-Border Transport Agreement (CBTA) has been signed by all six GMS countries since 2003. Attached to the GMS Agreement, 17 Annexes and 3 Protocols have been negotiated, and currently all of which have been signed. The Agreement has initially been implemented at key border crossing points in the GMS, for instance, the implementation of single window inspection at the Mukdahan-Savannakhet border.

3. CHANGES IN CROSS-BORDER TRAFFIC AND TRADE FLOW

Since the Second Thai-Lao Mekong International Bridge between Mukdahan and Savannakhet completed in December 2006, cross-border traffic and freight flow across the river have been substantially increasing. Prior to the opening of the bridge to traffic in

January 2007, the river crossing for vehicles was made possible by ferry, serving about 700 cars and 17,000 trucks annually between 2003 and 2006. The removal of physical barrier at the Mukdahan-Savannakhet border has stimulated growth in the cross-border traffic (Figure 2). The total number of cars crossing the border has suddenly risen to approximately 160,000 a year in 2009. There have also been increases in the rate of crossings for trucks with a total of 53,181 trucks recorded in 2009, although those from Lao PDR grew much faster during the first year of the bridge operation.

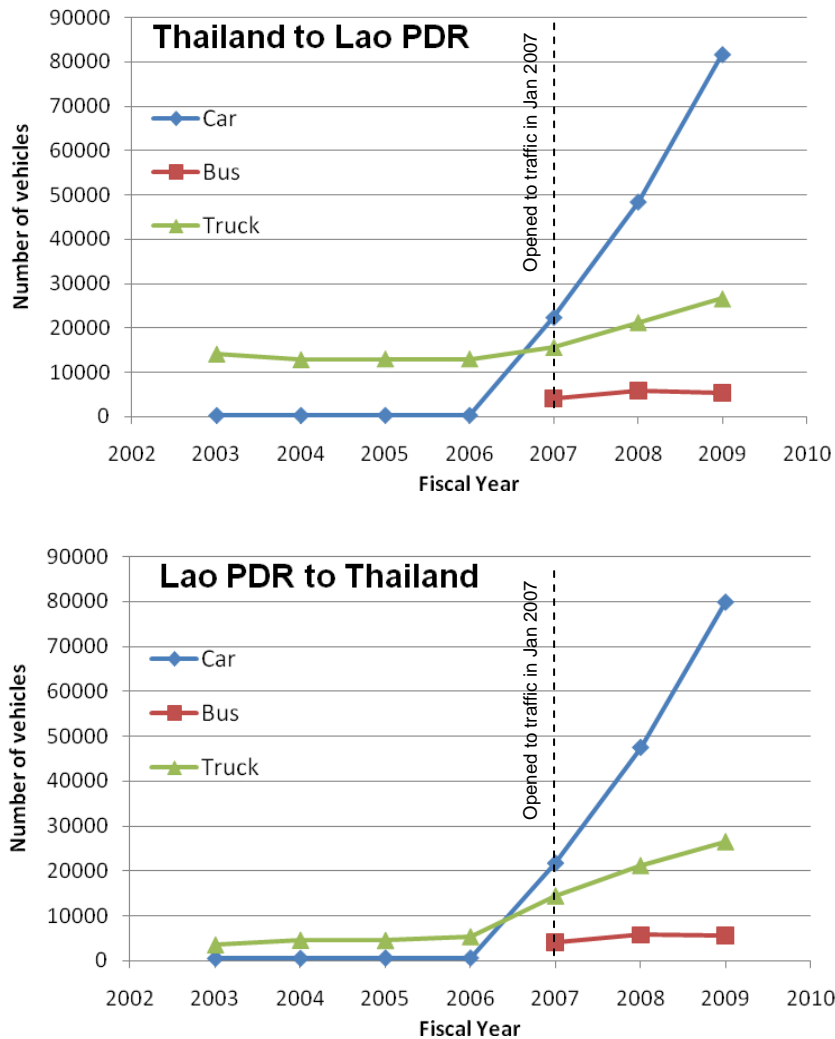


Figure 2 – Cross-Border Traffic at the Mukdahan-Savannakhet Border, 2003-2009
(Source: Mukdahan Customs House)

The growth in truck crossing is fairly attributable to increases in border trade after the completion of the bridge (Figure 3). From 1995 to 2005, the volume of the trade at the Mukdahan-Savannakhet border was about 4,000-5,000 million THB per year of which exports from Thailand to Lao PDR shared 80-90 percent of the total. Starting to grow suddenly in the final year of bridge construction, the border trade jumped to 24,531 million THB in 2008, though declining to 17,359 million THB in 2009 which was likely due to the

global recession. However, there has been a change in the balance of trade at the Mukdahan-Savannakhet border after the opening of the bridge, in that the volume of Thailand's exports to Lao PDR has been lower than that of imports from Lao PDR since 2007. This would suggest that in terms of international trade Lao PDR has been taking advantage of the bridge more effectively.

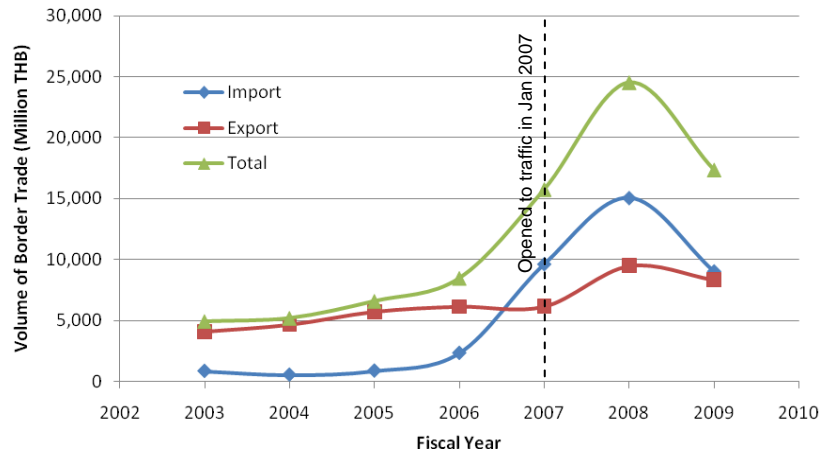


Figure 3 – Volume of Border Trade at the Mukdahan-Savannakhet Border, 2003-2009

(Source: Mukdahan Customs House)

4. IMPACTS ON THE MUKDAHAN ECONOMY

Given that the Second Thai-Lao Mekong International Bridge has resulted in significant changes to flows of freight and vehicles, it seems reasonable to expect the existence of some economic benefits accrued to a local economy, particularly in the two provinces now physically and directly connected by the bridge. While it might be argued that 3 years is too short to observe changes in the major economic structure of the cross-border area, the potential outcomes of the bridge that may take place in the short run could be the expansion of economic activities associated with greater mobility across the border. In this regard, we focus on identifying economic changes in Mukdahan province which are specifically related to the opening of the Second Mekong International Bridge.

Gross Domestic Product

Accounting for 27% of total border trade between Thailand and Lao PDR in 2006, Mukdahan is regarded as the second most important border cross-point between the two countries. However, Mukdahan is among the poorest provinces in Thailand. Its gross domestic product (GDP) in 2008 accounts for only 0.14% of Thailand's national output and 1.37% of the regional total.

The Second Thai Lao Mekong International Bridge is expected to stimulate growth in the economy of Mukdahan province. Situated at the gateway to Indochina, Mukdahan has been encouraged by the Government of Thailand to become trade, logistics and distribution centers in Northeastern region. Since the opening of the bridge, Mukdahan has served as a major gateway to tourism in Laos and Vietnam. Therefore, tourist and visitor expenditures could also be a significant boost to its economy.

Comparing the annual growth in real GDP between Mukdahan and the Northeastern region as well as the whole country from 1997 to 2008, the results shown in Figure 4 suggest that the bridge has led to an increase in the overall economic performance of Mukdahan. Over the period 1997-2006, Mukdahan tended to exhibit weaker performances than the Northeastern region and Thailand as a whole. Though the annual GDP growth of Mukdahan generally moves in the same direction as the regional economy, it was practically below the regional average, particularly during the period of bridge construction (2004-2006). Since the bridge opening to traffic in 2007, however, there has been a significant improvement in the Mukdahan economy as we have seen two consecutive years of its annual GDP growth higher than the national and regional averages.

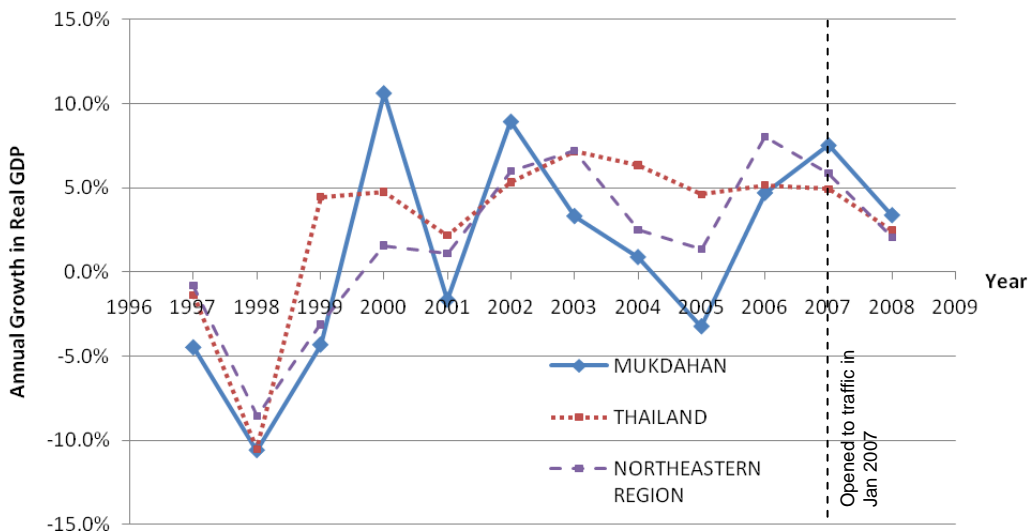


Figure 4 – Annual Growth in Real GDP from 1997 to 2008

Unemployment

The improvement in the health of Mukdahan economy is also reflected by a change in the labour market condition, measured by the unemployment rate. Growth in economic activities associated with the Second Mekong International Bridge could increase the local demand for goods and services, which in turn positively affect the job market such as decline in joblessness. Given that the statistics on GDP growth indicate the better performance of the Mukdahan economy since the first year of bridge opening in 2007, it is reasonable to expect

some lags in the effect on the unemployment rate which reflects where the economy has been.

Table 1 shows that compared with the Northeastern region and Thailand as a whole, the Mukdahan's labour market condition started to improve in 2008, departing from the national and regional trends. Its unemployment rate decreased from 1.95% in 2007 to 1.22%, while the figures for the nation and the whole region remained stable. In addition, this is the first time since 2001 that the unemployment rate of Mukdahan fell below the country as a whole. It is also lower than the Northeastern region for the first time since 2004. This trend appears to continue as guided by the unemployment statistics during the first three quarters in 2009.

Table 1 - Unemployment Rates from 2001 to 2009

Year	Thailand (1)	Northeastern region (2)	Mukdahan (3)	Deviation from the whole country (3)-(1)	Deviation from the whole region (3)-(2)
2001	3.32	5.20	3.28	0.04	1.92
2002	2.40	3.26	3.37	-0.96	-0.10
2003	2.16	2.56	2.43	-0.27	0.13
2004	2.07	2.51	2.72	-0.65	-0.20
2005	1.83	2.06	2.44	-0.60	-0.38
2006	1.51	1.66	1.98	-0.47	-0.32
2007	1.38	1.43	1.95	-0.57	-0.52
2008	1.38	1.43	1.22	0.16	0.21
2009 q1	2.08	2.42	1.47	0.60	0.95
2009 q2	1.75	2.00	1.72	0.02	0.27
2009 q3	1.17	1.01	0.76	0.41	0.24

Source: The Labor Force Survey, National Statistical Office, Ministry of Information and Communication Technology

5. UNINTENDED EFFECTS OF THE BRIDGE

The findings reported in the previous sections suggests that the Second Mekong International Bridge stimulates growth in cross-border traffic and trade and that its economic benefits has begun to be felt by the local economy of Mukdahan. However, the likely resulting expansion of cross-border freight and traffic may adversely affect border areas and their vicinity unintentionally, for example, increasing the risk of road traffic injuries, increasing illegal trade in narcotics, and facilitating transmission of infectious diseases such as HIV/AIDS and avian influenza. We investigate the presence of these issues in Mukdahan province since the completion of the bridge as follows.

Road traffic injuries

Providing road infrastructure crossing an international border could potentially increase the risk of traffic accident and injuries for several reasons. The expansion of cross-border traffic implies an increase in the exposure to the risk of traffic accidents. Growth in freight movements could lead to increases in the risk of crashes and severity, particularly in built up areas since heavy vehicles (e.g. trucks and trailers), if allowed, are likely to make roads more vulnerable to non-motorized vehicles and pedestrians. For more general situations, the presence of such freight vehicles may enlarge the dispersion of traffic speeds, which in turn negatively affect road safety. Moreover, inter-country differences in traffic rules and regulation as well as road standard may contribute to road accidents and injuries.

Given that the deterioration of road safety could predominantly take place along major highways serving traffic induced by the bridge, we examine the 13-year (1997-2009) crash records on Highway Route No. 12 and Highway Route No. 212 that connect Mukdahan to its neighbouring provinces, focusing on traffic crashes that occurred within the area of Mukdahan province. Figure 5 shows the number of accidents, fatalities, and injuries on both highways during the period 1997-2009. As can be seen, there was practically no significant change in the situation during the first year of bridge operation in 2007. Since the second year of bridge operation in 2008, however, there have been sharp increases in traffic accidents and casualties on the two major highways connected to the bridge, though some figures slightly dropped in 2009.

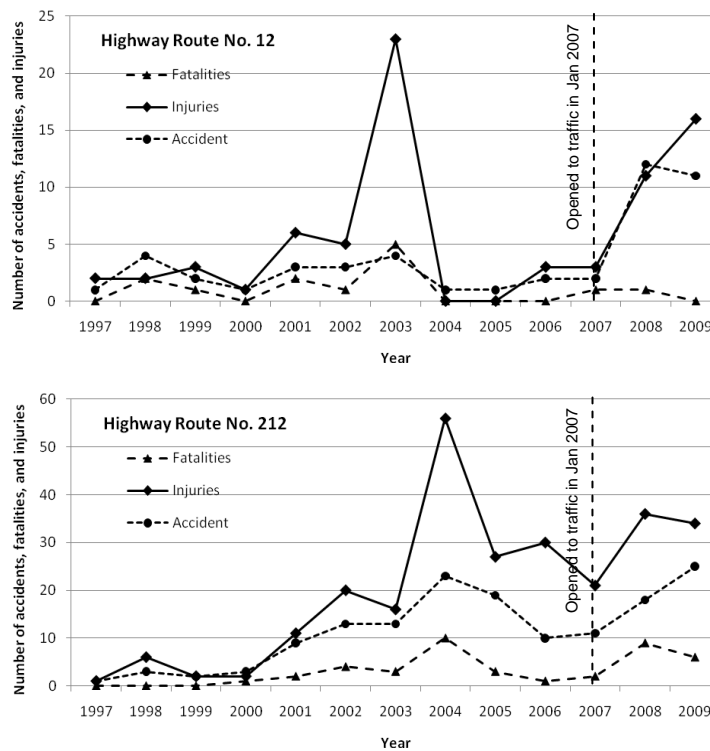


Figure 5 – Number of Accidents, Fatalities, and Injuries on Highways No. 12 and 212

(Source: Bureau of Highway Safety, Thailand’s Department of Highways)

The main issue concerning these findings is whether the observed increases in road accidents and casualties were the result of a real change in trends of traffic safety or a mere random fluctuation in the crash data. We address this issue by conducting a Poisson test to estimate the probability of crashes, fatalities and injuries occurring purely by chance over the 3-year period after the completion of the bridge. Based on the comparison of the long term average, the Poisson test results in Table 2 generally confirm the decline in the level of safety on the highways. For Highway Route No. 12 which is part of the East-West transport Corridor, the Poisson test rejects the null hypothesis that sudden increases in accidents and injuries since 2008 are due to random fluctuation at significant level of 5%. In the case of Highway Route No. 212, the results in Table 2 suggest that the increases in the number of accidents in the years 2008 and 2009 were a result of the real change in accident risk. However, the presence of road fatalities and injuries on Highway No. 212 since the opening of the bridge to traffic in 2007 seems to be driven by the random fluctuation.

Table 2 - The Poisson Test for Changes in Road Accidents and Casualties, 2007 - 2009

Highway Route No.	Type of data	2007			2008			2009		
		Number	Long term average	Poisson probability	Number	Long term average	Poisson probability	Number	Long term average	Poisson probability
12	Accident	2	2.182	0.639	12	3.000	0.000***	11	3.615	0.001***
	Fatalities	1	1.091	0.664	1	1.083	0.661	0	1.000	0.999
	Injuries	3	4.364	0.776	11	4.917	0.012**	16	5.769	0.000***
212	Accident	11	9.727	0.361	18	10.417	0.020**	25	11.538	0.000***
	Fatalities	2	2.364	0.680	9	2.917	0.003***	6	4.444	0.285
	Injuries	21	17.455	0.207	36	19.000	0.000***	24	27.889	0.127

Note: *, **, *** indicate the significance at 10%, 5%, 1% levels

HIV/AIDS Infections

A greater cross-border mobility associated with the Second Mekong International Bridge project has brought health concerns in particular transmission of HIV/AIDS to the construction workers and local people due to the increased exposure to other communities and their negligible educational background. Given this, HIV/AIDS prevention activities were conducted regularly for construction workers and residents, providing them appropriate knowledge of AIDS-related issues and countermeasures. Such interventions were implemented under cooperation from all concerned parties such as Thailand and Lao PDR's road agencies in charge of the construction project, Japanese construction companies, regional health authorities in both countries, and local NGOs.

Table 3 compares the situations of HIV/AIDS prevalence in Mukdahan and other provinces in Northeastern Thailand between the 3-year period of bridge construction (2004-2006) and the first 3-year period after the completion (2007-2009). For the Northeastern region as a whole, there was a general decline in the number of people with HIV/AIDS per thousand population. Although the intensified movement of goods and people across the border would increase the spread of HIV, we find no concrete evidence that the completion of the bridge triggered

growth in HIV/AIDS prevalence in Mukdahan and its adjacent provinces as their figures are not substantially different from the regional trend. Given the basic premise that improvements of cross-border mobility tend to increase HIV/AIDS vulnerability and risk in cross-border areas, those involved with the aforementioned HIV/AIDS prevention program may reasonably consider this finding as a result of their tireless efforts in controlling the threat of HIV/AIDS in Mukdahan.

Table 3 - HIV Prevalence in Northeastern Thailand, 2004-2009

Provinces	Number of people with HIV/AIDS per thousand population (3-year average)		
	2004-2006	2007-2009	% Change
All	23.3	10.5	-55%
Mukdahan	30.3	16.1	-47%
Adjacent provinces with major highway connectivity			
Amnat Charoen	50.2	22.0	-56%
Kalasin	25.8	11.0	-57%
Neighbouring provinces with international cross-border points			
Loei	29.7	23.3	-21%
Nong Khai	9.7	3.3	-66%
Nakhon Panom	16.2	5.5	-66%
Ubon Ratchathani	26.0	9.9	-62%
Surin	23.9	3.3	-86%
Si Sa Ket	29.8	25.1	-16%
Other Northeastern Provinces			
Nong Bua Lum Phu	28.0	14.2	-49%
Udonthani	33.9	22.7	-33%
Sakon Nakorn	11.6	3.6	-69%
Roi Et	23.1	8.5	-63%
Maharakham	16.3	11.1	-32%
Khon Kaen	19.4	5.7	-70%
Yasothon	26.9	10.5	-61%
Nakorn Ratchasima	18.8	5.0	-74%
Chaiyaphum	22.9	7.6	-67%
Buriram	24.4	10.3	-58%

Source: Thailand Department of Disease Control, Ministry of Public Health

SMULGGING OF ILLEGAL DRUGS

Smuggling of illegal drug is another concern over negative impacts associated with improvements in cross-border transport infrastructure. In the case of the Second Mekong International Bridge, the recent statistics from the Royal Thai Police (See Figure 6) seem to suggest that opening the cross-border opportunities for goods and people is unlikely to cause the influx of illegal trade in narcotics. In Mukdahan province, there has been a substance

increase in reported narcotics cases since the completion of the bridge in 2006. However, similar evidence has also emerged in other Northeastern provinces with international cross border points. The fact that these findings are also consistent with the regional and national trends implies the most likely presence of other important factors contributing to the increase in the narcotics problem. These essentially make it implausible for the present study to discern the extent to which the bridge stimulates the smuggling of illegal drugs in Mukdahan.

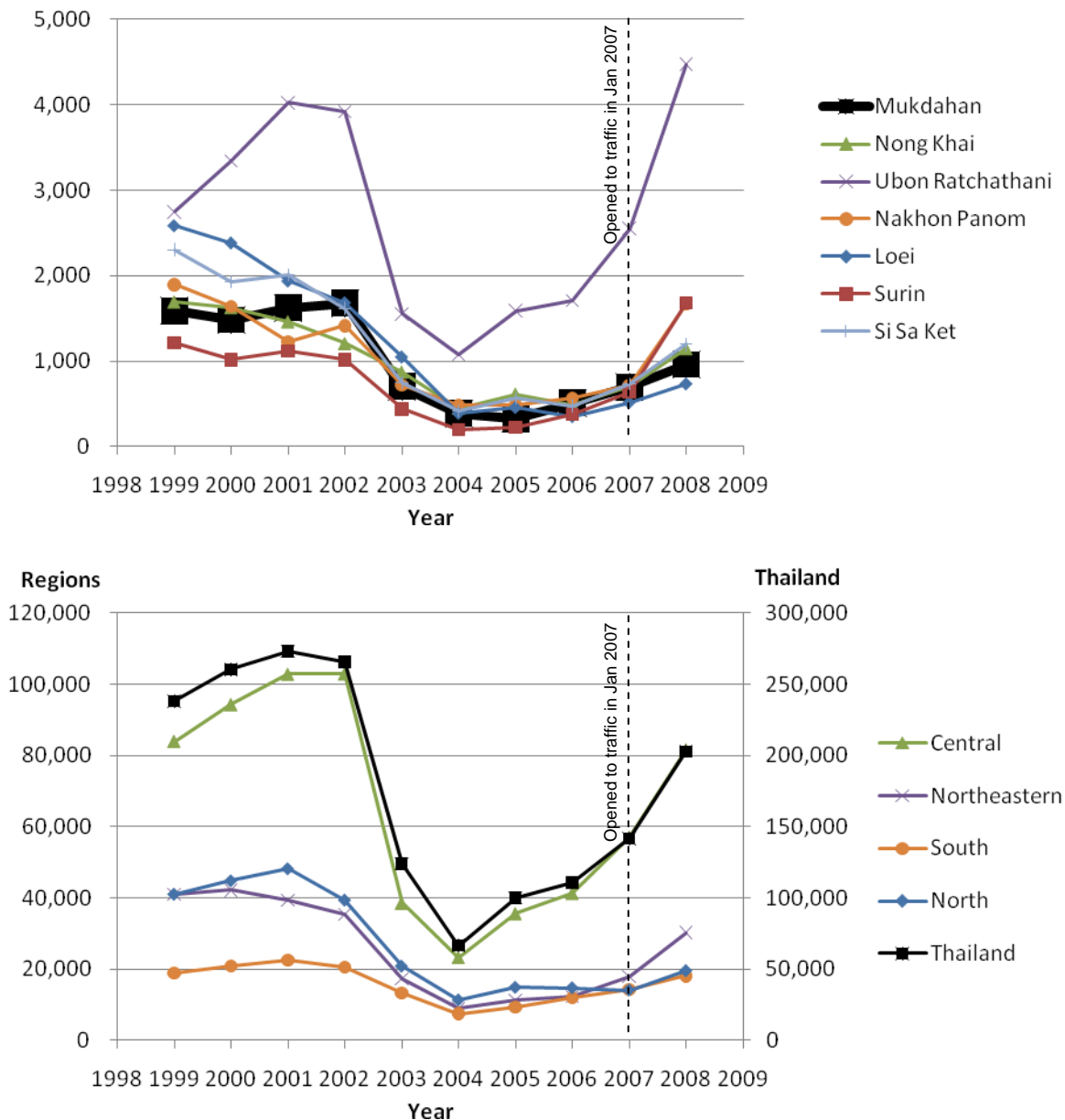


Figure 6 – Number of Reported Narcotics Cases in Thailand, 1999-2008

(Source: Royal Thai Police)

6. SUMMARY AND IMPLICATION

The construction of the Second Thai-Lao International Bridge over the Mekong River is one of the priority projects aimed at promoting economic integration in the Greater Mekong Sub-region (GMS) by strengthening regional linkages and alleviating the economic disparities among the GMS countries. The findings reported in this paper suggests that the bridge which was opened to traffic in 2007 stimulates remarkably increases in cross-border traffic and trade as expected and has began to provide economic development benefits to Mukdahan, one of the poorest provinces in Thailand.

Since the opening of the bridge in 2007, Mukdahan has served as an important gateway to Lao PDR and other countries in Indochina. This helps to stimulate the expansion of economic activities involving trade and logistics, investment, and tourism, which in turn contributes to a significant improvement in the health of Mukdahan economy. Compared with the Northeastern region and Thailand as a whole, Mukdahan has enjoyed two consecutive years of its annual GDP growth higher than the national and regional averages in 2007 and 2008, which rarely happened over the past decade. With some delay, the job market in Mukdahan appears to capitalize the increases in economic activities and local consumption as we have seen its unemployment declining well below the national and regional figures.

As commonly for international cross-border transport projects, there have been concerns over the widespread of HIV/AIDS and the smuggling of illegal drugs which might increase due to growth in the cross-border movement of goods and people. For few years after the bridge opening to traffic, we find that the threat of HIV/AIDS in Mukdahan appears to be under control, as the statistics reveal no significant shift from the regional trend of HIV/AIDS prevalence decline. Similar evidence has been found for the issue of narcotics as the situation in Mukdahan merely reflects the national and regional patterns.

Several other cooperation projects between Thailand and Lao PDR are scheduled to complete in the next few years, with aims at making the two countries being more closely integrated with one another. These include the construction of two more bridges across the Mekong River to facilitate cross-border trade and logistics between the two neighbours and other countries in the GMS. While it becomes clear that efforts need to be given in providing necessary institutional infrastructure and ensuring non-physical barriers for the border crossing which might exist to be eliminated, much attention also needs to be given towards the potential deterioration of traffic safety. We find evidence on a real change in accident risks few years after the completion of the Second Mekong International Bridge, showing dramatic increases in accidents and injuries on highways linking the bridge with Mukdahan's neighbouring provinces. It will therefore be necessary for all parties involved to establish an action plan on crash and injury prevention, prepare effective road safety campaigns, and ensure safer environment in the major highway network connected to the new bridges that will certainly need to serve massive cross-border movements in the near future.

7. REFERENCE

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