



SEATCA
SOUTHEAST ASIA TOBACCO CONTROL ALLIANCE

**The Collaborative Funding Program for
Southeast Asia Tobacco Control Research**

Tax Policies for Tobacco Industry in Lao PDR

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**Financial support from
The Rockefeller Foundation and
Thai Health Promotion Foundation**

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Supported by

Southeast Asia Tobacco Control Alliance (SEATCA)
Under The Collaborative Funding Program for Tobacco Control Research

Financial support from

Thai Health Promotion Foundation (ThaiHealth) and
The Rockefeller Foundation

July 2008

ACKNOWLEDGEMENTS

The author appreciates the assistance and contribution of many people, especially Ms. Menchi G. Velasco of SEATCA, the officials at the Tax Department of the Ministry of Finance of Lao PDR, and Dr. Maniphan Vongphosy of ADRA Lao, who all provided valuable support and assistance on data collection and clarification, and also constructive comments and suggestions on the earlier versions of this report. Special thanks go to Dr. Bounlonh Ketsovannasane of WHO Lao PDR who also provided invaluable support. Sincere thanks are for participants of the workshop organized by the Ministry of Health of Lao PDR for their contributive comments, and officials at the Ministries of Health, Finance and Commerce who provided additional information that was crucial for the completion of this report.

The author is also grateful to the Southeast Asia Tobacco Control Alliance (SEATCA) under its Collaborative Funding Program for Tobacco Control Research, the Thai Health Promotion Foundation (ThaiHealth), and The Rockefeller Foundation for their technical and financial support.

EXECUTIVE SUMMARY

The economy of Lao PDR is dominated by agriculture. In 2000, more than 52% of its GDP at current prices was originated from the agricultural sector. The contribution of industry and services was around 23-24%. However, the share of agriculture in GDP went down to slightly over 50% in 2001. At the same time, those of industry and services both went up to around 24%. This trend has continued in the following years. In 2006, the share of agriculture went down to around 42%, while those of industry and services went up to more than 31% and 25%, respectively. With regards to tobacco and tobacco products, a similar trend could be observed. Tobacco harvested area was found to decrease over the period while cigarette production significantly increased. This was probably caused by higher tobacco yield and more importation of tobacco leaves.

Tobacco Industry in Lao PDR

Cigarette production in Lao PDR was mainly confined to Lao-China Lucky Tobacco Company Limited and Lao Tobacco Company Limited, the producers of the two most popular brands of cigarettes i.e. A Deng and Dok Mai Daeng (Red Flower). Production of the two companies is believed to occupy most of the cigarette sales in Lao PDR. The report of the World Health Survey in 2003 showed that the smoking prevalence rate in Lao PDR was 40.3%. This rate was much higher than those in other Association of South East Asian Nations (ASEAN) member countries. It is widely known that tobacco smoking is a cause of many diseases.

Lao-Chinese Lucky Tobacco Company was the first tobacco manufacturer in Lao. It was established in 1992 and was 100% owned by Chinese investors. The second cigarette producer, Lao Tobacco Co., Ltd., was established under an Investment Law in 2001. The government shares 47% of the company's investment while French and Singaporean investors share 34% and 19% share, respectively. Under the Law, Lao Tobacco Company is entitled to a 25-year concession period that can be extended. The concession consists of the right for a 5-year profit tax holiday (from 2002 to 2006), and a privilege to a lower excise tax rate for 25 years (from 2002-2026). The privilege also applies to Lao-Chinese Lucky Tobacco Company. Based on the Law, if the production cost of cigarettes is not more than 1,500 kip per pack of twenty cigarette sticks, an excise tax rate of 15% will be applied. This rate is much lower than the ceiling rate of 55% and the 30% rate that is applied on cigarette production with a higher unit cost. On the other hand, the actual tax that is applied to imported cigarettes is presumptive at around US\$70 per box of twenty packs or only around 8 % of the retail price..

Cigarette is also an important source of government revenue. The government has earned revenue from tobacco and tobacco products in terms of revenue from import tariff, excise tax, business tax, and profit tax. As a shareholder in one of the two major cigarette manufacturers in Lao PDR, the government also earns revenue from the manufacture's net profit. Moreover, in order to attract more investment, the cigarette industry has come under the government's promotion policies. Because of the fact that smoking is a major cause of diseases that impair and shorten the life of

hundreds of thousands of smokers in Lao PDR as well as people who are exposed to secondhand smoke, the tobacco policy in Lao PDR is therefore conflicting. This fact points to the need for a comprehensive analysis on the impact of taxation on cigarettes demand, the health of smokers, and government revenue.

Cigarette Price and Taxation

The cigarette retail price consists of the production cost or imported price, import tariff (in the case of imports), excise tax, business tax, and profit margin. In the case of local cigarettes, the factory price means the production cost that includes the cost of tobacco leaves, materials, and capital cost, as well as labor cost. In the case of imported cigarettes, the imported price is c.i.f. (cost, insurance and freight) price. Import tariff is applied on the c.i.f. price. The excise tax is applied on the factory price or the imported price that includes customs tariff. The ceiling rate which was 20% in 1989 continuously increased to 55% in 2005. However, the applied rate is much lower than the ceiling rate, especially for cigarettes, as mentioned earlier.

An international trade agreement also have an important role to play for Lao PDR. Based on the Common Effective Preferential Tariff (CEPT) scheme of the ASEAN Free Trade Area (AFTA), the rate of customs tariff depends on countries of origin. But it should be noted that the impact of including tobacco and tobacco products in a free trade agreement (FTA) such as AFTA differs from that of other goods and services. As many past studies have found, the overall tobacco consumption has risen because of lower cigarette prices. Thus, rather than improving economic welfare, more tobacco consumption leads to an increase in cigarette demand and higher economic cost, i.e. health cost and forgone earnings due to tobacco-related mortality. Moreover, all FTAs in general favor imported cigarettes and this will eventually results in greater market share for imported cigarettes in the domestic markets.

Summary of Results

Two scenarios on the excise tax policy were simulated based on the fact that the government would not allow the two tobacco companies to enjoy the benefits of lower excise tax rate. The first scenario looked at the impact should the government apply the rate of 30% instead of 15%, i.e. a 100% increase. The change in cigarette retail prices that will follow from such an increase in the rate will equal 13.0% of the on-going price. By assuming that this change in the retail price of cigarette has no effect on income, inflation rate, and that the price elasticity of demand equals -0.3925, cigarette demand will decrease by 5.1025% of the on-going demand. The second scenario looked at the results should the government strictly enforces the new tax law, i.e. impose the rate of 55% which means an increase of 83.33% in the excise tax. Based on the same assumptions, the change in cigarette retail price will equal 19.23% of the would be retail price, if the excise tax rate was 30%. Thus, cigarette demand will decrease further by around 7.55%.

The results of many epidemiological studies indicated that prolonged smoking directly and indirectly causes many diseases, both by substances in cigarettes and by destroying the body's resistance, and increases susceptibility to illnesses and even death. Based on the increase in excise tax rate from 15% to 30% and from 30% to 55% in 2008, the total reduction in the number of tobacco-related deaths would be

around 143,454 and 201,434 in the year 2028. Certainly, the lives of child smokers account for significant share of these figures. The gains in forgone earnings as measured by 2008 price level will be around 9,521.075 million kip and an additional gain of 13,369.178 million kip, in 2028, respectively. If the new excise tax rate of 55% continues after 2008, there will be similar gains every year after 2028. In terms of government revenue, total tobacco revenue of the government will increase by 19.60% and 28.99%, respectively. These impacts that are favorable both in terms of tobacco control and raising revenue are important reasons why the government should increase the excise tax rate.

In the case of the profit tax holiday that was terminated in 2007, it is worth to look at the potential benefit of an increase in the retail prices although the cigarette producers have decided not to increase them. A simple assumption is that the companies decide to maintain the ongoing rate of profit margin even though the same rate of profit tax as other industries, i.e. 20%, will be applied. The whole burden of profit tax will be passed on to consumers in terms of a 16.40% increase in the retail cigarette price. This translates into a 6.44% decrease in cigarette demand, i.e. around 167.891 million sticks. Based on the same methodology, the decrease in per capita cigarette consumption will equal 608.238 sticks. Lung cancer related death will decrease by 15,084 and tobacco related mortality will be around 162,484 in 2027. Thus, the gain in earnings will be 9,662.302 million kip in the next 20 years and every year after that. Consequently, the total tobacco revenue of the government will increase by 24.76%. These figures point to the foregone benefit that would have been gained by Lao PDR.

Policy Recommendations

The results have shown the favorable impact of the increases in the rates of cigarette excise tax in 2008 and the favorable potential impacts of the termination of profit tax holiday for the tobacco companies in 2007. Moreover, an international comparison showed that the total tax burden as percentage of cigarette retail price in Lao PDR (18.82%) is lower than those of other countries, including Cambodia which has the lowest tax burden (20-25%) among other ASEAN member countries. Thus, a decision to increase cigarette prices through higher excise tax rates should not be delayed. This will allow the government to gain in terms of lower economic cost and more revenue. In addition to tax policies, the roles of non-tax measures should not be overlooked.

However, it should be noted that these scenarios are an extreme departure from the privileges that the two tobacco companies have enjoyed, and they could be very difficult to implement. The government may decide to negotiate with the Companies for a smaller and gradual increase in the rate of excise tax, i.e. 1% or 2% at a time. But it should be noted that the impact on cigarette demand will also be much less and slower to kick in. Moreover, this may not be sufficient to catch up with inflation that has been very high, i.e. more than 10%. Alternatively, since the declared production cost has been abnormally low, the government may decide to increase profit tax on cigarette production to a rate that is sufficient to offset the benefit of under-declared production cost. A health tax is also a way to correct negative externality caused by cigarette smoking. However, it should not be based on excise tax revenue but on profit tax revenue.

Suggestions for Future Researches

Despite research results which showed that the cigarette tax policies of Lao PDR have been very positive for tobacco control, there are still many issues that have to be explored and analyzed.

The shares of illicit tobacco products and hand-rolled cigarettes in the tobacco market are also of paramount importance. Lessons can be learnt from many countries that illicit tobacco products can lower prices and increase demand by avoiding taxes. Also, cheaper hand-rolled cigarettes can be a substitute for higher taxed cigarettes. Both are important problems that should also be tackled immediately.

Another important factor for tobacco control in Lao PDR is the role of the CEPT scheme on the tobacco market in Lao PDR that has never been investigated. Results of many past studies showed that the impacts of the scheme on cigarette demand in other ASEAN member countries will be significant. Thus, the impact of CEPT scheme in Lao PDR requires further study.

The employment effect of tobacco is also noteworthy. If the tobacco industry is an important source of employment, the employment effect of tobacco, caused by the forward and backward linkages of the industry, will be significant and requires further analysis.

Finally, the assumption that the cigarette companies will not change their profit margin in response to the change in excise tax rate requires further consideration. In reality, the companies may opt to decrease their profit margin instead of increase the retail price in order to maintain their sales as in the case of the profit tax holiday that was abolished in 2007. Thus, cigarette demand will not change as much as expected. Consequently, the impacts on tobacco-related mortality and government revenue will differ from the estimates shown in this report.

ABSTRACT

The economy of Lao PDR is dominated by agriculture. In 2006, the share of agriculture went down to around 42% from 52% in year 2000, while those of industry and services went up to more than 31% and 25%, respectively from less than 25% in 2000. With regards to tobacco and tobacco products, a similar trend can be observed. Tobacco harvested area was found to decrease over the period while cigarette production significantly increased.

Cigarette production in Lao PDR was mainly under the control of Lao-China Lucky Tobacco Company Limited and Lao Tobacco Company Limited, both of which produce the two most popular brands of cigarettes in the country, i.e. A Deng and Dok Mai Daeng (Red Flower). The two companies are also believed to account for most of the cigarette sales in Lao PDR. The two companies have enjoyed a special privilege in the form of low excise tax rate and profit tax holiday despite cigarettes being an important source of government revenue through profits, and various taxes. But it should be noted that the smoking prevalence rate in Lao PDR was much higher than those of other ASEAN member countries. The World Health Survey in 2003 showed that the rate in Lao PDR was 40.3%. It is widely known that tobacco smoking is a cause of many diseases.

Tax policy was found to be very effective for tobacco control in many countries. In this report, two policies on the excise tax rate were simulated. Based on an increase in the excise tax from 15% to 30% and from 30% to 55%, it was found that cigarette demand and tobacco-related mortality would decrease, thus pointing to the favorable impacts this would have for tobacco control. Furthermore, the government's move in 2007 in modifying the tobacco tax policy which include terminating the profit tax holiday in that year would potentially be favorable both for tobacco control and for increasing tobacco revenue. However, the benefit of the policy was not gained since the cigarette producers sacrifice parts of their profit to maintain the ongoing retail prices and their sales. An international comparison also showed that the total tax burden as a percentage of cigarette retail price in Lao PDR is lower than those of many other countries, and the lowest among ASEAN member countries. These results point to an urgent need for an excise tax policy in tobacco control, as well as future researches that will benefit Lao PDR.

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INTRODUCTION

The economy of Lao PDR is dominated by agriculture. In 2000, more than 52% of its GDP (Gross Domestic Product) at current prices was originated from the agricultural sector. The contribution of industry and services were both less than 25%. However, the share of agriculture went down to slightly over 50% in the following year. At the same time, the share of industry and services as a proportion of GDP went up. This trend has continued over the following years and agriculture has become relatively less important for the Lao economy. In 2006, the share of agriculture went down to around 42%, while those of industry and services went up to more than 31% and 25%, respectively. Regarding tobacco and tobacco products, a similar trend can be observed. Tobacco harvested area was found to have increased slightly over the period while cigarette production significantly increased. Consequently, employment in the tobacco industry is believed to have changed in the same direction.

Table 1: Gross Domestic Products: 2000-2006

Fiscal Year	GDP at Current Prices (Million Kip)	Structure (%)			
		Agriculture	Industry	Services	Statistical Discrepancy
2000	13,669,485.4	52.14	22.72	24.36	0.78
2001	15,701,809.2	50.79	23.48	24.83	0.90
2002	18,400,978.1	49.85	24.41	24.75	0.99
2003	22,511,415.7	48.10	25.69	25.27	0.94
2004	26,590,131.3	46.55	27.04	25.52	0.89
2005	30,594,085.4	44.43	29.20	25.49	0.88
2006	35,407,259.8	42.19	31.55	25.39	0.87

Note: - Not available.

Sources: 1. Ministry of Finance.

2. Annual Statistics 2003, National Statistical Center.

Tobacco and tobacco products are also important sources of government revenue. The government has earned revenue from tobacco and tobacco products in the form of revenue from import tariff, excise tax, business tax, and profit tax. As a shareholder in one of the two major cigarette manufacturers in Lao PDR, the government also earns revenue from the company's net profit. Moreover, in order to attract more investment, the cigarette industry has come under the government's promotion policies. Because of the fact that smoking is a major cause of diseases that impair and shorten the life of hundreds of thousands of smokers in Lao PDR as well as people who are exposed to secondhand smoke, the tobacco policy in Lao PDR is therefore conflicting. This fact points to the need for a comprehensive analysis on the impact of taxation on cigarettes demand, the health of smokers, and government revenue.

Following this introductory section, this paper is organized as follows. Section 2 describes the role of tobacco in the Lao economy. The focus of this section is on tobacco production and investment, tobacco tax revenue, tobacco consumption, smoking prevalence and major health problems. Section 3 surveys the role of various taxes on the structure of cigarette retail prices. This includes import tariff, AFTA, as well as other taxes, i.e. excise tax and business tax. The following section develops a model to estimate the impact of changes in important variables including production

cost and excise tax rate. The estimated impacts on cigarette demand are detailed in Section 5. This includes the impact on cigarette demand, health consequence, and government revenue. The final section summarizes important findings and offers policy recommendations for the government.

TOBACCO AND THE LAO ECONOMY

2.1 Tobacco Production and Investment

The tobacco industry in Lao PDR has performed relatively well. Between 2002 and 2003, while domestic production of tobacco leaf decreased by 6.49%, that of manufactured tobacco jumped by nearly 60%. At the same time, cigarette production rose by nearly 24%, from 55 million packs to 68 million packs. On a per capita basis, this was equivalent to an increase in cigarette consumption of around 20.31% from 17.85 packs in 2002 to 21.47 packs in 2003. The most recent available data show different changes between 2005 and 2006. The change in tobacco harvested area indicated a reverse trend. Instead of decreasing, it increased by 4.76% between over this period. The tobacco leaf production dropped to 12.14% while cigarette production went up by 11.43%. However, despite the increase in cigarette production, these figures under-reported cigarette consumption. There are, legally and illegally, imported cigarettes especially from neighboring countries. Also Lao people consume significant amount of hand-rolled cigarettes.

Table 2: Tobacco and cigarette production: 2002-2003 and 2005-2006

Sector	2002	2003	2005	2006
Tobacco Harvested Area (Ha)	5,476	4,772	5,360	5,615
	Change -12.86%		Change 4.76%	
Tobacco Leaf Production (Ton)	27,497	25,713	28,100	24,690
	Change -6.49%		Change -12.14%	
Manufactured Tobacco (Ton)	593	947	-	-
	Change 59.70%		Change - %	
Cigarette (Million Packs)	55	68	105	117
	Change 23.64%		Change 11.43%	
Population (Million)	5.526	5.679	-	-
	Change 2.77%		Change - %	
Population Over 15 Years Old (Million)	3.082 ¹⁾	3.167	-	-
	Change 2.77%		Change - %	
Per Capita Cigarette Consumption (Packs)²⁾	17.85	21.47	-	-
	Change 20.31%		Change - %	

Notes: 1). Estimated from the total number of population in 2002 and the share of population over 15 years old in 2003.

2). Based on locally produced cigarettes and population 15 years old and over.

Source: Annual Statistics 2003, National Statistical Center.

The increase in cigarette production was mainly due to the performance of the two major cigarette producers in Lao. They are Lao-China Lucky Tobacco Company Limited and Lao Tobacco Company Limited, who together account for most of the cigarette sales in Lao PDR. The two companies produce the two most popular brands of cigarettes i.e. A Deng and Dok Mai Daeng (Red Flower). Retail prices of the two brands are around 4,000-5,000 kip¹ per pack. Lao-Chinese Lucky Tobacco Company was the first tobacco manufacturer in Lao. It was established on January 23, 1992 and is 100% owned by Chinese investors. Lao Tobacco Co., Ltd., the second cigarette

¹ Kip is Lao currency. The exchange rate is around 250 kip/baht or 10,000 kip/US\$.

producer, was established under an Investment Law in 2001. The company contributed around 100,156.77 million kip of investment to the Lao economy. The government has a 47% share in the company while French and Singaporean investors have a 34% and 19% share, respectively.

Under the 2001 Investment Law, Lao Tobacco Company is entitled to a 25-year concession that can be extended. The concession consists of the right to a 5-year profit tax holiday (from 2002 to 2006), and a privilege to a lower excise tax rate for 25 years (from 2002-2026). The privilege is also applied to another local producer, i.e. Lao-Chinese Lucky Tobacco Company. Based on the Law, if the production cost of cigarette is not more than 1,500 kip per pack of twenty cigarette sticks, the excise tax rate of 15% will be applied. This rate is much lower than the ceiling of 55% and the 30% rate that will be applied to cigarettes that are produced at a higher unit cost. However, the actual tax that is applied on imported cigarettes such as Marlboro, 555, and Mild Seven is presumptive at around US\$70 per box of twenty packs or only around 8% of the retail price. This unequal treatment is subject for debate. It provides benefit to imported cigarettes, especially the more expensive brands.

2.2 Tobacco Tax Revenue

Tobacco tax has been very important for the government of Lao PDR. Tobacco tax was around 40 billion kip in 1999/2000 and in 2000/2001 and dropped sharply to around 15 billion kip in 2001/2002. This sharp decrease was caused by the special privilege to cigarette producers that began in 2002. In the following years, the figures increased continuously to nearly 20 billion kip in 2002/2003, 24 billion kip in 2003/2004, 27 billion kip in 2004/2005 and 35 billion kip in 2005/2006. A comparison with total tax revenue also showed that the importance of tobacco tax decreased significantly. The share of tobacco tax in total tax revenue that was more than 3% in 2000/2001, fluctuated around 2% between 2001/2002 and 2003/2004 and dropped continuously to less than 2% after that. It should be noted that none of this tobacco tax revenue had been earmarked for tobacco control activities.

Table 3: GDP, Tax Revenue, and Tobacco Tax: 1999/2000-2006/2007.

Year	GDP (Million Kip)	Tobacco Tax (Million Kip)	Fiscal Year	Total Tax Revenue	Tobacco Tax Share (%)
2000	13,669,485.4	41,390	1999/00	-	-
2001	15,701,809.2	37,314	2000/01	1,087,807	3.43
2002	18,400,978.1	15,482	2001/02	844,288	1.83
2003	22,511,415.7	19,782	2002/03	942,985	2.10
2004	26,590,131.3	24,284	2003/04	1,079,730	2.25
2005	30,594,085.4	27,235	2004/05	1,383,538	1.97
2006	35,407,259.8	34,765	2005/06	1,769,244	1.96
2007	-	40,374	2006/07	2,625,730	1.54

Note: - Not available.

Sources: 1. Ministry of Finance.

2. Annual Statistics 2003, National Statistical Center.

The special privilege for tobacco industry had been very costly to the government. During the five-year period (2002-2006), Lao Tobacco Company was exempted from profit tax by nearly 28 billion kip (Table 4). Based on a tax law, a special privilege is also granted to cheaper products. If the production cost of cigarette is not more than 1,500 kip per pack, the excise tax rate of 15% will be applied. This rate is much lower than the 55% ceiling rate and the 30% rate that will be applied to cigarette production at a higher cost. Since the reported unit cost of production was much lower than 1,500 kip, the 15% rate of excise tax has been applied on the company's products since 2002. Although the Ministry of Finance decided to increase the ceiling rate to 55% in 2005, the new regulation has never been implemented. A simple calculation showed that this special privilege has allowed the company to earn a total of more than 91 billion kip over the five years (Table 5), and is a burden to the government in terms of forgone excise tax revenue. This issue will be investigated in detail in subsequent sections.

Table 4: Profit tax exemption for Lao Tobacco Company: 2001-2006

Year	Pre-Tax Profit (kip)	Profit Tax 20% (kip)	Tax Paid	Net Loss in Profit Tax Revenue (kip)
Total	263,500,192,172	52,700,038,434	Exempted	27,931,020,370
2001	-	-	Exempted	-
2002	21,745,496,209	4,349,099,242	Exempted	2,305,022,598
2003	29,434,443,252	5,886,888,650	Exempted	3,120,050,985
2004	45,272,152,940	9,054,430,588	Exempted	4,798,848,212
2005	68,352,239,476	13,670,447,895	Exempted	7,245,337,384
2006	98,695,860,295	19,739,172,059	Exempted	10,461,761,191

Source: Anonymous.

Table 5: Excise tax reduction for Lao Tobacco Company: 2001-2006

Year	Unit Cost of Production	Excise Tax (15%)	Excise Tax (30% and 55%)	Loss in Excise Tax Revenue
Total	-	50,325,472,226	141,399,349,057	91,073,876,831
2001	550	-	-	-
2002	600	8,549,591,004	17,099,182,008	8,549,591,004
2003	493	7,879,279,254	15,758,558,508	7,879,279,254
2004	506	9,447,559,205	18,895,118,410	9,447,559,205
2005	600	11,225,944,294	41,161,795,745	29,935,851,451
2006	629	13,223,098,469	48,484,694,386	35,261,595,917

Note: The 30% rate should be applied for the period between 2002 and 2004, and the 55% rate was for 2005 and 2006.

Source: Author's Calculation.

Consequently, the total net loss in tobacco tax revenue has been continuously increasing over the period. It was slightly less than 13 billion kip in 2002, then it increased to nearly 14 billion kip in 2003, and to around 18.5 billion kip in 2004, and subsequently increased to around 44, and 55 billion kip in the following two years. In sum, the total loss in tobacco tax revenue was nearly 144 billion kip over the five year period between 2002 and 2006. Considering the 47% share of the government in the Company, nearly 25 billion kip of the forgone tax revenue went back to the

government in terms of profit. Thus, the net loss to the government was slightly over 119 billion kip in the five years. Based on the same trend, it is estimated that the net loss in 2007 would be nearly 37 billion kip; all of this amount are revenue from excise tax since there was no profit tax holiday from 2007.

Table 6: Forgone tax revenue for Lao Tobacco Company: 2001-06 and 2007

Year	Net Loss in Tax Revenue (kip)	Total Loss in Tax Revenue (kip)	Loss in Excise Tax Revenue (kip)	Loss in Profit Tax Revenue (kip)
Total (2002-2006)	119,004,897,201	143,773,915,265	91,073,876,831	52,700,038,434
2001	-	-	-	-
2002	10,854,613,602	12,898,690,246	8,549,591,004	4,349,099,242
2003	10,999,330,239	13,766,167,904	7,879,279,254	5,886,888,650
2004	14,246,407,417	18,501,989,793	9,447,559,205	9,054,430,588
2005	37,181,188,835	43,606,299,346	29,935,851,451	13,670,447,895
2006	45,723,357,108	55,000,767,976	35,261,595,917	19,739,172,059
2007	36,995,000,000	36,995,000,000	36,995,000,000	-

Note: The figures for 2007 are estimated and are based on a simple time trend model.

Source: Author's Calculation Based on Tables 2 and 3.

It is worth to look at another cigarette producer, i.e. Lao-China Lucky Tobacco Company. Based on a simple time trend constructed from data from the years 2000 and 2001, excise tax revenues for the period 2002-2006 were estimated. Over the period between 2001 and 2006, the estimated total excise tax revenue from the Company was around 182 billion kip and the total foregone excise tax revenue was slightly over 113 billion kip. In 2007, the foregone excise tax revenue could be as much as 40 billion kip.

Table 7: Excise tax reduction for Lucky Tobacco Company: 2001-2006

Year	Unit Cost of Production	Excise Tax (15%)	Excise Tax (30 and 55%)	Loss in Excise Tax Revenue
Total	-	68,853,907,366 (2000-2006)	181,974,864,195 (2001-2006)	113,120,956,829 (2001-2006)
2000	550	8,675,549,131	NA	NA
2001	600	9,385,846,976	18,771,693,952	9,385,846,976
2002	600	<i>10,136,714,734</i>	<i>20,273,429,468</i>	<i>10,136,714,734</i>
2003	600	<i>10,947,651,913</i>	<i>21,895,303,826</i>	<i>10,947,651,913</i>
2004	600	<i>11,823,464,066</i>	<i>23,646,928,132</i>	<i>11,823,464,066</i>
2005	600	<i>12,769,341,191</i>	<i>46,820,917,701</i>	<i>34,051,576,510</i>
2006	600	<i>13,790,888,486</i>	<i>50,566,591,117</i>	<i>36,775,702,630</i>
2007	600	<i>14,894,159,565</i>	<i>54,611,918,406</i>	<i>39,717,758,841</i>

Note: The 30% rate should be applied for the period between 2001 and 2004, and the 55% rate was for 2005 and 2006. The data for 2000 and 2001 are based on actual data, the rest (in italic) were predicted from the same trend. The total figures do not include the data of the year 2000.

Source: Author's Calculation.

The total foregone tobacco tax revenue that went to the two cigarette producers was enormous. In terms of excise tax, the total amount over the five-year period (2002-06) was nearly 195 billion kip. Over the same period, the net loss in profit tax that went to Lao Tobacco Company was nearly 28 billion kip. In 2007, the projection shows that the government will loss around 74 billion kip of excise tax revenue to the two companies.

However, as shown in the above Table 7, the unit cost of production of the Dok Mai Daeng or Red Flower that was 550 kip in 2000, rose to 600 kip in 2001, dropped dramatically to 493 kip in 2002, and increased continuously to 506 kip, 600 kip, and 629 kip in the following three years, and also 629 kip in 2006. The unit cost of cigarettes produced by Lao-China Tobacco Company was similar. These anomalies reflect much lower unit cost of cigarette production than those in other ASEAN member countries. For examples, those of Thailand and Indonesia were not less than 1,500 kip in the year 2003.

2.3 Tobacco and Household Consumption

The major source of data on Lao household consumption pattern is the Lao Expenditure and Consumption Survey (LECS). LECS is a five-yearly survey. The first survey was conducted in 1992 and 1993. The second was in 1997 and 1998. The third survey or LECS3 was undertaken between March 2002 and February 2003, covering 8,100 households from 5,400 villages, i.e. 15 households from each village. The objectives of the survey are to provide estimates for the National Account, the consumption structure, labor force, access to services, nutrition, and poverty and income distribution (The Household of Lao PDR Social and Economic Indicator, 2004).

Based on the three surveys, the consumption pattern of Lao households has changed significantly over the ten-year period. In 1992/1993, Lao households spent 64.3% of their consumption expenditure on food and 35.7% on nonfood items. However, the share of nonfood has increased continuously to 39.1% in 1997/1998 and 45.0% in 2002/2003. The increases were dominated by the increases in the share of transport and communication from 6.7% in 1992/1993 to 10.6% in 1997/1998 and 11.8% in 2002/2003, as well as an increase in the share of housing expenditure between 1997/98 and 2002/2003 from 7.1% to 12.7%. It is noteworthy that the share of alcoholic and tobacco consumption continuously decreased from 3.0% to 2.9% and 2.5% over the same period. This decrease can be explained by a decrease in demand for and/or a decrease in prices of the two products or demand for cheaper tobacco substitutes may have increased.

Table 8: Lao consumption basket: 1992/1993, 1997/1998, and 2002/2003

Budget Share	1992/1993	1997/1998	2002/2003
Total	100.0	100.0	100.0
Food	64.3	60.9	55.0
Nonfood	35.7	39.1	45.0
-Clothing and Footwear	4.1	2.8	2.4

-Housing	7.1	7.1	12.7
-Household Utensil	4.0	5.1	4.1
-Medical Care	2.4	2.2	1.7
-Transport and Communication	6.7	10.6	11.8
-Education	0.8	0.5	1.0
-Personal Care	3.1	0.8	2.2
-Recreation	3.8	6.1	3.7
-Alcohol and Tobacco	3.0	2.9	2.5
-Others	0.7	1.1	2.8

Source: Lao Expenditure and Consumption Surveys 1992/93, 1997/98, and 2002/03.

The consumption patterns differed across areas and regions. While an average Lao household spent 55% of their consumption expenditure on food and 45% on nonfood in 2002/2003. The share of food was much lower in the high income urban areas (45%) than in the rural areas (63%). Similarly, the share of food in the consumption basket of households in the central region (52%) was also lower than those of households in the North and the South. It is noteworthy that the share of alcohol and tobacco was higher in the rural areas than in the urban areas, and in the South than in other regions. There are 7 provinces in the central region, including Vientiane C. (the capital city) and Vientiane that are more populated and more dominated by non-agriculture activities. The other 7 provinces including Luang Prabang are in the North and four provinces including Champasack are in the South. Both Luang Prabang and Champasack are famous tourism destinations.

Table 9: Household consumption basket: 2002/2003

Budget Share	Lao PDR	Urban	Rural	North	Central	South
Total	100	100	100	100	100	100
Food	55	45	63	58	52	60
Clothing and Footwear	2	2	3	2	2	2
Housing	13	17	10	12	14	10
Household Utensil	4	5	4	4	4	5
Medical Care	2	1	2	1	2	2
Transport and Communication	12	17	8	12	13	9
Education	1	1	1	1	1	0
Personal Care	2	2	2	2	2	3
Recreation	4	5	3	4	4	3
Alcohol and Tobacco	3	2	3	2	2	4
Others	3	3	3	3	3	2

Source: Lao Expenditure and Consumption Survey 2002/2003.

2.4 Smoking Prevalence and Health Problems

The World Health Survey 2003 provides information on the smoking prevalence rate in Lao PDR. The survey showed that Lao people were heavier smokers than people

in other ASEAN member countries with a smoking prevalence rate of 40.3%. Male smoking prevalence rate was 67.7% while that of females was 16.0%. By region, the highest rate was found in the South (52.3%), followed by the North (41.3%) and the Central Region (34.5%). Rural people were found to smoke much heavier (44.8%) than urban people (27.0%) mainly because of hand-rolled cigarettes. According to age, the highest rates were those in the 50-59 and 60-69 years of age cohorts, at 45.5% and 45.7%, respectively.

A number of past studies have provided additional useful information. Phandouangsy and Somsamuth (2003) conducted a multi-stage sampling survey on youth in schools in four major provinces, namely Luang Prabang, Vientiane, Vientiane Municipality, and Savannakhet. The survey results showed that around 7.4% of school students in Luang Prabang had experienced cigarette smoking. In the other three provinces, the rate tends to be higher, especially in less developed areas. The rate was 16.9% in Vientiane, 15.5% in Savannakhet, and 12.3% in Vientiane Municipality. However, around 92% of current smokers wanted to stop while about 86% tried to stop in the sampling year.

Since smoking is a cause of many diseases, it is worth to look into the data on people with long term illnesses. Based on LECS3, the percentage of people with long term illness in Lao was considerably higher in the rural areas and in the South, where the smoking prevalence rates were very high. On the average 5.1% of Lao people, and around 5.5% of rural people living in areas with road access and 7.5% of people in the South were suffering from long term illnesses. The rate was higher for male (5.2%) than for female (5.0%). It should also be noted that the much higher rate in the South was concentrated in Champasack (8.6%). Khammuane was the only province in the other regions that had a comparable rate (7.1%) to that of the South.

Table 10: Percent of people with long term illness or disability: 2002/2003

Areas and Regions	Total	Male	Female
Lao PDR	5.1	5.2	5.0
Urban	4.6	4.5	4.7
Rural			
-with Road Access	5.5	5.7	5.4
-without Road Access	4.4	4.7	4.2
North	4.2	4.7	3.8
Central	4.6	4.7	4.6
-Khammuane	7.1	7.2	6.9
South	7.5	7.3	7.9
-Champasack	8.6	8.2	9.4

Source: Health Status of the People in Lao PDR 2006.

TAXATION AND CIGARETTE PRICE STRUCTURE

3.1 Tobacco Tax and AFTA

In 1992, ASEAN decided to establish an ASEAN Free Trade Area (AFTA). One of its major objectives has been to increase the efficiency and international competitiveness in the world market of ASEAN member countries. In order to achieve these objectives, elimination of tariffs and non-tariff barriers is considered to be crucial. Principally, the Common Effective Preferential Tariff (CEPT) Agreement for AFTA is supposed to cover the liberalization of all manufactured and agricultural products that have at least 40% of ASEAN content. The tariff rates levied on these products traded within the region have to be reduced to 0-5% by the 10th year. Non-tariff barriers have also to be eliminated. Originally, the scheme was scheduled to be completed by 2008.

The timetables for reducing tariffs and eliminating non-tariff barriers differ across products and countries. These are divided into four categories, namely Inclusion List (IL), Temporary Exclusion List (TEL), Sensitive List (SL) and General Exception List (GEL). The implementation of the CEPT scheme is mainly based on the completion of the Inclusion List or IL within ten years. Thus, products in IL are to undergo immediate liberalization. Except the four new ASEAN member countries, tariff rates should have been decreased to 20% by 1998 and 0-5% by 2002. The schedules for the ASEAN Four, i.e. Vietnam, Laos, Myanmar and Cambodia, are 2006, 2008, 2008, and 2010, respectively. Products can be temporarily excluded from IL and placed on the Temporary Exclusion List (TEL). Ultimately, however, they should be brought back into IL and undergo the liberalization process. Unprocessed agricultural products are in SL. The general timetable for these products is extended to 2010. For the four countries, the timetables are 2013, 2015, 2015, and 2017, respectively. There are a number of products that are permanently excluded from the free trade area for the protection of national security, public morals, the life of humans, animals and plants, health, and articles of artistic, historic and archaeological value. These are listed under GEL and cover around 1,036 tariff lines or 1.61% of all ASEAN tariff lines.

Lao PDR has joined ASEAN since 23 July 1997. As a member, Lao PDR has to implement all ASEAN agreements and protocols including the CEPT scheme. Following this, a National AFTA Unit of Lao PDR (NUAL) was established on 22 July 1997. The first task of the NUAL was the collective formulation of the four product lists in accordance with the CEPT scheme, i.e. IL, TEL, SL and GEL. The CEPT package of the year 2002 was approved by the government and adopted by the 15th AFTA meeting in 2001 in Hanoi. The lists have been revised periodically. In 2007, 2,098 or 59% of the total 3,551 tariff lines were transferred into IL for an implementation by 1 January 2002. The other 1,291 tariff lines remained in TEL. However, these have to be phased into IL in three stages for the years 2007, 2008 and 2009, respectively.

The status of tobacco products in the CEPT scheme is different across AFTA member countries (Yong, 2003). For Brunei where tobacco consumption has been declared to be "*Haram*" or forbidden under Islamic law, 15 tariff lines of tobacco products are on GEL and 4 tariff lines are on IL. For Indonesia, Philippines, Singapore, Vietnam and

Thailand, all tobacco products are on IL. For Malaysia, they are in SL and are allowed to be phased into the CEPT no later than 2010. In the case of Cambodia and Myanmar, these products are on TEL. For Cambodia, manufactured and unprocessed products are supposed to be brought back into the liberalization process no later than 1 January 2007 and 1 January 2010, respectively. For Myanmar, the schedules are 1 January 2005 and 1 January 2008.

In the case of Lao PDR, tobacco and tobacco products were in IL for the period 2001-2008. Six out of 9 tariff lines are on Temporary Exclusion List and should be brought into the Inclusion List by 1 January 2015. For the other 3 lines in Sensitive List, they are supposed to be brought into the process between 1 January 2005 and 1 January 2008, for manufactured products and unprocessed products, respectively. The impact of the CEPT scheme on the tobacco market in Lao PDR has never been investigated.

It should be noted that the impact of including tobacco and tobacco products in a free trade agreement (FTA) such as AFTA differs from that of other goods and services. As reviewed from past studies (Austria, 2006; Isra Sarntisart, 2005; Saad, 2006; and San San Aye, 2006), for the tobacco industry, the overall tobacco consumption has risen because of lower cigarette prices. Thus, rather than improving economic welfare, more consumption leads to an increase in cigarette demand and higher economic cost, i.e. health cost and forgone earnings due to tobacco-related mortality. Moreover, all FTAs in general favor imported cigarettes. Thus, sooner or later imported cigarettes will gain greater market share in the domestic markets.

3.2 Retail Cigarette Price Structure and Other Taxes

The cigarette retail price consists of the production cost or imported price, import tariff (in the case of imports), excise tax, business tax, and profit margin. In the case of local cigarettes, factory price means production cost that includes the cost of tobacco leaves, materials, and capital cost, as well as labor cost. In the case of imported cigarettes, imported price is c.i.f. (Cost, Insurance and Freight) price. Import tariff is applied on the c.i.f. price. The rate of customs tariff depends on the countries of importing origin and is affected by international trade agreements such as the CEPT scheme of AFTA. The excise tax is applied on the factory price or the imported price that includes customs tariff. The ceiling rate that was 20% in 1989 continuously increased to 30% in 1995, 50% in 1998, and 55% in 2005. However, the applied rate is much lower than the ceiling rate, especially for cigarettes as already mentioned in the previous paragraphs.

Table 11: Cigarette price structure: 2000-2007

Year	Unit Cost (kip/pack)	Wholesale Price (kip/box)	Retail Price (kip/box)
2000	550	750,000	750,000
2001	600	1,000,000	1,000,000
2002	493	650,000	650,000
2003	506	650,000	650,000
2004	600	650,000	650,000
2005	629	650,000	650,000
2006	629	675,000	675,000

Notes: 1. There is no information on market shares. Thus, the average figures are simple averages of four brands, i.e. Red Flower (White page), Red Flower (Yellow Page), V, and Johnny Black.

2. One box contains 50 packets and each packet contains 10 packs. There are 20 sticks of cigarettes in each pack.

Source: Ministry of Commerce.

However, based on a special agreement between the government and the two companies in 2002, the applied rate of excise tax on tobacco products is two folds. If the production cost is less than 1,500 kip per pack of twenty cigarette sticks, a 15% rate is applied. Otherwise, the manufacturers will have to pay at a higher rate of 30% that is still lower than the declared rate. For the business tax, a 10% is charged as a percentage of the retail price. In the case of profit, it is not known how the profit margin is determined. In this report, it is assumed to be a proportion of the retail price. Although the general rate of profit tax on other products is 35%, the cigarette manufacturers have been exempted from profit tax. However, from the year 2007, they will have to pay at the rate of 20%. These are summarized in the following table.

Table 12: Tax rates on cigarettes: 2007

Tax	General Rate (%)	Applied Rate (%)	Remarks
Tariff	NA	NA	NA
Excise Tax	55	15	Unit cost ≤ 1,500 kip
		30	Unit Cost > 1,500 kip
Business Tax	5 or 10	10	-
Profit Tax	35	20	0% before 2007

Note: NA = Not available.

Source: Interview.

An international comparison showed that Lao PDR is still lagging behind other countries in terms of tobacco control by tax measures. Based on the unit cost and the retail price of 572.43 and 1,449.82 kip per pack, the total tax burden in 2007 was about 18.82% of the retail price of cigarettes in Lao PDR. Another source, SEATCA's Report Card in 2007, confirmed the above estimate. The total tax burden was found to be 15-30%. This was much lower than those of developed countries such as France and the United Kingdom where the rates were around 80%. Those of other ASEAN member countries were also higher. For example, the rates for Singapore and Thailand were 64% and 60.05%, respectively. Even Cambodia's tax burden rate of 20-25% which was the lowest among other ASEAN member countries,

was still higher than Lao's. These figures pose a challenge for Lao PDR to reconsider her tobacco tax policy.

Table 13: Tax burden in the retail prices of cigarettes in some countries

Countries	Total Tax	Retail Price	Tax Burden (%)	Year and Source
France	200.97	250.00	80.39	2007, 3)
United Kingdom	308.29	401.24	76.81	2007, 3)
Singapore	NA	NA	64	2)
Vietnam	NA	NA	41	2)
Thailand	18.168	30.00	60.05	2002, 1)
Vietnam	NA	NA	41	2)
Indonesia	NA	NA	20-40	2)
Malaysia	NA	NA	36	2)
Philippines	NA	NA	10-30	2)
Cambodia	NA	NA	20-25	2)
Lao PDR	272.86	1,449.82	18.82	2007

Notes: NA = Not available. For France and United Kingdom, figures are in Euro dollar. For other countries, figures are in local currencies.

Sources: 1. Table 28, Isra Sarntisart (2003).

2. SEATCA The ASEAN Tobacco Control Report Card (2008).

3. Table 7.1, Chollatam Vitsarutwongse (2008).

3.3 Cigarette Price Structure

To summarize, the structure of the retail price of cigarettes can be described by the following equation.

$$P^c = P^0 * (1+T_r) * (1+T_e) * (1+T_b) + (1+T_p) * M * P^c \quad (1)$$

Where P^c = purchaser price or retail price of cigarettes (kip per pack),
 P^0 = factory price or imported price of cigarettes (kip per pack),
 T_r = tariff rate (% of $P^0/100$),
 T_e = excise tax rate (% of P^0 including tariff/100),
 T_b = business tax rate (% of $P^c/100$)
 T_p = profit tax rate (% of Profit/100), and
 M = rate of profit margin (% of $P^c/100$).

By rearranging terms, Equation (1) can be rewritten as follows.

$$P^c = P^0 * (1+T_r) * (1+T_e) * (1+T_b) / [1 - (1+T_p) * M] \quad (2)$$

METHODOLOGY

This section explains the way in which a change in the rates of various taxes and profit margin affect cigarette demand and government revenue. The analysis follows the mathematical price structure already described by Equation (1) in the previous section.

If a variable x represents the rate of change of any variable X , i.e. dX/X or $d\ln X$, then the rate of change in the retail price of cigarettes can be explained by Equation (3).

$$p^c = \frac{p^0 + t_r * T_r / (1 + T_r) + t_e * T_e / (1 + T_e) + t_b * T_b / (1 + T_b) + [t_p * T_p / (1 + T_p) + m] * (1 + T_p) * M / [1 - T_b - (1 + T_p) * M]}{(3.1)}$$

Holding all other things constant, Equation 3.2 captures the impact of a change in the rate of excise tax on cigarette retail price.

$$p^c = \frac{t_e * T_e / (1 + T_e) + [t_p * T_p / (1 + T_p) + m] * (1 + T_p) * M / [1 - T_b - (1 + T_p) * M]}{(3.2)}$$

Following this, Equation (4) explains the rate of change in cigarette demand (q). Since there is no study on Lao consumer demand for cigarettes, this report borrows the elasticity estimates for Thailand from Isra (2003). Results of the study showed that the own price elasticity (ϵ_p) and the income (consumption expenditure) elasticity of demand (ϵ_y) for cigarettes equal -0.3925 and 0.7049, respectively. By the homogeneity property of consumer demand, the cross price elasticity of cigarette demand (ϵ_0) equals -0.3124.

$$q = \epsilon_p * p^c + \epsilon_0 * r + \epsilon_y * y \quad (4)$$

Where p^c = a rate of change in cigarette retail price,
 r = an inflation rate, and
 y = a rate of change in income.

Government revenue (GR) from cigarettes can be divided into two parts, i.e. tax revenue (TR) and profit revenue (FR). The tax revenue consists of revenue from tariff (in the case of legally imported cigarettes and tobacco leaves), excise tax, business tax, and profit tax. In other words, tax revenue equal retail price less profit and production cost or $(P^c - M * P^c - P^0)$, multiplied by Q . Profit revenue is derived from the government's share (S_g) of the cigarette manufacturers' profit ($M * P^c * Q$). This share is 0% for Lao-China Lucky Tobacco Company and 47% or 0.47 for Lao Tobacco Company. These can be written in mathematical forms as follow.

$$GR = TR + FR \quad (5)$$

Where

$$TR = [(1 - M) * P^c - P^0] * Q \quad (6)$$

$$FR = S_g * M * P^c * Q \quad (7)$$

Thus, in percentage change form, Equations (5), (6), and (7) can be rewritten as follows:

$$gr = (TR/GR)*tr + (F/GR)*f \quad (8)$$

$$tr = \frac{[(1-M)*P^c / \{(1-M)*P^c - P^0\}] * [p^c - m*M/(1-M)] - [P^0 / \{(1-M)*P^c - P^0\}] * p^0 + q}{(1-M)*P^c - P^0} \quad (9)$$

$$f = \frac{s_g + m + p^c + q}{s_g + m + p^c(1+q)} \quad (10)$$

IMPACT OF CHANGES IN THE RATES OF TAXES

5.1 Increases in Excise Tax Rate

This section demonstrates how cigarette demand changes in response to a change in cigarette retail price that follows changes in tax policies. There are two policies to be investigated. Firstly, the government does not allow the two tobacco companies to enjoy the benefit from lower excise tax rate. The rate of 30% will be applied instead of 15%, i.e. a 100% increase. This could be done by a re-valuation of the anomaly low production cost. In estimating the impact, three assumptions are needed: 1) the re-valuated production cost increases from 629 to slightly over 1,500 kip per pack; 2) the tariff rate, the business tax rate, the profit tax rate and the rate of profit margin remain unchanged; and 3) the prices of all other tobacco products will change by the same proportion as those of cigarettes produced by the two companies, i.e. substitution among different types of tobacco products is negligible.

Table 14: Cigarette production and tobacco tax revenue: 2000-2007

Year	Unit Cost of Production	Cigarette Production (Packs)	Excise Tax (kip; at 15% Rate)	Pre-Tax Profit (kip)	Wholesale Price (kip/box)
Total	-		50,325,472,226	263,500,192,172	750,000
2001	550	-	-	-	1,000,000
2002	600	103,631,406	8,549,591,004	21,745,496,209	650,000
2003	493	106,548,739	7,879,279,254	29,434,443,252	650,000
2004	506	124,473,771	9,447,559,205	45,272,152,940	650,000
2005	600	124,732,714	11,225,944,294	68,352,239,476	650,000
2006	629	140,149,427	13,223,098,469	98,695,860,295	675,000
2007	-				
2008	-				

Note: Imputed Figures. One box contains 500 cigarette packs.

Source: Author's Calculation.

Since the true production cost of cigarettes is unknown to the public, there can be two possibilities. On the one hand, if the reported low production cost is true then the cigarette companies will strongly oppose any attempt to increase the excise tax rate. However, following the decision to increase the tax rate, it will be very likely that the companies will need to increase the retail prices. On the other hand, if the reported low production cost is not true then it is understandable that the profit margin is very high. In this respect, it will be less likely that the companies will need to increase the retail prices. They may decide to decrease their profit margin so that the retail prices and cigarette demand will not change.

There are two scenarios to be simulated. Firstly, based on Equation 3, the change in cigarette retail price that will follow the increase in excise tax rate from 15% to 30% equals $100.0 \times 0.15 / 1.15$ or 13.0% of the on-going price. By assuming that this change in the retail price of cigarette has no effect on income, inflation rate and total consumption expenditure, cigarette demand will decrease by 5.1025% of the on-going demand (Equation 4).

Secondly, the government strictly enforces the new tax law, i.e. the rate of 55% will be applied instead of 30%, i.e. an increase of 83.33%. Based on the same assumptions, the change in cigarette retail price equals $83.33 \times 0.30 / 1.30$ or 19.23% of the retail price that would be, if the excise tax rate was 30%. By assuming also that this change in the retail price of cigarette has no effect on inflation rate and consumption expenditure, cigarette demand will decrease further by around 7.55% (Equation 4).

5.2 Termination of Profit Tax Holiday

The termination of the profit tax holiday for the two tobacco companies in 2007 can, by law, be used as an excuse by the cigarette companies to increase the retail prices of cigarettes. However, they sacrificed part of their profit by maintaining the ongoing cigarette retail prices. Thus, cigarette demand will not change. However, it is worth to look further into this policy. This paper attempts to answer the question “what would have been the impact, had the cigarette companies decided to increase the cigarette retail prices”. In this regard, the effect on cigarette retail price depends on how the Companies manage the trade off between their profit tax burden and profit margin. The more profit tax burden that the Company bears, the less impact will be on cigarette prices and demand. A simple assumption is that the Companies decide to maintain the ongoing rate of profit margin while applying the same rate of profit tax, (20%) as other industries under investment promotions². The whole burden of profit tax will be passed to consumers in terms of higher retail cigarette prices. Mathematically, because of tax holiday, i.e. the ongoing rate of 0%, Equation (3) cannot be used to investigate the effect of this increase in the rate of profit tax from 0 to 20%. Equations 11, 12 and 13 will be used instead.

$$\begin{aligned}
 P^{0\%} &= P^0 \cdot (1+0) \cdot (1+0.15) \cdot (1+0.10) / [1-(1+0) \cdot M] \\
 &= P^0 \cdot (1) \cdot (1.15) \cdot (1.10) / [1-M] \\
 &= 1.265P^0 / [1-M] \qquad (11)
 \end{aligned}$$

$$\begin{aligned}
 P^{20\%} &= P^0 \cdot (1+0) \cdot (1+0.15) \cdot (1+0.10) / [1-(1+0.20) \cdot M] \\
 &= P^0 \cdot (1) \cdot (1.15) \cdot (1.10) / [1-1.20 \cdot M] \\
 &= 1.265P^0 / [1-1.20 \cdot M] \qquad (12)
 \end{aligned}$$

$$p^c = 0.20 \cdot M / (1-1.20 \cdot M) \qquad (13)$$

There is no available information on the cigarette manufacturers’ rate of profit. By law, the companies are allowed to earn profit at the rate of 8% only of retail price. However, it is still worth to impute the actual profit rate. Based on Equation (1) and the rates of taxes, the profit rate is imputed (Table 15). In 2007 and 2008, the imputed value of M is 41.33% and 41.42%, respectively. Thus, the percentage change in the retail price of cigarettes equals 0.1640 or 16.40%. By assuming the price elasticity of demand of -0.3925, this translates into -0.0644 or a 6.44% decrease in cigarette demand. Following this change, there will also be consequences on tobacco-related mortality, and the gain in earnings of smokers, and government revenue.

² General rate is 40%.

Table 15: Cigarette price structure: 2000-2007

Year	Factory Price or Unit Cost (kip/pack)	Retail Price (kip per pack)	Profit Rate (% of Retail Price)
2000	550	1,500	52.83
2001	600	2,000	60.50
2002	493	1,300	51.39
2003	506	1,300	50.24
2004	600	1,300	41.92
2005	629	1,300	39.36
2006	629	1,350	41.42
2007 ^P	572.43	1449.82	41.33
2008 ^P	572.42	1453.34	41.42

Notes: Profit rates are calculated from Equation (1). Estimates are based on ordinary least square regression. Unit cost = $572.4318 - .0008*(t-1999)$ and retail price = $1,421.6114 + 3.5257*(t-1999)$.

5.3 Tobacco Related Mortality

Results of many epidemiological studies indicate that prolonged smoking directly and indirectly causes many diseases, both by the substances in cigarettes and by destroying the body's resistance. It also increases susceptibility to illnesses and even death. Lao smokers are no exceptions. This section attempts to analyze the reduction in lung cancer mortality that will follow the decrease in cigarette demand caused by the increases in the excise tax rate on cigarettes from 15% to 30% and from 30% to 55%. The impact of profit tax holiday that was eliminated in 2007 is also estimated but analyzed separately. The analysis follows the following four steps.

Firstly, the additional number of cigarettes consumed per an adult (ΔQ_{pc}) smoker will be calculated. Based on the most up to date statistics, the total number of people in 2003 aged between 35 and 49, 50 and 59, and 60 and 69 years old were 373,700, 140,800, and 95,800, respectively. Taking into account the smoking prevalence rates of these age-groups that were 38.1%, 45.5%, and 45.7%, the total number of smokers aged between 35 and 69 was around 250,224 in 2003. By assuming a population growth rate of around 2.5%, there should be around 283,106 adult smokers whose age are between 35 and 69 years old in 2008. The increases in excise tax rate from 15% to 30% and from 30% to 55% will lead to decreases in demand for cigarettes by around 5.1025% and 7.55%, respectively. Using the rate of increase in cigarette demand between 2002 and 2003 that was anomaly high could produce an overestimate. Thus, a projection was based on the increase in demand for locally produced cigarettes between 2005 and 2006 that was 11.43%. Based on this rate, the demand in 2008 will be around 145.27 million packs or 2,905 million sticks. Thus, the increases in excise tax rate from 15% to 30% and from 30% to 55% will lead to decreases of around 148.228 and 208.136 million sticks. Changes in per capita cigarette consumption or ΔQ_{pc} will equal -523.576 and -735.189 sticks, respectively.

Secondly, the additional lung cancer mortality per 100,000 people in the 35-69 age group is calculated from k multiplied by ΔQ_{pc} . The parameter k is borrowed from Figure 2.4 of Gajalakshmi, Jha, Ransom and Nguyen (2000). Based on the study, for every stick of cigarette smoked, there will be an additional 0.0248 mortality per 100,000 adults aged 35-69 years old after 20 years, i.e. $k = 0.0248$. Thus, because of

the increases in excise tax rate, there will be less 12.985 and less 18.233 lung cancer mortality per 100,000 adults in 2028.

Thirdly, the total reduction of related deaths will be calculated. Based on Table 2.10 of the same study, the excess tobacco-related annual mortality rate per 100,000 people of adult smokers in the United States was 701/441 or around 1.6 times that of lung cancer. Considering the fact that the United States is a developed country, the figure 1.6 could be a very optimistic estimate for Lao PDR. However, based on the 1.6 figure, there will be at least 20.776 and 29.172 less tobacco related deaths per 100,000 adult population. Based on the total adult population which would be around 690,498 in 2008, the total reduction in the number of tobacco-related deaths will be around 143.454 and 201.434 in the year 2028. As discussed, the smoking prevalence rates among school students was around 15%. Thus, the reduction in the number of tobacco-related deaths would include the lives of child smokers.

Fourthly, the gain in earnings that will follow the increases in excise tax rate will be estimated. However, there is no study on the health care cost of smoking-related diseases in Lao. This paper relies on the health cost of some smoking-related diseases in Thailand estimated by Narinthon and Kamol (2002). The study found that the forgone earning of each tobacco-related death caused by lung cancer was 578,393 Baht per case in 1999. An adjustment was made to capture a difference in earnings and purchasing power between Laos and Thais. The most up-to-date information in 2003 shows that Lao's per capita GDP³ was 3,968,323 kip while it was 92,960 Baht for Thailand in the same year. Thus, the imputed foregone earning of each tobacco-related death caused by cigarette smoking in Lao PDR is equivalent to 24,690,731 kip in 1999.

Data on a change in price is also needed in order to calculate the future gain. A simple estimate from price data over the years 1999-2003 showed that, on average, Lao's inflation rate was around 11.61% each year⁴. Although this reflects a sharp rise in price level, the same inflation rate has been assumed to prevail over the period between 1999 and 2008. Thus, the figure should go up to 66,369,572 kip or around 66.370 million kip per case in 2028. Thus, the increases in excise tax rate in 2008, from 15% to 30% and from 30% to 55%, will lead to gains in earnings of around 9,521.075 million kip and an additional gain of 13,369.178 million kip in 2028, respectively. If the new excise tax rate of 55% continues after 2008, there will be similar gains every year after 2028.

Although the government has already made a decisive policy to terminate the profit tax holiday, cigarette producers decided not to change the retail prices of cigarettes. It is also worth looking at the potential health benefit of this policy. The results will show how favorable the policy is to the welfare and well-being of the Lao population if the retail prices of cigarettes were increased.

³ In 2003, Lao's GDP at current prices was 22,511.416 billion kip and the total number of population was around 5.679 millions.

⁴ Information from the National Statistical Center show that GDP deflator was around 15.77 percent and inflation rate was around 15.23 percent between 2002 and 2003.

As already discussed, the percentage change in the retail price of cigarettes equals 0.2056% or 20.56% following the implementation of the policy. By assuming that the own-price elasticity of demand equals -0.3925, this translates into -0.0644 or a 6.44% decrease in cigarette demand. The demand in 2007 was estimated to be 130.351 million packs or 2,607 million cigarette sticks. Thus, the decrease in demand will equal 167.891 million sticks. Based on the same methodology as in Sub-section 5.3.1, the change in per capita cigarette consumption will equal -608.238. Lung cancer-related death will decrease by 15.084 and tobacco related mortality will be reduced by 24.135 per 100,000 adult population or 162.484 total tobacco-related deaths in 2027. Thus, the gain in earnings will be 9,662.302 million kip in the next 20 years and every year after that.

All of these favorable impacts of the increases in tax rates are summarized in the following Table 16. It should be noted that the effect of an increase in the excise tax rate from 15 to 55% is equal to the sum of the effect of the increase from 15 to 30% and the effect of the increase from 30 to 55%. For example, the decrease in demand that will follow the increase in excise tax rate from 15 to 55% equals $148.228+208.136 = 356$ million cigarette sticks and so on.

Table 16: Impacts on tobacco-related mortality and forgone earnings

Impacts	Excise Tax Rate Increases in 2008		Profit Tax Rate Increases in 2007 from 0 to 20%
	From 15% to 30%	From 30% to 55%	
% Decrease in Demand	5.1025	7.55	6.44
Decrease in Demand in the Same Year (million sticks)	148.228	208.136	167.891
Decrease in Lung Cancer Mortality Per 100,000 Adults in the Next 20 Years	12.985	18.233	15.084
Decrease in Tobacco Related Mortality Per 100,000 Adults in the Next 20 Years	20.776	29.172	24.135
Decrease in the Number of Tobacco Related Deaths in the Next 20 Years	143.454	201.434	162.484
Gain in Earnings in the Next 20 Years (million kips)	9,521.075	13,369.178	9,662.302

5.4 Government Revenue

This sub-section shows how the increases in excise tax rate and the termination of the profit tax holiday will affect government revenue from cigarettes. This is a comparative static, i.e. the rates of tariff, business tax, profit tax, profit margin, and the share of the government in cigarette companies' profit are assumed constant. Based on Equations (8), (9) and (10), government revenue from cigarettes will be explained by the following Equations (11)-(13) and Table 13.

$$gr = (TR/GR)*tr + (F/GR)*f \quad (8)$$

$$tr = [(1-M)*P^c / \{(1-M)*P^c - P^0\} + \epsilon_p] * p^c \quad (9)$$

$$f = p^c(1+\epsilon_p) \quad (10)$$

Based on Tables 2 and 3, the shares of tax revenue and profit to total government revenue from cigarettes were estimated (Table 15). The rate of profit margin (M) is 0.4133 in 2007 and 0.4142 in 2008. The share of tobacco tax revenue to total government revenue from tobacco ((TR/GR) is assumed to be 0.4385 and the share of profit from Lao Tobacco Company to total government revenue from tobacco (F/GR) is assumed to be 0.5615, i.e. the same proportions as in 2005. The unit cost is assumed to be 572.43 kip per pack and 572.42 kip per pack in 2007 and 2008. Retail price is assumed to be 1,449.82 and 1,453.34 kip per pack in 2007 and 2008, respectively. These figures were used to estimate effects of the increases in excise tax rate from 0% to 15% and from 15% to 30%, and the termination of profit tax holiday on total government tobacco revenue.

Table 17: Tobacco tax and profit: 2000-2007

Fiscal Year	Total Tobacco Revenue	From Tobacco Tax		From Tobacco Profit	
		Million kip	%	Million kip	%
2000	41,722	41,390	99.20	332	0.80
2001	47,880	37,314	77.93	10,566	22.07
2002	29,639	15,482	52.24	14,157	47.76
2003	41,723	19,782	47.41	21,941	52.59
2004	57,213	24,284	42.44	32,929	57.56
2005	62,110 ^P	27,235	43.85	34,875 ^P	56.15
2006	79,282 ^P	34,765	43.85	44,517 ^P	56.15
2007	92,073 ^P	40,374	43.85	51,699 ^P	56.15

Note: Calculated from Tables 2 and 3. Tobacco tax revenue in 2005, 2006 and 2007 are projected values (p).

Sources: 1. Ministry of Finance.

2. Annual Statistics 2003, National Statistical Center.

As shown in previous sub-sections, following the increase in excise tax rate from 15 to 30% and from 30 to 55%, the retail price for cigarettes will increase by 13%, 19.23%, and 16.40% respectively. Consequently, cigarette demand will decrease by 5.1025%, and 7.55% or 148.228 and 208.136 million sticks. Thus, tobacco tax revenue will increase by 34.57% and 51.14%. At the same time, government revenue from profit will increase by 7.90% and 11.68%. In sum, total tobacco revenue of the government will increase by 19.60% and 28.99% respectively. These are summarized in columns 2 and 3 of Table 18. As discussed in the previous section, the effect of the increase in excise tax rate from 15 to 55% is equal to the sum of the effect of the increase from 15 to 30% and from 30 to 55%.

However, it should be noted that these estimates are based on an assumption that the cigarette companies will not change their profit margin in response to the change in excise tax rate. In reality, this assumption may not be true. The Companies may opt to decrease their profit margin in order to maintain cigarette retail prices and their

sales. Consequently, the effects on government revenue will be different from the above estimates.

As shown in column 4 of Table 18, following the increase in profit tax rate from 0 to 20%, cigarette retail price will increase by 16.40%. Consequently, cigarette demand will decrease by 6.44%. Thus, tobacco tax revenue and tobacco profit revenue will increase by 43.71 and 9.96%. In sum, the total tobacco revenue of the government will increase by 24.76%. It should be noted that the cigarette companies did not change their profit margin in response to the change in profit tax rate. Consequently, the effects on government revenue were different from the above estimates.

Table 18: Impacts on government revenue from cigarettes

Impacts	Excise Tax Rate in 2008		Profit Tax Rate Increase in 2007 from 0 to 20%
	From 15 to 30%	From 30 to 55%	
% Increase in Retail Prices	13	19.23	6.44
% Decrease in Demand	5.1025	7.55	8.07
% Share of Tobacco Tax	43.85	43.85	43.85
% Rate of Profit Margin	41.42	41.42	41.33
Total Tobacco Revenue	19.60	28.99	24.76
Tax Revenue	34.57	51.14	43.71
Profit Revenue	7.90	11.68	9.96

SUMMARY, POLICY RECOMMENDATIONS AND SUGGESTIONS

6.1 Summary

The analysis has shown many important results. All are very useful for policy making to control tobacco consumption. These are summarized in the following paragraphs.

Two excise tax policies were investigated. Firstly, the government does not allow the two tobacco companies to enjoy the benefit from lower excise tax rate. The rate of 30% will be applied instead of 15%, i.e. a 100% increase. This could be done by a re-valuation of the anomaly low production cost. Firstly, the change in cigarette retail price that will follow the increase in excise tax rate from 15% to 30% equals 13.0% of the on-going price. By assuming that this change in the retail price of cigarette has no effect on income, inflation rate, and the price elasticity of demand equal -0.3925, cigarette demand will decrease by 5.1025% of the on-going demand. Secondly, the government strictly enforces the new tax law and apply the rate of 55%, i.e. an increase of 83.33%. Based on the same assumptions, the change in cigarette retail price will equal 19.23% of the would be retail price, if the excise tax rate was 30%. Thus, cigarette demand will decrease further by around 7.55%.

Results of many epidemiological studies indicated that prolonged smoking directly and indirectly causes many diseases, both by substances in the cigarettes and by destroying the body's resistance, as well as increases a person's susceptibility to illnesses and even death. Based on the increase in excise tax rate from 15% to 30% and from 30% to 55% in 2008, the total reduction in the number of tobacco-related deaths would be around 143.454 and 201.434 in the year 2028. These reductions include significant share of the lives of the children of smokers. The gains in forgone earnings as measured by 2008 price level will be around 9,521.075 million kip and an additional gain of 13,369.178 million kip, in 2028, respectively. If the new excise tax rate of 55% continues after 2008, there will be similar gains every year after 2028. In terms of government revenue, tobacco tax will increase by 34.57% and 51.14%. At the same time, government revenue from profit will increase by 7.90% and 11.68%. In sum, the total tobacco revenue of the government will increase by 19.60% and 28.99%, respectively. These favorable impacts both in terms of tobacco control and raising revenue are important reasons why the government should decide to increase the excise tax rate.

In the case of the profit tax holiday that was terminated in 2007, it is worth to look at the potential benefit of an increase in the retail prices although it was not allowed by law. Basically, the effect on cigarette retail price depends on how the Companies manage the trade off between their profit tax burden and their profit margin. A simple assumption is that the Companies decide to maintain the ongoing rate of profit margin even though the same rate of profit tax as other industries, i.e. 20%, will be applied. The whole burden of profit tax will be passed to consumers in the form of higher cigarette retail price. Thus, the percentage change in the retail price of cigarettes equals 16.40%. This translates into a 6.44% decrease in cigarette demand, i.e. around 167.891 million sticks. Based on the same methodology, the decrease in per capita cigarette consumption will equal 608.238. Lung cancer-related death will decrease by 15.084 and tobacco-related mortality will be reduced by 24.135 per 100,000 adult

population, or 162.484 total tobacco related deaths in 2027. Thus, the gain in earnings will be 9,662.302 million kip in the next 20 years and every year after that. Consequently, tobacco tax revenue will increase by 43.71%. At the same time, government revenue from profit will increase by 9.96%. In sum, the total tobacco revenue of the government will increase by 24.76%. These results confirm the positive results of the tobacco tax policy.

6.2 Policy Recommendations

The results have shown the favorable impact of the increases in the rates of cigarette excise tax in 2008 and the potential benefit of the termination of profit tax holiday for the tobacco companies in 2007. Thus, the government's policy to abolish the profit tax holiday in 2007 is confirmed to be a right decision especially if the cigarette companies were allowed to increase the retail prices. Also, a decision to increase cigarette prices through higher excise tax rates should not be delayed. As already mentioned, the share of tax in cigarette retail prices in Lao PDR has been very low and much lower than that of many countries including ASEAN member and neighboring countries. Not to mention an important point that low cigarette prices are harmful to children who are the future of the country. In addition to the tax policies, the roles of non-tax measures, such as advertising ban, smoke free places, graphic health warnings, and public health regulations, are also important and should not be overlooked.

However, it should be noted that these scenarios are an extreme departure from the privileges that the two tobacco companies have enjoyed, and they could be very difficult to implement. The government may decide to negotiate with the Companies for a smaller and gradual increase in the rate of excise tax, i.e. 1% or 2% at a time. But it should be noted that the impact on cigarette demand will also be much less and slower. Moreover, this may not be sufficient to catch up with inflation that has been very high, i.e. more than 10%. In this case, cigarette will become cheaper in real terms and cigarette demand, as well as health cost, will increase.

Alternatively, since the declared production cost has been abnormally low and the special privilege provided by the Investment Law is very difficult to amend, the Lao government may decide to increase profit tax on cigarette production to a rate that is sufficient to offset the benefit of under-declared production cost. A health tax is also a way to correct negative externality caused by cigarette smoking. However, it should not be based on excise tax revenue that is too low because of investment law. A profit tax revenue based is therefore a better alternative.

6.3 Suggestions for Future Research

Despite research results which showed that the cigarette tax policies of Lao PDR have been very positive for tobacco control, there are still many issues that have to be explored and analyzed.

The shares of illicit tobacco products and hand-rolled cigarettes in the tobacco market are also of paramount importance. Lessons can be learnt from many countries that illicit tobacco products can lower prices and increase demand by avoiding taxes.

Also, cheaper hand-rolled cigarettes can be a substitute for higher taxed cigarettes. Both are important problems that should also be tackled immediately.

Another important factor for tobacco control in Lao PDR is the role of the CEPT scheme of AFTA on the tobacco market in Lao PDR that has never been investigated. Results of many past studies showed that the impacts of the scheme on cigarette demand in other ASEAN member countries will be significant. Thus, the impact of CEPT scheme in Lao PDR requires further study.

The employment effect of tobacco is also noteworthy. If the tobacco industry is an important source of employment, the employment effect of tobacco, caused by the forward and backward linkages of the industry, will be significant and requires further analysis.

Finally, the assumption that the cigarette companies will not change their profit margin in response to the change in excise tax rate requires further consideration. In reality, the Companies may opt to decrease their profit margin instead of increasing retail prices in order to maintain their sales. Thus, cigarette demand will not change as much as expected. Consequently, the impacts on tobacco-related mortality and government revenue will differ from the estimates shown in this report.

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About SEATCA

The Southeast Asia Tobacco Control Alliance (SEATCA) works closely with key partners in ASEAN member countries to generate local evidence through research programs, to enhance local capacity through advocacy fellowship program, and to be catalyst in policy development through regional forums and in-country networking. By adopting a regional policy advocacy mission, it has supported member countries to ratify and implement the WHO Framework Convention on Tobacco Control (FCTC)

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