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**LIKELY IMPACTS OF
AFTA ON CIGARETTE
CONSUMPTION:
INDONESIAN CASE**

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Thai Health Promotion Foundation**

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I. INTRODUCTION

Indonesia has more than 250 big cigarette factories which are mostly producing clove cigarette or commonly called “kretek” in Indonesian name. In 2002, total production of clove cigarette was reaching 220 billion sticks. With that production, Indonesia is in the fifth position as the largest cigarette producer in the world. Production white cigarette is very insignificant in number.

Indonesia is net-exporter of cigarette. In 2002, Indonesia exported 22 billion stick (11% of total production) and imported only 300 million stick (0.2% of total production) of white cigarette. Export destination is mostly, more than 90%, to ASEAN countries. On the other hand, the origin of white cigarette import is mostly from non-ASEAN countries.

Indonesia is a big tobacco producer with total production about 144.700 MT in 2002. Indonesia exported tobacco about 32% of its products but at the same time, for quality reason, Indonesia is also imported Virginia tobacco as much as 33% of total production. So Indonesia is big importer of tobacco. Both export destination and import of origin, however, are mostly non-ASEAN countries.

AFTA has been implemented and raw tobacco is included in the list of commodities that should be liberalized in trade. Import tariff of raw tobacco has been lowered only 5% and in several years later the tariff will be totally removed to 0%.

Expected consequences of AFTA is smoking prevalence among young people increase, more people suffering from disease related to smoking, more years of life will lost among youth and more portion of household expenditure should be allocated to hospital services.

II. OBJECTIVES

1. To examine whether AFTA implementation has an impact on tobacco consumption, the increase of smoking prevalence, years of life lost and direct medical cost caused by tobacco related diseases.
2. To provide inputs to the government of Indonesia on what implication of any policy is adopted to change domestic price of tobacco.

III. CONFIGURATION OF INDONESIAN TOBACCO AND CIGARETTES

3.1 Production and Domestic Supply of Cigarette

Indonesia is a big cigarette producer, the fifth rank in the world with total production more than 220 billion stick a year and produces mostly clove cigarette that is called 'kretek' in Indonesian name. 'kretek' is made of tobacco and clove with composition 70% tobacco and 30% clove.

Table 1 provides figure indicate that clove cigarette contributed more than 86% of total domestic production. About 56% of the total clove cigarette that are rolled by machine with capital intensive production technology. Hand rolled clove cigarette with labor intensive production technology has contributed 40% of the total production. White cigarette that are also produced by machine has been contributed only about 12% of the total.

Table 1: Production of Cigarettes by Types, 1991-2002, (in million sticks)

Year	Clove Cig. SKM	Clove Cig. SKT	Total Clove Cig.	White Cig. SPM	Other Cigarettes	Total Cigarette
1991	89,424.2	44,144.8	133,569.0	20,368.7	1,255.2	155,192.90
1992	94,482.2	44,319.6	138,801.8	19,095.0	1,013.0	158,909.80
1993	88,923.9	49,880.2	138,804.1	19,788.4	902.4	159,494.90
1994	112,885.7	55,621.5	168,507.2	21,507.4	918.0	190,932.60
1995	117,870.7	56,794.7	174,665.4	24,786.2	859.5	200,311.10
1996	129,309.5	58,331.7	187,641.2	28,677.0	794.5	217,112.70
1997	141,955.5	57,072.9	199,028.4	29,368.9	564.6	228,961.90
1998	125,072.5	70,709.8	195,782.3	32,521.1	915.7	229,219.10
1999	111,432.0	85,799.8	197,231.8	30,328.3	853.7	228,413.80
2000	119,551.3	86,475.1	206,026.4	25,785.3	697.6	232,509.30
2001	114,312.2	88,083.6	202,395.8	24,675.2	746.6	227,817.60
2002	99,980.4	81,666.0	181,646.4	24,205.9	714.4	206,566.70

(% share)

1991	57.6	28.4	86.1	13.1	0.8	100.00
1992	59.5	27.9	87.3	12.0	0.6	100.00
1993	55.8	31.3	87.0	12.4	0.6	100.00
1994	59.1	29.1	88.3	11.3	0.5	100.00
1995	58.8	28.4	87.2	12.4	0.4	100.00
1996	59.6	26.9	86.4	13.2	0.4	100.00
1997	62.0	24.9	86.9	12.8	0.2	100.00
1998	54.6	30.8	85.4	14.2	0.4	100.00
1999	48.8	37.6	86.3	13.3	0.4	100.00
2000	51.4	37.2	88.6	11.1	0.3	100.00
2001	50.2	38.7	88.8	10.8	0.3	100.00
2002	48.4	39.5	87.9	11.7	0.3	100.00

Notes: SKM is machine made clove cigarette, SKT is hand made clove cigarette

Source: Central Board of Statistics

Indonesian ‘kretek’ is not only consumed domestically, but also consumed abroad. In 2002, Indonesia exported ‘kretek’ as much as 11% of its total production. This percentage of export has been increasing significantly during the year of economic recovery, 1999 to 2001 (Table 2).

At the same time, Indonesia has also imported cigarette. But its volume is very insignificant, less than 0.5% of total production and all of them are white cigarette.

Table 2: Total Domestic Supply of Cigarettes in Indonesia, 1995-2002

Year	Domestic Production (million sticks)	Exports (million sticks)	Exports as % of Production	Imports (million sticks)	Import as % of Production	Domestic Supply (million sticks)
1995	186,200	21,175	11.37	294	0.16	165,319
1996	211,823	19,225	9.08	90	0.04	192,688
1997	225,385	23,090	10.24	84	0.04	202,379
1998	216,200	17,080	7.90	16	0.01	199,136
1999	219,700	11,500	5.23	121	0.06	208,321
2000	232,724	16,052	6.90	400	0.17	217,072
2001	221,293	22,220	10.04	206	0.09	199,279
2002	200,000	22,000	11.00	300	0.15	178,300

Source: Central Board of Statistics

3.1.1. Production and domestic supply of Tobacco

Indonesia is also a big tobacco producer. Total domestic production is around 135 to 150 thousand ton a year. Indonesia exported about 30% of their total tobacco production. Due to quality reason, Indonesia has also imported stemmed Virginia and processed tobacco. Total import is relatively the same with total export, about 30% of domestic production (Table 3).

Table 3: Total Domestic Supply of Tobacco in Indonesia, 1995-2002

Year	Production (ton)	Exports (ton)	Export as % of Production	Imports (ton)	Import as % of production	Domestic Supply (ton)
1995	140,169	21,989	15.69	47,954	34.21	166,134
1996	151,025	33,205	21.99	45,060	29.84	162,880
1997	136,746	42,281	30.92	47,108	34.45	141,573
1998	137,564	46,960	34.14	17,152	12.47	107,756
1999	135,384	37,097	27.40	40,913	30.22	139,200
2000	135,578	35,658	26.30	34,248	25.26	134,168
2001	146,100	43,031	29.45	44,347	30.35	147,416
2002	144,500	42,687	29.54	33,289	23.04	135,102

Source: Central Board of Statistics

3.1.2. Clove

'Kretek' industry need clove as part of their main raw materials, 30% of their total raw materials are clove. This makes Indonesia become a clove producer. In 2002, Indonesia is the largest clove producer in the world with total production 50 ton or about 63% of the world total clove production. With that total domestic production, however, Indonesia still becomes a main clove importer. Clove is imported from other main clove producers such as Madagascar, Tanzania, and Sri Lanka.

3.2. Trade

3.2.1. Trade in Cigarette

Export

Export of Indonesia cigarette (both clove and white cigarette) are mostly to ASEAN countries, contributed more than 90 % (Table 4). Malaysia, Thailand and Cambodia are the main ASEAN country destination (Table 5).

Table 4: Export of Cigarettes to ASEAN and Non-ASEAN Countries, 1998-2002 (volume in ton)

Year	ASEAN	Non-ASEAN	Total	% share of ASEAN	% share of Non-ASEAN
1998	22,611.8	1,534.6	24,146.4	93.64	6.36
1999	22,764.0	1,622.9	24,386.9	93.35	6.65
2000	20,510.2	2,451.3	22,961.5	89.32	10.68
2001	29,002.9	2,461.8	31,464.7	92.18	7.82
2002	24,477.7	1,958.4	26,436.1	92.59	7.41

Source: Central Board of Statistics

Table 5: Export of Cigarettes by Country of Destination, 2001 (volume in ton)

Country	(Ton)	% share
Clove Cigarette:		
1. Malaysia	4,938	73.0
2. Singapore	765	11.3
3. Vietnam	393	5.8
4. USA	214	3.2
5. Germany	182	2.7
6. East Timor	60	0.9
7. Others	212	3.1
Total	6,764	100.0

White Cigarette:		
1. Thailand	11,688	48.0
2. Cambodia	9,929	40.8
3. Philippines	541	2.2
4. USA	456	1.9
5. Syprus	411	1.7
6. Malaysia	377	1.6
7. Others	941	3.9
Total	24,343	100.0

Source: Central Board of Statistics

Import

At the same time, Indonesia also imported cigarettes. But only white cigarettes and imported mostly from Non-ASEAN countries. In 2001, 99% of import was coming from China and in 2002, 78% of import was coming from United State of America. Other main sources of import of white cigarette are Japan and South Korea (Table 6).

Table 6: Import of Cigarettes by Country of Origin, 2001-2002

Country origin	2001		2002	
	Volume (kg)	% share	Volume (kg)	% share
1. South Africa	203	0.07	0.00	-
2. Australia	5	0.00	0.00	-
3. China	288,000	98.88	0.00	-
4. Hong Kong	1,315	0.45	949.00	1.38
5. Ireland	215	0.07	0.00	-
6. Japan	1	0.00	5,694.00	8.28
7. Germany	48	0.02	131.00	0.19
8. Malaysia	614	0.21	436.00	0.63
9. Singapore	75	0.03	0.00	-
10. Spain	5	0.00	0.00	-
11. USA	787	0.27	53,706.00	78.08
12. Dominic	-	-	66.00	0.10
13. Honduras	-	-	50.00	0.07
14. South Korea	-	-	5,349.00	7.78
15. France	-	-	6.00	0.01
16. Others	-	-	2,400.00	3.49
Total	291,268	100.00	68,787	100.00

Source: Central Board of Statistics

3.2.2. Trade in Tobacco

Export

Unlike cigarettes, raw tobacco is mostly (more than 80%) exported to non-ASEAN countries (Table 7). The main countries of destination are Belgium, Germany, United States, and Netherlands. For ASEAN countries are Malaysia, Thailand and Philippine as the main destinations.

Table 7: Export of Raw Tobacco to ASEAN and Non ASEAN Countries, 1998-2002 (volume in ton)

Year	ASEAN	Non-ASEAN	Total Exports	% share of ASEAN	% share of Non-ASEAN
1998	3,857.3	43,243.6	47,100.9	8.19	91.81
1999	3,335.3	33,761.4	37,096.7	8.99	91.01
2000	4,378.0	31,355.5	35,733.5	12.25	87.75
2001	6,948.3	36,082.8	43,031.1	16.15	83.85
2002	7,819.0	34,585.8	42,404.8	18.44	81.56

Source: Central Board of Statistics

Import

Table 8 shows that Indonesia has imported both raw tobacco and processed tobacco, 85.30% raw tobacco in 1998 that went down to 78.86% in 2001 and almost 15% processed tobacco in 1998 to 21.14% in 2001. Raw tobacco is mainly in terms of stemmed Virginia. China is the main source of this commodity that imported by Indonesia. China contributed 50% of total stemmed Virginia import. Other main countries of origin are Brazil, Zimbabwe and United State. Total contribution of these four countries is 75% (Table 9).

Table 8: Import of Raw and Processed Tobacco, 1998-2001 (volume in ton)

Tobacco	1998	1999	2000	2001
Raw Tobacco:	16,882	38,376	33,048	44,346
Stemmed Virginia	9,521	26,124	23,214	36,938
Non-Virginia	7,361	12,252	9,834	7,408
Processed Tobacco	2,909	10,464	9,645	11,891
Total Import	19,791	48,840	42,693	56,237
(% share of total)				
Raw Tobacco	85.30	78.57	77.41	78.86
Stemmed Virginia	48.11	53.49	54.37	65.68
Non-Virginia	37.19	25.09	23.03	13.17
Processed Tobacco	14.70	21.43	22.59	21.14
Total Import	100.00	100.00	100.00	100.00

Source: Central Board of Statistics

Table 9: Import of Stemmed Virginia by Country of Origin, 2001-2002

Country	2001		2002	
	Quantity (ton)	% Share	Quantity (ton)	% Share
1.China	28,182	76.29	16,904	50.92
2.Zimbabwe	2,995	8.11	2,378	7.16
3.Brazil	2,118	5.73	3,762	11.33
4.USA	1,483	4.01	1,749	5.27
5.Turkey	586	1.59	1,821	5.49
6.Greece	469	1.27	2,099	6.32
7.Singapore	-	-	1,257	3.79
8.Others	1,106	2.99	3,228	9.72
Total	36,939	100.00	33,198	100.00

Source: Central Board of Statistics

Processed tobacco also has been imported mostly from non-ASEAN countries. Contribution of ASEAN countries is only 28% of total import or 10% of total domestic supply. Dominant country in this case is Malaysia with market share more than 90% (Table 10).

Table 10: Share of ASEAN to Total Import and Domestic Supply, 2001-2002 (Volume in ton)

Tobacco	2001	2002
Unprocessed	44,346.80	33,288.90
Processed:	11,599.00	14,087.60
ASEAN:	11,309.20	13,519.75
Malaysia	11,302.50	13,513.20
Total	55,945.80	47,376.50
<i>% share to import</i>		
Unprocessed	79.27	70.26
Processed:	20.73	29.74
ASEAN:	20.21	28.54
Malaysia	20.20	28.52
Total	100.00	100.00
<i>% share to domestic supply</i>		
Unprocessed	30.08	24.64
Processed:	7.87	10.43
ASEAN:	7.67	10.01
Malaysia	7.67	10.00
Total	37.95	35.07
Total production (ton)	147,416.00	135,102.00

Source: Central Board of Statistics

3.3. Cost Structure of Cigarette Production

Cigarette Production technology tends to be more capital intensive. This is indicated by its cost structure that the share of interest rate has been increasing and the share of labor cost has been decreasing during the period of 1998-2002 (Table 11).

It seems that cigarette factory has tried to be away from domestic condition where Indonesian labor market is very inflexible and highly government intervention in wages determination. In addition, using machine in producing cigarette is more productive and efficient.

Production cost is dominated by cost of raw material in which in this case consists of tobacco and clove. Tobacco contributes 70% while clove 30% of total cost of raw material.

Table 11: Cost Structure of Clove Cigarette Production, 1998-2002 (million Rp)

Items	1998	1999	2000	2001	2002
1.Labor cost	1,247.2	973.3	1,187.5	1,001.8	213.0
2.Electricity	31.7	32.1	41.1	46.2	69.6
3.Raw Material	5,857.7	7,026.5	8,451.5	14,129.3	11,161.5
4.Fuels	19.3	20.3	25.8	63.1	70.5
5.Rental	6.0	11.1	8.3	7.1	12.4
6.Interest rate	462.4	313.9	140.9	494.1	581.1
7.Others	55.1	401.8	385.6	1,219.8	1,439.1
Total	7,679.4	8,779.0	10,240.6	16,961.5	13,547.2

(in %
share)

	1998	1999	2000	2001	2002
1.Labor cost	16.24	11.09	11.60	5.91	1.57
2.Electricity	0.41	0.37	0.40	0.27	0.51
3.Raw Material	76.28	80.04	82.53	83.30	82.39
4.Fuels	0.25	0.23	0.25	0.37	0.52
5.Rental	0.08	0.13	0.08	0.04	0.09
6.Interest rate	6.02	3.58	1.38	2.91	4.29
7.Others	0.72	4.58	3.77	7.19	10.62
Total	100.00	100.00	100.00	100.00	100.00

Source: Central Board of Statistics

3.4. Price

Price of cigarette in Indonesia is relatively cheap for all income groups. The price for the best seller kretek (Gudang Garam with 16 Sticks) is only Rp.6.500 or US\$0.72. The highest price is Rp9.500 or US\$1.10 for the best kretek 'Dji Sam Soe' (16 Sticks). The price white cigarette 'Marlboro' (20 sticks) is Rp7.500 or US\$0.83. Lowest income smokers purchase one or two stick of kreteks in one occasion the need to smoke. One stick is costly about Rp340-400 or US\$0.05.

Market structure of cigarette is could be regarded as monopolistic competition, where each type of cigarette has a group of fanatic consumers. Each cigarette industry has tried to keep its fanatic consumer through intensive campaign and advertisement. For excise tax revenues purposes, minimum retail price is determined and control by the government. There is not prohibition to the factory to sell its cigarette above the minimum retail price Table 12 shows the minimum retail price of three types of cigarette based on production technology; machine-rolled clove cigarette, hand-rolled clove cigarette and machine-rolled white cigarette. The minimum price is differentiated according to the size of production. Large size is more expensive than the small size. It is based on economic of scale principle.

Table 12: Minimum Retail Price of Cigarettes by Type (Rp/stick)

Type of cigarettes	1998	2001	2002	2003
Machine-rolled clove cigarette:				
Large scale >2b	175	270	400	400
Medium scale >500m=<2b	175	270	330	330
Small scale <=500 m	120	127	320	320
Hand-rolled clove cigarette:				
Large scale >2b	120	225	340	340
Medium scale >500m=<2b	120	225	280	280
Small scale <=500 m	120	225	270	270
Machine-rolled white cigarette:				
Large scale >2b	125	150	250	270
Medium scale >500m=<2b	125	150	190	210
Small scale <=500 m	125	150	180	200

Source: Ministry of Health, 2004

By using unit prices of export and import, international prices could be compared with domestic price of cigarette. Table 13 and 14 shows that domestic price is higher than export prices and slightly lower than import price. This unique phenomenon is mainly due to government intervention to domestic market.

Table 13: Unit Price of Export of Cigarettes, 2002

Year	Export US\$/Ton	Export Rp/kg	Rp per stick
1998	4,230	38,070	190.4
1999	4,739	42,651	213.3
2000	6,060	45,450	227.3
2001	5,499	41,243	206.2
2002	5,557	44,456	222.3

Source: Central Board of Statistics

Table 14: Unit Price of Import of Cigarettes, 2002

Year	Import US\$/Ton	Import Rp/kg	Rp per stick
1998	3,222	28,998	145.0
1999	1,645	14,805	74.0
2000	5,735	43,013	215.1
2001	6,780	50,850	254.3
2002	6,624	52,992	265.0

Source: Central Board of Statistics

3.5. Market Share

Domestic market is dominated by clove cigarette, market share is more than 86%. White cigarette could only take around 10 to 14 % of total domestic sales. Gudang Garam and Djarum dominated the market with a total share of 55% in 2003, but recently, Sampoerna has gradually took an important part in the market with market share increased from 10% in 1995 to 19% in 2003 (Table 15).

Table 15: Percentage Market Share of Each Type of Cigarette

Trade mark	1979	1989	1995	1998	2003
Industry/trade mark					
1. Kretek (clove Cigarette):	71.0	90.0	87.5	85.8	88.0
Gudang garam	12.0	28.0	41.3	40.2	32.0
Djarum	13.0	28.0	14.0	11.0	25.0
Bentoel	8.0	11.0	4.8	2.3	2.0
Sampoerna	1.0	3.0	9.6	10.4	19.0
Noyorono	4.0	3.0	2.3	2.1	1.0
Other	33.0	17.0	15.5	19.8	9.0
2. White cigarette	29.0	10.0	12.5	14.2	12.0
3. Total sales	100.0	100.0	100.0	100.0	100.0

Source: Ministry of Health, 2004

The composition of the market share is build-up by cigarette preferences of Indonesian smokers who in general have still been very fanatic with their traditional clove cigarette.

Even if young new smokers tend to preferred white cigarette, but they gradually shifting to consume more clove cigarette when they getting older. Table shows that adult smokers have mostly preferred clove cigarette.

Table 16: Cigarette Preference by Age Group, 2000

Ages group	Clove Cigarette	White cigarette	Total
15-19	79.53	20.47	100.00
20-29	83.94	16.06	100.00
30-39	90.48	9.52	100.00
40-49	93.30	6.70	100.00
50-59	93.12	6.88	100.00
60+	91.00	9.00	100.00
Average	88.09	11.91	100.00

Source: Ministry of Health, 2004

IV. CIGARETTE CONSUMPTION

Smoking prevalence

In average, smoking prevalence of Indonesian population is about 62.2% for male and 1.3% for female. Adult male (35-69 old) has been the highest smoking prevalence with figure about 70% in average. The prevalence has been increasing by around 0.43% a year during the period of 1995-2001. Assuming that the growth rate is stable, it can be estimated that smoking prevalence for the adult group is increasing to become 71% in 2004.

Smoking prevalence for young male has been much lower compare to that for adult group, but it has been growing with higher rate, around 1.7% a year. This make smoking prevalence for the young group is estimated increase from 56% in 2001 to become 58% in 2004. (Table 17)

Table 17: Smoking Prevalence by Age Group, 1995 and 2001
(Male)

Age Category	1995	2001	% increase	% annual Increase	Estimate 2002	Estimate 2003	Estimate 2004
10-14 year	0.5	0.7	40.0	2.47	0.72	0.73	0.75
15-19 year	13.7	24.2	76.6	4.20	25.22	26.28	27.38
20-24 year	42.6	60.1	41.1	2.52	61.62	63.17	64.76
25-29 year	57.3	69.9	22.0	1.45	70.91	71.94	72.98
30-34 year	64.4	70.5	9.5	0.66	70.96	71.43	71.90
35-39 year	67.3	73.5	9.2	0.64	73.97	74.44	74.92
40-44 year	67.3	74.3	10.4	0.72	74.83	75.37	75.91
45-49 year	68.0	74.4	9.4	0.65	74.89	75.38	75.87
50-54 year	66.8	70.4	5.4	0.38	70.67	70.94	71.21
55-59 year	66.1	69.9	5.7	0.41	70.18	70.47	70.75
60-64 year	64.7	65.6	1.4	0.10	65.67	65.73	65.80
65-69 year	64.3	64.7	0.6	0.04	64.73	64.76	64.79
70-74 year	56.9	59.2	4.0	0.29	59.37	59.54	59.71
70+ year	53.3	48.5	(9.0)	(0.68)	48.17	47.84	47.52

(Female)

Age Category	1995	2001	% increase	% annual Increase	Estimate 2002	Estimate 2003	Estimate 2004
10-14 year	0.1	-	(100.0)	-	-	-	-
15-19 year	0.3	0.2	(33.3)	(2.89)	0.2	0.2	0.2
20-24 year	1.0	0.6	(40.0)	(3.63)	0.6	0.6	0.5
25-29 year	1.1	0.6	(45.5)	(4.29)	0.6	0.5	0.5
30-34 year	1.2	0.9	(25.0)	(2.06)	0.9	0.9	0.8
35-39 year	1.7	1.3	(23.5)	(1.92)	1.3	1.3	1.2
40-44 year	2.3	1.9	(17.4)	(1.37)	1.9	1.8	1.8
45-49 year	3.1	2.2	(29.0)	(2.45)	2.1	2.1	2.0
50-54 year	3.4	2.6	(23.5)	(1.92)	2.6	2.5	2.5
55-59 year	3.3	3.0	(9.1)	(0.69)	3.0	3.0	2.9
60-64 year	2.8	2.8	-	-	2.8	2.8	2.8
65-69 year	3.8	2.7	(28.9)	(2.44)	2.6	2.6	2.5
70-74 year	3.1	2.1	(32.3)	(2.78)	2.0	2.0	1.9
70+ year	1.9	2.1	10.5	0.73	2.1	2.1	2.1

Source: Adioetomo, 2001 and Ministry of Health, 2004

Smoking prevalence for low income group of population (63%) is higher than for the highest income group (57%). But low upper and middle income group have the highest smoking prevalence (64-65%). Education has negative correlation with smoking prevalence. The higher education the lower smoking prevalence or in other word that the people who were never enter any formal school has the highest smoking prevalence. Table 18 shows that 73% of male who have no-formal school background were smokers in 2001 compare with only 44.2% for male with university educational background.

Table 18: Smoking Prevalence for Male Above 15, by Income Group and School Background

Income groups	1995	2001	% increase	% annual increase	Estimate 2002	Estimate 2003	Estimate 2004
1. Low income	57.8	62.9	8.82	0.61	63.28	63.67	64.06
2. Low upper	56.5	65.4	15.75	1.06	66.09	66.79	67.50
3. Middle	55.0	64.0	16.36	1.10	64.70	65.42	66.14
4. Upper lower	51.6	61.2	18.60	1.24	61.96	62.73	63.50
5. Upper	46.2	57.4	24.24	1.58	58.31	59.23	60.16
Education:							
1. No school	67.3	73.0	8.47	0.59	73.43	73.86	74.30
2. Elementary	52.8	65.1	23.30	1.53	66.09	67.10	68.13
3. Junior high school	38.6	51.8	34.20	2.15	52.91	54.05	55.22
4. Senior high school	44.7	57.7	29.08	1.86	58.78	59.87	60.99
5. University	37.1	44.2	19.14	1.28	44.76	45.33	45.91
All population	53.4	62.2	16.48	1.11	62.89	63.59	64.29

Source: Adioetomo, 2001 and Ministry of Health, 2004

Consumption rate

Smokers in Indonesia are mostly consuming clove cigarette or “kretek”. Kretek contributed about 88% of total cigarette domestic consumption. The rest 12% are white cigarette. Each smoker in this country is consumes 11.2 stick in average per day. Smoking prevalence of Indonesian male population is relatively high. In 2001, smoking prevalence for male population for above 15 years of age was 62.2%. Indonesian females are not smokers, its smoking prevalence was only 1.3%. Smoking prevalence is higher for lower income and less educated group of people.

In average, each smoker could consume more about 11 stick a day or about four thousand stick a year. Number of cigarette consumed increased by 7% during the period 1995-2001 or grew about 0.50% a year (Table 19). Adult smokers consume higher number of cigarette compare to the young smokers. The group of 40-49 years old has consumed the highest number.

Table 19: Average Cigarettes Consumed Daily by Age Group

Age Category	1995 Average	2001 Average	% increase	Annual Consumption
10-14 year	7.8	8.7	11.5	3,132
15-19 year	7.9	8.9	12.7	3,204
20-24 year	9.3	10.2	9.7	3,672
25-29 year	10.2	11.2	9.8	4,032
30-34 year	10.8	11.7	8.3	4,212
35-39 year	11.4	11.8	3.5	4,248
40-44 year	11.5	12.0	4.3	4,320
45-49 year	11.3	12.0	6.2	4,320
50-54 year	10.9	11.5	5.9	4,154
55-59 year	10.8	11.4	5.6	4,104
60-64 year	10.8	10.5	(2.8)	3,780
65-69 year	10.2	10.3	1.0	3,708
70-74 year	10.1	9.8	(3.0)	3,528
75+ year	9.3	9.4	1.1	3,384
Average	10.5	11.2	6.7	4,032

Source: Adioetomo, 2001 and Ministry of Health, 2004

Higher income means higher ability to afford to buy and consume more cigarettes. This economic rationality is consistently implemented in cigarette consumption. This is also indicated cigarette has been categorized as normal goods.

But it is not the case for level of educational achievement. Number of cigarettes consumed by group with elementary educational background is the same number consumed by the group of university background (Table 20).

Table 20: Average Number of Cigarettes Consumed by Income Group and Education Background

Income group	1995	2001	% increase	% annual increase	Estimate 2002	Estimate 2003	Estimate 2004
2. Low upper	10.4	10.9	4.81	0.34	10.94	10.97	11.01
3. Middle	10.6	11.2	5.66	0.40	11.24	11.29	11.33
4. Upper lower	11.0	11.6	5.45	0.39	11.64	11.69	11.73
5. Upper	11.7	12.3	5.13	0.36	12.34	12.39	12.43
All groups	10.6	11.2	5.66	0.40	11.24	11.29	11.33
Education:							
1. No school	10.8	11.1	2.78	0.20	11.12	11.14	11.17
2. Elementary	10.3	11.1	7.77	0.54	11.16	11.22	11.28
3. Junior high School	10.8	11.2	3.70	0.26	11.23	11.26	11.29
4. Senior high School	10.8	11.6	7.41	0.52	11.66	11.72	11.78
5. University	11.2	11.6	3.57	0.25	11.63	11.66	11.69
All population	10.6	11.2	5.66	0.40	11.24	11.29	11.33

Source: Demographic Institute of Indonesian University, 2001, Adioetomo, 2001 and Ministry of Health, 2004

High number of cigarette consumed make the lower and middle income group allocate about 10% of their income to buy cigarette. This percentage has been increasing significantly (by around 48% or by 3% a year) during the period of 1995-2001. It is estimated to reach 12 percent in 2004. The percentage is considered high if we compare with percentage of income allocated to high quality food such as milk, meat etc that was lower than that (Table 21).

Table 21: Proportion of Income Allocated for Cigarettes (%)

Income groups	1995	2001	% increase	% annual Increase	2002	2003	2004
1. Low income	6.11	9.10	48.94	2.93	9.37	9.64	9.92
2. Low upper	6.99	10.54	50.79	3.02	10.86	11.19	11.52
3. Middle	7.09	10.49	47.95	2.88	10.79	11.10	11.42
4. Upper lower	6.85	10.12	47.74	2.87	10.41	10.71	11.02
5. Upper	4.99	7.47	49.70	2.96	7.69	7.92	8.15
Average	6.41	9.62	50.08	2.98	9.91	10.20	10.51

Source: Adioetomo, 2001 and Ministry of Health, 2004

Number of Smokers

Out of 208 million number of population in 2001, 45.7 million or 22.0% are smokers in Indonesia. More than 98% of the smokers are male population who started to smoke when they were 10 years old. Highest number of male smokers is within the group of age between 20 to 39 years old. Female started to smoke when they were 15 years old and the

highest number of female smokers is within the group of ages 40 to 49 years old (Table 22).

Table 22: Number of Smokers by Age Group, 2001

Classification by age group	Number in '000			% share to Total
	Male	Female	Total	
0 – 4	-	-	-	-
5 – 9	-	-	-	-
10 – 14	76.9	-	76.9	0.2
15 – 19	2,616.3	21.5	2,637.8	5.8
20 – 24	5,952.5	62.9	6,015.5	13.2
25 – 29	6,480.8	58.4	6,539.2	14.3
30 – 34	6,049.9	77.7	6,127.6	13.4
35 – 39	5,622.5	98.4	5,720.8	12.5
40 – 44	4,897.9	118.5	5,016.4	11.0
45 – 49	3,904.0	104.7	4,008.7	8.8
50 – 54	2,772.6	95.7	2,868.3	6.3
55 – 59	2,124.9	89.6	2,214.5	4.8
60 – 64	1,652.1	73.7	1,725.8	3.8
65 – 69	1,188.9	55.1	1,244.1	2.7
70 – 74	761.6	29.7	791.3	1.7
75 +	674.0	36.8	710.8	1.6
Total	44,774.9	922.7	45,697.6	100.0

Source: Central Board of Statistics and Ministry of Health, 2004

V. HEALTH IMPLICATION AND COST RELATED TO SMOKING

It is only the Ministry of Health which has been very concern on tobacco negative impacts. This is because the impact of smoking to expenditure for health care is very high and has been increasing significantly during the last several years. In addition, portion of household expenditure allocated to cigarette is approaching 10%. The lower the income the higher portion of expenditure for cigarette and the lower portion of income could be allocated to nutritional food and education for their children.

Smoking has a negative impact to health. Clove cigarette contains harmful chemicals that could make smokers suffering from number score killer disease such as cancer and heart disease. By applying death related tobacco coefficient, Table 23 provides figures of 182 smokers or 45% out of 409 people above 35 years old, who died in 2001 because of tobacco related diseases: cancer, heart and respiratory systems.

Table 23: Main Causes of Mortality Related to Tobacco of Above 35, 2001

Main cause	Number Of death	Proportion Related to Tobacco	Death due to Tobacco	% in Average
Cancer	84		36	43.44
Mouth and oropharynx	25	0.70	18	
Pancreas	4	0.25	1	
Liver	23	0.10	2	
Trachea, bronchus and lung	13	0.90	12	
Larynx	2	0.06	0	
Cervix uteri	12	0.30	4	
Ovarium	2	0.06	0	
Bladder	2	0.06	0	
Myeloid % Monocytic Leukemia	1	0.03	0	
Heart Disease:	334		124	37.22
Ischaemic heart disease	158	0.35	55	
Hypertensive	7	0.20	1	
Stroke	169	0.40	68	
Respiratory system:	325		146	44.89
COPD	166	0.70	116	
Pneumonia	136	0.10	14	
Bronchitis, emphysema	23	0.70	16	
Total death	409		182	44.59

Source: Demographic Institute of Indonesian University, 2001 and Adioetomo, 2001

A study conducted in 'Pusat Persahabatan' Hospital in Jakarta in 2002 and 2003 provided data on total cost that patient should pay for one episode of hospital service. Patient with tobacco related disease should stay at least 8 days in hospital for medical services with total services cost more than one million rupiah (Table 24). Considering that minimum daily wage for unskilled worker is only Rp700,000 (US\$7), the hospital service cost is very expensive and significant for lower income smoker.

Table 24: Cost for One Episode of Hospital Services

Disease	Number Of days In Hospital	Average of service cost (rupiah)	Maximum cost (rupiah)
Cancer:			
Mouth and oropharynx	21	2,673,000	6,450,000
Pancreas	17	628,000	950,000
Liver	9	1,919,800	2,950,000
Trachea, bronchus and lung	16	1,964,000	4,800,000
Larynx	11	1,103,000	2,200,000
Cervix uteri	9	764,000	1,350,000
Ovarium	10	1,708,000	2,550,000
Kandung kencing	10	917,250	2,200,000
Myeloid % Monocytic leucaemia	5	917,250	2,200,000
Heart Disease:			
Ischemic heart disease	6	1,072,000	1,350,000
Hypertensive	6	748,300	1,250,000
Stroke	7	856,000	1,612,000
Aneurysma Aorta	7	1,454,000	1,454,000
Respiratory system:			
COPD	9	1,128,000	2,240,000
Pneumonia	8	1,109,000	1,350,000
Bronchitis, emphysema	8	1,109,000	1,350,000

Source: Demographic Institute of Indonesian University, 2001 and Adioetomo, 2001

VI. GOVERNMENT REVENUE

For the purpose of domestic revenue rising, Indonesian government has supported the development of cigarettes production. From excise taxes, government collected about Rp26 trillion in 2003 or 8.0% of total domestic revenues. Excise rate is ranging from maximum 26% for cigarette produced by small scale factory to maximum 40% for cigarette produced by large scale factory. Due this significant contributions to domestic revenues, Ministry of Finance and Ministry of Industry and Trade are very eager to support development of domestic tobacco and cigarette production.

Cigarette excise is one of the main sources of government income. Its contribution to total domestic revenues has been doubled during the last ten years from only 4% in 1994 to become 8% in 2003. In terms of nominal value, excise on tobacco increase more than 10 times from Rp2.6 trillion in 1994 to become 26.4 trillion in 2003. During the period of economic crises, cigarette consumption did not decrease, even increased. This makes excise tax on tobacco also increase substantially during the period (Table 25).

Table 25: Government Revenue from Excise on Tobacco, 1990-2003

Year	Excise on Tobacco (billion rupiah)	% Increase of Tobacco Excise Tax	Total Excise Revenues (billion rupiah)	% Share of Tobacco Excise Tax to Total	Total Gov. Revenues (billion rupiah)	% Share of Tobacco Excise Tax to Revenue
1990/91	1,713.8		1,799.8	95.22	42,193.0	4.06
1991/92	1,703.3	(0.61)	1,915.0	88.95	42,582.0	4.00
1992/93	2,116.4	24.25	2,241.6	94.41	48,862.6	4.33
1993/94	2,470.4	16.73	2,625.8	94.08	56,113.1	4.40
1994/95	2,647.5	7.17	3,153.3	83.96	66,418.0	3.99
1995/96	3,451.2	30.36	3,592.7	96.06	73,013.9	4.73
1996/97	4,060.5	17.65	4,262.8	95.25	87,603.3	4.64
1997/98	4,892.8	20.50	5,101.2	95.91	108,183.8	4.52
1998/99	7,459.4	52.46	7,973.9	93.55	152,869.5	4.88
1999/00	10,113.3	35.58	10,398.0	97.26	200,643.7	5.04
2000	13,768.5	36.14	14,885.1	92.50	205,335.5	6.71
2001	18,266.3	80.62	19,372.1	94.29	301,077.7	6.07
2002	23,084.0	26.37	25,286.1	91.29	305,151.2	7.56
2003	26,400.0	14.36	27,945.0	94.47	336,155.5	7.85

Source: Ministry of Health, 2004

Excise tax rate for machine-rolled clove cigarette produced by big industries is 20% to 40%, the same tax rate applied for machine-rolled big white cigarette. But for labor intensive hand-rolled clove cigarette is taxed by minimum 1% and maximum 22% (Table 26).

To increase revenues, government did not make any significant change in excise tax rate, but rather mostly emphasize on minimum retail price increase. This strategy is mostly as a result of cigarette industries lobby to the government, than other economic rationalization of the government it self.

Table 26: Government Regulation on Excise Tariff Structure

Government Regulation	SKM		SKT		SPM	
	Range of Excise	Retail Price Per Stick	Range of Excise	Retail Price Per Stick	Range of Excise	Retail Price Per Stick
228/KMK.05/1996	20-38%	Rp30-75	1-18%	Rp10-65	22-38%	Rp25-85
229/KMK.05/1996	20-36%	Rp30-80	2-16%	Rp20-60	20-38%	Rp25-75
91/KMK.05/1997	20-36%	Rp40-85	2-16%	Rp25-65	20-38%	Rp30-80
118/KMK.05/1998	20-36%	Rp140-225	2-16%	Rp80-150	20-38%	Rp30-125
124/KMK.05/1999	20-36%	Rp110-225	4-16%	Rp55-150	20-36%	Rp110-225
89/KMK.05/2000	28-40%	Rp120-250	12-20%	Rp65-165	28-40%	Rp70-150
453/KMK.05/2000	26-40%	Rp150-280	10-20%	Rp100-200	26-40%	Rp80-180
144/KMK.05/2001	26-40%	Rp170-305	4-20%	Rp125-230	26-40%	Rp90-195
383/KMK.04/2001	26-40%	Rp190-325	4-20%	Rp150-255	26-40%	Rp103-208
597/KMK.04/2001	20-34%	Rp270	0-14%	Rp175-225	20-34%	Rp150
121/KMK.04/2002	26-40%	Rp270	4-20%	Rp175-255	26-40%	Rp150
449/KMK.04/2002	26-40%	Rp340-400	4-22%	Rp200-340	26-40%	Rp200-270
537/KMK.04/2002	26-40%	Rp340-400	4-22%	Rp200-340	26-40%	Rp200-270

Source: Ministry of Health, 2004

VII. ANALYSIS

Import Tariff

AFTA is only applied for raw tobacco not for tobacco product including cigarette. Import duty for tobacco is 5% of all type that are imported from all countries. Plus 10% of value added tax and 2.5% of sales tax so that total taxes imposed for imported tobacco are 17.5%. Import tariff for cigarettes is 15% for all types that are imported from all countries including ASEAN countries. In addition to that, imported cigarette is also imposed 10% of value added tax so total taxes are 25%.

Price elasticity

Cigarette demand is inelastic, both in response to price changes and income changes. Price elasticity for cigarette demand by smokers from all income groups is less than one. At least five studies have been estimating the magnitude of the elasticity in Indonesia. The studies results are in the range of 0.35 (Djutahara, 2002) to 0.83 (Bird, 1999) for price elasticity and 0.33 (WHO-SEARO, 2002) to 0.76 (Adioetomo, 2001) for income elasticity. Moderate figure was 0.51 for price elasticity and 0.47 for income elasticity (De Beyer & Yureki, 2000). See Table 27.

Table 27: Price and Income Elasticity

Researcher/Publication	Price Elasticity	Income elasticity
1. Adioetomo, et al 2001	-0.61	0.76
2. De Beyer & Yureki 2000	-0.51	0.47
3. Djutaharta, et al 2002	-0.35	0.47
4. Bird, K, 1999	-0.83	0.43
5. WHO-SEARO, 2002	-0.46	0.33

Price elasticity for low income is more than twice higher than price elasticity for high income smokers (Table 28). This indicates that lower income smoker is relatively more sensitive to price changes compare with higher income group. This is very reasonable, since lower income smoker have been allocated their income more than 10% for cigarette and lower income smoker could more flexible to switch to cheaper cigarette.

Table 28: Price Elasticity by Income Group

By income group:	% price change	% change in Consumption
Higher income	10	3.1
Middle income	10	3.3
Low income	10	6.7
Total	10	6.1

Source: Adioetome, 2001

Price Determination

Domestic price of cigarette is not market determined, but based on government regulation that ask all cigarette factories to not sell their product below minimum retail price that determined by the government. The purpose of the intervention is to make excise tax revenues easy to calculate and to achieve government revenues target contributed by cigarette business.

Table 29 shows how excise tax is calculated and what percentage of margin that factory could receive from each pack of cigarette. Retail price is minimum price that is set up by government after getting input from cigarette factory and considering purchasing power of domestic smokers.

Distribution cost is consisting of distribution expenditure and advertisement. Both are under the control of cigarette factory. Most likely that the factory could gets another margin from these activities.

Table 29: Retail and Factory Price of Machine-rolled Clove Cigarettes, 2002

Items	Machine-rolled Clove cigarette (Rupiah)	Hand-rolled Clove cigarette (Rupiah)
1. Retail Price (RP)	5,900.0	6,500.0
2. Total taxes:	2,855.6	1,976.0
Excise tax (40%)	2,360.0	
Excise tax (22%)		1,430.0
PPN (8.4%)	495.6	546.0
3. Factory Price (FP)	4,440.0	5,796.0
% FP to RP	75.3	89.2
4. Distribution costs (DC)	1,460.0	704.0
% DC to RP	24.7	10.8
5. Factory revenue after taxes	1,584.4	3,820.0
% revenue to FP	35.7	65.9

Source: Indonesian Cigarette Association

VIII. LIKELY IMPACT

If import tariff decrease or is removed by AFTA, import price of tobacco goes down makes cost of production of cigarette also goes down. As a result, domestic price of cigarette become cheaper for smokers.

Since price of imported cigarette goes down, domestic smokers consume more imported cigarette. This makes demand for imported cigarettes increase and that more imported cigarettes are needed.

Consequences of the cheaper cigarette price are increased rate of smoking prevalence among young people and increased cigarette consumption. As a result, more people suffering from disease related to smoking. More portion of household expenditure should be allocated to hospital services and more years of life will lost among the youth.

This mechanism will take place if all the following assumptions have been fulfilled:

1. Share of imported cigarette and tobacco from ASEAN countries is high,
2. Share imported cigarette in domestic market and domestic consumption is high,
3. Price elasticity of cigarette demand is greater than 1
4. Elasticity of substitution between imported and domestic cigarette is greater than 1
5. Cigarette price is flexible and market structure is relatively competitive

However, the existing data and information have indicated that:

1. Share of imported cigarette to total domestic production or domestic supply is very low, it is only 0.15%.
2. Share of imported cigarette from ASEAN countries to total import is very low, it is only 0.63%.
3. Share of imported tobacco to total domestic production or domestic supply is 23%.
4. Share of imported tobacco from ASEAN countries to total import is only 10%.
5. Price elasticity of cigarette consumed (demand) by all income groups is less than 1, (0.51 – 0.61)
6. No data available yet, but based on the very small share of imported cigarette to total domestic demand, it is most likely that elasticity of substitution between imported and domestic cigar is less than 1.
7. Price is not flexible, minimum retail price is determined by government.
8. Tobacco contributed only 70% of total raw material, clove contributed 30%. Clove is domestically produced and some imported from non-ASEAN countries
9. Indonesian smoker are mostly smoke domestic produced clove cigarette. 88% of cigarette consumed is clove cigarette.

Based on above existing data, tariff removal through AFTA implementation, will not have any significant impact on domestic cigarette price and also on increase in cigarette demand and consumption in Indonesia.

IX. SIMULATION

This simulation is not based on tariff removal effect, but based on assumption that any effort by the government to try to push cigarette price down by say 10%, the implication will be seriously unfavorable both for population and for the economy. The based year of this simulation is 2001.

1. Disability Adjusted Life Years (DALY)

With demand-price elasticity of 0.61, this implied that if price of cigarette decreased by 10%, number of cigarette consumed by smokers will increase by 6.1%. The figures in Table 30 are the increase in cigarette consumed by smokers within each age category if domestic cigarette price goes down by 10%. In average, each smoker will increase his consumption as much as 246 sticks during the year of simulation.

Table 30: Increase in Number of Cigarettes Consumed by Per Adult Smokers

Age Category Year	Daily consumpti on in 2001 (stick)	Annual consumption in 2001 (stick)	Consumption Increase if price down by 10 %
14 – 10	8.7	3,132	191.05
15 - 19	8.9	3,204	195.44
20 - 24	10.2	3,672	223.99
25 - 29	11.2	4,032	245.95
30 - 34	11.7	4,212	256.93
35 - 39	11.8	4,248	259.13
40 - 44	12.0	4,320	263.52
45 - 49	12.0	4,320	263.52
50 – 54	11.5	4,154	253.42
55 – 59	11.4	4,104	250.34
60 – 64	10.5	3,780	230.58
65 – 69	10.3	3,708	226.19
70 – 74	9.8	3,528	215.21
75+	9.4	3,384	206.42
Average	11.2	4,032	245.95

Source: Simulation results

Total number of additional cigarette consumed by adult smokers (35-69 years old) is 1,726.7 stick. Based on this figure, DALY lost can be calculated. DALY lost in Indonesia will be 4.678 years. This will be a very significant negative impact to human resources capability and the national productivity.

Table 31: Additional DALY Lost

Cigarette consumption increase By adult	Lung cancer Mortality per 100000 Adult	Related tobacco	DALY Lost
1,746.70	43	130	4,678

Source: Simulation results

2. Mortality

This section attempts to analyze the additional lung cancer mortality that will follow the decrease in cigarette demand encouraged by the hypothetical 10% decrease in the prices of tobacco and tobacco products. As in Sarntisart (2005), the analysis follows the following four steps¹.

Firstly, the additional number of cigarettes consumed per an adult (ΔQ_{pc}) smoker will be calculated. Based on the available statistics, the total number of smokers aged between 35 and 69 years old was 22,798.6 in 2001. As already mentioned in the previous paragraphs, the 10% decrease in prices will lead to an increase in demand for cigarettes by around 246 sticks per one smoker, ΔQ_{pc} equals 246.

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 being smoked, there will be an additional 0.0248 mortality per 100,000 adults aged 35-69 years old after 20 years. Thus, because of the price decrease, there will be an additional 6.448 lung cancer mortality per 100,000 adults in 2021.

Thirdly, the total additional tobacco 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 Indonesia. Thus, there will be at least 10.3168 additional tobacco related deaths per 100,000 adult population. Based on the total number of population of 231.328 millions in 2001 of which around 37% was adult population aged between 35-69 years, the total additional number of tobacco related deaths would be around 8,831 in the year 2021.

3. Increase in Health Care Expenditure

Not only the number of cigarette consumed increase if the cigarette price goes down, but also the number of smokers. It is estimated that if price decrease by 10%, number of

¹ The authors had discussion with and suggestions from Dr Hana Ross and Dr Richard Peck (University of Illinois at Chicago (UIC) during the Consultative Meeting Cum Training Workshop organized by the Southeast Asia Tobacco Control Alliance (SEATCA) on 24-25 July 2004 in Kuala Lumpur, Malaysia.

Indonesians who become new smokers will increase as much as 1.97 million that consist of 1.3 million under 35 (youth group of population) and 0.68 million above 35 (adult group) (Table 32).

Due to that, total costs needed for long term health care in Indonesia will increase as much as US\$21.0 million or Rp189 billion.

Table 32: New Smokers and Long Term Health Care

Description	Additional Number of Smokers
Male smokers	
Youth	1,270,583
Adult	664,890
Female smokers	
Youth	13,236
Adult	19,067
Male and Female	
Youth	1,283,819
Adult	683,957
Long Term Health Care (US\$ million)	
Youth	15,405.8
Adult	5,642.6
Total	21,048.5

Source: Simulation results

4. Cost / Benefit

It is expected that cigarette producers will get more benefit from any trade policy that could make price of cigarette cheaper in domestic market. The benefit is expected to be coming from the increase in demand for cigarettes. However, since the demand-price elasticity is less than one, the increase in demand is not high enough to get additional revenues for the producers. As a result, lowering price policy is creating loss instead of profit to the producers.

Table 33 provide simulation results that if price of cigarette decreased by 10%, demand for cigarettes increase by as much as 11.2 billion sticks and producer will get a loss of as much as Rp2.4 billion (US\$ 240,000).

Table 33: Cost and Benefit Calculation

Estimation of benefit for industries	Number of sticks demanded (in million)	Values (in million Rupiah)
Consumption before price down	184,253	53,618
Consumption after price down	195,492	51,219
Increase / decrease	11,239	(2,399)

Source: Simulation results

X. CONCLUSION

1. Impact of AFTA implementation on Indonesian cigarette price is insignificant due to; (a) import shares of both cigarettes and tobacco to total domestic consumption are very small; (b) imported cigarette are only white cigarettes; (c) Indonesian smokers consume clove cigarettes mostly; (d) demand-price elasticity is less than one.
2. In any case, if the government policy could try to push to decrease cigarette price, say for example 10%, the implication will be: (a) cigarette consumption per adult will increase by 1.727 sticks.; (b) DALY lost will be 4.678; (c) mortality potential will be 8,831; (d) long term health care cost will be US\$21 billion; and (e) cost to the producers will be Rp2.4 billion (US\$240,000).
3. Due to the above implications, the Indonesian government should adopt policies that should increase retail cigarette price. This could be done through increasing excise taxes, increase tariff, and to impose licensing for tobacco advertisements. With these proposed policies, the government will have a substantial increase in its domestic revenues.

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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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