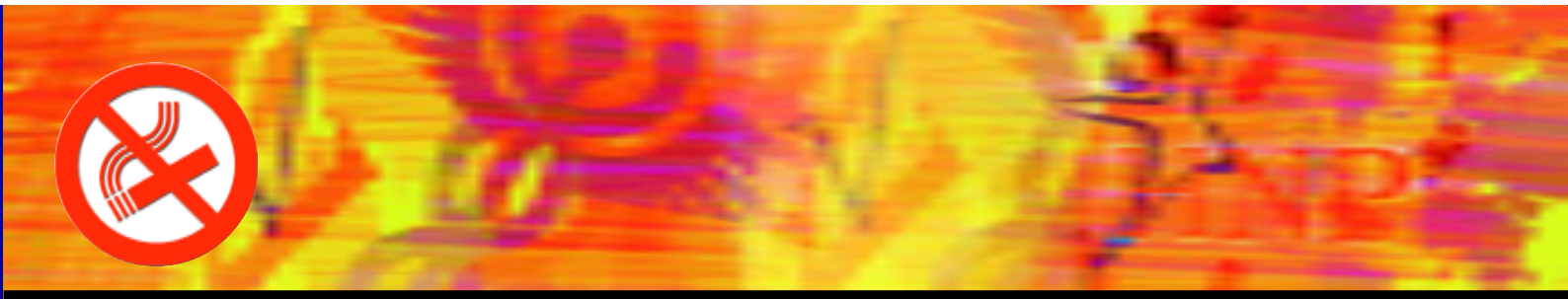

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Economics of Tobacco Control Paper No. 14

Tobacco Economics in Myanmar

Nyo Nyo Kyaing

October 2003

Tobacco Free Initiative
World Health Organization

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THE WORLD BANK

TOBACCO ECONOMICS IN MYANMAR

NYO NYO KYAING

OCTOBER 2003

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Health, Nutrition and Population (HNP) Discussion Paper

ECONOMICS OF TOBACCO CONTROL PAPER NO. 14

Tobacco Economics in Myanmar

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Paper prepared for the World Health Organization Regional Office for South-East Asia. Presented at a meeting on the Economics of Tobacco Control in the South-East Asia Region, in Jakarta, Indonesia, December 3-4, 2003

Abstract: This study is based on different data sources but mainly on the Myanmar Study on Tobacco Economics 2001. Surveys of smoking prevalence in Myanmar show varying results, but most suggest that over 50% of the population over the age of 15 smoke, with figures being considerably higher among men than women. Cheroots are the most commonly used tobacco product (49% of all tobacco products consumed). Cheroots are produced locally either by cottage industries or by domestic companies. Recent trends in the price of tobacco products show that the real prices of all tobacco products have been declining. Econometric estimation shows that smokers are very sensitive to an increase in prices (price elasticity of demand is –1.62). In order effectively to reduce tobacco consumption, real prices of tobacco products need to be increased through heavier taxation, and other proven tobacco control measures need to be strengthened.

Keywords: Myanmar, tobacco, tobacco production, tobacco products, smoking, smoking prevalence, tobacco use, cigarettes, cheroots, tobacco prices, taxation, price elasticity, government revenue, tobacco control, tobacco attributable health care costs, health burden, mortality and morbidity.

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ABBREVIATIONS

COAD	Chronic Obstructive Airway Disease
CSO	Central Statistical Organization
CPI	Consumer price index
CVA	Cardiovascular accident
DOH	Department of Health
DHP	Department of Health Planning
FY	Fiscal year (1 April to 31 March)
GDP	Gross domestic product
PAR	Population attributable risk
RHC	Rural health centre
RR	Relative risk

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The trend in tobacco consumption in many developing countries is worrying. This is not only because of the millions of deaths and related suffering that it involves, but also due to its negative impact on economic development. Experiences from many countries have shown that effective tobacco control measures can be taken at low cost that could bring net economic gains for the country. Proven, cost-effective measures include: public education and information, a ban on tobacco advertising, tobacco smuggling deterrence and increased tobacco taxes. All these measures can be incorporated in national anti-tobacco legislation. Studies and research from countries around the world have revealed that increases in tax on tobacco products is perhaps the most effective tool for tobacco control, and is especially effective in reducing tobacco use among young people and people with low incomes. Higher tobacco taxes can help a country in a number of ways – by generating additional revenue, reducing tobacco use leading to less tobacco-related morbidity and mortality and reduced expenditure on treatment of tobacco-related diseases.

Effective collaboration between health and finance ministries is essential to address appropriately the economic and fiscal aspects of tobacco control. Such collaboration could ensure improved health for millions of people by protecting them and their families from the harmful effects of tobacco use.

I am confident that the findings of the study initiated by World Health Organization and World Bank will encourage the policy makers, in particular, in the health and finance ministries, to take appropriate and coordinated action for tobacco control.

10 October, 2003

Dr Uton Muchtar Rafei
Regional Director
World Health Organization
Office for South East Asia

FOREWORD

In 1999, the World Bank published *Curbing the epidemic: governments and the economics of tobacco control*, which summarizes the trends in global tobacco use and the resulting immense and growing burden of disease and premature death. By 1999, there were already 4 million deaths from tobacco each year. This number is projected to grow to 10 million per year by 2030, given present trends in tobacco consumption. Already about half of these deaths are in high-income countries, but recent and continued increases in tobacco use in the developing world is causing the tobacco-related burden to shift increasingly to low- and middle-income countries. By 2030, seven of every ten tobacco-attributable deaths will be in developing countries. *Curbing the epidemic* also summarizes the evidence on the policies and interventions that have proved to be effective and cost-effective in reducing tobacco use in countries around the world.

Raising taxes to increase the price of tobacco products is the most effective way to reduce tobacco use and the single most cost-effective intervention. It is also the most effective way to persuade young people to quit or not take up smoking. This is because young people, like others with low incomes, tend to be highly sensitive to price increases.

Why are these proven cost-effective tobacco control measures not adopted or implemented more strongly by governments? Many governments hesitate to act decisively to reduce tobacco use because they fear that tax increases and other tobacco control measures might harm the economy by reducing the economic benefits their country gains from growing, processing, manufacturing, exporting and taxing tobacco. The argument that tobacco contributes revenues, jobs and incomes is a formidable barrier to tobacco control in many countries. Are these fears supported by the facts?

In fact, these fears turn out to be largely unfounded when the data and evidence on the economics of tobacco and tobacco control are examined. A team of about 30 internationally recognized experts in economics, epidemiology and other relevant disciplines who contributed to the analysis presented in *Curbing the epidemic* reviewed a large body of existing evidence. The team concluded that in most countries tobacco control would not lead to a net loss of jobs and could, in many circumstances actually generate new jobs. Tax increases would increase (not decrease) total tax revenues, even if cigarette smuggling increased to some extent. Furthermore, the evidence shows that cigarette smuggling is caused at least as much by general corruption as by high tobacco product tax and price differentials. The team recommended that governments not forego the benefits of tobacco tax increases because they feared the possible impact on smuggling. Rather, they should act to deter, detect and punish smuggling.

Much of the evidence presented and summarized in *Curbing the epidemic* was from high-income countries. However, the main battleground against tobacco use is now in low- and middle-income countries. If needless disease and millions of premature deaths are to be prevented, then it is crucial that developing counties raise tobacco taxes, introduce comprehensive bans on advertising and promotion of tobacco products, ban smoking in

public places, inform their citizens about the harm that tobacco causes and the benefits of quitting, and provide advice and support to help people quit.

In talking to policy-makers in developing countries, it became clear there was a great need for country-specific analytic work to provide a basis for policy making within a sound economic framework. The World Bank and WHO's Tobacco Free Initiative (as well as several other organizations, acting in partnership or independently) began to commission and support analysis of the economics of tobacco and tobacco control in many countries around the world.

The report presented in this paper makes a valuable contribution to our understanding of the issues and likely economic impact of tobacco control. Our hope is that the information, analysis and recommendations contained herein will prove helpful to policy-makers and result in stronger policies that will reduce the unnecessary harm caused by tobacco use.

Joy de Beyer

Tobacco Control Coordinator
Health, Nutrition and Population
World Bank

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Many thanks go to the responsible persons from the Internal Revenue Department and Customs Department (Ministry of Finance and Revenue), Directorate of Commerce (Ministry of Commerce), Labour Department and Social Security Board (Ministry of Labour), Myanmar Foodstuff Industries (Ministry of Industry 1) and Central Statistical Organization (Ministry of Planning and Economic Development) for their invaluable information and help.

I am very grateful to Dr U Myint Swe and the staff of the Institutes of Economics for their help in analysing the economic trends and estimates, and to Dr Ko Ko Zaw of the Ministry of Health, Department of Medical Research (Lower Myanmar), and Dr Ko Ko Naing, Deputy Divisional Health Director, Kachin State, Department of Health, for their invaluable work on the household survey data. I also owe immense gratitude to John Sinclair from the World Bank and Emmanuel Guindon and Anne-Marie Perucic from WHO's Tobacco Free Initiative for their technical assistance in finalizing the paper.

I am also indebted to the data collection team for the household survey and small-scale survey of the cheroot industry in Bago, who managed the survey in time for the paper. Last but not least, my heartfelt thanks go to my family for their understanding and patience throughout the study.

The author is also grateful to the World Bank for publishing the report as an HNP Discussion Paper.

SUMMARY

General economic situation

The population of Myanmar in 2000 was estimated at 49 million. The growth rate of GDP accelerated from 6% during 1996-1998, to an average of almost 12% since 1999. In 1996–97, over 11 million (63%) of the work force of nearly 18 million people were engaged in the agricultural sector. Labour force participation was more than 75% for males and more than 46% for females. The unemployment rate was fairly stable at about 4%.

Tobacco growing and the tobacco industry in Myanmar

There is no information available for estimating the number of people engaged nationally in tobacco cultivation and production. In a household survey conducted in 2001 for this study, only 0.1% of the sampled households were engaged in agriculture related to tobacco and 0.3% earned daily wages from tobacco.

Most of the tobacco industry in Myanmar comprises factories and cottage industries that produce cheroots. Two state-owned factories produce cigarettes, one in Yangon, the other in Pakokku, in the central plains. Production of cigarettes by these factories has fluctuated considerably, declining from 1985–86 to 1993–94 (with the exception of 1990-91) and increasing from 1994–95 onwards. With the introduction of foreign brands at cheaper prices, cigarettes produced by the state-owned factories are becoming less popular. Cheroot production also declined between 1988 and 1995 and is thought to have continued to decline, although no data are available for years since 1995.

Imports of cigarettes and raw tobacco products are increasing. There are no exports of cigarettes, cheroots, cigars or any other tobacco products from Myanmar.

Tobacco advertisements have been banned on radio and television from 1999, and recently were prohibited in all forms of electronic and print media, and on billboards. Sports sponsorship by tobacco companies has been restricted recently also. A draft law on control of tobacco products seeks to prohibit all forms of tobacco advertisement.

Smoking prevalence and tobacco use

Several surveys with limited coverage provide smoking prevalence data, but there is no nationally representative survey. Surveys in 1999 and 2000 found male prevalence of 60% and more. The 2001 survey done for this study recorded much lower male of 31%. Survey findings on female prevalence differ even more widely, finding rates from 7% to over 50%. The most common form of tobacco in Myanmar is cheroots, in both urban and rural areas. Cigarettes are smoked more in urban areas and by adolescents and young people. The median consumption of tobacco (sticks) per day is 4 for males and 3 for females.

Prices, taxes and demand

Unlike the trend shown in nominal prices, the real prices of all tobacco products have fallen dramatically since 1987/1988. This is especially the case for cigarettes. Cheroot and cigar prices fell by half in real terms in the late 1980s, and have fluctuated around that real level since 1990.

All domestically made tobacco products are exempt from all commercial taxes up to an annual threshold of kyats 240 000. Sales above this threshold are taxed at a rate of 75% of the tax-inclusive retail sales price for cigarettes, 10% for cheroots, 20% for cigars and pipes, and 25% for betel preparations and pipe tobacco. No tax is charged on Virginia tobacco and cured tobacco produced locally.

Tobacco products may only be imported for sale in duty free shops and hotels. Customs imposes a tariff of 30% on the CIF value of imported cigarettes (reduced from 300% in 1997). Customs duty is also charged on raw material under the heading of cut tobacco, which includes tobacco leaf, paper, filter and packaging, and even ink.
Imported cigarette sales exceeding kyats 240 000 attract a tax of 7.5% of the landed cost, which includes the customs tariff plus the CIF value of the imported cigarettes.

Profit and income taxes are applied only to locally manufactured tobacco products. There are no additional taxes such as a health tax levied on the tobacco industry.

Tobacco revenue only accounts for 1.4% of total government revenue.

Household expenditure on tobacco averaged over all households (including those who purchase no tobacco products at all) was 2.7% of total household expenditure, and considerably higher among lower income groups (4%) than higher income groups (less than 2%). It was higher in urban areas than in rural areas. These percentages are approximately double this level for households that have non-zero tobacco product expenditures.

The estimated price elasticity of demand, using the data from the 2001 survey, was very high and significant; indicating that for each 10% increase in prices of tobacco products, consumption would decrease by about 16%. The analysis suggests that increases in tobacco product prices would have a stronger effect on the decision to quit smoking than in reducing the quantity of tobacco consumed by smokers.

Individuals from the highest income group reacted less to increases in price than individuals from lower income groups. Younger people were also more price-sensitive.

Health consequences of tobacco control

Although data are incomplete (since they exclude the growing private sector), there appears to be an increasing trend in admissions for cancers of the oesophagus, stomach,

lungs and larynx and also an increase in admissions due to tuberculosis of the respiratory system and stroke.

The smoking-attributable disease burden and direct medical costs borne by patients were estimated. Direct medical costs (average cost of treatment) due to key tobacco-attributable diseases was estimated to be kyats 85.3 million for admissions and kyats 37.9 million for outpatient cases in 1999.

Policy recommendations

Taxes increases should be used to increase of price of all tobacco products by at least 5% in excess of overall inflation every year, as recommended by the World Health Organization. Special attention should be given to cheroots as they are the most widely used, the cheapest and most lightly taxed.

All cigarette enterprises, cheroot manufacturers, and wholesale and retail shops selling any form of tobacco should be licensed, and all employees registered under the social security scheme.

A system should be established for regular reporting by the private health care sector to the Ministry of Health.

In line with the Myanmar National Tobacco Control Policy and Plan of Action:

1. legislation should be enacted and enforced to designate schools, workplaces and public places as tobacco free; to put strong, large warning labels on all forms of tobacco products; and to forbid access of minors under the age of 18 to all forms of tobacco;

2. health promotion should be enhanced using mass media and interpersonal communication (especially by health care professionals) on the dangers of tobacco use and the benefits of quitting.

3. Research activities to obtain relevant information and data on smoking prevalence, behavioural patterns, health and socio-economic impacts of smoking should be encouraged.

1. GENERAL SITUATION OF THE COUNTRY

1.1. Sociodemographic characteristics

Myanmar, located in southeast Asia, has common international borders with Thailand and Laos in the east, China in the north and northeast, India in the northwest and Bangladesh in the west. Myanmar covers an area of 676 578 km^2 of the Indo-China peninsular. It lies between latitudes 9°32' N and 28°31' N and longitudes 92°10' E and 101°11' E. About 2800 kilometres of coastline is bounded on the west by the Bay of Bengal and in the south by the Andaman Sea.

Administratively, the country is divided into seven states and seven divisions; these are further divided into 52 districts, 324 townships, 13 762 village tracts and 65 212 villages. Geographically, the country can be divided into a delta region and a central plain surrounded by mountains. Myanmar enjoys a tropical climate with three distinct seasons: rainy, cold and hot.

The population of Myanmar in 1999 was estimated at 48.12 million and in 2000 at 49.01 million, with an annual growth rate of 1.84%. The rate of population growth has declined from 1.96% in 1992–93 to 1.84% in 1997–98 and slightly increased to 1.87% in 2000–2001. Population growth from 1980 to 2000 is shown in Appendix 1, using estimates by the population department of the Ministry of Immigration and Central Statistical Organization. Estimates for 1985–93 are based on a 1983 population census. Estimates for the subsequent period are based on the 1983 population census as well as on a 1991 Myanmar population change and fertility survey.

1.2. GDP and consumer price index

Gross domestic product (GDP) in fiscal year 1999–2000 was kyats 88 134.1 million (at 1985–86 constant prices) and kyats 44 579 million at current prices. The growth rate of GDP in 1999–2000 was 8.7%. The provisional actual per capita GDP in fiscal year 1999–2000 was kyats 1794 (at 1985–86 constant prices).[1]

Table 1.1 shows the GDP growth, per capita GDP growth rate, per capita consumption and per capita investment for Myanmar from 1985–86 to 1999–2000 (provisional actual).

[1] Source: Myanmar Central Statistical Organization, *Statistical year book 2000* (Yangon, 2001), Tables 14.04 and 14.05, pp. 304–5.

Table 1.1. Annual growth rates of gross domestic product, consumption and investment, Myanmar, 1985–86 to 1999–2000 (1985-86 constant prices)

Particular	1985–86 (%)	1990–91 (%)	1992–93 (%)	1993–94 (%)	1994–95 (%)	1995–96 (%)	1996–97 (%)	1997–98 (%)	1998–99 (%)	1999–2000 pa (%)
GDP growth rate	2.9	2.8	9.7	6.0	7.5	6.9	6.4	5.7	5.8	10.9
Per capita GDP growth rate	0.9	0.9	7.6	4.2	5.5	5.0	4.5	3.8	1.9	8.7
Per capita consumption growth rate	0.2	–1.0	6.1	5.4	0.6	4.4	0.4	0.3.	–3.2	3.1
Per capita investment growth rate	–0.4	34.8	–1.4	8.7	21.5	25.7	20.4	6.2	12.3	7.1

Source: Myanmar Central Statistical Organization, *Statistical year book 2000* (Yangon, 2001), Table 14.05, p. 305.

The composition of GDP in fiscal year 1997–98 shows that agriculture accounted for the major portion of GDP (34.4%; Table 1.2).

Table 1.2. Composition of gross domestic product, Myanmar, 1999–2000

Sector	Share (%)
Agriculture	34.4
Livestock and fishery	7.9
Forestry	1.0
Energy	0.4
Mining	1.7
Processing and manufacturing (industry)	9.4
Power	1.1
Construction	4.6
Transportation	4.3
Communications	1.9
Financial institutions	2.0
Social and administrative services	6.5
Rentals and other services	4.0
Trade	20.8
Total	100.0

Source: Myanmar Central Statistical Organization, *Statistical year book 2000*, (Yangon, 2001), Tables 14.04 and 14.05, pp. 304–5.

The increase in GDP, value of import and export, total consumption, total investment, per capita GDP, per capita consumption, per capita investment and net output per worker over the years can be seen in Table 1.3.

Table 1.3. National production, consumption and investment, Myanmar, 1988–89 to 1999–2000 (millions kyats at 1985–86 constant producer's prices)

	1988–89	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–2000
GDP	47 141	48 883	50 259	49 933	54 756	58 064	62 406	66 742	71 042	75 123	79 460	88 134
Value of imports (c.i.f.)	3 109	2 846	4 212	3 847	3 829	5 431	5 106	6 117	5 663	5 846	6 859	6 111
Value of exports (f.o.b.)	2 762	3 527	4 038	3 925	5 381	6 229	6 528	5 089	5 608	63 340	7894	9 782
Total consumption	41 065	41 825	42 199	40 315	43 542	46 795	47 955	51 027	52 181	53 178	53 517	56 243
Total investment	5 399	6 452	8852	9 187	9 249	10 234	12 640	16 221	19 887	21 196	25 036	27 348
Per capita GDP	1 200	1 221	1 232	1 202	1 293	1 347	1 421	1 492	1 559	1 602	1 650	1 794
Per capita consumption	1 045	1 045	1 035	970	1 029	1 085	1 092	1 140	1 145	1 146	1 111	1 145
Per capita investment	137	161	217	221	218	237	288	362	436	457	520	557
Net output per worker	3 113	3 152	3 178	3 119	3 337	3 453	3 622	3 795	3 955	4 049	4 158	4 512

Source: Myanmar Central Statistical Organization, *Statistical year book 1998*, (Yangon, 1999), Table 14.04, p. 300; Myanmar Central Statistical Organization, *Statistical year book 2000* (Yangon, 2001), Table 14.04, p. 304.

The general consumer price index (CPI), rate of inflation (annual change in CPI) and CPI for tobacco at Yangon from fiscal year 1988–89 to 2000–2001 are shown in Table 1.4.

The annual change in CPI ranged between 21 and 49 and dropped in 1999–2000. The CPI for tobacco gradually increases over the years and rose markedly after 1997–98. However, the tobacco CPI remains well below the general CPI, indicating that tobacco products became much more affordable relative to other goods and services between 1988 and 2000.

Table 1.4. General consumer price index, Myanmar, and consumer price index for tobacco at Yangon, 1988–89 to 2000–2001 (base year 1986 = 100)

Year	General consumer price index	CPI for tobacco (Yangon)	Rate of inflation (%)
1988–89	155.00	152.00	22.50
1989–90	191.73	153.30	23.70
1990–91	233.73	167.14	21.91
1991–92	301.80	192.80	29.12
1992–93	369.09	243.89	22.30
1993–94	492.99	273.20	33.57
1994–95	603.66	296.75	22.45
1995–96	735.51	308.21	21.84
1996–97	882.81	354.50	20.03
1997–98	1182.10	705.88	33.90
1998–99	1762.22	1040.10	49.0
1999–2000	1963.47	1099.10	11.4

Source: Teruko Saito, Lee Kin Kiong, *Statistics on the Burmese economy. The 19th and 20th centuries* (Institute of Southeast Asia Studies, Singapore, 1999) Table VIII-10, p. 210; Myanmar Central Statistical Organization, *Statistical year book 1998* (Yangon, 1999), Table 11.03, p 224; Myanmar Central Statistical Organization, *Selected monthly economic indicators, May–June 2000* (Yangon, 2000), Table 15, p. 38.

1.3. Employment by economic sector

About 50% of Myanmar is forested. There are 80 300 km^2 of arable land. In 1996–97, of the total 17.96 million employed, 11.38 million or 63.4% were engaged in the agricultural sector—the largest work force among the productive sectors. The processing and manufacturing sector employed 1.57 million or 8.8% and the remaining productive sectors, comprising mining, power and construction, employed 0.53 million or 3.0%. Service sectors such as transport and communications, social services, administration and other services employed 1.88 million or 10.5%, and the trade sector employed 1.75 million or 9.7% (see Appendix 2, Table A2.1). Labour force participation was more than 75% for males and more than 46% for females. The unemployment rate was more or less stable at about 4% (see Appendix 2, Table A2.2).

The Myanmar Department of Labour of the Ministry of Labour conducted a labour force survey in 1990. According to this survey, more than 56% of the employed population

were engaged in agriculture, about 15% were engaged in wholesale/retail/trade/hotels and restaurants, and 11% were engaged in manufacturing (see Appendix 2, Table A2.3).

1.4. Trade

Myanmar believes in the concept of free trade. It has pledged to follow a market-oriented economic system and is a member of the World Trade Organization.

The major trading partners of Myanmar are China, Singapore, Japan, Thailand, India and Malaysia; countries belonging to European Union form a second group of important trading partners. Since 1988, the economic system has been in transition from a centrally planned system to a market-oriented economic system. As a result, the role of the private sector has developed considerably. Agriculture produce such as rice, pulses, maize, animal feed; wood products such as teak, hardwood, sawed wood; metal goods; and jewellery have emerged as major export items.

Laws, procedures and rules have been adopted to facilitate the economic system, allowing state economic enterprises to form joint ventures with local and foreign entrepreneurs, and private entrepreneurs to form partnerships and limited companies, modifying export and import procedures as and when necessary. Due to extensive participation of private entrepreneurs in economic activities in line with the market economy, the market has become more liberal.

2. DESCRIPTION OF THE TOBACCO MARKET

2.1. The performance of the tobacco industry

Tobacco companies (public and private)

The majority of the tobacco industry in Myanmar is made up of factories and cottage industries that produce cheroots, which are very similar to *bidi*.

Data for the cottage industries available for five years between 1953–54 and 1962–63 are presented below in Table 2.1 and data for the last decade of the 20th century for cheroot industries covered by the social welfare system are shown in Table 2.2. The social welfare system covers industries that employ a minimum of five people. It covers only 75 of the 324 townships in the country.

In Table 2.1, the number of employees is shown, but in Table 2.2 only the number of industries, because there was no record kept of the number of employees working in those industries.

Table 2.1. Number of tobacco factories, home industries and employees, Myanmar, 1953–54 to 1962–63

	1953–54	1958–59	1959–60	1961–62	1962–63
Factories and home industries	550	298	283	342	262
Employees	18 343	11 329	11 365	14 061	12 038

Source: Teruko Saito, Lee Kin Kiong, *Statistics on the Burmese economy. The 19th and 20th centuries* (Institute of Southeast Asia Studies, Singapore, 1999) Table IV-5, p. 133.

Table 2.2. Number of cheroot industries covered by the social welfare system in 75 townships, Myanmar, 1989–90 to 2000–2001

Year	Number of cheroot industries
1989–90	1211
1990–91	1121
1991–92	1139
1992–93	1137
1993–94	1124
1994–95	1110
1995–96	1107
1996–97	1008
1997–98	912
1998–99	867
1999–2000	915
2000–01	940

Source: Myanmar Department of Labour, official documents, 2001.

Employment and average wages

Data on tobacco employment at the national level are not available as the Ministry of Labour does not collect data on tobacco employment for the whole country. Tobacco employment at the national level should include estimates of the actual number of people engaged in tobacco cultivation, manufacturing and processing, wholesale and retail, etc. as well as estimates of full-time equivalents for part-time workers.

There is no information available from which to estimate the number of people engaged in tobacco cultivation. From a household survey conducted in five townships for this study it was found that only about 0.1% of the sampled households were engaged in agriculture related to tobacco and about 0.3% earned daily wages from tobacco. The number of people employed at state-owned cigarette factories was 1690 in 2000. There was no information on people employed in private domestic companies that produced cigarettes with imported raw material.

The data in Table 2.2 can be used to estimate a lower bound for employment in cheroot factories. As the minimum number of employees in a cheroot factory under the social

welfare system is five, the number of employees in the cheroot industry in 2000 in the 75 townships covered (roughly one-quarter of the 324 townships) is at least 5 × 940 = 4700. If these 74 townships are representative of the country as a whole, then there would be at least four times this, or about 19 000 people working in the cheroot industry throughout the country. But two factors should be taken into account: not all the townships in the country had cheroot factories, number of factories should be multiplied by the (unknown) average number of employees (not the minimum), and some estimate would be needed of employment in smaller cheroot factories not covered in the social welfare system.

During 1996–97, the Department of Labour collected data on the number of employees working in the cheroot industry in seven states and divisions. There are 14 states and divisions in Myanmar, hence the information covered only half of the country. (Table 2.3)

Apart from the possibility that the cheroot factories did not register all those who were employed on a daily wage or salary, most factories hired women who took the material to their homes to roll. These women were paid per 1000 cheroots rolled and were not registered as employees. It is estimated that they make up approximately 60% of the workforce engaged in the tobacco industry.

Due to all the above facts, national data on tobacco employment in Myanmar cannot be compiled currently. A system to compile information on tobacco employment should be introduced.

Table 2.3. Number of employees at the cheroot factories at seven states and divisions, 1997

State/division	Male employees	Female employees	Total employees
Yangon	12	342	354
Ayeyarwady	13	284	297
Bago	100	624	724
Mandalay	55	695	750
Sagaing	18	292	310
Mon	6	58	64
Rakhine	1	8	9
Total	205	2303	2508

Source: Department of Labour, official documents, 1997.

Most of the employees in the cottage industries are paid daily on a piece-rate basis, depending on the number of cheroots rolled at the end of the day. Average wages for the past few years vary from kyats 180 to kyats 250 per 1000 cheroots. Wages may differ slightly between one factory and another depending on the popularity of the brand. Usually employees (mostly women) roll between 800 and 1000 cheroots a day, earning between kyats 150 and kyats 250 daily.[2]

[2] Small-scale survey on cheroot industries, Bago, 2001 conducted for this study. Two small-scale surveys were conducted for this study: a small-scale survey on cheroot industries and a household survey on tobacco consumption, agriculture and expenditure.

A skilled manager earns between kyats 10 000 and kyats 20 000 monthly; monthly salary for skilled employees engaged in quality control activities in the production of cheroots ranged from kyats 6000 to kyats 8000 in 2001.[1]

Employment in the two state-owned factories and average wages (salaries) in the 1990s are shown in Table 2.4. Apart from salaries, government employees receive subsidies on rice, electricity, gas, etc., and in most cases subsidized accommodation. Salaries, subsidies, fringe benefits and facilities for the employees of the state-owned cigarette factories are similar to those of other government employees.

Table 2.4. Employment in state-owned cigarette factories and average wages, Myanmar, 1989–2000

Year	Number employed					Average monthly salary	
	Cigarette Factory 1		Cigarette Factory 2		Total	Current kyats*	2000 kyats
	Full time	Part-time	Full time	Part-time			
1989	647	–	630	5	1282	900	10 748
1990	462	–	611	45	1118	900	8 817
1991	778	–	603	78	1459	900	6 830
1992	610	3	558	171	1342	900	5 584
1993	665	67	520	184	1436	1000	4 644
1994	674	75	501	213	1463	1000	3 794
1995	279	8	613	108	1008	1000	2 944
1996	403	6	659	238	1306	1000	2 453
1997	683	122	651	368	1823	1000	1 832
1998	684	140	650	285	1759	1000	1 229
1999	632	140	634	348	1754	1000	1 103
2000	643	115	605	327	1690	4800	4 800

Source: Ministry of Industry: Cigarette Factory 1, Yangon, and Cigarette Factory 2, Pakokku, 2001.
The government increased the nominal monthly salary three times, in 1981, 1989 and 2000. In 2000 the salary was increased almost four times.

2.2. Tobacco production

Production of cigarettes

There are two state-owned factories that have been producing cigarettes for decades, one in Yangon, the other in Pakokku, in the central plains of Myanmar. The numbers of cigarettes produced by these state-owned factories are shown below in Tables 2.5, 2.6 and 2.7. Table 2.5 shows the total number of cigarettes produced by these factories from fiscal

year 1980–81 to 1999–2000. It shows that the production of cigarettes by these factories fluctuated considerably, declining from 1985–86 to 1993–94 (with the exception of 1990-91) and increasing from 1994–95 onwards.

Table 2.5. Cigarette production by state-owned factories, Myanmar, 1980–81 to 1999–2000

Year	Production (millions)
1980–81	2734
1985–86	3236
1986–87	1574
1987–88	553
1988–89	398
1989–90	629
1990–91	1059
1991–92	507
1992–93	410
1993–94	341
1994–95	542
1995–96	853
1996–97	1965
1997–98	2116
1998–99	2009
1999–2000	2502

Source: Myanmar Central Statistical Organization, statistical year books 1995, 1997, 1998; Myanmar Central Statistical Organization, *Selected monthly indicators May–June, 2000* (Yangon, 2000).

Table 2.6 shows cigarettes produced by Cigarette Factory 1 from fiscal year 1988–89 to 1999–2000. The factory is located in Yangon and is under the administration of Ministry of Industry 1.[3]

Table 2.6. Cigarette production by Cigarette Factory 1, 1988–89 to 1999–2000

Year	*Duya* and *Lucky* (million cigarettes)	Year	*Duya* and *Lucky* (million cigarettes)
1988–89	151	1994–95	1014
1989–90	235	1995–96	923
1990–91	552	1996–97	939
1991–92	423	1997–98	980
1992–93	606	1998–99	961
1993–94	808	1999–2000	1057

Source: Ministry of Industry 1; Cigarette Factory 1, Yangon.

[3] There are two Ministries of Industry in Myanmar.

Table 2.7 shows the production of cigarettes by Cigarette Factory 2, which is located in Pakokku. This factory produces several brands, both filter-tipped and non filter-tipped. The *Duya* and *Khapaung* brands were very popular and almost monopolized the cigarette market until 1996–97. Foreign brands and brands, produced by either joint ventures or by domestic companies, eventually began to dominate the domestic cigarette market. With the introduction of foreign brands at cheaper prices, cigarettes produced by the state-owned factories are becoming less popular.

Factory 2 has introduced new brands such as *Duwan*, *Polo nine*, *Fine 2000* and *Reno 5* but they are still at the test-marketing stage. From Table 2.7, it is evident that cigarette production was much lower between 1986–87 and 1994–95. There was an uprising in Myanmar in 1988, during which the industry was hard hit. The factory resumed its momentum in 1994–95 and gradually increased its production.

Table 2.7. Cigarette production by Cigarette Factory 2, 1980–81 to 1999–2000

	Brand (millions cigarettes)										
Year	*Khapaung* (non-filter)	*Khapaung* (filter)	*Duya* (filter)	*Duya* (non-filter)	*Duya* (brown box, filter)	*Duya* (hard box, filter)	Duwan (hard box, filter)	*Polo nine* (filter)	*Fine 2000* (filter)	*Reno 5* (filter)	Total
1980–81	321	–	856	–	–	–	–	–	–	–	1177
1981–82	205	–	1087	–	–	–	–	–	–	–	1293
1982–83	247	–	1253	–	–	–	–	–	–	–	1500
1983–84	374	–	1045	–	–	–	–	–	–	–	1419
1984–85	354	–	1038	–	–	–	–	–	–	–	1394
1985–86	354	–	1174	–	–	–	–	–	–	–	1528
1986–87	112	–	341	–	–	–	–	–	–	–	454
1987–88	174	–	219	–	–	–	–	–	–	–	393
1988–89	118	–	131	–	–	–	–	–	–	–	249
1989–90	6	–	199	190	–	–	–	–	–	–	395
1990–91	54	–	294	158	–	–	–	–	–	–	506
1991–92	40	–	297	161	9	–	–	–	–	–	507
1992–93	55		212	115	28	–	–	–	–	–	410
1993–94	71	–	242	127	.04	–	–	–	–	–	341
1994–95	125	–	386	26	15	–	–	–	–	–	552
1995–96	128	101	404	9	12	189	–	–	–	–	843
1996–97	198	141	384	–	–	300	4	–	–	–	1027
1997–98	196	142	431	–	–	303	64	–	–	–	1136
1998–99	240	177	309	–	–	270	52	–	–	–	1048
1999–2000	406	47	432	–	–	225	–	166	108	62	1446

Source: Ministry of Industry 1, Cigarette Factory 2, Pakokku.

A few domestic companies import raw material for the production of foreign brands, which have became very popular as they are cheaper than imported cigarettes.

Table 2.8 shows the cigarette companies registered under the Directorate of Supervision and Inspection of Myanmar Food Industries. It shows the number of cigarettes that the companies declared they had produced each year. Some of the companies have stopped functioning since 2000.

The Indonesian company Sampoerna produces *Vegas*, which is the second most popular brand produced by a domestic private company. The most popular brand is *London*, which is produced by a joint venture between a foreign company (British American Tobacco) and Myanmar Economic Enterprises. It produces about 3000 million cigarettes per year. It is not shown in the table because it is not registered with Myanmar Food Industries.

Company reports were not available, but it is estimated that there has been an increase in cigarettes produced by private companies in recent years, because a marked increase has been observed in the import of raw materials for cigarette manufacturing, and there is also an increase in commercial tax collected from domestic companies. Market surveys show that foreign brands hold a big part of the cigarette market.

Table 2.8. Private cigarette companies registered under the Directorate of Industrial Supervision and Inspection of Myanmar Food Industries

Name of cigarette factory/place	Year of registration	Annual production (millions)	Remarks
Myanmar Sampoerna/Thanlyin	1995	1460	Produce *Vegas* cigarettes, the second most popular domestic brand
Shwe Pyan Hlwa International United/Mandalay	1996	87.48	Not functioning since 2000
Milar/Kyaingtone	1994	60	*
Kholone Lishaw/Nang Khan	1994	50	*
Kokant Yone Phone/Kyukoke Pansaing	1995	90	*
Kokant/Kwanlone	1996	100	Produces *Daung* cigarettes
Myanmar Peony Company Limited/Lashio	1997	200	*
Muse Kokant Company Limited/Muse	1998	20	*
Kabalone/Muse	1998	56	*

*Data not available; most likely not functioning.

Production of cheroots

Cheroot production data are also very limited. Data were available until the *Statistical Year Book 1995*, but data have not been published since. It is thought that cheroot production nationally has been in slight decline in recent years.

Because of the limited aggregate data on cheroot production, a small-scale survey was conducted for this paper in Bago, where most of the popular brands of cheroot are manufactured. The owners or managers of eight cheroot companies that produced the most popular brands were interviewed using a structured questionnaire.

Table 2.9 shows national data for cheroot production from 1985 to 1994. There was a marked decline in national production between the mid 1980s and mid 1990s. Table 2.10 and Figure 2.1 show a downward trend in cheroot production in eight cheroot companies in Bago where most of the cheroot factories that produce popular brands are located.

Table 2.9 Cheroot production, Myanmar, 1985–94

Year	Production (millions)
1985	2752
1986	2780
1987	2800
1988	2856
1989	2307
1990	2342
1991	2389
1992	2000
1993	1837
1994	2298

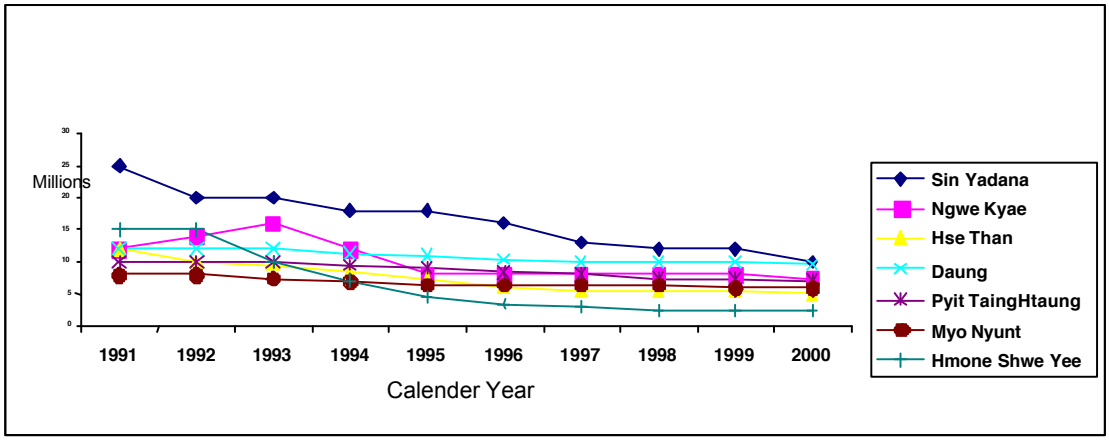
Source: Myanmar Central Statistical Organization, *Statistical year book 1995*, Yangon, 1996, p. 142.

Table 2.10. Production of eight cheroots companies, Bago, 1991–2000

	Company (millions cheroots)							
Year	Sin Yadana	Sin Pyan	Ngwe Kyae	Hse Than	Daung	Pyit Taing Htaung	Myo Nyunt	Hmone Shwe Yee
1991	25	20	12	12	12	10	8	15
1992	20	18	14	10	12	10	8	15
1993	20	18	16	9.5	12	10	7.5	10
1994	18	12	12	8.5	11.5	9.5	7	7
1995	18	10	8	7.5	11.1	9	6.5	4.6
1996	16	9	8	6	10.5	8.5	6.5	3.5
1997	13	9	8	5.5	10	8	6.5	3
1998	12	8	8	5.5	10	7.5	6.5	2.5
1999	12	8	8	5.5	10	7.5	6	2.5
2000	10	8	7.5	5	9.6	7.2	6	2.5

Source: small-scale survey on cheroot production of Bago district, 2001.

Figure 2.1. Yearly production, eight cheroots industries in Bago district, 1991–2000



Data on production of cigars are available up to 1994 only. Cigar production declined over the years as they became less popular (Table 2.11).

Table 2.11. Cigar production, Myanmar, 1985–94

Year	Production (millions)
1985	361
1986	377
1987	398
1988	404
1989	180
1990	183
1991	184
1992	187
1993	187
1994	290

Source: Myanmar Central Statistical Organization, *Statistical year book 1995*, Yangon, 1996, p. 142.

2.3. Imports, exports and consumption

Exports and imports of tobacco products as percentage of total exports and imports

The Myanmar Standard International Trade Classification lists tobacco under beverages and tobacco. Beverages and tobacco exports as a share of total exports from 1980–81 are shown in Table 2.12. Export of beverages and tobacco are negligible; with a small increase in the share in later years. No cigarettes, cheroots, cigars or tobacco products are exported. Tobacco and tobacco products as a percentage of total imports remained well below 1% up to 1997–98, then increased to over 1.2% (Table 2.13).

Table 2.12. Export of beverages and tobacco as a percentage of total exports, Myanmar 1980–81 to 1997–98

Year	Total export (millions current kyats)	Total export (millions 1997 kyats)	Export of beverages and tobacco (millions current kyats)	Export of beverages and tobacco (millions 1997 kyats)	Percentage of total exports
1980–81	3176	54 157	1.10	18.76	0.040
1985–86	2566	34 636	–		–
1988–89	2169	17 504	–		–
1989–90	2835	18 480	–		–
1990–91	2953	15 791	11.01	58.88	0.373
1991–92	2926	12 120	2.99	12.39	0.102
1992–93	3590	12 159	0.03	0.10	0.001
1993–94	4228	10 718	0.01	0.03	0.024
1994–95	5405	11 195	0.32	0.66	0.006
1995–96	5033	8 087	2.14	3.44	0.043
1996–97	5488	7 348	2.37	3.17	0.043
1997–98	6290	6 290	8.66	8.66	0.137

Source: Myanmar Central Statistical Organization, *Statistical year book 1998*, Yangon, 1999, Table 10.06, p. 199.

Table 2.13. Imports of tobacco and tobacco products as a percentage of total imports, Myanmar, 1980–81 to 1997–98

Year	Total imports (millions current kyats)	Total imports (millions 1997 kyats)	Imports of tobacco and tobacco products (millions current kyats)	Imports of tobacco and tobacco products (millions 1997 kyats)	Percentage of total imports
1980–81	4 635	79 035	0.11	1.88	0.002
1985–86	4 802	64 818	0.37	4.99	0.008
1988–89	3 443	27 785	0.01	0.08	0.000
1989–90	3 395	22 131	1.02	6.65	0.030
1990–91	5 523	29 535	1.19	6.36	0.022
1991–92	5 337	22 107	0.30	1.24	0.006
1992–93	5 365	18 171	5.31	17.98	0.017
1993–94	7 923	20 086	5.18	13.13	0.065
1994–95	8 332	17 257	3.03	6.28	0.036
1995–96	10 301	16 552	45.15	72.55	0.438
1996–97	11 779	15 772	48.31	64.69	0.410
1997–98	14 258	14 258	176.88	176.88	1.2406

Source: Myanmar Central Statistical Organization, *Statistical year book 1998*, Yangon, 1999, Table 10.08, p. 203; Table 10.09, p. 204.

Trade policy

The trade policy on tobacco as stated by the Ministry of Trade and Commerce covers enterprises that operate with the approval of the Myanmar Investment Commission. There are limits on imports of manufactured cigarettes, but no limitation on imports of Virginia tobacco or other raw material for the production of cigarettes. Raw material is mainly leaf tobacco and is registered as "cut rag tobacco" but other inputs and paper for wrapping are also imported. The cigarettes produced by these enterprises can be freely distributed inside the country or exported. So far none have been exported.

The data on imports of cigarettes shown in Table 2.14 refer to the import figures of duty-free shops that operate with the permission of the Ministry of Hotels and Tourism. According to the trade policy, imported cigarettes are meant for duty-free sales only. But foreign-brand cigarettes can be obtained easily anywhere in the country. Data are not available for the percentage of cigarettes marked for duty-free sales that circulate in the country. There are no data on smuggled cigarettes.

Reports from the Computerized Recording Section of the Customs Department were not available for years prior to 1995–96. Table 2.14 shows a marked increase in imports of raw materials for cigarettes since 1997–98.

Table 2.14. Imports of tobacco and tobacco goods, Myanmar, 1988–89 to 1999–2000 (tonnes)

Year	Imports of raw material for cigarettes	Imports of tobacco and tobacco goods
1989–90	n.a.	14
1990–91	n.a.	11
1991–92	n.a.	4
1992–93	n.a.	172
1993–94	n.a.	230
1994–95	n.a.	54
1995–96	710	1769
1996–97	585	979
1997–98	1527	3680
1998–99	2330	1652
1999–2000	3201	325

n.a.: not available.
Source: Myanmar Central Statistical Organization, official documents; Ministry of Finance and Revenue, Customs Department, official documents.

Table 2.15 also shows a marked increase in cigarettes imported at the request of the Ministry of Hotels and Tourism for the duty-free shops. The production and import data suggest a very significant shift from domestically produced tobacco products to imported cigarettes, with negative implications for the trade balance and domestic employment.

Table 2.15. Imports of cigarettes, Myanmar, 1995–96 to 1999–2000

Year	Imports of cigarettes (thousand kilograms)
1995–96	56
1996–97	44
1997–98	127
1998–99	306
1999–2000	502

Source: Ministry of Finance and Revenue, Customs Department, official documents.

2.4. Tobacco agriculture and production

Land use and tobacco yield

Two types of tobacco, Myanmar tobacco and Virginia, are sown in Myanmar. In Table 2.16 land use and cultivation of Virginia and Myanmar tobacco are shown from 1985–86 to 1999–2000. It is seen that areas under Virginia comprised less than 0.1% of the net area sown, and the sown area for Myanmar tobacco was less than 0.6%. Cultivation of Virginia decreased from 1987–88 to 1992–93, then increased slightly. Cultivation of Myanmar tobacco had been declining since 1987–88, which correlates with the decline in production of cheroots and cigars described above.

Table 2.16. Land use and tobacco cultivation, Myanmar, 1985–86 to 1999–2000

Year	Net area sown (thousand ha)	Virginia tobacco			Myanmar tobacco		
		Sown (ha)	Harvested (ha)	Production (tonnes)	Sown (ha)	Harvested (ha)	Production (tonnes)
1985–86	8222	8.1	8.1	8.3	46.2	45.4	64.6
1986–87	8075	7.6	7.4	8.9	42.1	40.5	60.1
1987–88	8073	3.2	3.2	2.5	33.2	32.4	45.5
1988–89	7900	1.6	1.6	1.4	36.0	35.2	48.1
1989–90	8045	1.6	1.6	1.3	29.2	28.8	38.1
1990–91	8151	2.0	2.0	1.6	32.4	32.4	42.2
1991–92	8159	3.6	3.6	2.8	36.7	36.3	52.6
1992–93	8509	2.8	2.8	2.0	38.5	38.5	49.6
1993–94	8516	5.3	5.3	5.0	32.8	32.4	46.0
1994–95	8721	3.2	3.2	2.6	27.9	27.9	34.3
1995–96	8917	3.6	3.6	3.1	25.1	25.1	40.2
1996–97	9006	4.5	4.5	4.0	29.2	29.2	48.5
1997–98	9033	4.9	4.9	4.7	31.2	31.2	52.2
1998–99	9305	3.6	3.6	4.3	26.3	26.3	41.6
1999–2000	9680	3.6	3.6	4.5	28.4	28.4	45.5

Source: Settlement and Land Records Department (net area sown does not include areas trespassed); Myanmar Central Statistical Organization, statistical year books 1995, 1997, 1998.

Survey findings on tobacco cultivation

The household survey (see Section 3) conducted in five townships found that less than 0.1% of households were engaged in tobacco agriculture.

A small-scale survey was conducted in 2001 in Hinthada in two small villages where the majority of the farmers earn their living by tobacco farming. A pre-structured questionnaire was used to interview the farmers. Tables 2.17 and 2.18 report the survey findings. Table 2.17 shows that on average there were 0.81 hectares of arable land per household out of which 1.2 acres were used for tobacco cultivation in 2000. The average yield in hectares of tobacco leaves was 514 viss (1 viss= 1.6 kg).

There were no government loans for tobacco cultivation nor any government subsidies for tobacco cultivation in the form of fertilizer, electricity, water or insecticide.

Table 2.17. Tobacco cultivation, Myanmar (hectares)

Item	Area/yield
Total arable land in the household	0.81
Total land for tobacco cultivation in 2000	0.65
Total yield of tobacco leaves in 2000	514 viss

Source: Author's survey

Table 2.18 shows the cost of growing tobacco per hectare per year and profit from tobacco growing per hectare per year.

Table 2.18. Annual cost of and profit from growing tobacco, Myanmar

Item	Cost (kyats/ha)
Cost of growing tobacco	44 116
Profit from growing tobacco	84 128

Source: Author's survey

2.5. Tobacco advertising and promotion by tobacco companies

Tobacco advertisements were banned on radio and television from 1999. Recently, advertisements have been prohibited in all forms of electronic and print media, and city development committees have been asked to remove billboards with tobacco advertisements. Sports sponsorship by tobacco companies has been restricted recently also. The draft law on control of tobacco products seeks to prohibit all forms of tobacco advertisement.

3. SMOKING PREVALENCE AND TOBACCO USE

3.1. Studies conducted on smoking prevalence

Several studies on the prevalence of smoking have been conducted in recent years by different departments of the Myanmar Ministry of Health. The findings of the surveys are summarized below. Unpublished relevant information from some studies is quoted in this report with the permission of the investigators. These are marked with an asterisk (*).

Survey findings

1. In a cross-sectional cardiovascular disease survey of adults within the urban and rural areas of Yangon division, carried out in 1989–90, a subgroup analysis of 2,611 persons included in the sample population (1,195 in urban areas and 1,416 in rural areas) showed that the overall prevalence of smoking in urban areas was 58%, and 59% in rural areas. Among the urban population, 74% of the males and 46% of the females smoked. In the rural study population, 68% of the males and 55% of the females were smokers.
   CVD Project and AIDS Project, Department of Health and Department of Preventive and Social Medicine, Institute of Medicine 1. Prevalence of cardiovascular diseases in rural areas of Hmawbi and urban Yangon city, *1991.*

2. In 1991, a study of smoking habits among middle and high school children was carried out in North Okkalapa township, a periurban area of Yangon. Of 2,101 children investigated by self-administered questionnaires, smoking was found in 47.7% of boys and 2.9% of girls. The smoking prevalence was found to be highest among children aged 16 years of age and attending the eighth standard. Among those who smoked, 56.7% were occasional smokers and 30.7% were regular smokers. A majority of smokers (94.1%) started smoking between 14 and 18 years of age.
   Saw Win, Smoking among middle and high school children in North Okkalapa township. *A dissertation as partial fulfilment of a masters degree in paediatrics, 1991.*

3. A 1994 study of smoking habits of Myanmar health personnel covered 1,058 doctors, nurses, basic health services personnel, technicians and other ancillary health workers in 25 townships in Yangon division chosen at random. Only 17.3% of respondents reported that they smoked, while 7.1% had stopped smoking and 75.4% said they had never smoked. Among doctors, 13.6% of professors, lecturers and specialists and 9.3% of junior doctors were smokers. While 8.9% and 40.38% of basic health and ancillary health workers were found to smoke, the figure for nurses, midwives and lady health visitors combined was only 2.8%.
   Khin Maung Lwin et al., Central Health Education Bureau, CVD Project, Department of Health and Department of Medical Research. A study of the smoking habits of Myanmar health personnel, *1994.*

4. A rapid survey of women above 18 years of age in Thanlyin township in 1996 revealed a smoking prevalence among females of 8.2% in urban areas and 24.8% in rural areas (n = 279).
Myanmar Central Statistical Organization.

5. In September 1999, the Institute of Medicine 1 conducted a cross-sectional analytic study on the prevalence of youth smoking in 29 townships belonging to Bago, Magwe and Mandalay divisions. The study covered a total of 3,856 youths 15 to 24 years of age. The overall prevalence of smoking was found to be over 50% with the prevalence among males being 68% and that among females a little below 6%. Among the population studied, cheroots were the most common tobacco product used; followed by cigarettes. The occasional use of cigars and homemade cheroots was also found among young smokers.
Myo Oo, Tracy Sein et al. Department of Preventive and Social Medicine, Institute of Medicine 1. Prevalence trend of smoking among young people in 29 townships of Bago, Magwe and Mandalay divisions, *September 1999*.

6. In 1999, a study on smoking prevalence was conducted on 23,975 persons residing in 4,800 households in the same 29 townships as the youth survey reported above. The overall community prevalence of smoking was found to be over 30%, the prevalence among males being 50% and among females being a little below 9%. Less than 20% of households surveyed were reported to have no smokers; at least one smoker resided in more than 80% of households. Smoking prevalence among those aged 14 years and over was found to be about 39%. When smoking was differentiated by sex among adults over 14 years of age, 64% of males and 11% of females were reported to be smokers. Among 15 year olds, prevalence was found to be 37% among males and 1.03% among females.
Khin Saw Naing, Tracy Sein et al., Department of Preventive and Social Medicine, Institute of Medicine 1. Prevalence of smoking in 29 townships of Bago, Magwe and Mandalay divisions, *September 1999*.

7. The Institute of Medicine 1 conducted prevalence studies in the same townships again in 2000. A cross-sectional study on prevalence of current smokers (defined as smoking more than 100 sticks during the past 3 months) was conducted among 3,059 persons; 55.4% were found to be current smokers, of whom 59.9% were males and 28.8% females, much higher than in the 1999 survey, especially for women.
Department of Preventive and Social Medicine, Institute of Medicine 1. Prevalence of smoking in 25 townships of Bago, Magwe and Mandalay divisions, 2000, *data presented in 2000*.*

8. An adolescent reproductive health survey conducted by the maternal and child health section of the Department of Health of the Ministry of Health in 2000 in Yangon division revealed that among the sampled male adolescents,

68.8% had ever smoked and 56.3% were current smokers, whereas 8.8% of female adolescents had ever smoked and only 1.4% were current smokers. For male adolescents, smoking was more common among urban dwellers, but for females, rural dwellers had used tobacco more often than urban dwellers. Comparisons between in-school and out-of-school youths revealed that there was a higher percentage of tobacco use among the out-of-school youths. *Adolescent reproductive health survey, maternal and child health section, Department of Health, 2000.**

9. In 2000, the Tobacco Free Initiative Project of the Department of Health, Ministry of Health, conducted research on the socioeconomic determinants of tobacco use in three townships belonging to Yangon, Mandalay and Ayeyarwady divisions: Insein, Madaya and Hinthada. Research findings revealed a smoking prevalence rate of 28.8% for the general population (n = 5,631), 46.4 % for males and 15.4% for females. Among the population aged 15 years and over, 38.3% were found to be current smokers, 58.7% of males compared with 20.1% of females. The research showed strong association between type of smoking and income, occupation and education. Parental smoking and the urge to experiment due to the presence of smokers nearby were found to have a significant influence on smoking experimentation, although current smokers did not mention peer pressure as the cause of experimentation. No significant association was found between alcohol drinking and smoking, but there is a significant association between smoking and chewing of betel nut (*kun*) with tobacco and retention of tobacco in the mouth.
Nyo Nyo Kyaing, Soe Naung et al., Tobacco Free Initiative Project, Department of Health, Ministry of Health. A study on the socioeconomic determinants of tobacco use, 2001.*

10. A household survey was conducted in January and February 2001 by Nyo Nyo Kyaing et al. in five townships: Magwe in Magwe division, Ayetharyar in south Shan state, Maulamyine in Mon state, Bago in Bago division and Monywa in Sagaing division. Information on tobacco economics was collected using questionnaires prepared by the World Health Organization's Regional Office for South-East Asia. The study revealed that 22.8% of urban population and 19.5% of rural population, 33.9% of males and 8.09% of females above 6 years of age had smoked at least once in their lifetime (ever users). The prevalence rate of current smokers was 19.2% of the urban population and 17.8% of the rural population aged above 6 years, 30.62% of males and 7.09% of females. Among those above age 15 years, 22.6% of the urban population and 48.7% of the rural population were current smokers. The mean age of experimentation was 21.6 years. Tobacco use was more prevalent among males than females in all age groups, both in urban and rural areas.
Nyo Nyo Kyaing et al., Tobacco Free Initiative Project, Department of Health. A study on tobacco economics, *2001.**

Each study had a different design and methodology, and different instruments were used. Some of the studies did not specify the status of smokers—whether they were ever smokers or current smokers. Thus it is not possible to comment on trends. None of the studies represent the whole country. Tables 3.1 and 3.2 summarize prevalence rates from the surveys (Table 3.2 shows prevalence for specific age or sex groups).

Table 3.1. Smoking prevalence rates from studies conducted in Myanmar

Source	Year	Region	Age	Residence	Both sexes	Male	Female
1. CVD survey	1989–90	Yangon division, 2,611	18+	Urban Rural	58 59	74 68	46 55
2. Smoking prevalence survey	1999	29 townships of Bago, Magwe and Mandalay division, 3,856	All ages	Combined	30	50	9
3. Smoking prevalence survey	2000	29 townships of Bago, Magwe and Mandalay divisions, 3,059	All ages	Combined	55.4	59.9	28.8
4. Research on socioeconomic determinants of tobacco use	2000	Insein, Madaya and Hinthada, 5,631	15+	Periurban and rural	38.3	58.7	20.1
5. Study on tobacco economics household survey	2001	Magwe, Ayethayar, Mawlamyine, Bago, Monywa, 9,847	10+	Urban Rural Total	19.2 17.8 18.2	34.5 29.4 30.6	6.3 7.3 7.1

Table 3.2. Smoking prevalence rates, specific groups, Myanmar studies

Source	Year	Region, sample size	Age	Residence	Both sexes	Male	Female
1. A study of smoking habits among middle and high school children	1991	North Okkalapa, Yangon division, 2,101	10–18	Periurban	n.a.	47.1	2.9
2. Smoking habits of Myanmar health personnel survey	1994	25 townships of Yangon division, 1,058	18+	Combined	17.3	n.a.	2.8
3. Rapid survey of women	1996	Thanlyin, 279	18+	Urban Rural	n.a. n.a.	n.a. n.a.	8.2 24.8
4. Study on prevalence trend of smoking among young people	1999	29 townships of Bago, Magwe and Mandalay divisions	15–24	Combined	50	68	6
5. Adolescent reproductive health survey	2000	Yangon division,	15–24	Combined		56.3	1.4

n.a.: not available.

A household survey was conducted in five townships of Myanmar in order to get information on prevalence of tobacco use (Myanmar Study on Tobacco Economics, 2001). The townships were randomly selected from five different regions of the country. They were Mawlamyine township from Mon state, Shwe-nyaung township from south Shan state, Magwe township from Magwe division, Monywa township from Sagaing division and Bago township from Bago division. Random sampling of households was done. A total of 400 households from each survey site was chosen randomly; 20% from the urban and 80% from the rural areas. Persons above 6 years were interviewed from the households about tobacco use and expenditure. A total of 9,847 persons above 6 years of age was interviewed using a prestructured questionnaire modified from a questionnaire prepared by the World Health Organization's Regional Office for South-East Asia. The results are summarized in Table 3.3 and Figures 3.1 and 3.2.

The urban prevalence rate was found to be slightly higher than the rural prevalence rate (19.2% and 17.9% respectively); and the prevalence among males was found to be four times that of females (30.6% and 7.1% respectively).

Table 3.3. Prevalence of current smoking (%), by age and sex, household survey, Myanmar Study on Tobacco Economics, 2001

Age	Urban			Rural			Total		
	M	F	Total	M	F	Total	M	F	Total
10–19	3.5	0.0	1.7	4.9	0.4	2.7	4.7	0.0	2.5
20–29	40.4	2.0	18.9	29.9	0.8	14.7	32.1	.3	15.7
30–39	54.4	2.9	26.2	44.9	4.6	23.2	47.4	1.3	23.9
40–49	48.8	6.8	25.1	50.0	11.7	28.9	49.1	4.1	27.9
50–59	50.0	20.2	35.1	55.0	20.3	36.8	53.6	10.4	36.3
60–69	49.2	22.2	34.6	51.8	30.7	40.3	51.2	20.2	38.9
70–79	38.1	21.1	27.1	43.4	26.9	34.2	42.5	28.6	32.7
80–89	30.0	9.1	19.1	18.7	23.5	22.0	23.1	25.6	21.1
90+	0.0	0.0	0.0	50.0	0.0	20.0	33.3	20.0	16.7
Overall %	34.5	6.3	19.2	29.5	7.4	17.9	30.6	7.1	18.2

Source: Myanmar Study on Tobacco Economics, 2001.

In 2001, the Myanmar Sentinel Tobacco Use Prevalence Study was conducted. Hinthada district in the Irrawaddy delta region and Pakokku township in the central dry zone region were randomly selected, and 16 clusters from urban areas and 44 clusters from rural areas were selected for each district. A total of 120 clusters with 55 persons above 10 years of age in each cluster was surveyed (n = 6,600) using pretested structured questionnaires. As more than one survey was conducted within the country, the average value of the two surveys was taken as a national figure. Although it may not reflect the true national prevalence rate, it can serve as a tool for monitoring and evaluation of tobacco control programs, if the surveys are conducted periodically in the same manner. The results are summarized in Table 3.4.

Figure 3.1. Percentage prevalence of current smoking by age and sex, household survey, Myanmar Study on Tobacco Economics, 2001

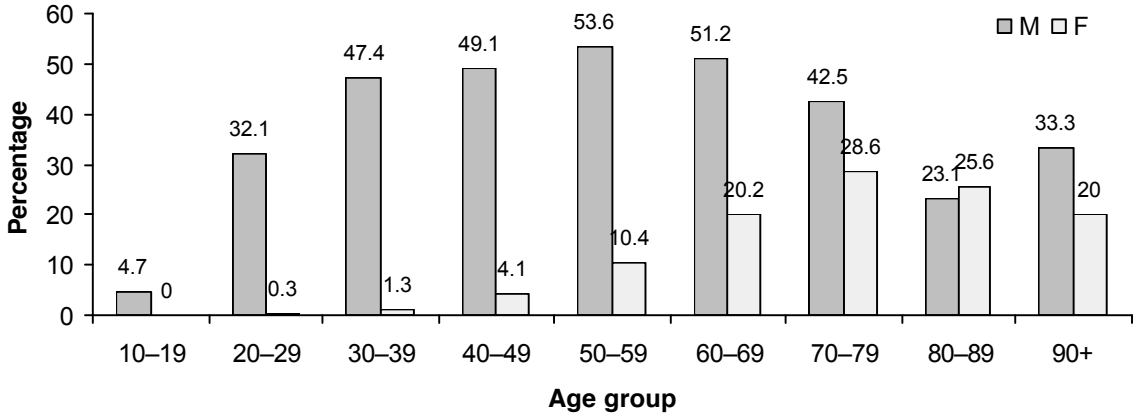


Table 3.4. Percentage prevalence of current smoking by age and sex, Myanmar Sentinel Tobacco Use Prevalence Study, 2001

Age	Urban			Rural			Total		
	M	F	Total	M	F	Total	M	F	Total
10–19	8.50	2.50	5.20	6.20	2.20	4.00	6.70	2.30	4.40
20–29	39.50	5.40	19.30	33.90	7.40	18.50	35.30	6.80	18.70
30–39	50.00	8.50	12.70	65.20	22.80	15.50	60.60	19.10	14.70
40–49	59.30	18.90	36.10	60.70	41.80	50.60	60.30	34.90	46.50
50–59	50.60	31.80	42.20	6.77	49.80	57.80	64.00	44.60	53.30
60–69	48.97	43.20	45.40	65.80	53.10	21.40	48.20	50.60	26.30
70–79	60.00	33.90	43.40	53.80	64.30	59.30	55.30	53.90	54.50
80–89	0.00	0.00	0.00	50.00	45.20	47.40	42.50	32.20	36.40
Overall %	41.42	14.7	26.1	44.3	25.20	33.58	43.50	22.30	31.60

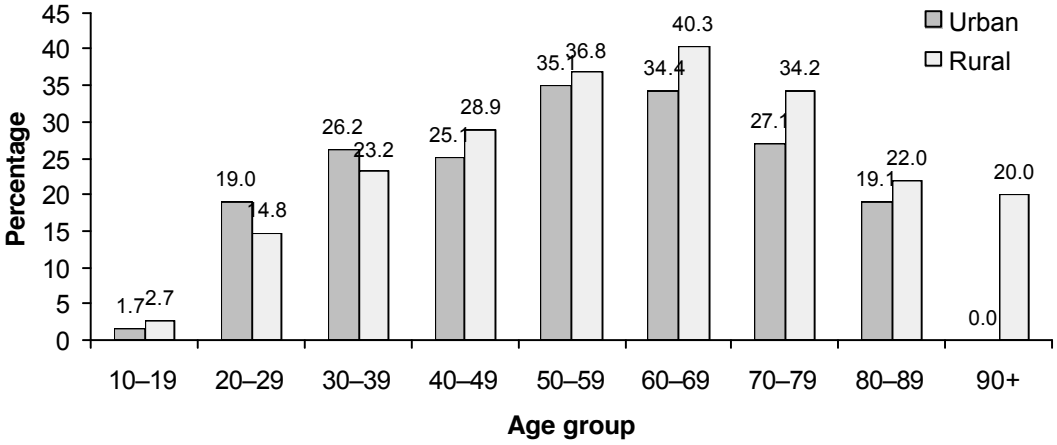
Source: Nyo Nyo Kyaing et al. Tobacco Free Initiative Project, Department of Health, Myanmar Sentinel Tobacco Use Prevalence Study, 2001.

Male smoking was reported as four times more common than female smoking. In all age groups male smoking was reported as significantly more (at the 95% confidence interval) than females except in the age group 80–89 years.

The study found that males take up smoking at a relatively earlier age than females. The biggest jump in smoking among men was in the age group 20–29 years, and prevalence

increased till the 50-59 age group, then decreased for older groups of men. Women took up smoking at later ages; with prevalence peaking in the 70-79 year group. In the household survey for the Myanmar Study on Tobacco Economics, only two age groups showed higher prevalence of current smokers in urban than rural areas: the 20–29 years age group and 30–39 years age group. For other age groups, higher prevalence was reported in rural areas than in urban areas.

Figure 3.2. Percentage distribution of current smokers by age group and region, household survey, Myanmar Study on Tobacco Economics, 2001



3.2. Consumption of tobacco

According to all studies ever conducted on tobacco in Myanmar, the most common form of tobacco product used in Myanmar is cheroots, either produced by cottage industries or by domestic companies. The household survey on tobacco economics collected information on different types of tobacco products used in Myanmar. Table 3.5 shows that cheroots were most commonly used in both urban and rural areas, followed by home-rolled tobacco.

Cheroots are thin and long and are wrapped with a leaf called *thenatphet*. Myanmar tobacco leaves are sun-cured and ground; their stems are baked and chopped; and these are mixed with tamarind and wrapped with *thenatphet* leaves to roll into cheroots. All cheroots are hand-rolled. In this report "cheroots" refers to those made by cottage industries and "hand-rolled cheroots" refers to those rolled by the users themselves. Home-rolled tobacco may be wrapped with corn husk, *thenatphet* leaves or paper. Tobacco wrapped with corn husk is also called *pyanung phoo phet* and tobacco wrapped with *thenatphet* leaf is called *phet kyan*; cheroots made from tobacco wrapped in paper or

with sheaths from betel-nut trees are called *put chun*. In this chapter, all these forms are collectively named "hand-rolled tobacco".

Chewing of tobacco includes chewing of betel quid with tobacco mixed with lime and chewing of raw tobacco. Both categories were classified as chewing tobacco.

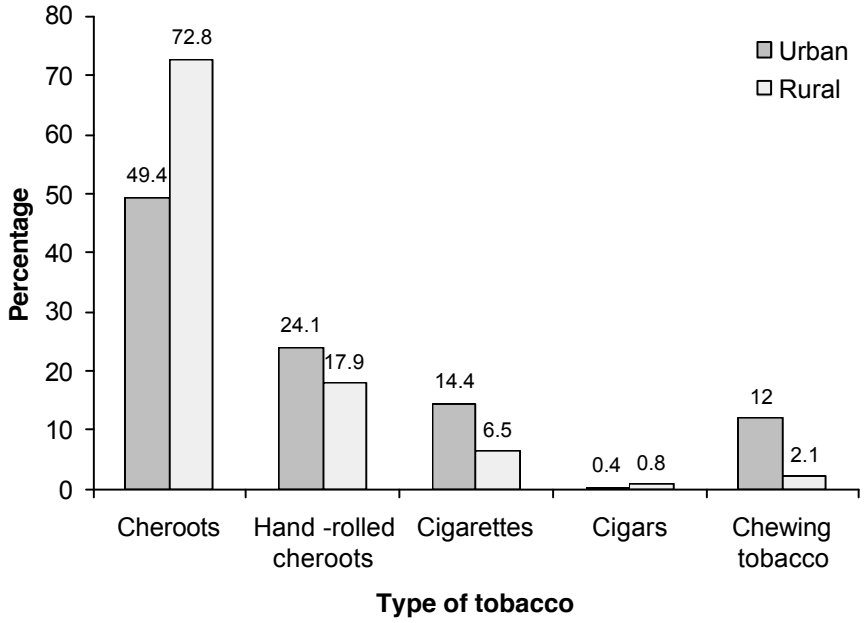
Table 3.5. Types of tobacco used in Myanmar, household survey, Myanmar Study on Tobacco Economics, 2001

Type of tobacco	Urban (%)	Rural (%)	Total (%)
Cheroots	49.4	72.8	66.7
Hand-rolled cheroots	24.1	17.9	19.5
Cigarettes	14.4	6.5	8.5
Cigars	0.4	0.8	0.7
Chewing tobacco	12.0	2.1	4.6
Total	100	100	100

Source: Nyo Nyo Kyaing et al. Tobacco Free Initiative Project, Department of Health. Myanmar Study on Tobacco Economics, 2001.

Cheroots were more widely used in rural areas. Cigarettes were used by twice the percentage of people in urban areas than rural areas. All types of hand-rolled cheroots were combined in one category, but tobacco wrapped with corn husk and paper is more widely used in rural areas (Figure 3.3).

Figure 3.3. Percentage distribution of types of tobacco used in Myanmar by region, household survey, Myanmar Study on Tobacco Economics, 2001



From Tables 3.6 and 3.7, it can be seen that smoking of cheroots was the most common type (66.7%) for both sexes and in both urban and rural areas. Cigarette smoking was

higher in urban areas and among males, and smoking of hand-rolled tobacco was more common among females. Smoking accounted for 95% of all forms of tobacco used and smokeless tobacco 5%.

Table 3.6. Percentage distribution of types of tobacco used by sex, household survey, Myanmar Study on Tobacco Economics, 2001

Type of tobacco	Male	Female	Total
Cheroots	68.5	68.8	68.7
Hand-rolled tobacco	16.3	25.9	19.5
Cigarettes	9.6	2.1	8.5
Cigars	0.8	0.3	0.7
Chewing tobacco	4.8	2.9	4.6
Total	100	100	100

Source: Nyo Nyo Kyaing et al. Tobacco Free Initiative Project, Department of Health. Myanmar Study on Tobacco Economics, 2001.

Table 3.7. Percentage distribution of type of tobacco used by age, household survey, Myanmar Study on Tobacco Economics, 2001

Age group	Cheroots	Cigarettes	Cigar	Hand-rolled tobacco	Chewing tobacco	Total
10–19	65.4	15.4	0.0	15.4	3.8	100
20–29	63.4	11.7	0.3	11.4	9.5	100
30–39	63.8	12.4	0.6	15.5	5.0	100
40–49	66.3	7.9	0.6	18.2	3.2	100
50–59	68.1	3.6	0.3	18.5	3.6	100
60–69	58.7	3.5	0.8	24.0	1.2	100
70–79	44.5	2.5	3.4	31.1	1.7	100
80–89	30.4	8.7	0.0	39.1	4.3	100
Overall %	66.6	8.5	0.7	19.5	4.6	100

Source: Nyo Nyo Kyaing et al. Tobacco Free Initiative Project, Department of Health. Myanmar Study on Tobacco Economics, 2001.

Figure 3.4 shows the higher prevalence of smoking of cigarettes, cigars and chewing of tobacco among males, and the higher prevalence of smoking of hand-rolled tobacco among females. Rate of smoking of cheroots were the same in both sexes.

From Table 3.7 and Figure 3.4, it is evident that in all age groups cheroots were the most common type of tobacco used (66%). The incidence of cigarette smoking was higher among adolescents and young adults compared with other age groups. The percentage use of hand-rolled tobacco increased with age. Chewing of tobacco was most common between 20 and 30 years of age.

Figure 3.4. Percentage distribution of types of tobacco used by sex, household survey, Myanmar Study on Tobacco Economics, 2001

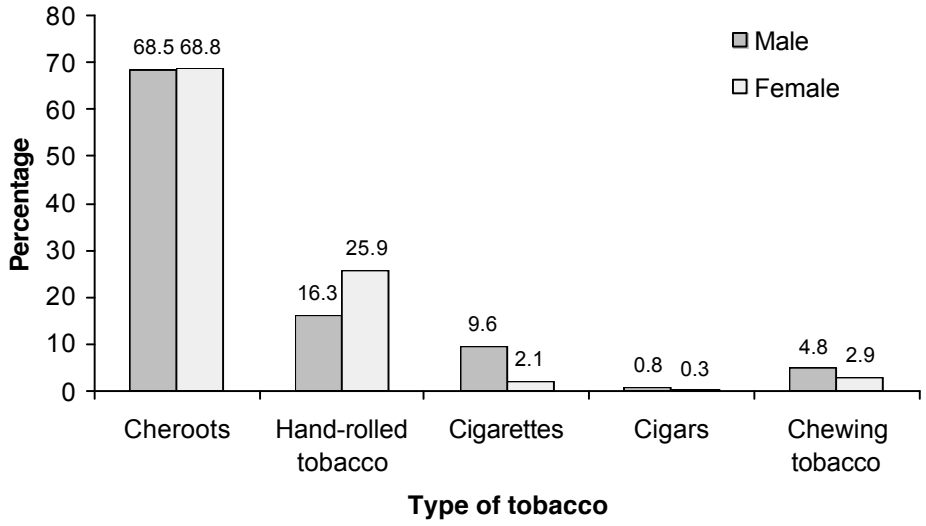
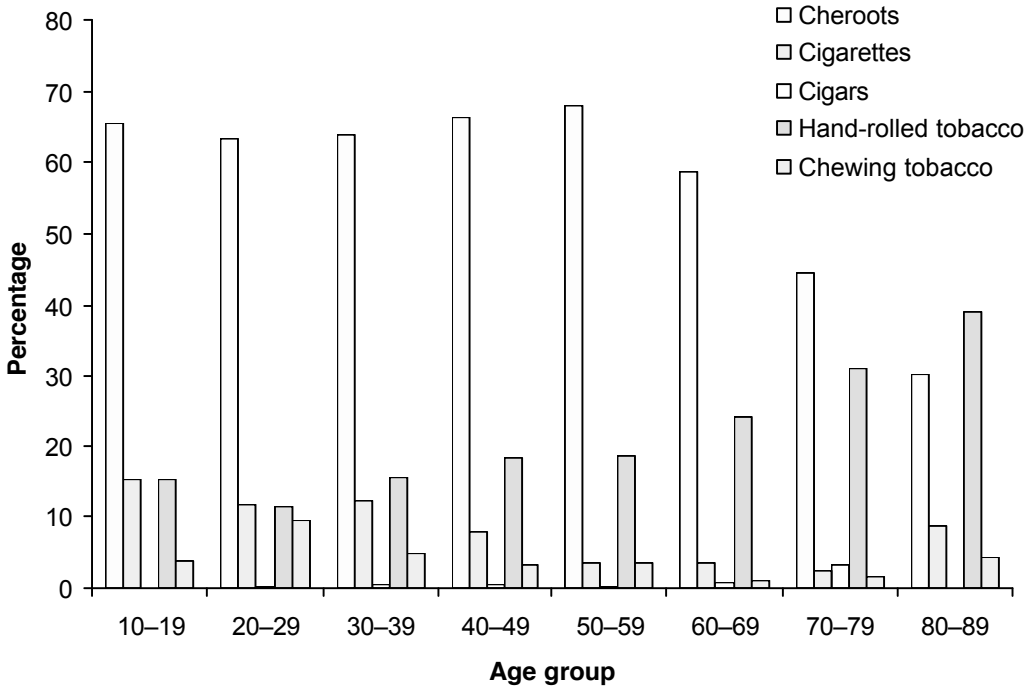


Figure 3.5. Percentage distribution of type of tobacco use by age group, household survey, Myanmar Study on Tobacco Economics, 2001



3.3. Frequency of tobacco use

Frequency of smoking or chewing is on average 4–5 times per day, 4 in urban and 5 in rural areas. There is no difference by gender (Table 3.8), although males report using more sticks per day (4) than females (3) (Table 3.9).

Table 3.8. Average frequency of smoking or chewing tobacco (sticks per day), household survey, Myanmar Study on Tobacco Economics, 2001

Year	Urban			Rural			Total		
	M	F	Total	M	F	Total	M	F	Total
10–19	3	0	3	4	4	4	4	4	4
20–29	3	3	3	5	5	5	5	4	4
30–39	5	4	5	5	5	5	5	5	5
40–49	4	2	4	5	5	5	5	4	5
50–59	4	3	4	5	5	5	5	5	5
60–69	5	4	5	6	5	5	5	5	5
70–79	3	6	4	5	5	5	4	5	4
80–89	5	7	5	6	4	6	6	5	6
Total	4	4	4	5	5	5	5	5	5

Source: Nyo Nyo Kyaing et al. Tobacco Free Initiative Project, Department of Health. Myanmar Study on Tobacco Economics, 2001.

Table 3.9. Median consumption of tobacco (sticks) per day, household survey, Myanmar Study on Tobacco Economics, 2001

Year	Urban			Rural			Total		
	M	F	Total	M	F	Total	M	F	Total
10–19	2	0	3	3	3	3	3	3	3
20–29	3	2	3	4	3	4	4	2	3
30–39	5	2	5	7	3	4	4	3	4
40–49	4	3	4	4	3	4	4	3	4
50–59	4	2	3	4	3	4	4	3	4
60–69	5	3	4	3	3	3	4	3	3
70–79	3	3	2	3	3	3	3	3	3
80–89	5	1.	4	5	3	3	5	2	3
Total	4	3	4	4	3	3	4	3	4

Source: Nyo Nyo Kyaing et al. Tobacco Free Initiative Project, Department of Health. Myanmar Study on Tobacco Economics, 2001.

4. PRICES, TAXES AND THE DEMAND FOR TOBACCO PRODUCTS

4.1. Prices of tobacco products

Price is the single most effective measure for reducing tobacco consumption. An increase in the price of cigarettes can induce smokers to quit smoking or consume less tobacco. It can also prevent others, especially young people, from starting and thus avoid addiction.

Nominal prices of manufactured tobacco products and unmanufactured tobacco

The Myanmar Central Statistical Organization collects data on retail prices of cigarettes (*Duya* brand), cheroots and cigars. Table A4.1, Appendix 4, shows average nominal retail price of cheroots per 100, cigars per 100 and cigarettes (*Duya*) per packet of 20. Data show an increase in the nominal retail price of tobacco products over the years. The same can be seen in Table A4.2, Appendix 4, for the price of tobacco leaves.

Real prices of tobacco products

However, nominal prices do not show a real picture of the trend in tobacco prices because they do not take into account the inflation rate and thus the trend in affordability of tobacco prices. In Table 4.1, prices of tobacco products were adjusted at 1985 constant prices. Unlike the trend shown in nominal prices, it can be seen that the real prices of all tobacco products have fallen dramatically since 1987/1988.

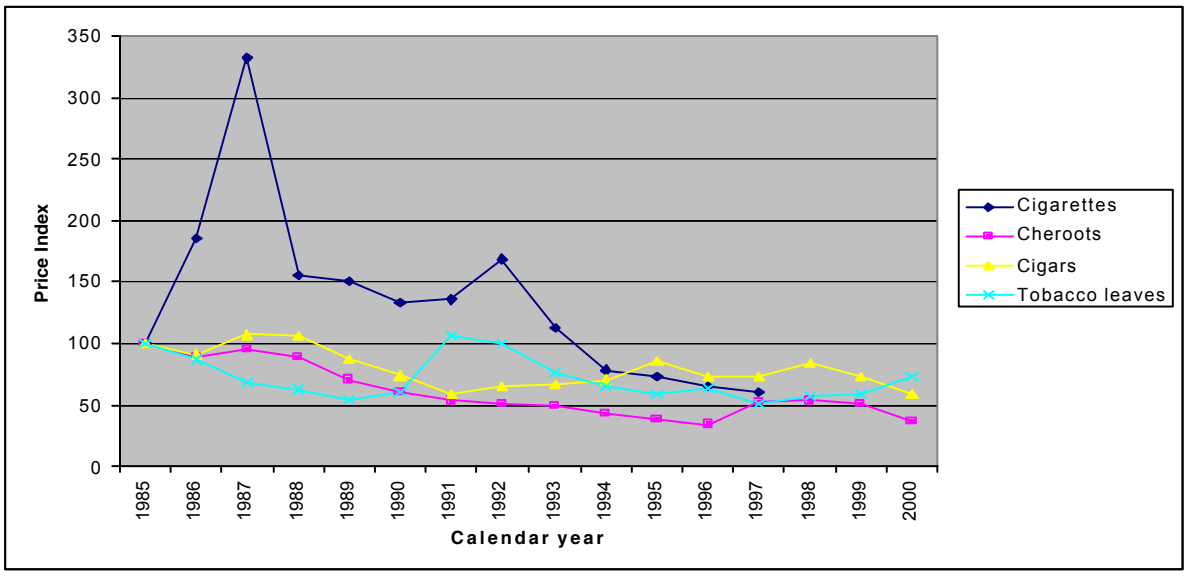
Table 4.1. Adjusted prices of tobacco products at 1985 constant prices, kyats

Type of tobacco	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cheroots (100s)	20.5	18.13	19.57	18.12	14.49	12.36	10.92	10.54	10.05	8.87	7.84	7.08	10.78	11.03	10.43	7.4
Cigars (100s)	32.0	29.21	34.47	34.02	28.06	23.89	19.12	20.68	21.41	22.79	27.19	23.48	23.17	26.94	23.47	19.13
Cigarettes (*Duya* 20s)	5.2	9.68	17.27	8.07	7.82	6.93	7.03	8.76	5.9	4.07	3.79	3.37	3.16	n.a.	n.a.	n.a.
Tobacco leaves (*Shwe let wah*)	23.1	20.14	15.72	14.41	12.7	13.98	24.37	23.26	17.6	15.05	13.69	14.65	11.93	13.13	13.7	16.76

n.a.: not available.

In order to compare the prices of different tobacco products, the real prices were converted to an index, taking the value 100 for the year 1985. Figure 4.1 shows the evolution of these indexes. The largest change can be seen in the price of cigarettes. Real prices in cigarettes increased sharply (by three) in 1986–87 and then decreased more sharply, starting in 1988, following a downward trend for the following 10 years to reach almost half of the original price of 1985. A decreasing, though less erratic, trend is also seen for the other tobacco products.

Figure 4.1. Index price of tobacco products at 1985 constant prices (price = 100 in 1985)



From Table 4.1 and Figure 4.1, it can be seen that average real retail prices for all forms of manufactured as well as unmanufactured tobacco products have dramatically decreased over the years. Consequently, tobacco products have become much more affordable to consumers in the past 10–15 years. These are alarming figures, since lower real prices increase tobacco consumption and consequent incidence of tobacco-related diseases.

4.2. Tax rates for tobacco products

Commercial tax law

Under section 4 of the commercial tax law (State Law and Order Restoration Council No. 8/1990) enacted on 31 March 1990, goods relating to tobacco are taxed.

Regarding domestic products, for sales up to kyats 240 000 (yearly sales made by the tobacco companies or industries) there is no commercial tax applied on any tobacco products. When sales exceed this threshold, for cigarettes, a tax of 75% of the TIRSP (tax-inclusive retail sales price) is applied on the amount of sales in excess of 240 000 kyats. For cheroots, the commercial tax is 10% of the TIRSP, for cigars and pipes the tax is 20% of the TIRSP and for betel preparations and pipe tobacco[4] the tax is 25% of the TIRSP. However, there is no tax charged on sales of locally produced Virginia and cured tobacco.

[4] Pipes are barrels without tobacco while pipe tobacco is the tobacco produced or mixed to be used for pipes, raw material for pipes

The policy applies differently to imported products. Normally, import of tobacco products is not allowed. But some cigarettes are imported, mostly for duty-free shops. In addition, imported cigarettes are requested by Ministry of Hotels and Tourism for use in hotels. Customs imposes a tariff of 30% on the CIF value of the imported cigarettes (this tariff was 300% before 1997). Customs duty is also charged on raw material under the heading of cut tobacco, which includes tobacco leaf, paper, filter and packaging, and even ink.

The customs tariff plus the CIF value of the imported cigarettes represent the landed cost on which the commercial tax is applied. Imported cigarettes sales exceeding kyats 240 000 (the kyats 240 000 being exempt from tax) attracted a tax of 75% of the landed cost until 1997, after when the tax was reduced to 7.5% (due to a change in the exchange rate from kyats 6 to US$ 1 before 1997 to kyats 100 to US$ 1 after 1997).

Profit tax and income tax

Profit and income taxes are applied only to locally manufactured tobacco products. Income taxes are imposed on enterprises producing tobacco and registered as "companies" and profit taxes are imposed on domestic enterprises producing mainly cheroots, cigars and pipes.

Cigarettes are produced by either state-owned factories (there are two of them) or other domestic companies. Companies may be foreign companies incorporated in Myanmar, or multinational companies incorporated in Myanmar or not incorporated in Myanmar but acting as non-resident companies. Any industry producing cigarettes and registered as a company will be liable for commercial tax and income tax. Foreign companies or multinational companies incorporated in Myanmar are subject to 30% income tax and non-resident foreign companies are subject to 35% income tax. No profit tax is collected on cigarettes. (Income is considered as sales value in excess of kyats 240 000, minus commercial taxes and costs of production (labour, etc.).

It was noted above that there are small cottage industries that produce mainly cheroots; a few of them make cigars and a negligible amount produce pipes or pipe tobacco. Betel quids with tobacco are produced by individual vendors or very small-scale operations. Commercial tax and profit tax is levied on all the tobacco products produced by these enterprises. For cheroots, 10% of tax due is collected in addition to the profit tax and commercial tax. The profit is calculated as follows: sales – (cost of production + overhead expenses). The profit tax is collected on profits greater than kyats 10 000. The profit tax ranges from 0% to 50% for profits of kyats 10 000 to kyats 300 000. For profits exceeding kyats 300 000, the tax would equal kyats 146 703[5] plus 50% of the profit minus 300 000.

Table 4.2 summarizes the taxation policy applied to tobacco products sold in Myanmar.

[5] The amount of kyats 146 703 represents the maximum amount collected for profits up to kyats 300 000, it represents a little bit less that 50% of kyats 300 000.

Table 4.2. Taxation policy

	Commercial tax	Profit tax	Income tax
Raw tobacco (Virginia and cured tobacco)			
Locally grown	No	No	No
Imported	75% of landed cost < 1997 7.5% of landed cost > 1997 where landed cost = customs duty + CIF value; and customs duty = 300% of CIF value < 1997 and = 30% of CIF value > 1997	No	No
Cigarettes			
Locally manufactured	75% of TIRSP for sales > kyats 240 000	No	Resident domestic companies: 30% income tax Non-resident domestic companies: 35% income tax
Imported	75% of landed cost < 1997 7.5% of landed cost > 1997 where landed cost = customs duty + CIF value; and customs duty = 300% of CIF value < 1997 and = 30% of CIF value > 1997	No	No
Cheroots	10% of TIRSP for sales > kyats 240 000	0%–50% of profit for kyats 10 000 < profit < kyats 300 000 kyats 146 703 + 50% of profit (minus kyats 300 000) for profit > kyats 300 000 + an extra 10% of profit tax	No
Cigars and pipes	20% of TIRSP for sales > kyats 240 000	0%–50% of profit for kyats 10 000 < profit < 300 000 kyats kyats 146,703 kyats + 50% of profit (minus kyats 300 000) for profit > kyats 300 000	No
Betel preparations and pipe tobacco	25% of TIRSP for sales > kyats 240 000	0%–50% of profit for kyats 10 000 < profit < kyats 300 000 kyats 146 703 + 50% of profit (minus kyats 300 000) for profit > kyats 300 000	No

4.3. Government revenue from tobacco

Tables 4.3 and 4.4 show the amount collected from taxes on cheroots and cigarettes from 1995–96 to 1999–2000. The commercial tax and the profit tax collected from cheroots sharply decreased between 1995–96 and 1999–2000. The commercial tax on domestic cigarettes increased. The trend is less clear for the commercial tax for imported cigarettes and the customs duty for imported tobacco and imported cigarettes.

Table 4.3. Tax collected on cheroots/Myanmar tobacco, 1995–96 to 1989–90 (kyats, 1995 prices)

Fiscal year	Price (per 100)	Commercial tax collected (million kyats)	Profit tax collected (million kyats)
1995–96	61.50	22.10	11.70
1996–97	59.50	24.25	9.25
1997–98	90.55	31.62	9.09
1998–99	92.71	12.31	7.43
1999–2000	87.60	8.36	6.63

Source: Ministry of Finance and Revenue, Department of Internal Revenue. Central Statistical Organization: *Selected monthly indicators*, various issues.

Table 4.4. Tax collected on cigarettes at 1995 prices, kyats

Fiscal year	Price per unit	Commercial tax for domestic cigarettes (million kyats)	Income tax for domestic cigarettes (million kyats)	Customs duty for imported raw tobacco and cigarettes (million kyats)	Commercial tax for imported cigarettes (million kyats)
1995–96	34.00	73.11	n.a.	9.90	8.90
1996–97	35.50	22.54	n.a.	97.17	34.83
1997–98	39.21	199.40	17.49	268.24	81.84
1998–99	27.63	174.77	27.43	37.94	1.13
1999–2000	19.56	151.94	5.03	98.36	0.90

n.a.: not available.
Source: Ministry of Finance and Revenue, Department of Internal Revenue. Central Statistical Organization: *Selected monthly indicators*, various issues.

Tables 4.5 and 4.6 show the total revenue from tobacco taxation as well as total government revenue. Although data for total revenue and revenue for commodities, services and commercial were available for earlier years, official documents from the computerized system in customs department were available only after 1995–96. The same is true for total government revenue.

Table 4.6 shows that tobacco revenue as percentage of total revenue has declined, because total government revenue from other sources has increased during these years. Tobacco revenue is not a significant part of total government revenue: in 1999–2000, it represented slightly more than 1% of total revenue.

There are no additional forms of tax such as excise tax or health tax levied on tobacco products.

Table 4.5. Tax collected in local currency, Myanmar, 1995–96 to 1999–2000 (million kyats, 1995 prices)

Fiscal year	Commercial tax collected on cheroots	Profit tax collected on cheroots	Commercial tax collected for domestic cigarettes	Income tax collected from domestic companies	Customs duty for imported raw tobacco and cigarettes	Commercial tax on imported raw tobacco and cigarettes	Total tobacco revenue
1995–96	22.10	11.70	73.11	n.a.	9.90	8.90	125.71
1996–97	24.25	9.25	22.54	n.a.	97.17	34.83	188.04
1997–98	31.62	9.09	199.40	17.49	268.24	81.84	607.68
1998–99	12.31	7.43	174.77	27.43	37.94	1.13	261.01
1999–2000	8.36	6.63	151.94	5.03	98.36	0.90	271.21

n.a.: not available.

Source: Ministry of Finance and Revenue, Department of Internal Revenue. Central Statistical Organization: *Selected monthly indicators*, various issues.

Table 4.6. Government total and tobacco-related revenue, Myanmar, 1995–96 to 1999–2000 (million kyats, 1995 prices)

Fiscal year	Total revenue	Revenue from commodities, services and commercial tax	Total tobacco revenue	Tobacco revenue as % of total revenue
1995–96	16 687.00	7 045.00	125.71	0.75
1996–97	18 168.33	7 908.33	188.04	1.03
1997–98	23 874.16	1 123.97	607.68	2.55
98–99	20 188.34	9 489.35	261.01	1.29
99–2000	19 510.63	9 214.07	271.21	1.39

Source: Ministry of Finance and Revenue, Department of Internal Revenue. Central Statistical Organization: *Selected monthly indicators*, various issues.

4.4. Household economics for tobacco

Household expenditure

Several surveys have been conducted to investigate household expenditure on tobacco. The findings from these surveys have been compiled in Table 4.7. The total income and expenditures shown in this table are averages for all households. In all the surveys, reported expenditures are higher than reported incomes. In Myanmar, as in many countries, people are reluctant to answer questions and often understate their income, whereas they are likely to answer more accurately about their expenditures.

Table 4.7. Household expenditure for all households, Myanmar (kyats)

Survey	Year	Monthly income			Monthly expenditure		
		Urban	Rural	Total	Urban	Rural	Total
Central Statistical Organization household income and expenditure survey	1997	13 005	8 905	10 122	15 266	13 091	13 784
Household survey on tobacco economics	2001	17 420	16 268	17 291	19 367	16 546	18 413
Sentinel prevalence study on tobacco use	2001	10 862	7 603	8 437	n.a.	n.a.	n.a.

n.a.: not available.

Table 4.8 shows the mean household yearly expenditure distribution by region and as a percentage of total expenditure. Expenditure patterns for the urban and rural households are similar. The household survey on tobacco economics found mean yearly (monthly) expenditure on tobacco of kyats 5103 (425) per household, which was 2.7% of total household expenditure overall, 3.3% of total expenditures for urban households and 2.5% for rural households. However, these figures average tobacco expenditures over all households, including households that buy no tobacco products at all. If the analysis had looked only at households whose members use tobacco products, the percentages would be much higher – nearly twice as high.

Table 4.8. Mean annual household expenditure distribution, Myanmar, 2000 (kyats)

Item	Urban	% of total expenditure	Rural	% of total expenditure	Total	% of total expenditure
Food	126 190	66.8	123 566	67.3	135 363	67.5
Clothing	7 853	4.2	8 964	4.8	9 940	4.9
Fuel	11 105	5.8	8 813	4.8	9 974	5.0
Education	19 947	10.6	17 951	9.8	19 366	9.8
Health	8 122	4.3	7 311	4.0	7 895	3.9
Tobacco	**6 160**	**3.3**	**4 562**	**2.5**	**5 103**	**2.7**
Others	9 451	5.0	12 400	6.8	12 749	6.4
Total	188 828	100	183 567	100	200 390	100

Source: household survey on tobacco economics, 2000.

Household expenditure on tobacco

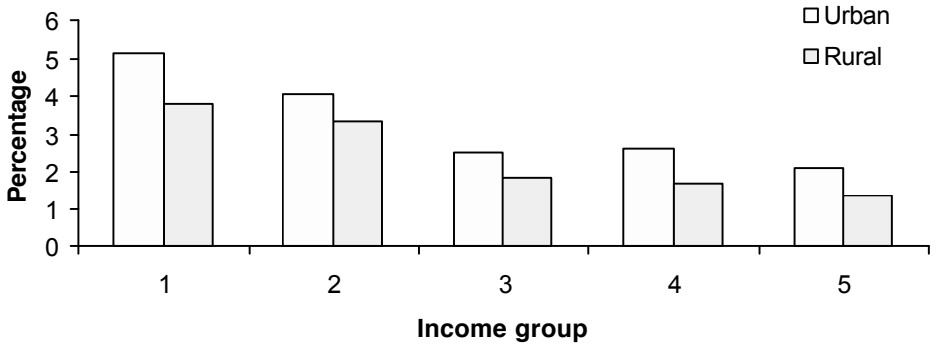
Table 4.9 and Figure 4.2 show the percentage of total expenditure on tobacco products among households by region and income group. Group 1 is the lowest income group. Although the actual expenditure in kyats was lower in low-income groups, the percentage of monthly expenditure for tobacco products is highest among the lowest income groups, and falls steadily for higher income groups. At each income level, it was higher in urban than in rural areas. Tobacco expenditures are a burden on the poor, and may well contribute to malnutrition because scarce money is spent on tobacco instead of food. This poses a real problem in particular for poor households who spend a high proportion of their expenditures on food and are more likely to suffer malnutrition.

Table 4.9. Percentage of monthly household expenditure on tobacco products by income groups, Myanmar (kyats)

Income group	% monthly expenditure on tobacco		
	Urban	Rural	Total
Income group 1	5.12	3.77	4.04
Income group 2	4.03	3.31	3.48
Income group 3	2.52	1.83	1.96
Income group 4	2.64	1.68	1.96
Income group 5	2.09	1.35	1.58
Total	3.22	2.47	2.65

Source: household survey on tobacco economics, 2000.

Figure 4.2. Tobacco expenditure as a percentage of total monthly expenditures by income group and region



Source: household survey on tobacco economics, 2000.

These tobacco expenditures are a much higher proportion of total expenditures than those reported in the 1997 household income and expenditure survey, where tobacco accounts for only about 1% of total household expenditures, and 3.9% of non-food expenditures (higher in rural areas at 4.2% than in urban areas at 3.1% (Table 4.10).

Table 4.10. Share of tobacco in non-food expenditure, Myanmar, 1997

Residence	Monthly household income (kyats)	Monthly household expenditure (kyats)			Tobacco share in non-food expenditure (%)
		Total	Non-food	Tobacco	
Total	10 122.98	13 784.51	4 005.06	154.74	3.86
Urban	13 005.76	15 266.42	4 846.43	150.29	3.10
Rural	8 905.65	13 091.16	3 611.86	151.47	4.19

Source: Central Statistical Organization, *Report of the 1997 household income and expenditure survey,* Table 4.11.1, p. 153, Table 4.12, p 165.

Income from tobacco production

The household survey on tobacco economics found that the mean yearly income from economic activities associated with tobacco for the households included in the study was kyats 110 720 and yearly income from tobacco growing by farm households was kyats 152 217. This is about 25-40% lower than average incomes reported in the survey.

4.5. Household level estimation

The survey collected data on consumption of the following tobacco products: cheroots, cigarettes, cigars, *phet kyan* (tobacco wrapped with *thenatphet* leaf) and chewing tobacco. The estimation focuses only on the consumption of cheroots, cigarettes and *phet kyan* since they represent 94% of tobacco consumption— very few individuals consume cigars (1%) and chewing tobacco (5%).

Methodology

Three parameters need to be estimated in order to measure the responsiveness of tobacco consumption to changes in the price of tobacco: elasticity of smoking participation, conditional price elasticity and total price elasticity. The price elasticity of smoking participation represents the impact of changes in price on the ratio of the number of individuals smoking to those not smoking. The conditional price elasticity indicates the responsiveness in the quantity smoked to changes in price among individuals who smoke. The total price elasticity includes both of those elasticities.

The calculation of the elasticities is as follows:

1. Estimating cigarette tax paid as a function of income, to use in the next equation.

$Tax = f(Y)$ => estimate Tax' and replace its values where we have no tax values in our Tax data (where non-smokers answered) => Tax^*.

2. Estimate price independently of whether a person is a smoker or not (in order to generate a notional price faced by non-smokers, for whom we have no expenditure data to use to estimate a price):

$P = f(Tax, Y, Educ, Noread, Urban)$ => estimate P' and replace its values where we have no price values in our P data (where non-smokers answered) => P^*.

3. Estimate the probability of a person's smoking as a function of income, price, age, education and literacy, gender, marital status and urban/rural residence:

$$p_{smoke} = \frac{1}{1 + e^{-(\alpha_1 + \beta_1 P^* + \beta_2 Y + \beta_2 Age + \beta_4 Age^2 + \beta_5 Educ + \beta_6 Noread + \beta_7 Female + \beta_8 Married + \beta_9 Urban)}}$$

$\beta_1^* = \beta_1 \times (1 - \Pr oportion\ of\ smo\ker s)$ = price elasticity of smoking participation.

4. Estimate consumption equation C (for smokers only):

$C = \alpha + \beta P + \delta Y + \gamma\ Cheroot + \partial\ PhetKyan + \varsigma\ Addict + \lambda\ Age + \kappa\ Age^2 + \tau\ Educ + \vartheta\ Noread + \mu\ Female + \psi\ Married + \ell\ Urban$

β = conditional price elasticity for smokers

5. Total price elasticity = $\beta_1^* + \beta$
where:

C = monthly consumption of cigarettes cheroots and *phet kyan* (per stick)

P = price of cigarettes, cheroots or *phet kyan* in kyats (expenditure on cigarettes, cheroots and *phet kyan*/consumption of cigarettes, cheroots and phet kyan) (per stick)

Y = per capita monthly income in kyats (household income divided by the number of individuals in the household)

Tax = cigarette tax (75% of the cigarette price), tax on cheroots (10% of the price of cheroot) or tax on *phet kyan* (10% of the price of *phet kyan*) in kyats (per stick)

Age = age of the individual (15 years and up)

Female = sex dummy = 1 if the person is a female and = 0 if the person is male

Noread = dummy variable = 1 if person is illiterate and = 0 otherwise

Educ = number of years of schooling

Urban = dummy variable for place of residence, = 1 if the person lives in an urban area and = 0 otherwise
Married = dummy variable for marital status, = 1 if the person is married and = 0 otherwise

Addict = addiction variable corresponding to the numbers of years of smoking

Cheroot = dummy variable = 1 if the person smokes cheroots and = 0 if the person smokes cigarettes

PhetKyan = dummy variable = 1 if the person smokes *phet kyan* and = 0 if the person smokes cigarettes.

Logarithmic values of the data are used for the estimation. The probability of smoking is estimated in a logit model, and the consumption equation is estimated with ordinary least squares. The price elasticity is estimated for all the population and also by age group and income group. Results are shown below (the proportions of smokers by age and income groups are listed in Appendix 6).

The income elasticity is estimated following the same method.

A Hausman test is performed in order to test whether the price data are endogenous. The test is applied to all the logit and consumption equations. The results are provided in Appendix 5. Results show that for all the different estimations the price is exogenous.

Results

Price elasticities
Results shown in Table 4.11 show a very high negative and significant price elasticity; for each 10% increase in prices of tobacco products, consumption would decrease by about 16%. The value of the elasticity of smoking participation (–1.633) is much higher than the conditional elasticity of demand (–0.342), which means that an increase in the price of tobacco has a stronger effect on the decision to smoke or to quit smoking than on the quantity of tobacco products consumed by smokers.

Table 4.11 also shows the reaction to price changes among the population divided by age group. The price elasticities are all negative and significant, and the impact of price changes decreases with age. Young individuals seem more responsive to price changes than older individuals. Three reasons could explain this. First, because tobacco use is highly addictive, older and hence usually longer-term users are less able to quit and reduce their consumption when facing higher prices (Lewit et al., 1981). Secondly, youth smoking is believed to be more determined by peer pressure than adult smoking. In other words, the effect of the price increase will be compounded because of peer pressure (Lewit et al., 1981). Thirdly, because younger individuals tend to have less income than their older counterparts, it is more difficult for the young to absorb the price increase (Grossman and Chaloupka, 1997).

Table 4.11. Overall price elasticity and price elasticity by age group

	Overall	Age group					
		15–24	25–34	35–44	45–54	55–64	65+
Logit coefficient on price	–1.633*** (0.111)	–2.157*** (0.37)	–1.52*** (0.226)	–1.488*** (0.231)	–1.358*** (0.262)	–1.444*** (0.283)	–1.315*** (0.273)
Elasticity of smoking participation	–1.277	–1.992	–1.231	–1.08	–0.943	–0.856	–0.887
Conditional price elasticity of demand	–0.342*** (0.021)	–0.418*** (0.065)	–0.365*** (0.046)	–0.318*** (0.039)	–0.32*** (0.06)	–0.397*** (0.052)	–0.28*** (0.062)
Total price elasticity	–1.619	–2.41	–1.596	–1.398	–1.263	–1.253	–1.167

*** Significantly different from 0 at the 1% level.
Source: Author's estimates

Table 4.12 shows price elasticities by income group. The values are also highly negative and significant, and individuals from the highest income group react less to increases in price than individuals from lower income groups. Theory would suggest that individuals of the lowest group would be the most sensitive to increases in price, which is not the case in the results below. This could be explained by the quality of the income data used in the estimation. Income data were collected from heads of households only and then distributed equally among all the members of each household; this approximation is a bit rough. Income data could also be biased due to the fact they are often underreported in surveys because respondents are reluctant to reveal the real value of their earnings. Table 4.13 shows that rural residents seem to be more price sensitive than urban residents.

Table 4.12. Price elasticity by income group

	Income quintile				
	Lowest	2	3	4	Highest
Logit coefficient on price	–1.444*** (0.218)	–1.618*** (0.244)	–1.736*** (0.272)	–1.75*** (0.266)	–1.571*** (0.257)
Elasticity of smoking participation	–1.087	–1.246	–1.411	–1.376	–1.238
Conditional price elasticity of demand	–0.419*** (0.045)	–0.313*** (0.041)	–0.343*** (0.058)	–0.357*** (0.05)	–0.239*** (0.05)
Total price elasticity	–1.056	–1.559	–1.754	–1.733	–1.477

*** Significantly different from 0 at the 1% level.
Source: Author's estimates

Table 4.13. Price elasticity by geographical location

	Geographical location			
	Urban		Rural	
Logit coefficient on price	–1.524***	(0.223)	–1.651***	(0.128)
Elasticity of smoking participation	–1.188		–1.292	
Conditional price elasticity of demand	–0.239***	(0.052)	–0.362***	(0.023)
Total price elasticity	–1.427		–1.654	

*** Significantly different from 0 at the 1% level.

Income elasticities

Estimates were made of the extent to which tobacco consumption behaviour changes with changes in income. In many countries, individuals increase their consumption of tobacco when their income increases. Results shown in Tables 4.14, 4.15 and 4.16 below vary a lot in each sub-group, in some cases, consumption falls at higher income levels and in some cases it rises. Most results are not statistically significant. This could be due to the quality of the income data.

Table 4.14. Income elasticity by age group

	Overall	Age group					
		15–24	25–34	35–44	45–54	55–64	65+
Logit coefficient on income	–0.366	0.181	–0.044	–0.049	–0.205***	–0.2	0.154
	(0.279)	(0.144)	(0.098)	(0.095)	(0.1)	(0.107)	(0.119)
Elasticity of smoking participation	–0.338	0.167	–0.036	–0.036	–0.142	–0.119	0.104
Conditional income elasticity of demand	–0.417***	–0.015	–0.092	0.008	–0.014	0.026	–0.018
	(0.065)	(0.054)	(0.038)	(0.033)	(0.039)	(0.038)	(0.046)
Total income elasticity	–0.755	0.152	–0.128	–0.028	–0.156	–0.093	0.086

*** Significantly different from 0 at the 1% level.

Source: Authors' estimates

Table 4.15. Income elasticity by income group

	Income quintile				
	Lowest	2	3	4	Highest
Logit coefficient on income	0.042	–0.283	1.34	–1.571*	–0.386*
	(0.114)	(0.69)	(0.845)	(0.822)	(0.198)
Elasticity of smoking participation	0.032	–0.218	1.089	–1.235	–0.304
Conditional income elasticity of demand	–0.107***	0.232	–0.353	0.433	–0.116
	(0.045)	(0.261)	(0.349)	(0.323)	(0.085)
Total income elasticity	–0.075	0.014	0.736	–0.802	–0.42

*** Significantly different from 0 at the 1% level.

Source: Authors' estimates

Table 4.16. Income elasticity by geographical location

	Geographical location	
	Urban	Rural
Logit coefficient on income	0.26***	–0.153***
	(0.097)	(0.052)
Elasticity of smoking participation	0.203	–0.12
Conditional income elasticity of demand	–0.074*	0.013
	(0.042)	(0.02)
Total income elasticity	0.129	–0.107

*** and * Significantly different from 0 at the 1% and 10% levels respectively.

Source: Authors' estimates

5. HEALTH CONSEQUENCES OF TOBACCO CONTROL

5.1. Methodology for estimating tobacco-attributable health care costs

An estimation of the smoking-attributable disease burden and direct medical costs borne by patients was conducted in three stages.

Stage one

National data for outpatient visits and admissions for eight major diseases related to tobacco (lung cancer, cancer of head and neck, hypertension, stroke, ischaemic heart disease, tuberculosis, chronic obstructive airway disease, and other respiratory diseases including asthma) were collected from the Health Management Information System (HMIS) section of the Department of Health Planning from 1995 to 1999. HMIS collects a 10% sample of patients on one day, once in each season every year, from all government hospitals (most hospitals in the country). These 10% sample data are weighted, and indicators calculated for yearly outpatient visits and admissions.

With the growth of health care services provided by the private sector, use of outpatient clinics of state-owned hospitals has been declining in recent years. The reporting efficiency of outpatient departments has also become less reliable. Hence, outpatient department data were not available for all eight diseases, but only for three diseases: tuberculosis, chronic obstructive airway disease and hypertension.

Stage two

Medical doctors and staff at the cardiac medical, chest medical and radiotherapy units of Yangon General Hospital were asked to cooperate with the survey by interviewing outpatients on each visit and inpatients on discharge from their units. A structured questionnaire was used to collect information on direct medical costs borne by the patients per outpatient visit and per admission. Direct medical costs included fees for drugs, equipment, X-rays, ultrasound, echocardiograph and all cardiac investigations, all laboratory investigations, radiology, etc. For patients who used private wards, direct medical costs included room charges and service fees. (Most patients did not stay in private wards.)

Most medical personnel in these facilities are overworked, so the design of the questionnaire was kept very simple. Only the total amount spent by the patient for one outpatient visit and for one admission was recorded. Breakdown of costs into different categories would require much more time from patients and medical personnel; besides, patients on discharge usually could not remember how much they paid for each category of cost. Hence, only round, out-of-pocket figures were recorded. Hospital reporting systems still do not keep records of cost by case.

Costs of laboratory investigations and costs for the use of machines such as ultrasound, made available through the community cost sharing system, were charged by the units concerned; but patients could choose where to buy drugs and small equipment. Therefore it was not possible to collect all information on each category of cost.

The cost borne by the government in giving treatment for each category of illness was not calculated in this survey.

Data on total admissions and outpatient cases for all forms of cancer cases were collected from the Medical Records Department of Yangon General Hospital and from the radiotherapy unit, for nearly 10 years, from 1991 to 1999. The data show a marked increase in the number of lung cancer cases admitted to the radiotherapy unit. The number of oesophageal cancer cases and the number of lung cancer cases were also found to be rising (Table 5.2, Figure 5.1).

Data from the private sector are not available.

Stage three

Data from Yangon General Hospital were collected for two months from December 2000 to January 2001. Data cleaning and analysis was done in February and March, 2001. The cost borne by the patient per outpatient visit and per admission are shown in Table 5.3.

Population-attributable risks (PAR) for tobacco—the fraction of the cases of each disease that can be attributable to tobacco use—for Myanmar was estimated using the relative risks from the People's Republic of China[6]. These rates were applied to the total number of tobacco-related diseases (provided by HMIS) for five years (Table 5.4).

Direct medical costs were calculated for 1999. It was assumed that there was no great change in direct medical costs from 1999 to 2000 as the fees for all forms of investigation, radiotherapy, etc., did not change in that period (Table 5.5).

5.2. Tobacco-related morbidity

Table 5.1 shows the number of admissions due to selected tobacco-related diseases: cancer of the lips, tongue, oesophagus, stomach, liver, larynx, lungs, cervix and bladder; tuberculosis of the respiratory system; chronic bronchitis; emphysema; chronic obstructive airway disease; hypertension; ischaemic heart disease; and stroke. There has been an increase in admissions of cancers of the oesophagus, stomach, lungs and larynx and also an increase in admissions due to tuberculosis of the respiratory system and stroke over the study period.

[6] It should be noted though that tobacco initiation and the intensity of use differ across countries (and societies), then *RR* for different illnesses should be country(or society)-specific. Consequently, conclusions from this approximation should be used with caution

The data for Table 5.1 and 5.2 were obtained from the HMIS. Outpatient numbers and inpatient numbers are coded, and every fifth code number is entered into Hospital Form II and reported to the central planning office of the Department of Health Planning. At the central office, these numbers are weighted to estimate monthly and yearly figures.

Morbidity and mortality surveys were also done by the same department. For these surveys, one day each season (summer, rainy and winter) was fixed for the whole country. For example 15 June was fixed for the rainy season. Data on all outpatients and admissions to all hospitals in the country for 15 June were collected and sent to the central office, where the data were aggregated and weighted.

Table 5.1. Admissions (national)

Tobacco- related disease	1995	1996	1997	1998	1999
Lip cancer	0	13	0	0	13
Tongue cancer	81	53	77	110	116
Oesophageal cancer	297	318	386	425	528
Stomach cancer	987	995	1210	1084	1158
Liver cancer	757	663	669	535	553
Larynx cancer	406	889	232	343	257
Lung cancer	743	902	1 004	1 797	1 544
Cervical cancer	960	1 154	1 390	1 921	2 084
Bladder cancer	108	80	129	96	180
Respiratory tuberculosis	18 477	16 544	17 207	19 001	23 135
Chronic bronchitis	879	517	502	508	656
Emphysema	54	93	51	82	142
COAD	635	650	656	1 098	965
Hypertension	7 813	5 678	6 847	7 738	7 025
Ischaemic heart disease	1 978	2 043	2 613	3 114	2 265
Stroke	3 717	3 648	3 822	4 253	4 156
Total admissions	803 505	888 965	842 234	884 902	869 153

Source: Source: Department of Health, Health Management Information System.

Table 5.2 shows data on outpatients for respiratory tuberculosis, chronic bronchitis and hypertension from 1996 to 1999. There is an increase in number of cases of respiratory tuberculosis over the years, and the number of chronic bronchitis cases was highest in 1999.

Table 5.2. Outpatients (national)

Tobacco-related disease	1996	1997	1998	1999
Respiratory tuberculosis	31 460	29 847	32 267	34 687
Chronic bronchitis	6 453	5 647	4 840	7 260
Hypertension	43 560	46 787	47 593	41 947
Total outpatients	2 190 100	2 173 160	2 025 540	1 929 547

Source: Department of Health, Health Management Information System.

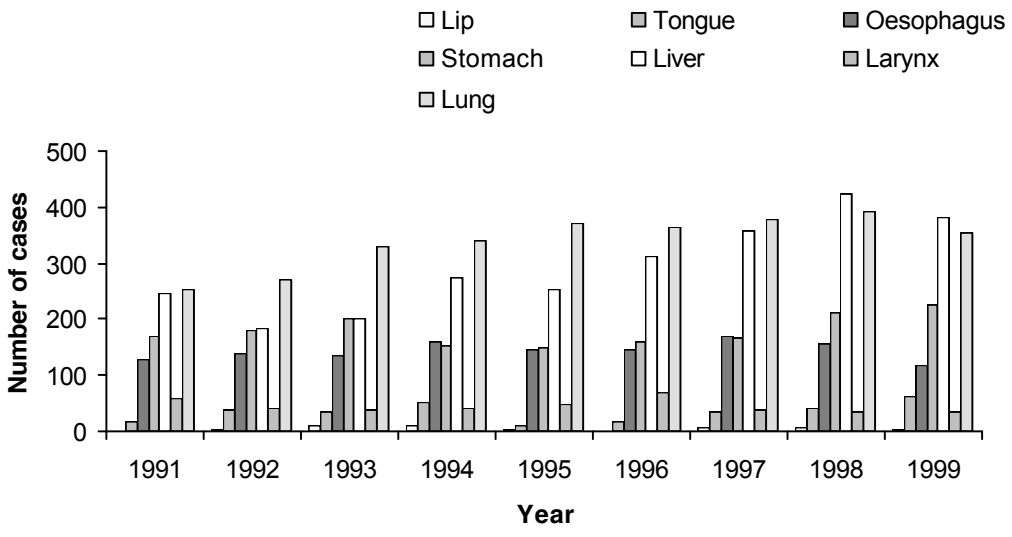
Table 5.3 shows the total number of cancer cases admitted to Yangon General Hospital from 1991 to 1999. It shows a much higher incidence of cancer of the lungs, lips, tongue, oesophagus, stomach, liver, larynx and bladder among males. The data are graphed in Figure 5.1, which clearly shows the increasing trend in the total number of cancer cases—especially for oesophagus and lungs.

Table 5.3. Cancer cases admitted to Ya ngon General Hospital, 1991–99

Tobacco-related disease		1991	1992	1993	1994	1995	1996	1997	1998	1999
Lung cancer	M	177	191	201	246	268	266	281	264	236
	F	76	81	129	95	102	100	98	130	118
Lip cancer	M	0	0	0	0	0	0	0	0	0
	F	0	0	0	0	0	0	1	0	0
Tongue cancer	M	3	0	1	3	1	2	2	3	3
	F	1	2	0	2	1	0	2	0	2
Oesophageal cancer	M	12	18	16	26	21	16	17	10	3
	F	5	2	5	6	5	7	5	5	2
Stomach cancer	M	7	17	20	10	3	12	10	13	13
	F	8	3	5	6	8	7	7	8	5
Liver cancer	M	27	28	24	24	42	48	40	48	47
	F	10	5	11	14	14	11	13	18	14
Larynx cancer	M	11	4	6	5	4	5	4	1	3
	F	0	0	2	3	0	2	1	0	1
Cervical cancer	F	24	20	19	19	12	15	16	13	18
Bladder cancer	M	2	2	1	5	3	1	2	0	0
	F	2	0	2	0	1	0	0	0	0

Source: Yangon General Hospital, Medical Records Department.

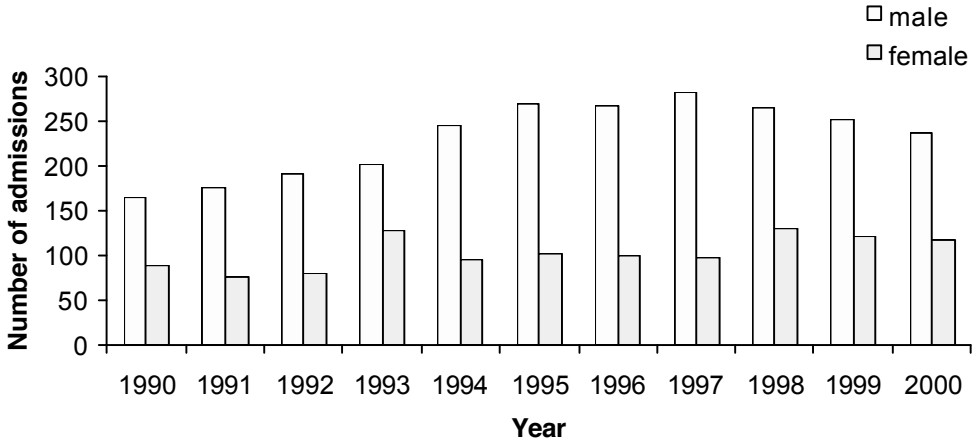
Figure 5.1. Admission of cancer cases to Yangon General Hospital, 1991–95



Source: Yangon General Hospital Medical Records Department.

In Figure 5.2, the trend in lung cancer cases admitted to the radiotherapy unit of Yangon General Hospital is shown from 1990 to 2000. It is seen that lung cancer rates were higher among males than females, reflecting higher their smoking prevalence.

Figure 5.2. Lung cancer cases admitted to the radiotherapy unit, Yangon General Hospital, 1990–2000



Source: Yangon General Hospital, Medical Records Department.

Table 5.4 presents the total number of cancer cases treated at outpatient departments of Yangon General Hospital from 1991 to 1999.

Table 5.4. Total number of cancer cases treated at outpatient departments of Yangon General Hospital, 1991–99

Cancer site		1991	1992	1993	1994	1995	1996	1997	1998	1999
Lip	M	0	3	6	2	2	0	5	3	0
	F	0	1	4	9	2	0	2	3	2
Oesophagus	M	7	25	23	38	7	12	23	32	45
	F	12	12	12	14	14	6	10	11	18
Tongue	M	86	107	99	107	100	101	132	108	80
	F	43	33	36	51	46	45	39	48	39
Stomach	M	97	110	128	85	98	102	107	125	137
	F	73	69	72	67	53	58	64	88	90
Liver	M	198	148	144	207	203	230	250	326	301
	F	47	36	58	67	52	83	109	98	81
Larynx	M	51	34	31	29	30	53	29	29	29
	F	9	6	6	12	18	18	8	6	7
Cervical	M	0	0	0	0	0	0	0	0	0
	F	405	400	433	519	400	429	429	451	448
Bladder	M	23	29	34	44	16	6	8	6	13
	F	4	20	15	20	15	1	2	4	3

Source: Yangon General Hospital, Medical Records Department.

5.3. Smoking-attributable direct medical costs from major diseases

Table 5.5 presents cost per admission and cost per outpatient visit as calculated in the study. As described above, costs include costs for drugs and all forms of investigations borne by the patient.[7]

Table 5.5. Cost borne by the patient for tobacco-related morbidity (kyats)

Disease	Cost per outpatient visit	Cost per admission
Cancer		
Lung	3 886	20 308
Head and neck	8 368	17 500
Respiratory disease		
COAD	4 723	8 863
Tuberculosis	3 313	8 000
Other	2 500	14 666
Circulatory disease		
Hypertension	2 420	2 500
Stroke	3 000	50 000
Ischaemic heart disease	2 000	18 000

Source: Survey conducted by authors

5.4. Estimated smoking-attributable disease burden

Table 5.6. Estimated number of outpatient visits for selected diseases, and those attributable to tobacco use (attr), Myanmar 1995–99

Year	TB	TB attr (PAR = 0.246)	COAD	COAD attr (PAR = 0.283)	Hyp	Hyp attr (PAR = 0.325)
1996	31 460	7 739	6 453	1 826	43 560	14 157
1997	29 847	7 342	5 647	1 598	46 787	15 205
1998	32 267	7 938	4 840	1 370	47 593	15 467
1999	34 687	8 533	7 260	2 055	41 947	13 632

Source: Authors' estimates

[7] The costs reported are out-of-pocket costs borne by patients as part of a cost recovery mechanism. Patients who can afford to, are asked to pay for some of the diagnostic facilities such as X-ray, ultrasound and laboratory examinations and for radiology, and the cost of subsidized drugs along with a 10% service charge. Those identified as poor or indigent, nearly 15% of the patients, receive exemptions from these charges through the use of trust funds managed by the hospitals. The government bears the cost of hospital infrastructure and salaries for all medical and paramedical professionals. Individuals are charged for private beds and rooms on demand. The current survey does not include the cost of infrastructure or labour; thus mostly variable costs are reported in this study.

Table 5.7. Estimated number of admissions for selected diseases, and those attributable to tobacco use (Attr), Myanmar 1995–99

Year	TB	TB Attr	COAD	COAD Attr	ORD (other Resp. diseases)	ORD Attr
		(PAR= 0.246)		(PAR= 0.283)		(PAR= 0.325)
1995	18 477	4545	635	179	933	303
1996	16 544	4070	650	184	610	198
1997	17 207	4233	656	186	553	180
1998	19 001	4674	1098	311	590	192
1999	23 135	5691	965	273	798	259

Year	Hypertension	Hyp Attr	IHD	IHD Attr	CVA	CVA Attr
		(PAR= 0.325)		(PAR= 0.293)		(PAR = 0.327)
1995	7813	2539	1978	580	3717	1215
1996	5678	1845	2043	599	3648	1193
1997	6847	2225	2613	766	3822	1250
1998	7738	2515	3114	912	4253	1390
1999	7025	2283	2265	664	4156	1359

Year	CA lung	CA lung Attr	CA head and neck	CA head and neck Attr
		(PAR= 0.134)	Inpatient	(PAR= 0.306)
1995	743	100	784	240
1996	902	121	1193	365
1997	1004	135	695	213
1998	1797	241	1070	327
1999	1544	207	914	280

TB: Respiratory Tuberculosis
COAD: Chronic Obstructive Airways Disease
IHD: Ischaemic heart disease
CV: cardio vascular accident (stroke)
CA: cancer

Table 5.8 presents estimates of direct medical costs (average cost of treatment) due to selected tobacco-attributable diseases in 1999, amounting to kyats 85.3 million for admissions and kyats 37.9 million for outpatient cases. The admissions were calculated for cancer of the lungs and head and neck, respiratory tuberculosis, chronic obstructive airway disease, other respiratory diseases, ischaemic heart disease, stroke and hypertension. The estimate for outpatient cases was calculated only for respiratory tuberculosis and other respiratory diseases because there was no information available for other diseases.

It is worth noting here that we have not taken into account people who might have received no medical care, but whose ailment imposes costs to their families and possibly to society. If these patients were to receive care in a health facility, the direct costs of tobacco-related illness would be higher.

Table 5.8. Direct medical costs for tobacco-related diseases, Myanmar, 1999 (kyats)

Diseases	OPD cases	Cost per visit	Total cost	Admissions	Cost per admission	Total cost
Lung cancer	n.a.	3 886	n.a.	207	20 308	4 203 756
Head and neck cancer	n.a.	8 368	n.a.	280	17 500	4 900 000
Respiratory tuberculosis	8 533	3 313	28 269 829	5 691	8 000	45 528 000
COAD	2 055	4 723	9 705 765	273	8 863	2 419 599
Other respiratory	n.a.	2 500	n.a.	259	14 666	3 798 494
Ischaemic heart disease	n.a.	2 000	n.a.	664	18 000	11 952 000
Stroke	n.a.	3 000	n.a.	1 359	50 000	6 795 000
Hypertension	13 632	2 420	32 989 440	2 283	2 500	5 707 500
Total	24 220		70 965 034	11 016		85 304 349

n.a.: not available.
Source: Author's estimates

5.5. Some research findings on smoking-attributable diseases in Myanmar

In **1988** the respiratory effects of occupational exposure to tobacco dust were studied in 476 workers from Cigarette Factory 1, Yangon. High prevalence of cough, tightness of chest and breathlessness in females and chronic phlegm in males were found. Chronic respiratory effects of occupational exposure to tobacco dust were observed in females.[8]

In 1**989**, a retrospective analysis was made of clinical profiles and risk factors of 70 patients with acute myocardial infarction admitted into the Yangon General Hospital and New Yangon General Hospital during 1988. Subgroup analysis revealed that 43 patients were smokers, of whom 26 smoked cheroots, 6 cigarettes but only 1 smoked cigars.[9]

In **1990**, a retrospective analysis was made of clinical profiles of 360 patients with acute myocardial infarction admitted into the Yangon General Hospital and New General Hospital from January 1987 to October 1990. Subgroup analysis showed that 26 patients

[8] Phyu Phyu Aung et al., Department of Physiology, Institute of Medicine 1, Department of Medical Science and Physiology Research Division, Department of Medical Research. *Chronic respiratory effects of occupational exposure to tobacco dust*, 1988.
[9] Phyu Phyu Aung et al., CVD Project, Department of Health. *Profiles of patients with myocardial infarction admitted to coronary care units of Yangon General Hospital and New Yangon General Hospitals*, 1989.

were under the age of 45, and among these patients the majority (77%) smoked. Among the smokers 65% smoked cheroots, 20% cigarettes, 10% cigars and the rest pipe.[10]

In **1987**, a survey of chronic respiratory disease in urban and rural communities was conducted. Of 8,476 persons interviewed, 34.05% were smokers, and the proportion of male to female smoking was 2:1. The lowest income groups, farmers, and the least educated groups smoked the most. Higher incidence of chronic respiratory disease was found among smokers in all categories.[11]

In **1990**, a preliminary study on the effect of cheroot smoking on ventilatory functions was conducted with the aim of determining whether cheroot smoking has similar effects to cigarette smoking. A study of ventilatory functions was carried out on 36 Myanmar male pure cheroot smokers and the results compared with those found in 39 Myanmar male non-smokers. A significant decrease in lung function (Forced Vital Capacity 1 and Forced Expiratory Volume 1) was found with increased cheroot smoking.[12]

In **1990**, a study into the effect of cigarette smoking on nasal mucociliary activity was conducted. Nasal mucociliary transport rates of 20 healthy male non-smokers and twenty cigarette smokers were measured using Saccharin Crystal Technique by Proctor (1973). Significant decreases in nasal mucociliary transport rates were observed in cigarette smokers.[13]

In **1996**, a study of the effects of tobacco smoking on the lipid profile of apparently healthy Myanmar adults was conducted. The nicotine content of an imported cigarette (*Lucky strike*) and a locally manufactured cheroot (*Joe Thein*) was determined using high performance liquid chromatography. The results showed that although net tobacco weight per cheroot was significantly greater than that per cigarette, the mean nicotine content per cigarette was significantly greater than that per cheroot. A significant rise of serum free fatty acids in heavy smokers was seen in both cheroot smoking and cigarette smoking.[14]

In **1997**, a study of lung functions in cigarette smokers and cheroot smokers was conducted in 75 apparently healthy men, consisting of 30 non-smokers, 25 cigarette smokers and 20 cheroot smokers, 22 to 68 years old. It concluded that both cigarette smoking and cheroot smoking are associated with a decrease in pulmonary functions. The effect of cheroot smoking was found to be more marked than that of cigarette smoking.[15]

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[10] Aung, Aung Chein, Kyi Kyi San Amung, Khin Mar Yi, Kywe Kywe Thein, Khin Thida Thwin. *A clinical profile of acute myocardial infarction patients under the age of 45 years*, 1990.
[11] Kyaw Tint, Thein Ngwe, Department of Preventive and Social Medicine, Institute of Medicine 1 and CVD Project. *Chronic respiratory disease in urban and rural communities*, 1990.
[12] Phyu Phyu Aung et al., Occupational Health Unit, Department of Health and Nutrition Research Division, Department of Medical Research. *A preliminary study on the effect of cheroot smoking on ventilatory functions*, 1990.
[13] Maung Maung Cho, Phyu Phyu Aung, Tin Tun. *The effect of cigarette smoking on nasal mucociliary activity*, 1990.
[14] Kyaw Nyunt thein, Myo Win, Thin Thin Hlaing, Nyunt Tin. *A study of the effects of tobacco smoking on lipid profile of apparently healthy Myanmar adults*, 1996.
[15] Phyu Phyu Khin, Maung Maung San Yi, Institute of Medicine, Mandalay. *The study of lung functions in cigarette smokers and cheroot smokers*, 1997.

6. POLICY RECOMMENDATIONS

Increase taxes on all tobacco products

Currently tobacco is a cheap product; even in countries where the price is relatively high, cigarettes often cost less than snack items or a drink, so many smokers can afford not the odd one or two, but usually 20 or so a day.[16] Section 4 shows the huge decline in real tobacco product prices in Myanmar in recent decades. This almost certainly increased consumption and thus the burden of disease and death toll related to tobacco use.

Higher prices of tobacco products are the most effective way to reduce consumption. Results from Section 4 above show that an increase of 10% in the price of tobacco products would decrease consumption by of about 16%. The most price-sensitive groups would be young people and low-income groups.

We recommend that taxes be used to insure a price increase of all tobacco products by at least 5% in excess of overall inflation every year, as recommended by the World Health Organization. Taxes on all tobacco products should be increased, so that consumers do not simply switch to cheaper products. It is important to tax all tobacco products if taxation is to be effective in reducing health risks. Special attention should be given to cheroots, which are the most widely used, the cheapest and most lightly taxed.

According to the commercial tax law, only 10% tax is levied on cheroots, 20% on cigars and pipes, 25% on betel preparations and 75% on cigarettes. Commercial tax rates on cigarettes were reduced from 75% to 7.5% of the landed cost of imported tobacco and tobacco products in 1997, following an agreement among ASEAN countries. The tariff on imported tobacco and tobacco produce was also reduced from 300% to 30% in 1997.

The current 10% tax rate on cheroots is a historic low. The cheap price of cheroots (kyats 183 per 100 in 2000) is the key reason that they are the most commonly used tobacco product among all age, sex and income groups. Studies show that cheroots are just as harmful to health as cigarettes (Section 5 above).

We also recommend that the low commercial tax rates and tariffs on tobacco and tobacco manufactures should be reconsidered. Tobacco and tobacco products are very harmful to health, and should not be treated in the same way as commodities that benefit users.

Strengthen other key tobacco control measures

All the existing surveys show that smoking prevalence is high in Myanmar, and that a high percentage of adolescent males have experimented with tobacco, many of whom become regular users.

[16] Townsend J. Price and consumption of tobacco. *British medical bulletin*, 1996, 52(1):132–42.

An increasing trend in the admissions of cancer cases was also found from hospital records. There was also an increase in cardiovascular and respiratory disease, a huge portion of them attributable to tobacco (Section 5).

The Tobacco Free Initiative Project of the Department of Health has laid down a National Policy and Plan of Action for Tobacco Control for 2002–04. The following recommendations are consistent with WHO guidelines and in line with the National Tobacco Control Policy and Plan of Action.

1. **Legislation should be enforced to make schools, workplaces and public places smoke-free; to ban all advertisements and promotion of tobacco products through all media and sponsorship; and to put large, strong warning labels on all forms of tobacco products; and to forbid access of minors under the age of 18 to all forms of tobacco.**

2. Health promotion using mass media and interpersonal communication programs on the dangers of tobacco use, the benefits of quitting, and the health, social and economic impact of tobacco use should be enhanced.

3. Sectoral and multisectoral coordination and collaboration among ministries should be strengthened. Coordination, collaboration and new partnership promotion with the community and with local as well as international nongovernmental organizations, UN agencies and other international bodies concerned should be improved.

4. Research activities to obtain relevant information and data on smoking prevalence, behavioural patterns, health and socio-economic impacts of smoking should be encouraged.

Improve surveillance and research

Data reporting, recording and compilation
Data on production of Myanmar and Virginia tobacco have been recorded regularly for decades and published yearly in the statistical year books by the Central Statistical Organization. But there have been no published data on the cheroot industry since 1962. Only a small percentage of cheroot makers are registered under the social security scheme. Hence, data on cheroot factories, their employees, and wholesale and retail sales of cheroots are not available. Only the numbers of employees working in the state-owned cigarette factories were available.

Data from domestic private sector cigarette companies were also not available. Imported volumes of raw material are registered at the Department of Customs, but there was no information on the volume of cigarettes produced from these materials by private enterprises.

We therefore recommend that all establishments of privately owned cigarette enterprises, cheroot industries, and wholesale and retail shops dealing in all forms of tobacco products should be licensed, and all employees registered under the social security scheme.

Health Management Information System

With the growth of the private sector, use of outpatient clinics at public hospitals has been declining over the years. There is still a lack of information on the private sector. There is no proper reporting system for the private sector. Information on the morbidity and mortality data of patients using private clinics and hospitals is not available. Therefore, there is a wide gap between the real national situation and the reported data from public hospitals.

We recommend that a system should be established for regular reporting by the private sector to the Ministry of Health. Registers and reporting formats should be produced by the Ministry of Health, and the private sector should be instructed to report regularly. Monitoring the HMIS of the private sector should be jointly conducted by the Department of Health and Department of Health Planning.

APPENDICES

Appendix 1. Population

Table A1.1 Population Estimates of Myanmar (1980-81 to 2000-2001)

Serial Number	Year	Total Population (millions)	Annual Growth Rate
1.	1980-81	33.61	2.03
2.	1985-86	37.07	1.96
3.	1988-89	39.29	1.96
4.	1989-90	40.03	1.88
5.	1990-91	40.79	1.88
6.	1991-92	41.55	1.88
7.	1992-93	42.33	1.88
8.	1993-94	43.12	1.87
9.	1994-95	43.92	1.87
10.	1995-96	44.74	1.87
11.	1996-97	45.57	1.84
12.	1997-98	46.40	1.84
13.	1998-99	47.26	1.85
14.	1999-2000	48.12	1.82
15.	2000-2001	49.01	1.87

Source: Central Statistical Organization, *Statistical Year Book ,1998,*(Yangon, 1998) Table 2.01, page 14 and Table 2.03, page 19

Appendix 2. Employment

Table A2.1 Estimated Employment in Various Sectors, Fiscal Year 1996/97

Sr. No	Sector	Numbers(Thousand)	Ratio (Percent)
1.	Agriculture	11381	63.35
2.	Livestock and Fishery	391	2.18
3.	Forestry	188	1.05
4.	Mining	132	0.73
5.	Processing and Manufacturing	1573	8.76
6.	Power	21	0.12
7.	Construction	378	2.10
8.	Transport and Communications	470	2.62
9.	Social Services	577	3.21
10.	Administration and other Services	835	4.65
11.	Trade	1746	9.72
12.	Workers n.e.s	272	1.51
	Total	17964	100.0

Note: Total employment is based on the working age-group of 15-59 years.
Source: Ministry of National Planning and Economic Development, *Review of the Financial, Economic and Social Conditions for 1996/97(Yangon, 1997)* Table 3,p 20.

Table A2.2 Labour Force, Labour Force Participation Rate and Unemployment, FY 1991/92- 1996/97

Indicator		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Total Labour Force	Male	11.14	11.43	11.73	12.03	13.23	13.57
Million	Female	7.36	7.55	7.75	7.95	8.17	8.38
	Total	18.50	18.98	19.48	19.98	21.40	21.95
Labour Force Participation	Male	76.62	77.96	77.73	79.04	76.56	78.57
Rate	Female	48.61	48.46	49.30	49.10	46.00	47.18
	Total	62.33	62.76	63.23	63.63	61.07	62.66
Unemployment Rate	Male	3.68	3.67	3.67	3.66	3.70	3.68
	Female	4.89	4.90	4.90	4.91	4.77	4.77
	Total	4.16	4.16	4.16	4.15	4.11	4.10

Source: Department of Labour and UNFPA , *Handbook on Human Resources Development Indicators (*Yangon, August, 1998), Table 11, p 7.

Table A2.3 Distribution of Employed Population by Occupation and Industry 1990 (Labour Force Survey, 1990)

Sr. No:	Category	Percent Distribution
1.	Agriculture	56.47
2.	Mining and Quarrying	0.95
3.	Manufacturing	11.36
4.	Electricity, gas and water	0.18
5.	Construction	2.64
6.	Wholesale/Retail/Trade/Hotels and Restaurants	15.81
7.	Transport and Communications	3.78
8.	Financial Institutions	0.27
9.	Community, Social & Personal Services	7.73
10.	Activities not adequately defined	0.81

Source: Department of Labour and UNFPA , Labour Force Survey, 1990, *Handbook on Human Resources Development Indicators , (* Yangon, 1998), Table13. p 8.

Appendix 3. Household survey questionnaire

Section 1: Household information

May I please have some information about the people who usually live or stayed last night in your household starting with the head of the household?

Sr. No	Usual residents visitors	1. Relationship	2. Sex	3. Age	4. Literate	5. Marital Status	6. Occupation	7. Education	
	Please give me the names of the persons who usually live or stayed last night in your household, starting with the head of the household.	Relation to the household head. (FOR CODES SEE BELOW)	Male .....1 Female....2	Completed age	Yes ..... 1 No 2	Married (1), Widowed (2), Divorced (3), Separated (4), Unmarried (5)	(FOR CODES SEE BELOW)	Last qualification	Mark all house hold members who are 6+ years old
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									

Relationship codes: Head .... 1, Wife/husband .... 2, Son/daughter .... 3, Grandchild .... 4, Father/mother .... 5, Sister/brother .... 6, Son/daughter-in-law .... 7, Brother/sister-in-law .... 8, Father/mother-in-law .... 9, Others 10,

Occupation codes: Agriculture non-tobacco .... 1, Agriculture tobacco-related .... 2, Cottage industry non-tobacco .... 3, Cottage industry tobacco-related .... 4, Modern industry non-tobacco .... 5, Modern industry tobacco-related .... 6, Service non-tobacco .... 7, Service tobacco-related .... 8, Business non-tobacco .... 9, Business tobacco-related .... 10, Student .... 11, Unemployed .... 12, Daily wages non-tobacco ....13, Daily wages tobacco related .... 14, Cannot work (health) .... 15, Others (SPECIFY) 16

Please tick here if another sheet is used for this family ..... ❑

Section 2: Smoking habits (for all household members 6 years and over)

Line #	8. Have you ever smoked? Yes .... 1 No .... 2 Go to Q18	9. How did you start smoking/what motivated you to begin smoking? (ASK FOR MOST IMPORTANT AND 2ND MOST IMPORTANT REASONS) (1) Peer pressure (2) Stylish (3) Lonely (4) Experiment (5) Parent asked for light (6) Others	10. Are you currently a smoker? Yes ..... 1 No ..... 2 Go to Q18	11. How old were you when you began to smoke? (COMPLETED AGE)	12. What do you smoke? Cigarettes ..... 1, Cheroot .....2, Cigar . ..... 3, *Phet kyan* ..... 4, Chewing..... 5 tobacco	13. How many times a day do you smoke?

Line #	14. How many sticks of cigarettes/cheroots /cigars/*phet kyan* do you smoke a day?	15. What cigarette or cheroot or cigar brand do you normally smoke? (SPECIFY)	16. How much do you normally spend a month on cigarettes/cheroot/cigar/*phet kyan* smoking? (SPECIFY kyats)	17. If you have stopped smoking, or have ever tried to quit what made you stop smoking? (ASK FOR MOST IMPORTANT AND 2ND MOST IMPORTANT REASONS) 1) Health 2) Peer pressure 3) Cost 4) Other	18. Do you know that tobacco is harmful for health? (1) yes (2) No	19. If yes from where do you get the information? (1) Radio, TV, newspaper, magazines (2) Health centre (3) Someone told me (4) Other

Section 3: Production, sale and consumption of tobacco (ask head of household only)

20. In the past 12 months did you grow tobacco on your land or on land owned by someone else (or that was mortgaged)? Yes .... 1 No ..... 2 ⟶ Q36	21. What quantity of tobacco did you harvest in the last 12 months? Viss .....
22. Of the total quantity you harvested how much did you sell (or expect to sell)? Viss----------	23. Do you consume the home grown tobacco in the household? Yes .... 1 No ..... 2 ⟶ Q25
24. Of the homegrown tobacco, how much do consume in a year? Viss---------- ⟶ Q27	25. Do you buy tobacco for your consumption? Yes .... 1 No ..... 2 ⟶ Q27
26. In all, how much do consume in a year? Viss---------- ⟶ Q28	27. How much would your household have to spend in the market to buy this quantity of tobacco (i.e. the quantity consumed in a year)? Kyats ..... ⟶ Q29
28. How much do you spend on the purchase of this quantity? Kyats	29. How much money do you make in a year by selling the home grown tobacco (after allowing for home consumption)? Kyats .....
30. (CHECK Q6 IF BUSINESSMAN ASK, IF OTHER, SKIP TO SECTION 4) Do you sell tobacco products? Yes ..... 1 No ..... ⟶ Go to Section 4	31. What tobacco products do you sell? Cigarette (1) Cheroots (2) Cigars (3) Raw tobacco (4) Other (5)
32. Of all the tobacco products you sell what proportion of them are domestic and what proportion are from outside? % Domestic ..... % Import	33. What is the profit of your shop in a year? Kyats .....
34. Of your total profit what percentage of income comes from the sale of tobacco products?	

Section 4: Family assets and expenditures (ask head of household only)
Now I would like to know about your sources of family income and expenditure

35. What are the sources of your income and in the past 12 months how much income did you earn? (INTERVIEWER: WRITE DOWN INCOMES FROM DIFFERENT SOURCES IN KYATS)

Ser. No	**Source of income**	**Kyats**
1.	Agricultural products: rice, corns, wheat, millets, beans, vegetables, fruits, etc.	
2.	Tobacco products: cultivation	
3.	Livestock: domestic animals, milk, birds, fish, etc.	
4.	Non-farm enterprise income: income from home enterprises and self employment outside agriculture, etc.	
5	Merchandise/retail/	
6.	Tobacco based cottage industry	
7.	Service: salaries	
8.	Wages	
9.	Other income: SPECIFY.....	

36. In the past 12 months and in the last month what was your family expenditure?

Ser. No.	Expenditure items	Past 12 months (kyats.)	Last month (kyats.)
1.	Expenditure on food items:.		
2.	Expenditure on cloths/clothing		
3.	Fuel items: Kerosene, gas, fire wood, et.		
4.	Schooling and education		
5.	Medicines and health services		
6.	Tobacco and related products		
7.	Others		
	TOTAL		

[After completing the interview with the head of the household ask, in turn, other family members who are 6 years and older, Q8 to Q26 of Section 2.]

INTERVIEWER'S CLOSING REMARKS

Thank you. This ends our questions. You have been very helpful. Again, thank you for your time. Your comments have been very helpful.

Time interview ended: hour: _____minute:

Appendix 4. Prices

Table A4.1. Average retail price of tobacco products at Yangon, 1985–2000 (kyats)

Type of tobacco	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cheroots (100s)	20.5	20.8	26.4	30.3	30.0	31.2	35.6	42.0	53.5	57.8	65.9	71.4	145.5	222	233.8	182.9
Cigars (100s)	32.0	33.5	46.5	56.9	58.1	60.3	62.3	82.4	114.0	148.5	228.4	236.7	312.7	542.2	526.3	473.0
Cigerattes (*Duya* 20s)	5.2	11.1	23.3	13.5	16.2	17.5	22.9	34.9	31.4	26.5	31.8	34.0	42.6	n.a.	n.a.	n.a.

n.a.: not available.

Source; 1) Central Statistical Organization. *Selected monthly economic indicators*. Various issues.

2) Central Statistical Organization. Statistical year books, Various issues.

Table A4.2. Average retail price of tobacco leaves per viss (= 1.65 kg) at Yangon 1985–2000 (kyats)

Type of tobacco	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Tobacco leaves (*Shwe let wah*)	23.1	23.1	21.2	24.1	26.3	35.3	79.4	92.7	93.7	98.1	115.0	147.7	161.0	264.3	307.1	414.5

Source; 1) Central Statistical Organization. *Selected monthly economic indicators*. Various issues.

2) Central Statistical Organization. Statistical year books, Various issues.

Appendix 5. Hausman test

Table A5.1. Hausman test

	Hausman statistic	
	For the logit equation	**For the conditional demand equation**
Overall	$\chi^2_8 = -71.2$	$\chi^2_{12} = -0.61$
Quintile group		
• First quintile	$\chi^2_8 = -11.52$	$\chi^2_{12} = -0.10$
• Second quintile	$\chi^2_7 = -36.81$	$\chi^2_{12} = -0.42$
• Third quintile	$\chi^2_7 = -7.37$	$\chi^2_{11} = 0.50$
• Fourth quintile	$\chi^2_7 = -66.55$	$\chi^2_{12} = -39.64$
• Fifth quintile	$\chi^2_{12} = -47.10$	$\chi^2_{11} = 1.49$
Age group		
• 15–24 years	$\chi^2_8 = -84.38$	$\chi^2_{11} = 0.00$
• 25–34 years	$\chi^2_8 = -53.17$	$\chi^2_{10} = -0.05$
• 35–44 years	$\chi^2_8 = -13.54$	$\chi^2_{11} = 0.02$
• 45–54 years	$\chi^2_8 = -63.37$	$\chi^2_9 = -1.49$
• 55–64 years	$\chi^2_8 = -5.82$	$\chi^2_8 = 0.00$
• 65 years and up	$\chi^2_8 = -7.10$	$\chi^2_{11} = -0.49$
Geographical location		
• Urban	$\chi^2_7 = -35.98$	$\chi^2_{11} = -1.14$
• Rural	$\chi^2_7 = -95.18$	$\chi^2_{11} = 0.44$

The Hausman test compares two models using different estimations of the price to test, which one is better. A first model uses the data on prices extracted from the survey and the second model uses an estimation of the price (instrumental variable). If there is no difference between the two models, it means that the instrumental variable does not bring more to the model than the price variable and that the price is not endogenous.

The Hausman test is performed using the software *Stata*, which tests H_0 = the difference in coefficients is not systematic. Results from the table show that some of the statistics can be negative. Having such results is not necessarily comforting because it means that the model estimated fails to meet the asymptotic assumptions, but it is not surprising either. However, negative values of the statistic could be interpreted as strong evidence that we cannot reject the null hypothesis and thus that price is exogenous. The other positive values in the table are statistics, which accept the null hypothesis at more than 99%.

Appendix 6. Proportion of smokers

Table A6.1. Proportion of smokers

		Income quintile				
	Overall	**1**	**2**	**3**	**4**	**5**
Proportion of smokers (%)	21.82	24.71	22.99	18.7	21.39	21.21
		Age group				
	15–24	**25–34**	**35–44**	**45–54**	**55–64**	**65+**
Proportion of smokers (%)	7.63	19	27.41	30.55	40.69	32.51
		Geographical location				
		Urban			**Rural**	
Proportion of smokers (%)		22.04			21.76	

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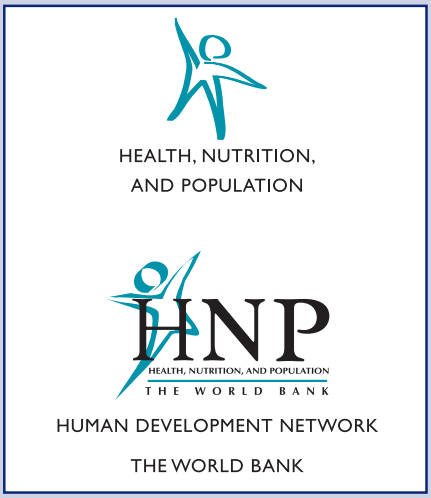

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