Issues in the global tobacco economy: Selected case studies

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FOREWORD

FAO shares international concern over the harmful effects of tobacco smoking and the rising incidence of smoking-related diseases, which along with the resultant personal and social distress also lead to associated economic losses, not only in the developed countries but also in the developing world, where consumption continues to expand. FAO supports measures to curtail smoking, and within the context of interagency cooperation, particularly within the United Nations Ad Hoc Inter-Agency Task Force on Tobacco Control, FAO has undertaken a project involving a number of studies into various aspects of the global tobacco economy. This is the second of two volumes to be published from this FAO project **Tobacco Supply, Demand and Trade by 2010: Policy Options and Adjustment,** which was supported by the Government of Sweden through its international development cooperation agency SIDA. These studies focus particularly on the potential effects, if any, that reductions in global demand might have on the economic conditions, earnings and food security of farming communities in developing countries particularly dependent on tobacco production for their livelihood. The underlying goal of this research is to provide a well defined and thoroughly researched analysis of economic issues as a basis for promoting the necessary international and national measures to achieve a healthier and more economically sustainable global environment.

The first volume, directed at providing projections to the year 2010 of tobacco production, consumption and trade, contains also a review of developments in the global patterns of production, consumption and trade since 1970. This present volume is intended to provide a closer look at the tobacco economies of a few selected countries.

The six country studies presented here were initially prepared in support of the research undertaken by FAO for this project. They are the work of individual consultants and staff members, and do not necessarily represent the views of the Organization. The papers in their original form were circulated as a basis for discussion at the International Meeting on Economic, Social and Health Issues in Tobacco Control, 3–4 December 2001, in Kobe, Japan, and to broaden the information and analytical base for future work in this area. The papers were subsequently revised in the light of comments received. They were then edited and are published here as a contribution to international discussion on this topic.

In addition, an overview paper considers tobacco from a global perspective, addressing production, trade and the socio-economic dimensions that affect both producers and users of tobacco and its products, and the implications for national governments.

A literature review which was prepared at the outset of the study provides a wide review of economic research on tobacco undertaken up to the year 2000.

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This publication is the result of work by a number of FAO staff and consultants, including Saurav Barratt, Erol Cakmak, Olwen Gotts, Haluk Kasnakoglu, Mauro de Rezende Lopes, Thor Lawrence, Sat Malhotra, Brian Moir, Shangnan Shui and Ping Zhang.

ACRONYMS USED IN THE TEXT

Abifumo	Associação Brasileira das Indústrias do Fumo (Brazilian Tobacco Industry Association)
Afubra	Associação dos Fumicultores Brasileiros (Association of Brazilian Tobacco Growers)
ANVISA	Agência Nacional de Vigilância Sanitária (National Public Health Agency) [Brazil]
CGE	Computable general equilibrium [model]
CMDR	Centre for Multidisciplinary Development Research [India]
CNE	Conselho Federal de Entorpecentes (Federal Drugs Council) [Brazil]
CTRI	Central Tobacco Research Institute [India]
FCV	Flue cured Virginia
IBGE	Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics)
ICMS	value-added tax [Brazil]
INCA	Instituto Nacional do Câncer (National Cancer Institute, Ministry of Health) [Brazil]
LSC	Large-scale commercial
MS	Ministério da Saúde (Ministry of Health) [Brazil]
NSSO	National Sample Survey Organization [Department of Statistics, Ministry of Planning and Programme Implementation, India]
PRONAF	Programa Nacional da Agricultura Familiar (National Programme of Family Agriculture) [Brazil]
SIDA	Swedish International Development Cooperation Agency
Sindifumo	Sindicato das Indústrias de Fumo (The Tobacco Industry Syndicate) [Brazil]
SIS	State Institute of Statistics [Turkey]
SSC	Small-scale commercial
TAMA	Tobacco Association of Malawi
TEKEL	General Directorate of Tobacco, Tobacco Products, Salt and Alcohol Enterprises [Turkey]
ZTA	Zimbabwe Tobacco Association

CURRENCIES

Brazil – the unit of currency is the real (plural: reais; symbol: $R).
At March 2003 US$1 = $R3.447.
People's Republic of China – the unit of currency is the *yuan renminbi* (symbol: RMB).
At March 2003, US$1 = RMB 8.277.
India – the unit of currency is the Rupee (symbol: Rs).
At March 2003, US$1 = Rs47.65.
Malawi – the unit of currency is the kwacha (symbol: K).
At March 2003, US$1 = K91.08.
Turkey – the unit of currency is the Turkish lira (symbol: LT).
At March 2003, US$1 = LT 1 661 500.
Zimbabwe – the unit of currency is the Zimbabwe dollar (symbol: $Z).
At March 2003, US$1 = $Z833.

1 OVERVIEW

This is the second of two volumes to be published from the FAO project **Tobacco Supply, Demand and Trade by 2010: Policy Options and Adjustment,** which was supported by the Government of Sweden through its international development cooperation agency SIDA. The first volume, directed at providing projections to the year 2010 of tobacco production, consumption and trade, contains also a review of developments in the global patterns of production, consumption and trade since 1970. This present volume is intended to provide a closer look at the tobacco economies of a few selected countries.

In order to better understand the economic contribution of tobacco production, and the likely impact which tobacco control might have on producing and exporting countries, detailed studies were conducted of a number of countries in which tobacco plays an economically important role. The countries so studied were Brazil, China, India, Malawi, Turkey and Zimbabwe.[1]

Four million deaths annually are attributed to tobacco by the WHO. The illnesses associated with tobacco impose a major cost on the health care services of all countries and illness and death are a significant source of lost input to the workforce. At the same time, however, tobacco makes an important contribution to incomes and food security in the agricultural sector of producing countries.

As tobacco plays a significant role in the economies of many countries, a global reduction in demand for tobacco[2], such as might be brought about by successful international efforts to control tobacco, could have a significant impact on farmers' incomes and on the economies of tobacco producing countries. Even in countries where tobacco production is relatively unimportant at the national level, farmers in particular regions may nevertheless suffer significantly should their markets for tobacco contract.

The extent of the impact of any weakening in demand for tobacco would depend on the capacity of the agricultural and other sectors to absorb labour and other resources displaced from agriculture, and on the returns which can be realised in these alternative enterprises. In most, if not all, tobacco-growing areas, there are other crops which can be grown in place of tobacco, and there are non-agricultural

[1] In addition to the descriptive studies, quantitative models were constructed for four of the countries, China, Malawi, Turkey and Zimbabwe, in order to gain a more thorough understanding of the likely implications that any weakening in demand for tobacco would have on those economies. In these studies, rather arbitrary scenarios were set, viz, that export prices for tobacco might drop by between 5 and 40 percent. The models themselves do not incorporate any dynamic elements, and no assumption is made about the time period over which any decline in price might occur. It might perhaps be assumed that any weakening in demand would occur over time, and that adjustment in the economies affected could keep pace with the changing world market conditions.
While a weakening in demand for tobacco would have negative effects on some of these countries, and while the impact on some individual farmers could be serious, the overall impact at the national level seems likely to be modest. (It must be stressed, however, that the assumptions on which these models are based are critical in reaching these conclusions.) In Malawi, the country most likely to suffer adverse effects from any weakening in demand for tobacco, the model predicts that agricultural wages could be depressed by up to 1 percent, while returns to land and capital (reflected in farmers' profits) may be negatively affected by 10 percent, in the face of a 15 percent decline in prices. A fall in tobacco prices of 20 percent would depress Malawi's GDP by 0.4 percent. If this were to occur over a 4 year period, the impact might be to reduce economic growth from 5 percent to 4.9 percent annually. The results for Zimbabwe are not dissimilar. However, the credibility of these results depends, inter alia, on the potential for adjustment to take place in the economies to the extent assumed in the models. The capacity for adjustment in the economy, particularly in the agricultural sector, appears as the critical factor in determining the impact which a weakening in demand for tobacco would have on producing countries.

[2] The analysis reported in **Tobacco Supply, Demand and Trade by 2010: Policy Options and Adjustment** suggests that modest global action to restrict consumption of tobacco would result in a slowing in growth, but not a contraction, of consumption.

enterprises which can absorb any labour displaced from agriculture. However, alternative crops typically return lower levels of remuneration to the farmers. In addition, the process of adjusting from production of tobacco to other crops is likely to take some time, and to require considerable investment and expertise which may not be readily available. Thus, even if reasonably remunerative crops do exist, there could be significant losses during a transition period.

These studies suggest that, while it is clearly the case that some people in some countries may suffer, the impact of any moderate contraction in the tobacco market, particularly if it were to occur slowly, might have only a limited impact on most tobacco producing countries.

In **Brazil**, for example, some 135 000 family farmers produce tobacco as their main economic activity. In the 2000/2001 crop year average gross income per family farmer reached R$ 9 165 (US$5 000). Tobacco is regarded as one of the few crops that generate income on small plots of land and, because it effectively utilizes family labour, it helps to mitigate the rural exodus which has become a major problem in recent years. Tobacco producers who own their properties are smallholders, with areas of around 43 acres where 4.7 acres are taken up with tobacco.

However, total household income from tobacco farming has shown substantial volatility over the years. It reached a peak of almost US$1 billion in 1997, and subsequently contracted to remain around $600 000 in the past 3 years.

Tobacco represents an important source of permanent jobs, including jobs for women for specialized work, both at farm and local industry levels. The total employment generated by the tobacco industry is around 2.2 million (3.2 percent of the total work force of Brazil), with around 500 000 employed in agriculture, 200 000 in farming related activities, such as tobacco processing at farm level and a further 1.5 million in other activities such as transportation, input production and distribution to agriculture and manufacturing, wholesale and retail labour force, processing tobacco for export, etc.

Brazil's state governments depend heavily on revenues raised from the value added tax on tobacco. Tobacco in Brazil provides higher net returns per hectare than corn or edible beans. A few remunerative crops do exist that may compete with tobacco, such as vegetables and legumes, but markets for those crops are relatively well supplied. Other opportunities for diversification away from tobacco include crops such as garlic and asparagus, which may compete with tobacco, but are demanding in terms of natural soil fertility. In some conditions, such as hilly terrains of the South of Brazil, topography makes cultivation of alternative crops very difficult.

As in many other countries, tobacco production in Brazil is attractive not only because of relatively high levels of returns, but because of the guaranteed purchase of production, not available to other crops. The insurance available for other crops is much less favourable.

In **China**, tobacco is an important source of income for the government, particularly as the government operates tobacco businesses. Thus profits as well as taxes contribute to government revenue.

At the regional level, particularly in the tobacco-dependent provinces such as Yunnan and Guizhou, tobacco production and cigarette manufacturing have played much more important roles in government finance and provincial development. In particular, many local governments rely on the Special Agricultural Crop Tax for their revenue. Since this tax is based solely on revenue from tobacco leaves, a decline in tobacco production would result in lower tax revenue.

Cigarette manufacturing is a key generator of revenue for local governments. For instance, the 1 429 state-owned enterprises in Yunnan had total sales of about RMB 69.1 billion (US$8.3 billion) in 1998 while 8 cigarette manufacturing plants accounted for about 53 percent of total provincial industry sales at RMB 36.2 billion. Cigarette manufacturing was the single largest sector in the province, ahead of

chemical manufacturing which had revenue of only RMB 5.1 billion. Cigarette manufacturers are among the few profitable state-owned industries.

In China, contrary to the situation in many countries, tobacco may not be more profitable to farmers than other crops which could be grown on the same land. Although tobacco leaf prices reached a peak in 1997, the gross profit of tobacco production per hectare of land was lower than cotton and sugarcane production. Income per man-day of labour in producing tobacco (RMB 14.7, US$1.8) was lower than for soybeans (RMB 26.9), sugar-cane (RMB 22.0), rice (RMB 21.1) and cotton (RMB 20.4). A major factor behind farmers' decisions to plant tobacco is the limited market risk. Tobacco is sold on contract at a guaranteed price, while other agricultural crops carry larger price risks, and the State Tobacco Monopoly Administration has had no difficulty in paying cash to farmers following delivery of tobacco.

Tobacco production in China does not employ more workers than other crops, so any substitution of tobacco by other crops would apparently not result in significantly lower employment in agriculture. Furthermore, adjustment from tobacco to other crops would probably take place relatively easily. Small growers dominate agricultural production, and produce tobacco along with other crops. There are very few specialized tobacco producers, and thus farmers have skills for producing not only tobacco but also other crops. Also, as tobacco production is undertaken largely by manual labour with little fixed capital, the costs of adjustment in switching between crops is small.

However, tobacco growers in some regions, such as those with poor agronomic conditions and without irrigation could face significant difficulties if they had to produce alternative crops in place of tobacco. Those near urban areas would face less income risk because off-farm employment would continue to offer alternative income opportunities.

In **India**, tobacco makes a significant contribution to the economy in terms of employment, income and government revenue. It generates nearly Rs. 20 billion (US$0.45 billion) of income per annum.

There are an estimated 850 000 growers of tobacco in the country, with farming characterized by small family farms. Nearly 6 million farmers and workers depend on this sector for their sustenance. In addition, the tobacco sector provides direct and indirect livelihood to a large number of people in many connected and ancillary industries. Studies on the Tobacco Industry in Andhra Pradesh found that marginal and small tobacco farmers depend on this crop as the main source of their family income and of livelihood, particularly for food which accounted for about 67 percent of the annual household expenditure.

Excise duty is imposed on the entire range of manufactured tobacco products. In 1998/99 tobacco excise contributed about Rs. 59.4 billion (US$1.4 billion) to the central government’s revenue, in addition to Rs. 18 billion distributed to the three tobacco growing states, Andhra Pradesh, Gujarat and Karnataka.

Tobacco contributed Rs. 7 790 million (US$180 million) to export earnings in 1998/99, which was around 5 percent of the foreign exchange earnings from agricultural products. In addition, the Central Government also realized on an average around Rs.2 billion per annum from tobacco enterprises in the form of corporate tax during the last three years.

As in many other countries, tobacco in India generally provides higher net returns per unit of land than most other cash crops and substantially more than food crops. In the light of over-supply of Flue-cured Virginia (FCV) tobacco in recent years, some comparisons have been carried out on profits from growing tobacco or other crops in FCV-growing areas. A few remunerative crops have been identified in different areas. However, they may not remain remunerative if supply to the market were to increase, driving down prices. Some of these alternative crops require high levels of irrigation. Tobacco has an advantage in that it is drought resistant and grows under non-irrigated conditions. As in many other countries the institutional arrangements for marketing tobacco, and for providing inputs

including crop insurance, encourage its production. The assured market and prompt payment of sale proceeds through the Tobacco Board make more difficult the task of replacing the FCV tobacco crop.

Bidi tobacco is generally less remunerative to farmers than is FCV tobacco. Some studies have shown other crops, such as chilli, cotton and combination of soybean and rabi sorghum as well as groundnut and rabi sorghum could give higher returns than a sole crop of tobacco. However, other studies have concluded that tobacco was more remunerative than all alternatives.

The reduction in net income which might result from a decline in tobacco prices and a shift to the next most profitable crop would be expected to reduce the demand for hired labour. This would result in increased economic and food insecurity not only among a large section of the landless in rural areas but also among the marginal and small farming families.

Given **Malawi's** predominantly agricultural economy, limited resource base, and slow growth in the national economy and government revenue, tobacco production has a major role in national economic growth, employment and income of rural households and government.

Exports of agricultural commodities, of which tobacco constitutes around 60 percent, are virtually the only source of export earnings and foreign exchange for Malawi's economy. Tea, the second largest export commodity, brought only about 14 percent of the revenue generated by tobacco. However, the dominance of tobacco in Malawi's exports has weakened slightly since 1995, as exports of tea, sugar, cotton and rice grew faster than those of tobacco. Tobacco production is estimated to contribute 6 percent of total GDP and 17 percent of agricultural GDP.

Employment in the tobacco industry accounts for about 20 percent of the total labour force of 5 million.

Consequently, tobacco is the major source of cash income for many rural households, particularly in the major tobacco producing regions. Sales of tobacco contributed 65 percent of rural households' cash income in Lilongwe, 89 percent in Kasungu and 95 percent in Dowa, and a large proportion is used for purchasing food. Most food expenses were for basic food such as cereal and cereal products, vegetables and meat, which accounted for more than 50 percent of total food expenses for many regions.

Malawi has been pursuing a diversification strategy for more than 30 years, and a number of crops have been identified which could potentially be produced. However, market opportunities for many products are limited. Malawi has a comparative advantage in the production of tobacco, and many farmers have continued to produce and expand tobacco production. Apart from other agricultural products, food processing, services and textiles have some potential for expansion based on resources which might be shed from tobacco production in the event of a downturn in demand for tobacco. The development of secondary and tertiary sectors may provide Malawi with greater stability based on diversity, but in an economy which is primarily agricultural; their development will not be easy.

However, given the dominance of tobacco in Malawi's economy, apparently reflecting comparative advantage in that product, it is likely that, in the event of a contraction in the tobacco market, Malawi will continue to specialise in tobacco production while adjustment to other crops is concentrated in other countries. In such a situation, however, Malawi may suffer a considerable loss of export earnings and farm income.

Turkey is the fifth largest tobacco producer in the world, with about 1.5 percent of its total cultivated area under tobacco.

There are approximately 600 000 small tobacco growers in Turkey, with total employment in tobacco production employing some 1.5 million persons. More are employed in other tobacco-related

activities, such as transportation, storage, trade and cigarette manufacturing. The latter employed more than 20 000 of Turkey's 1.1 million manufacturing workers in 1997.

Turkey is a major trader of tobacco on world markets, exporting about 150 000 tonne (60 percent of its total production) and importing about 50 000 tonne of processed and unprocessed tobacco. Turkey ranks fourth among tobacco exporting countries, with a share of 6–8 percent in total world exports. In 1999, total tobacco exports amounted to US$561 million, 23 percent of total agricultural export value. Cigarette taxes amounted to US$2 300 million in 1998, which was more than one eighth of total indirect tax revenue.

Zimbabwe is the largest producer of tobacco leaf in Africa and the world's fourth largest producer of flue-cured tobacco after China, Brazil and the United States.

Tobacco production, 98 percent of which is exported, makes an important contribution to GDP and to export revenue, and plays a major role in the national economy. The crop normally accounts for more than 50 percent of agricultural exports, 30 percent of total exports and nearly 10 percent of GDP. Total annual sales at auction since 1990 have ranged between US$270 to US$593 million. Tobacco sold through the auctions then undergoes further processing by merchant companies to remove stems and tips from the leaf before being shipped abroad. This adds 30 percent to 50 percent to the crop's final export value.

About 170 000 workers were engaged directly in tobacco production directly in 1998 in addition to 30 000 workers involved in tobacco research, marketing, service and manufacturing. Short-term hiring by the large commercial farms and small-holder farms employed a further 100 000. This full-time employment directly and indirectly of around 250 000 roughly equals 5 percent of Zimbabwe's total labour force. Many other jobs also depend on forward and backward linkages between tobacco and other parts of the economy including input supply, transportation services, coal mining, and hospitality during the auction season and other consumer services.

A levy system in which growers and buyers each pay a fixed percentage of the value of crop sales generates several million US dollars annually, but to encourage production, the tax rates have been reduced since 1999. Based on the 2001 tax rate, flue-cured tobacco generates around $Z 7 260 (US$132) per hectare in government revenue.

Zimbabwe has successfully diversified its agriculture into many commodity export markets over the past few decades. Exports of flowers, cotton, tea, coffee and meat have all increased in recent decades, reducing the level of dependence on tobacco. At the farm level, tobacco is rarely grown as a sole crop with most tobacco growers being quite diversified.

Diversified production reduces the exposure of growers to income variability in the face of variable tobacco prices. A diversified pattern of production also provides the technical possibility for tobacco growers to shift away from tobacco production to other crops immediately because farmers already have the skills, equipment and marketing channels required.

Large tobacco growers who have dominated tobacco production in Zimbabwe have considerable fixed investment in buildings used for curing tobacco leaves, which could not readily be used for other purposes. Other capital such as trucks and tractors can easily be used for other purposes. Small-holders have a much lower level of capital, but may experience more difficulties in adjusting away from tobacco production as they lack experience in growing other crops and are more dependent on tobacco for their cash income.

Globally it is clear that in the event that demand for tobacco should weaken, lower prices to farmers would encourage a drop in production. Land, labour and other resources freed from tobacco production would be employed in other agricultural enterprises or in other industries. The evidence from the various case studies suggests that alternative crops and other forms of employment for these

resources are available. However, the remuneration from these other activities would typically be expected to be lower than from tobacco, and thus there would be some loss of income.

In addition, the process of adjustment may not be easy. In some cases, the capital and skills required to expand production of other crops in place of tobacco may not be available, although in countries where tobacco is produced in mixed farming patterns with other crops, adjustment would not be as difficult.

This adjustment would depend on the magnitude of the weakening in demand and on the speed at which it occurred, and would be expected to vary from one country to another. It is likely that the developed countries, with more diverse agriculture and with ready availability of capital and skills, would be likely to adjust more than the developing countries, and that any contraction in global tobacco production might therefore become more concentrated in developed countries. Agricultural policies supporting tobacco production in the developed countries may sooner or later come under pressure to be eliminated or at least weakened, increasing further the shift of tobacco production from the developed to the developing countries.

The implementation of strict anti-smoking policies will have an impact on global trade patterns, as the extent to which the policy affects production and consumption of tobacco in different countries would vary according to consumer preferences and production possibilities. In general, it is expected that the demand for imported tobacco in developed countries could increase if production contracts faster than domestic demand. It is expected that net exporting developed countries will experience a decrease in net exports due to the decline in production. On the other hand, some developing countries in which consumers react to increases in price by reducing consumption and where producers have limited possibilities to switch to the production of an alternative commodity are expected to increase exports.

A consequence of any effective international tobacco control will be reduced returns to tobacco producers. In many situations, farmers will adjust to other forms of production, thereby maintaining, to some extent, their own livelihoods while reducing the supply of tobacco. In some countries, because of limited opportunities coupled with investment of capital and skills in tobacco production, adjustment will occur less readily.

It might be appropriate to consider, in general terms, the requirements that could arise for international assistance. Clearly the focus would need to be on those countries which currently have limited alternatives to tobacco production, and on those where the capital and skills required for adjustment to other crops are less readily available. The emphasis might be twofold, on providing assistance with skills and investment where these are needed to facilitate adjustment to other crops, and, in the longer term, to assist in the identification and development of alternatives in countries where these are not currently available. Such adjustment would help to minimise the economic damage arising from a weakening market for tobacco while at the same time encouraging a reduction in the supply of tobacco.

2 TOBACCO IN BRAZIL

2.1 INTRODUCTION

This study reviews the present status and potential future developments of the tobacco industry in Brazil. The study covers not only the production of raw tobacco but also the manufactured products: cigarettes and cigars.

An attempt has been made to identify the social importance of tobacco growing and the major economic factors affecting production and consumption of tobacco products. Some implications of government policies and measures for tobacco control are also considered.

2.2 ANALYSIS OF THE ECONOMIC SIGNIFICANCE OF TOBACCO

2.2.1 At farm household level

Tobacco is grown in two distinct areas: the northeast and the south. Approximately 135 000 family farmers in 656 municipalities in the three rich and industrialized states of the south have tobacco production as their main economic activity. In 2000/01, the harvest in the states of Paraná, Santa Catarina and Rio Grande do Sul was 504 728 tonnes of tobacco, with a gross income of $R 1.23 billion, implying an average gross income per family farm of $R 9 164.63, from average production of 3.74 tonne/ha – a record high. In the south, about half a million people work in tobacco-related activities.

The properties where tobacco is grown have an average area of 16.8 ha – a small farm by Brazilian standards – with 2.5 ha planted to tobacco, 9.4 ha under other crops, and the remainder being pasture, virgin or replanted forests, dams and fallow areas. About a quarter of the family farms growing tobacco in the south rent land or have sharecropping arrangements with landowners – contractual arrangements for renting land requiring all those farmers either to grow tobacco or to leave the farms. The small average size of farms in the south – between 1 and 10 ha – allows only limited alternatives to tobacco.

Tobacco is the one of the few crops that generates income from small plots of land, providing an income four times greater than any other crop, and utilizes family labour, which accounts for more than 50 percent of production costs. Tobacco production has a positive social impact, thus militating against rural exodus, which is one of the most dramatic problems in Brazil following trade liberalization.

In the poor northeast, tobacco drives the economy in 39 municipalities, especially in the states of Paraíba, Rio Grande do Norte, Ceará and Pernambuco, which are among the poorest states of the country. There, families rely on tobacco for their livelihood. Shifting away from tobacco to other crops – if it were possible – could have a significant impact on food security for tobacco growing farmers.

An estimate by Associação dos Fumicultores Brasileiros (Afubra) (the Association of Brazilian Tobacco Growers) and Associação Brasileira das Indústrias do Fumo (Abifumo) (the Brazilian Tobacco Industry Association) for the number of households in tobacco farming shows an interesting fluctuation in the last two decades (Table 2.1). In the south, numbers peaked at 160 560 in 1997, up from 83 150 in 1981, and then fell back to ca 135 000 in 2001. In the northeast, households in tobacco farming built from just under 64 000 in 1980 to a peak of 81 000 in 1986, before falling by half to reach 36 250 in 2001.

Total household income from tobacco farming built up from US$233.4 million in 1980 to a peak in 1997, when incomes totalled almost US$1 billion. Total household income from tobacco was only US$580.1 million in 2001.

Table 2.1: Number of households in tobacco farming and total household income

Year	Number of Households		Brazil total	Household Income (US$'000)
	South	Northeast		
1980	94 840	63 980	158 820	233 385
1981	83 150	77 140	160 290	311 181
1982	89 030	75 040	164 070	419 236
1983	113 380	81 790	195 170	404 846
1984	112 940	81 460	194 400	330 384
1985	112 110	80 880	192 990	364 116
1986	112 570	81 000	193 570	404 117
1987	113 490	69 990	183 480	433 765
1988	114 390	75 000	189 390	366 407
1989	127 400	75 200	202 600	419 691
1990	121 600	72 000	193 600	569 707
1991	123 600	72 000	195 600	461 000
1992	149 750	55 000	204 750	785 390
1993	157 520	56 000	213 520	766 375
1994	136 640	50 000	186 640	478 852
1995	132 680	48 000	180 680	601 420
1996	142 590	49 000	191 590	788 813
1997	160 560	49 000	209 560	973 053
1998	158 980	42 000	200 980	670 079
1999	150 070	45 000	195 070	584 200
2000	134 850	40 000	174 850	619 586
2001	134 930	36 250	171 180	580 149

Sources: Afubra and Abifumo.

2.2.2 At state level

Tobacco production and processing are very important economic activities in the south: Paraná, Santa Catarina and Rio Grande do Sul, where, besides production, there are manufacturing industries and processing firms that export tobacco and tobacco products. The states rely heavily on tax revenues from tobacco, primarily through the value-added tax – ICMS.

The northeast of Brazil – a region where tobacco plays an important role in an otherwise locally depressed economy, providing jobs and income for thousands of small family production units – produces far less tobacco than the south, but the quality is good for the manufacture of higher value cigars. This segment of the economy of the northeast is an important source of permanent full-time jobs. It provides jobs for women in specialized work, at both farm and local industry levels.

Typically, a small-scale farmer of the Recôncavo region, in the state of Bahia, would plant an average of 0.5 ha of tobacco, giving about 10 000 stands. The normal harvest is ca 750 kg, which in a normal crop year is sold for up to $R 60.00 per *arroba* (15 kg) of top quality leaf. This yields a gross income of $R 3 000 per year, most of which is used to pay for family expenses. This provides subsistence to a household of six people. Larger-scale growers plant up to 40 000 stands.

In Bahia, a densely populated area of the state and region, the tobacco industry also offers employment to rural-urban communities. A typical industry unit in Bahia provides almost year-round jobs for 300 women, who are trained in rolling cigars, a totally manual process. This is a skilled workforce, working for companies that often proudly claim compliance with "social responsibilities". Some companies further extend their involvement to include community development.

As in the southern states, growers participate in a so-called "integration" system together with companies, which provides a technological package of best practices (in use of fertilizers and agrochemicals), finances a part of the grower's production costs and buys the crop at harvest. The cigar industry also transports the tobacco from farms, where curing takes place, to processing plants.

The integration system, by virtue of guaranteeing the purchase of the product, in effect works as a price insurance mechanism, which has a strong effect on supply. Supply growth is mostly due both to this price risk management system and to quality control at farm level.

2.2.3 At federal level

The social and economic importance of tobacco can be judged from the 171 000 family farms growing tobacco in the south and northeast, and the related processing. The cigarette industry alone directly and indirectly provides 2.1 million jobs, has a turnover of $R 4.8 billion, and provides tax revenues of $R 3.1 billion.

Tobacco-related employment represents ca 3.2 percent of the total workforce of Brazil, of which tobacco production agriculture employs around half a million. Another 223 000 jobs are created in farming-related activities, such as tobacco processing at farm level. It has been estimated that another 1.5 million jobs are created by the tobacco industry in other areas, such as transport, input production and distribution, the wholesale and retail labour force, and employment in processing for exports (see Table 2.2).

Table 2.2: Employment in the Brazilian tobacco industry (1999/2000)

Sector	Number employed	Percentage
Farming and farm-level processing	723 000	33.0
Manufacturing	17 000	0.8
Indirect employment	1 450 000	66.2
Total	2 190 000	100.0

Sources: Afubra and Abifumo.

2.3 ANALYSIS OF CHANGES IN PRODUCTION, AREA AND YIELDS

2.3.1 Factors affecting production, area and yields

Brazil is a major tobacco producer, ranked second in the world after China, and therefore is sensitive to changes in international tobacco trade. Recent improvements have upgraded Brazilian tobacco to a new quality status, and production capacity has been expanded, mainly for export.

In the northeast, labour costs are the lowest in the country, if not in the world. As long as labour remains relatively cheap, tobacco production, a labour-intensive activity, will remain profitable. The primary difference between the south and northeast regions is that the south is devoted to production of tobacco leaf for cigarette manufacture, while the northeast specializes in black tobacco and tobacco leaf for cigar wrapping.

There has been a significant growth in area and production in recent years. Tobacco companies have been encouraged to improve the quality of Brazilian tobacco, resulting in better quality and productivity. Production increased at about 3.5 percent per year over the last 25 years, mostly attributable to yield increases (2.3 percent per year) and less to growth in area harvested (0.8 percent per year). Average yields show a consistent upward trend over the last two decades, but with fluctuations, as tobacco is a rainfed crop. Part of this improvement can be attributed to improved varieties, but, cultivation practices are the main factor underlying the growth in yield, among the highest in the world. In the south, the widespread adoption of improved cultivars and improved cultural practices, as recommended by the major tobacco companies, have boosted yields to unprecedented levels in the in the last decade.

Figure 2.1 shows the effects on production of the export boom in the early 1990s. Export-driven demand led to a sustainable growth in production. Trends in production, area and yields indicate prospects for sustainable growth in tobacco production in Brazil in the coming years. Of course, a lot will depend on developments in the foreign markets for Brazilian tobacco. Table 2.3 and Figures 2.1, 2.2 and 2.3 show trends in tobacco production.

Table 2.3: Production, harvested areas and average yields in Brazil

Year	Total harvest (tonne)	Area harvested (ha)	Average yield (kg/ha)
1975	285 934	253 736	1 127
1976	298 645	280 373	1 065
1977	356 999	311 386	1 146
1978	405 191	328 313	1 234
1979	421 708	326 049	1 293
1980	404 860	316 427	1 279
1981	365 738	297 564	1 229
1982	420 329	317 231	1 325
1983	392 578	311 759	1 259
1984	413 598	282 218	1 466
1985	410 474	268 992	1 526
1986	386 827	279 364	1 385
1987	397 453	297 744	1 335
1988	430 979	280 486	1 537
1989	446 041	289 083	1 543
1990	445 489	274 098	1 625
1991	413 831	287 266	1 440
1992	575 652	344 872	1 669
1993	655 739	372 912	1 758
1994	519 541	320 185	1 622
1995	455 986	293 425	1 554
1996	472 738	314 279	1 504
1997	596 952	338 059	1 765
1998	505 353	353 679	1 428
1999	629 525	341 591	1 842
2000	579 727	310 462	1 867

Source: IBGE.

Figure 2.1: Trends in total tobacco harvests in Brazil, 1975–2000

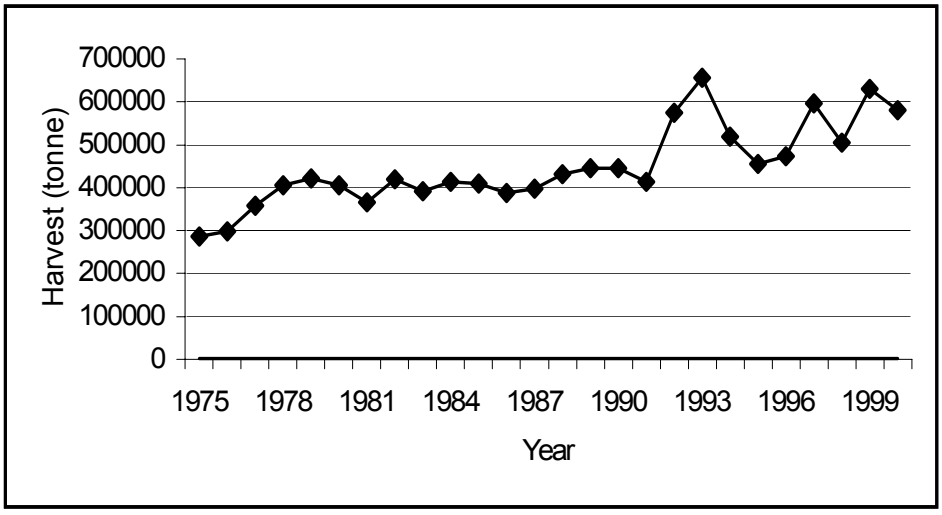


Figure 2.2: Area of tobacco harvested in Brazil, 1975–2000

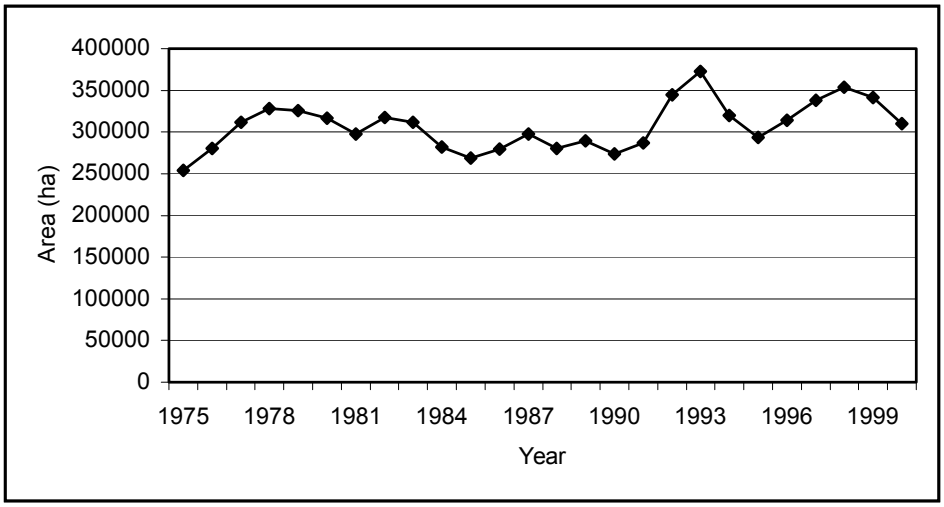
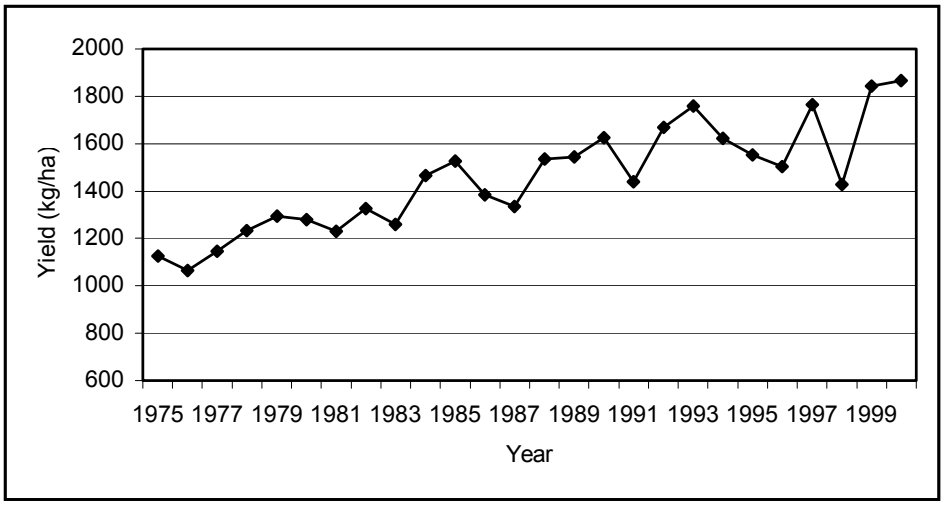


Figure 2.3: Average yield of tobacco leaf in Brazil, 1975–2000



From the mid-1970s, the area planted to tobacco expanded until it reached 354 000 ha in 1998, around 2.7 percent of the area under annual crops, and 0.2 percent of the total area cultivated in Brazil. The area under tobacco is strongly influenced by prices. The area grew from 1974 to 1979, as prices went from $R 3.75 to $R 4.50/kg, and grew again from 1990 to 1993, when prices increased from $R 2.90 to $R 4.55/kg. At other times, prices have been around $R 2.50/kg.

2.3.2 Improvement of tobacco quality and grading

Improvement in tobacco quality

Some measures were introduced in anticipation of any restriction or tightening of control measures that might challenge Brazil's position in the global tobacco trade in terms of chemical properties of the tobacco and the need to apply cultivation practices that are environmentally sustainable. In line with these policy decisions, the tobacco companies have campaigned to reduce contaminants. Tests of chemical – particularly alkaloid – levels have become routine, and agrochemicals are used in smaller amounts and the empty containers are collected and sent to a central recycling plant. An effective programme – *The Future is Now* – prevents children and youngsters under the age of 16 from working with tobacco on farms and in processing plants.

Guidance from industry has improved crop management to produce tobacco with lower alkaloid levels to meet international market demands, combined with better timing to harvest at optimum maturation and use of recommended varieties.

Varieties of tobacco grown in Brazil

Only a few tobacco varieties are grown in Brazil, and Virginia accounted for over three-quarters of total domestic production in 2000 (Table 2.4).

Table 2.4: Tobacco production in Brazil by variety (tonne)

Year	Virginia	Burley	"Comum"	Other
1977	119 870	26 970	44 800	145 360
1980	165 200	28 260	21 150	158 360
1985	221 320	41 190	15 440	132 330
1990	258 170	57 390	16 090	116 330
1995	282 480	52 220	3 710	51 590
1996	308 540	70 380	5 580	49 020
1997	429 890	100 970	8 870	48 440
1998	312 960	82 620	4 670	40 090
1999	440 130	100 740	5 230	44 000
2000	439 450	92 550	7 040	38 070

Source: Afubra.

The *Comum* (Common) is sold only in domestic markets. Consumers' preferences have changed drastically in the last decade, from "regular" quality tobacco, such as Comum, to other, fuller-flavoured varieties. Virginia and Burley are high quality varieties for both domestic and foreign markets. The "Other" category consists mainly of leaf for cigars and cigarillos, and is produced in the northeast.

Virginia and Burley tobacco are mostly dried in special ovens (flue-cured) and drying hangars (dark air-cured). The other varieties are dried in the open air (sun cured). In the south, an increasing number of tobacco growers are investing in facilities to produce flue-cured tobacco. The southern states have adequate soil fertility and rainfall, with the long periods of high relative humidity needed for curing.
Virginia tobacco for flue curing is the most common variety in south, with 408 200 tonnes (81 percent of total production). The remainder was air-cured varieties: Burley and Comum (17.5 percent (88 600 tonne) and 1.5 percent (7 600 tonne), respectively). Yields in the 2000/01 season reached 2 047 kg/ha for Virginia, 1 826 kg/ha for Burley, and 1 770 kg/ha for Comum. The areas planted were similar between years.

Although tobacco occupies only some 0.2 percent of the cultivated area, it gives $R 1.23 billion in farmer income, or roughly $R 9 200 per family. About 60 percent of the tobacco produced in the south is exported, the remainder being used domestically to make cigarettes.

Tobacco grading in Brazil

Thanks to a strict quality control system, good curing, modern machinery for processing, and advanced technology in manufacture and preparation of tobacco leaf for export, Brazil has became a reliable source of high quality tobacco. This quality is maintained by a system that rewards quality, stimulating growers to invest in quality. The quality is clear from the relatively high proportion of Virginia (41.3 percent) and Burley (33.5 percent) classed as the high quality type "B", with 54.7 percent of FCV tobacco in sub-class "O". In terms of type, 34.6 percent of the FCV is graded Type 1, and 47.8 percent of the Burley is also Type 1, with 58 percent of Burley in sub-class "O", a dark brown, highly valued tobacco, and 36.9 percent in sub-class "R", a light brown tobacco (not top quality).

Prices are negotiated between farmers and industry representatives each year, with quality the major determining factor. According to estimates from Afubra, each tobacco-farming family earned an average gross income of $R 9 240 in 2000/2001, an increase in gross revenues of 15.6 percent from $R 7 990 earned from the 1999/2000 crop. Profit for tobacco growers jumped from 22 percent to 47 percent. Table 2.5 shows the profile of the tobacco grading in Brazil, within the classes and sub-classes.

Table 2.5: Profile of tobacco grading in Brazil

		Virginia	Burley
		%	%
Classes	T	15.0	12.6
	B	41.3	33.5
	C	26.8	36.9
	X	15.3	16.3
	G	1.7	0.6
	Total	100	100
Subclasses	O	54.7	58.0
	R	20.8	36.9
	L	13.7	–
	K	9.2	4.5
	G	1.7	0.6
	Total	100	100
Types	1	34.6	47.8
	2	47.3	28.1
	3	18.1	24.1
	Total	100	100

Source: Afubra.

2.3.3 Fuelwood as a major constraint in production

One of the priorities for tobacco production is the supply of fuelwood for curing tobacco. Legislative restrictions on cutting natural forest require all farms to preserve 20 percent of their farm area as native forest, and this was seen as a threat to tobacco production. However, the tobacco companies implemented a programme to restore forest coverage on production areas. This programme was intended to preserve native forests and to reforest as a means of supplying growers with fuelwood for curing and lumber for building, such as curing barns, while at the same time maintaining ecological balance. The tobacco companies, the producers' associations and industries invested heavily in campaigns based on their joint proposal to plant idle areas with native (acacia) and exotic (eucalyptus) species, reaching around 140 000 growers in the south, with the agreement covering all related supplies of services and necessary inputs, such as financing, licensing of nurseries supplying low-cost seedlings for reforestation, technical assistance and field research. Industry has committed itself to not purchase tobacco cured with fuelwood from irregular sources, and no grower will be registered without a commitment to reforesting part of their property.

2.3.4 Crop substitution possibilities

Tobacco in Brazil yields higher net returns per hectare than either maize (an important food crop) or beans (an important cash crop). A few crops might potentially compete successfully with tobacco, such as vegetables and other legumes, but markets for those crops are already well supplied. Table 2.6 compares tobacco with alternative crops.

Other profitable crops, such as garlic and asparagus, that might compete with tobacco are demanding in terms of natural soil fertility, while tobacco is not. There are opportunities to diversify and move away from tobacco, but it depends on research and the economics of those alternative crops.

To match the gross income per hectare of tobacco requires 6.5 ha of maize or 9.6 ha of beans. On those terms, it is almost impossible to replace tobacco, in terms of income generation, on small farms. If maize and edible beans were to be cultivated in the south, new land would have to be brought into production, which implies opening new land and deforestation, with damage to the environment.

Table 2.6: Estimated costs, revenue and net income from tobacco and competing crops

Item	Tobacco		Other crops	
	Virginia	Burley	Maize	Beans
1. Variable Costs				
Labour cost (US$)	969.26	771.11	104.94	124.05
Hired services (US$)	78.59	61.10	59.79	25.91
Inputs (US$)	423.71	402.82	142.53	70.76
Fuelwood (US$)	145.71	-	-	-
Other (US$)	121.01	108.90	27.80	26.88
Subtotal variable costs (US$)	1 738.28	1 343.93	335.06	247.60
2. Fixed Costs				
Depreciation (US$)	160.47	163.06	48.17	48.21
Soil treatment (US$)	10.35	11.46	8.37	8.37
Subtotal fixed costs (US$)	170.82	174.82	56.54	56.58
Total costs (US$)	1 909.09	1 518.45	391.60	304.18
Yield (kg/ha)	2 026.00	1 678.00	3 600.00	1 200.00
Production cost per kg (US$)	0.94	0.90	0.11	0.25
Average price per kg (US$)	1.17	1.12	0.11	0.22
Gross income per ha (US$)	2 370.42	1 879.36	396.00	264.00
Net income per ha (US$)	454.57	360.91	1.51	(42.11)
Labour requirement (workdays/ha)	149	134	22	26

Source: Afubra.

Tobacco is suitable for the hilly terrain in the south, where cultivation of alternative crops would be difficult.

In addition, it is very difficult to replace tobacco by other crops because of the current comprehensive crop insurance, sponsored by Afubra. For 45 years, it has remained reliable and improved over the years. Without increasing rates, a recent innovation has been financial help for reconstructing curing barns damaged by fire, wind, hail or lightning during the tobacco curing process. There is also support for crop damage by hail or wind.

Crop insurance for other crops, PROAGRO, it is not as efficient as that for tobacco. PROAGRO is notorious for delays in payment of claims.

Little research has been done on crop substitution in the northeast. In the south the University of Santa Maria, in Rio Grande do Sul assessed tea, which has some advantages over tobacco production, although it would make a poor substitute: (i) in order to generate the same net income per family, it would require larger areas (certainly involving land clearing and deforestation); (ii) 30.6 percent of farmers have farms with less than 1 ha, which is insufficient for tea cultivation); and (iii) tea was potentially uneconomic under current market conditions.

Another possibility is forestation, planting indigenous species such as acacias. This is a viable substitute for tobacco. Acacia is valuable because it provides not only timber but also tannin from the bark. Difficulties with acacia are: (i) much of the appropriate land is already planted with exotic species to provide the fuelwood for curing tobacco; (ii) some tobacco areas have high fertility, suitable more for cash crops than permanent crops; and (iii) most of the existing plantations were established with farmers' own resources and fiscal incentives, when credit was also cheap, whereas credit is currently difficult to obtain and is expensive.

Farmers' dependence on tobacco production

Small-scale farmers in the south are totally dependent on tobacco for economic survival. A quarter of the tobacco-growers farm less than 1 ha; another 30.5 percent have from 1 to 10 ha (see Table 2.7). The average farm is 17.5 ha, with 2.6 ha under tobacco.

A quarter of growers rent the land from landowners or are sharecroppers; the rest own their land. Small farms dominate, and since tobacco does not require a large area, renting and sharecropping is a natural mode of tenure, with the advantage that neither arrangement immobilizes the grower's capital in the land.

Most of the farms rented are less than 5 ha (a *minifundia* in Brazil), with tobacco as a major source of income. Sharecropping is frequent among aged and retired farmers who share their land with new entrants.

Table 2.7: Size profile of farms growing tobacco in the south (1999/2000)

Category	Size (ha)	Proportion (%)
< 1 ha	33 886	25.1
1– 10 ha	45 075	30.5
11 – 20 ha	34 416	25.5
21 – 30 ha	15 836	11.7
31 – 50 ha	7 190	5.3
> 50 ha	2 467	1.8
Total	134 850	100

Source: IBGE.

2.3.5 Interviews at farm household level

In the south, according to a survey conducted by Afubra, farmers' dependence on tobacco can be judged from the following:

- 88.4 percent of tobacco growers have grown it for at least 5 years, and would have difficulty in learning how to cultivate other crops;
- tobacco growers assert that tobacco is the only crop they know that could provide a living from 2 to 3 ha;
- farm planning assessment suggests that tobacco is the only crop cultivated on a large scale that has a market capable of absorbing all the production in the south;
- farmers think that all other crops are subsistence crops, not market oriented crops;
- the best combination of activities with tobacco are pig and poultry production, which farmers say would yield US$1 200 annually, but they are not options for globally replacing tobacco;
- all the farmers say that changing land use would cause losses through forgone income;
- 67.1 percent of farmers noted that in the absence of a market for tobacco they would have to clear land to introduce another crop mix.
- 79.9 percent of tobacco growers plant maize after harvesting tobacco;
- 32.2 percent of tobacco farmers combine tobacco with forestation, the wood being used to cure tobacco, resulting in a profitable combination;
- 29.5 percent of farmers noted that tobacco is an ideal crop because it does not require large plots of land;
- 28.9 percent of farmers noted that tobacco is an attractive crop because of the guaranteed purchase of produce, which no other crop currently provides;
- 28.2 percent of growers felt no other crop could be as profitable as tobacco;

- 13.4 percent of farmers noted that they would have no alternative occupation, either within or outside agriculture, should tobacco growing not be possible: and
- the average net annual income with tobacco could reach $R 8 000, while the net income in the next best alternative would not exceed $R 2 000.

The interviews indicated that alternatives already available, such as early retirement and an exit bonus, would only marginally reduce the number of producers. The bulk of producers in the south will remain in tobacco production. In the northeast, tobacco is the main (if not only) source of income in the economically depressed areas of Bahia and Alagoas.

2.3.6 Future developments in tobacco supply

Brazil can be expected to continue to grow tobacco efficiently. Production and income from tobacco will grow as the application of improved technologies expands, such as fertilization; seedlings produced with the float system that result in a more even crop and eliminates the need for fumigation with methyl bromide; the use of disease- and pest-resistant varieties suited to each region; and the adoption of direct planting.

Cigar production will grow driven by the prospects of a growing export market. There is a trend towards new investment, with introduction of foreign technology and expertise through mergers and alliances with major global companies. However, investments have been hampered by the increased taxes on cigars and cigarillos, now at 67 percent, and increased competition from low-quality contraband.

2.4 THE IMPACT OF GOVERNMENT POLICIES

2.4.1 Introduction

Government attempts to reduce production of tobacco or to divert agriculture away from tobacco production have failed, although no systematic attempt has been made to study and propose alternative crops. No viable income generating alternative is available. Without appropriate research, not much can be done to help policy formulation.

Government has concentrated on anti-smoking campaigns. The cigarette industry adopted countermeasures designed to neutralize any campaign that might damage its image before Congress and public opinion. Any attempt made by the Executive to pass legislation imposing any restriction on production, marketing or consumption of cigarette has been emasculated in the House and Senate.

The tobacco industry stresses its importance to local communities and states, emphasizing contributions to social benefits improving the quality of life in the communities where they operate. Companies have often resorted to community work as a strategy to strengthen ties with political power, particularly local government and constituencies. Company employees – through a series of campaigns – have developed ties between the company and other local organizations, institutions and the community at large.

Some companies are contributing to natural resource management and the environment. There are programmes for environmental education, noise reduction, treatment of liquid effluents and control of air emissions. One company has a project for recycling plastics, to be re-utilized in the manufacture of other products. In Santa Cruz, Rio Grande do Sul, acetate, cellulose and filters are re-used in producing bedclothes and jackets.

The tobacco companies want to have their name associated with (i) cultural activities, such as art seminars, student artistic activities and events with prestigious artists; (ii) health initiatives such as work in partnership with the prestigious Zerbini Foundation in an AIDS prevention programme; (iii) social action and solidarity “capable of changing people’s lives”; and (iv) education to eradicate illiteracy, associated with the project “Solidarity for Literacy”, a programme developed by the

prestigious Solidarity Community Council, whose aim is to improve literacy in the most disadvantaged regions of the country.

2.4.2 Impact of government policies on production

In terms of employment, tobacco farming is mainly a family enterprise. This type of crop fits perfectly into the model of family farming that the federal government has sponsored, especially through the National Programme of Family Agriculture (Pronaf). Under Pronaf, tobacco growers are eligible for production and investment credit with subsidized interest rates.

No information is available with regard to the participation of tobacco farmers in Pronaf. It would be difficult to exclude growers from this programme, without a political cost, since this group meets the eligibility criteria. If productive alternative crops were available, perhaps this programme could be used.

Tobacco is excluded from government support policies for the production sector. In both the minimum price and the marketing loan (non-recourse loans) programmes, tobacco is ineligible. However, the tobacco industry provides farms with *de facto* price insurance through the system of guaranteed purchase at a pre-established price. This sort of arrangement creates strong ties between producers and industry, although, in a good harvest year, it can be hard agreeing a price.

2.4.3 Impact of government policies on marketing

Government attempts to restrict cigarette smuggling

The Government has directed efforts towards reducing the smuggling of cigarettes into Brazil. The Federal Revenue Department has increased seizures of smuggled and counterfeited products, especially those coming in from Paraguay and Uruguay. There are indications, however, that despite intensified efforts to control the flow of contraband, it may be more than estimated and even growing. Domestic cigarette markets were flooded with "pirate" brands and poor copies of existing regular brands. According to market specialists, the volume of cigarettes originating elsewhere (contraband) approached 30 percent of the total.

According to Abifumo, the illegal market continues to be a serious threat to the industry's survival (particularly for small- and medium-sized industrial units). Within illegal cigarette marketing, more than 80 percent is contraband, of which more than 25 percent are counterfeit products, and around 19 percent is tax-evading local production. Abifumo says that it is hard to measure the illegal market and therefore to determine total cigarette consumption in Brazil.

Public-private partnership in quality control

In January 1998, Associated Press reported that growers in Rio Grande do Sul were producing ϒ-1 type tobacco, which is characterized by double the normal amount of nicotine (the average level being 6.2 percent) compared with regular tobacco. This report caused considerable concern among those linked to the tobacco industry and among consumers and importers.

In response, the Ministry of Agriculture implemented a programme to certify alkaloid levels in Brazilian tobacco, due to the possible damage that the report could have to the industry. All Virginia tobacco processed by companies in Rio Grande do Sul now undergoes rigorous checks for nicotine levels. The programme is a partnership of seven companies linked to Abifumo and the University of Santa Cruz (UNISC) and ensures official product certification for the international market.

UNISC provides laboratory analyses of the average levels of alkaloids (nicotine and secondary alkaloids) in Virginia tobacco leaves, based on samples collected along the buying lines of tobacco companies. Subsequently, the results obtained by the authorized laboratory (UNISC Analysis Centre) are compared with results from the companies' laboratories. Each company receives a certificate with

its average and Sindifumo gets one with the general average. The scheme is now being extended to Santa Catarina and Paraná, thus covering all the south.

2.4.4 Impact of government policies on consumption

Empirical studies on economics of cigarette consumption are scarce in Brazil, but two (Costa e Silva *et al*., 2000; Carvalho and Lobão, 1999) can be used to assess the impact of government policies (through taxation, for example) on prices and consumption of cigarettes. Costa e Silva draws heavily on the data analysis of the earlier paper and discusses the results and their implications for policy-making.

Costa e Silva *et al* strongly favour increasing prices as a means to restrict consumption. This study published by INCA and influenced government decisions to raise cigarette prices to restrict tobacco use.

Costa e Silva *et al*. (2000) estimated price and income elasticities for market demand, with models of cigarette consumers, the results of which are summarized in Table 2.8.

The first – Model 1 – was based on the assumption that smokers were willing to keep in their bodies a "stock of tobacco", which is a proportion of the "desired consumption" of cigarette (Chaloupka, 1991). The model was based on the assumption that smoking, being a harmful activity, is the result of an evaluation of costs (dependence, damage to the person's own health and that of other people) and benefits (the pleasure of smoking).

The second – Model 2 – was proposed by Becker and Murphy (1988), with two versions. One hypothesized rational demand in the case of smokers with fixed preferences, while the other hypothesized a myopic or narrow-view demand on the part of adolescents and people with low levels of formal education and income. In the myopic hypothesis, a consumer is defined as someone with very little information about the long-term effects of smoking. They are, in other words, assumed to be people with naïve behaviour or with little schooling, such as the socio-economically disadvantaged. According to the literature, this group of myopic consumers should be the target of policies aimed at restricting tobacco consumption.

Table 2.8: Econometric models of cigarette price elasticity

Elasticity	Model 1 (Chaloupka, 1991)	Model 2 (Becker and Murphy, 1988)	
		Rational	Narrow or myopic
Prices			
short term	-0.1118	-0.1407	-0.1962
long term	-0.7982	-0.4932	-0.4792
Income			
short term	–	0.2277	0.3120
long term	–	0.7980	0.7621

Source: Costa e Silva *et al.*, 2000, based on Chaloupka, 1991, and Becker and Murphy, 1988.

The results of the analysis based on the myopic hypothesis indicated that cigarette consumption in Brazil underwent a structural change in price elasticity during the 3rd quarter of 1990, when consumption clearly shifted to a lower level compared with the historical trend of consumption. This structural change was probably related to occupational health regulations introduced in 1990, requiring strict control on smoking in work places. After that change, price elasticity of demand for both the short and long terms increased, mainly in the myopic consumer group, where it almost doubled. These changes are illustrated in Table 2.9.

A simulation of the impact of public policy changes aimed at reducing cigarette consumption suggested a price elasticity of demand of -0.15 in the short term, and -0.5 in the long term (as in Table 2.9). An increase of 15 percent in cigarette prices would lead to a reduction in consumption of 2.25 percent in the short term and 7.5 percent in the long term.

Table 2.9: Changes in price elasticity as a result of public policy changes in 1990.

	Rational model	Narrow model
Before 3rd quarter		
short term	-0.1407	-0.1962
long term	-0.4932	-0.4792
After 3rd quarter		
short term	-0.17	-0.35
long term	-0.58	-0.73

Source: Costa e Silva *et al*., 2000.

These results imply that changes in public policies on tobacco control can influence the price elasticities of demand of both rational and myopic consumers. Empirical evidence indicates that consumption is reduced in the face of improved information about possible health damage.

Consumer response to changes in prices and income had elasticities similar to comparable studies elsewhere, which showed that price increases may reduce cigarette consumption, while increased consumer income expands consumption.

There was little sensitivity to price variation in the short term. With an average price increase of 10 percent, a pack-a-day smoker would reduce cigarette consumption by between 4 and 7 packs a year.

In the long-term, the same 10 percent increase would reduce consumption by 344 cigarettes per year. Myopic consumers (youth and the less educated) would be more sensitive to price changes in the short-term than were the rational group.

Increasing taxes on cigarettes to 90 percent of average retail prices would in the short term increase tax revenues by 12–15.5 percent, while reducing consumption by 1.5–3 percent, and in the long term increase tax revenue by 3–9 percent and reduce consumption by 6–12 percent.

There are several policy implications:

- campaigns stressing the health hazards of smoking are more efficient than using taxation of cigarettes;
- although information campaigns should address all smokers and all society, some efforts should also target the young and less educated consumers; and
- consumers do react to prices when taxation produces a major increase in price, but income effects need also to be considered, as smokers in the lowest income bracket will suffer more, and that is precisely a target group that reacts most favourably to advertising and information.

Carvalho and Lobão (1999) discussed the efficiency of various policies. Taxes are already high (74 percent of cigarette retail price) and so increasing taxes may not be viable. However, despite high taxes, Brazilian cigarette prices are among the lowest in the world, indicating that there is still some room for increase, but increasing the price of cigarettes might encourage smuggling and thereby reduce tax revenue. Taxes always impose a greater burden on those with less capacity to evade.

The available statistics suggest that social norms influencing tobacco use are probably responsible for changes observed in structural demand for cigarettes. Hence the fall in consumption a few months after the introduction of warning labels on cigarette packets in 1995. Social norms also make the consumer more sensitive to price variation, increasing the price elasticity of demand (with a lower impact among rational consumers and a greater impact among myopic consumers.

The Carvalho and Lobão (1999) study, based on work in the 1990s, had three main conclusions. First, any attempt to reduce the consumption of cigarettes through increased taxes is probably an inefficient

policy, as raising taxes may have little impact on consumption because of the stimulus to illegal trade. Cigarette taxes are already high and probably have reached their limit, as tax evasion is already very high.

Second, higher taxes on cigarettes might have negative distributive effects, as the income effect of higher taxes would hurt the individuals (families) in the lower income brackets, since they spend a proportionally larger share of income on cigarettes, than do those in higher income brackets. This might cause "down trading" – a price increase due to higher taxes might not induce less consumption but rather transfer consumption to cigarettes of poorer quality. This policy could therefore be counterproductive.

Third, there are indications that health warning policies are more effective than increasing prices through taxation.

Brazil also restricts cigarette sales, imposes age limits for purchasing cigarettes, limits sales to specific places and requires special licences to sell cigarettes, prohibits sale in public places and limits the distribution of free testing samples. These policies were subject to much debate, and there is no research that examines the effectiveness of such measures.

2.5 DEVELOPMENTS IN TOBACCO PROCESSING AND MANUFACTURING

2.5.1 Cigarette industry

Cigarette production peaked at 189.3 billion pieces in 1998, and subsequently declined after the imposition of an export tax in 1999. Consumption peaked in 1989 and 1990, but then fell off, in part due to the antismoking campaigns and the ban on smoking in public places (Table 2.10).

The average price of a pack of 20 cigarettes increased from US$0.50 in the 1980s to more than US$1.40 in the mid-1990s. Currently, retail prices are between US$0.50 and US$0.90, making Brazilian cigarettes among the cheapest in the world.

In 1994, the macroeconomic stabilization plan (the Real Plan) eliminated the inflationary tax (which had reached almost 90 percent per month). In the following two years, consumption was stable at around 119 billion pieces. However, the exchange rate appreciation that followed the Real Plan stimulated smuggling, and where there is significant smuggling, cigarette consumption tends to be underestimated, because consumption estimates are based primarily on manufacturers' reported sales.

Nominal annual per capita consumption has been decreasing, from 1 177 pieces in 1980 to 720 pieces in the late 1990s. In 1992, smuggling was estimated to supply 5 percent of domestic consumption, but soared after 1995. It is now believed that smuggling approaches 30 percent of the official consumption figures, as traditional Brazilian brands are now counterfeited in neighbouring countries and smuggled into Brazil. The extent of smuggling explains a substantial part of the apparent decrease in consumption.

2.5.2 Employment in manufacturing

The impact of modern technology of processing and manufacturing has been to reduce the labour requirement in the tobacco industry, with the number of workers almost halving in 15 years (see Table 2.11).

Cigarette factories are highly automated and employ relatively little labour (30 000 directly employed workers). According to INCA estimates, the industry pays a relatively small price for each kilogram of tobacco leaf, which yields approximately 1 200 cigarettes. Cigarette packs are light, and easily stored and transported, leading to low transport and inventory costs, making this undertaking highly profitable.

The production of leaf tobacco for cigars, cigarillos and dark cigarettes in Brazil's northeast involves a large number of companies, which provide numerous jobs and drive local economies. Investment in new production technologies has helped improve prospects in both export and the domestic markets.

Table 2.10: Cigarette production, consumption and price in Brazil

Year	Production (billion units)	Consumption (billion units)	Price (US$/pack)
1980	144.2	142.7	0.42
1981	136.5	134.9	0.54
1982	133.9	132.3	0.64
1983	130.9	129.2	0.56
1984	128.9	127.8	0.46
1985	147.6	146.3	0.27
1986	170.5	168.9	0.33
1987	164.2	161.4	0.55
1988	163.3	157.9	0.57
1989	171.3	162.7	0.55
1990	174.0	164.1	0.64
1991	176.9	156.4	0.54
1992	152.9	127.8	0.75
1993	149.2	119.5	0.92
1994	164.0	109.2	1.15
1995	174.7	119.7	1.29
1996	182.5	119.2	1.42
1997	182.8	110.8	1.42
1998	189.3	97.0	1.07
1999	119.3	101.5	0.97
2000	111.6	100.0	0.88
2001	108.0	100.0	0.95

Source: Afubra and Abifumo.

Table 2.11: Index of employment in the tobacco industry in Brazil

Year	Average
1985	100.00
1986	99.47
1987	102.54
1988	95.55
1989	98.63
1990	90.28
1991	86.97
1992	97.95
1993	86.15
1994	69.83
1995	66.87
1996	69.13
1997	73.20
1998	61.09
1999	51.21
2000	48.62
2001	55.33

Source: IBGE.
Index 1985 = 100

Employment in the tobacco industry can be quite significant in an area. For example, in Santa Cruz do Sul, one tobacco processing unit has up to 2 500 employees, and there are several companies of similar size, and between them provide about 40 percent of the total ICMS value-added tax revenues for the municipality. The effects spill over to neighbouring counties and benefit a major part of the state.

Alongside current operations, investment is also very important. One company has invested some US$200 million since 1997, creating another 1 000 jobs. All the six main processors are making capital investments, ranging from US$60 million to US$500 million, and this will have a positive impact on employment over the next decade.

For each three-year investment of US$100 million – yielding about US$250 million in export sales annually – it is estimated that 400 jobs are created directly from the installation or restructuring of existing operations, and another 10 000 jobs are permanently created in the fields. A large company with 4 000 to 5 000 direct employees in the south would work with some 30 000 growers and could create an additional 150 000 indirect jobs in farm work, transport, services, etc.

2.5.3 Impact of changes in tobacco manufacturing technologies

All major companies have modernized their processing technology. New machinery and improved processing have contributed to reduced component prices, to improved cigarette quality and to reduced waste. Tar and nicotine levels have been reduced through filterization, thus reducing potential health damage from smoking. The advances in technology of processing and cigarette quality reflect the global trend of the industry, which is striving to remain competitive and meet consumer preferences.

However, smaller manufacturing companies have not modernized at the same pace as the leading industries, relying on old fashioned machinery, with poorer quality control of the tobacco. They have resorted to price competition focused on class C and D – relatively cheap – cigarettes. As a consequence, and due to the severe competition with smuggled cigarettes, small companies have been unable to generate savings to invest in modern technology.

Product quality

With improved technology and consumer preference for high quality products, companies are investing in total quality management for ISO 9002 certification. ISO certification is an improvement in product quality, giving clients an additional guarantee. To ensure optimum quality, tobacco companies are reducing foreign matter and routinely testing all products for chemicals, including alkaloid levels.

In part, this is achieved by working with growers to ensure supplies of requisite tobacco through the "integration" system, whereby all producer activities are supervised by the company's extension services. "Integration" participants have to adhere to the farming practices recommended by the companies, particularly with regard to cultivars, following a schedule of planting at the optimal time for each region, proper plant spacing, increasing the number of leaves per tobacco stem by using the appropriate fertilizer and harvesting at ideal maturation. The aim is to produce cigarette tobaccos that are more orange in colour (grade O), rather than dark (R). Alkaloid levels have been falling significantly, and the average nicotine level, which earlier was about 3.81 percent, dropped to 3 percent in recent years.

Volumes of leaf being processed into cigars

New processing technologies have also been introduced in the cigar industry, with substantially increased volumes of leaf processed. For exports, "loose tobacco leaf processing" is used, which consists of selecting high quality tobacco leaf, grading at delivery point, fermenting, extracting impurities and off-grade leaves, baling, stacking and fumigation. This produces a dark wrapper leaf of high quality for cigars. This processing technology is almost all manual, and gives a semi-processed product.

2.6 WHOLESALE AND RETAIL CHAINS

The legal cigarette market is dominated by one company, Souza Cruz SA, controlled by the British American Tobacco Company. In the 1990s, Souza Cruz marketed approximately 20 cigarette brands in seven price categories; its share of total cigarette sales increased from 78 percent in 1994 to 81 percent in the late 1990s. In second place is Phillip Morris of Brazil, with 17 cigarette brands and 13.9 percent of the market, down from 18 percent in 1994. The remaining 5.1 percent of cigarette sales is shared by small and medium companies.

The manufacturers are also distributors, imposing tight controls on retailers to maintain product freshness and quality. Direct distribution and assistance to retailers also maintains competitiveness.
Despite the overwhelming dominance of Souza Cruz, an intense struggle for cigarette market share is being fought between that company and Phillip Morris, mainly through price competition.

2.7 REVIEW OF DEVELOPMENTS IN TOBACCO CONSUMPTION

2.7.1 Cigarette consumption

Growth in cigarette production since 1985 has been associated with increasing cigarette exports, with little change in domestic consumption. The underlying competitiveness of Brazilian tobacco leaf and cigarettes is evident in the industry's strong export performance in the 1990s, despite initiatives in several countries to constrain smoking. Brazil's share of the global cigarette trade increased from 2 percent in 1990 to 8 percent in 1994, but fell after 1995. Tobacco exports as a proportion of total Brazilian exports increased from 2.52 percent in 1995 to 3.17 percent in 1999.

An INCA (1998) survey indicated that 23.9 percent of the population over the age of five smoked – 30.6 million people. As elsewhere, more men than women smoked, and a high number of adolescents were starting to smoke at an earlier age. Around 2.7 million Brazilian children and adolescents smoke.

Table 2.12: Cigarette consumption and prices.

Year	billion packets	Price ($R/packet)
1983	6.46	1.08
1984	6.39	0.99
1985	7.32	0.75
1986	8.45	0.72
1987	8.07	0.87
1988	7.90	0.82
1989	8.14	0.88
1990	8.21	0.60
1991	7.82	0.63
1992	6.39	0.89
1993	5.98	0.84
1994	5.46	0.70

Note: Prices deflated by IPC/FGV (average 1994 = 100).
Source: SRF/Abifumo, Souza Cruz S. A., and IBRE/FGV.

Table 2.13: Production, domestic consumption and exports of tobacco leaf and cigarettes

Year	Leaf production	Domestic cigarette consumption		Exports of cigarettes		Exports of leaf		
	tonne	billion pieces	Price US$/pack	billion pieces	US$'000	tonne	US$'000	US$/tonne
1980	372 970	142.7	0.42	1.5	11 050	128 400	284 260	2 213.9
1981	352 360	134.9	0.54	1.6	12 170	131 690	356 490	2 707.0
1982	391 960	132.3	0.64	1.6	14 150	144 930	462 780	3 193.1
1983	399 120	129.2	0.56	1.7	14 030	155 260	457 920	2 949.4
1984	434 750	127.8	0.46	1.1	8 100	187 440	460 470	2 456.6
1985	410 280	146.3	0.27	1.3	9 630	198 660	449 700	2 263.7
1986	410 490	168.9	0.33	1.6	8 900	175 660	404 310	2 301.7
1987	398 150	161.4	0.55	2.8	16 040	173 680	415 500	2 392.3
1988	431 710	157.9	0.57	5.4	33 620	206 950	519 630	2 510.9
1989	462 010	162.7	0.55	8.6	45 050	193 660	524 540	2 708.6
1990	447 980	164.1	0.64	9.9	57 630	188 140	565 520	3 005.8
1991	433 900	156.4	0.54	20.5	137 740	190 440	680 620	3 573.9
1992	573 730	127.8	0.75	25.1	177 990	241 010	803 600	3 334.3
1993	633 100	119.5	0.92	29.7	203 780	245 540	697 000	2 838.6
1994	446 900	109.2	1.15	54.8	327 640	275 540	693 900	2 518.3
1995	390 000	119.7	1.29	55.0	406 390	256 270	768 570	2 999.1
1996	433 520	119.2	1.42	63.3	421 185	282 360	1 028 520	3 642.6
1997	588 170	110.8	1.42	72.0	566 059	318 950	1 091 383	3 421.8
1998	440 340	97.0	1.07	92.3	607 609	300 540	939 891	3 127.3
1999	590 100	101.5	0.97	17.8	49 426	340 920	892 687	2 618.5
2000	577 110	100.0	0.88	11.6	5 786	341 450	812 920	2 380.8
2001	544 780	100.0	0.95	8.0	2 932	410 000	921 135	2 246.7

Source: Afubra/Abifumo; Secretaria de Comércio Exterior (Secex)/ Departamento de Operações de Comércio Exterior (Decex).

Table 2.14: Balance of trade in tobacco and tobacco products

Item	1996	1997	1998	1999	2000	2001
			US$ million, fob			
Tobacco leaf						
Exports (a)	1 028 521	1 091 394	939 891	892 687	812 921	921 135
Imports (b)	51 871	67 180	50 695	5 533	13 175	20 974
Balance (a) - (b)	976 650	1 024 214	889 196	887 154	799 746	900 161
Total Trade (a) + (b)	1 080 392	1 158 574	990 586	898 220	826 096	942 109
Cigars and cigarillos						
Exports (a)	1 071	1 742	917	249	350	201
Imports (b)	340	2 540	2 667	1 500	1 339	1 490
Balance (a) - (b)	732	(799)	(1 750)	(1 251)	(990)	(1 288)
Total Trade (a) + (b)	1 411	4 282	3 585	1 749	1 689	1 691
Cigarettes						
Exports (a)	481 186	566 060	607 609	49 426	5 787	2 932
Imports (b)	51	2 165	2 033	1 405	1 827	1 495
Balance (a) - (b)	481 135	563 895	605 576	48 021	3 960	1 437
Total Trade (a) + (b)	481 237	568 224	609 642	50 831	7 613	4 427
Other (raw tobacco for smoking)						
Exports (a)	4 614	5 611	10 572	18 875	22 416	20 047
Imports (b)	13 674	20 198	22 656	4 903	1 939	1 084
Balance (a) - (b)	(9 060)	(14 587)	(12 084)	13 972	20 477	18 963
Total Trade (a) + (b)	18 288	25 810	33 228	23 779	24 356	21 131
Total						
Exports (a)	1 515 392	1 664 806	1 558 990	961 237	841 474	944 316
Imports (b)	65 936	92 083	78 051	13 341	18 280	25 042
Balance (a) - (b)	1 449 456	1 572 723	1 480 939	947 896	823 193	919 273
Total Trade (a) + (b)	1 581 329	1 756 890	1 637 040	974 578	859 754	969 358

Source: Secretariat of Foreign Commerce, Ministry of Industry and Commerce.

Notwithstanding the uncertainty in statistics on domestic cigarette consumption due to the unknown extent of smuggling, it seems that Brazilians have been smoking less since 1990.

Cigarette consumption is fairly stable, despite the nominal drop in supply in 1999. The overall impression among market specialists is that there is little growth in domestic sales of cigarettes.

Taking the figures for the legal market and estimating those for the illegal market, Brazilian consumption seems to be around 142 billion cigarettes a year, according to Abifumo. Legal production and processing amounted to 95.1 billion units, while the number of cigarettes originating elsewhere (contraband) has been estimated at 46.86 billion, or one third of the total market.

Although consumers see primarily the price difference between contraband and legal goods, illegal cigarettes are of such poor quality that it has been predicted that buyers of cheap cigarettes will shift to higher quality brands. Smuggled cigarettes, typically produced with minimal surveillance and quality control, are of poor quality and cause greater damage to health.

2.7.2 Cigar consumption

The northeast region produces dark tobaccos from locally adapted varieties for manufacture of cigars and cigarillos – both in strong demand in recent years – for both the domestic and foreign markets, and intends to increase the area planted. The expanding domestic cigar consumption in part reflects the anti-smoking campaigns, which make smokers switch to cigars, with the argument that there is less or no inhalation of cigar smoke.

The cigar manufacturing companies in Bahia have been increasing their production year after year, keeping pace with higher domestic consumption and the expansion of international markets. According to market analysts, there are promising prospects for Brazilian cigars in international markets following the adoption in 1999 of a floating dollar. Exporting firms are focusing on growing niches (in the United States of America and Europe), with increasing penetration as Brazilian brands become better known, with their strong commitment to quality. Investment has also brought the introduction of Cuban technology in the production and processing of tobacco for cigars. Strong domestic and export markets will favour investment of scale in the industry.

The floating dollar also discouraged smuggling. Although there are no official figures, the Bahia Tobacco Industries' Union estimates that 6 out of 10 cigars sold are contraband.

It was predicted in the mid-1990s that, by 2000, North America would be consuming one million Brazilian cigars a year. This prospect generated a production boom, although market analysts did not confirm the estimates. Currently, demand for imported premium cigars in the United States of America is about 400 million pieces a year, with Brazil hardly represented.

Companies in Bahia are also making some political moves, including the creation of a Brazilian Cigar Chamber to promote their interests in government and society. The Chamber aims to create and to have adopted a quality mark to differentiate Bahia products, today recognized both for using raw materials of excellent quality and for tight control over industrial processing.

Innovative companies are testing the production, in summer crops, of the Sumatra variety, characterized by a light colour and used for cigar wrappers. Instead of the traditional drying in simple, plastic-roofed sheds set up near the fields, companies are introducing a curing-barn model, allowing total control over moisture and temperature conditions, ensuring uniformity and quality in the cured leaf. All this is a demand-driven investment by cigar companies.

2.7.3 Impacts of price and income

Descriptive analyses of cigarette consumption have shown that consumers of more expensive brands are less sensitive to price and income changes. In contrast, consumers of cheaper cigarettes respond to price and income changes and marketing strategies. It has been empirically determined that cigarette consumption in Brazil is affected by the rate of growth of the economy; the purchasing power (income) of consumers; cigarette prices (related mainly to changes in excise tax and marketing); and the quality of public policies (laws, decrees, and norms) that discourage smoking.

Overall, the predictable inverse association between cigarette price and consumption (i.e. the lower the price, the greater the consumption) held true until the mid-1990s. Thereafter, however, consumption shows an atypical relationship, probably due to a fall in real incomes and increasing underestimation of domestic consumption by statistics due to cigarette smuggling and excise falsifications.

According to more recent data, there was an increase in consumption from the mid-1990s to 2000. This increase was apparently due to stabilization of the economy, resulting in control of inflation and increasing real incomes, particularly in the case of lower socio-economic groups. Nonetheless, in 1997, as the Brazilian tobacco industry has pointed out in their annual reports, there was a 5.6 percent fall in the volume of legal cigarette sales in the domestic market.

2.7.4 Future developments in tobacco demand

There are clear trends in consumer preferences, in both domestic and world markets. Consumers prefer cigarettes with low nicotine content; lighter cigarettes; and cigarettes produced from regular “O” grade tobacco. Companies are therefore changing production technology by reducing fertilizers – especially nitrogen – to reduce yields, and adjusting planting time, spacing, topping and harvesting systems, as well as striving to reduce nicotine levels and not harvesting overripe tobaccos to avoid “R” grades.

Although proportionally minor, aromatic tobacco (oriental type) is important for a number of small farms in the northeast. Production has been about 800 to 1 000 tonne/year of high-value tobacco. The area planted has been increasing, to some 1 500 ha, with 1 176 growers in the 2000/01 crop. It is mainly used in blends for cigarette brands – the so-called American blend. Export of such blending types is a promising sector.

The suitable soil and climate in the northeast has made aromatic tobacco production an important agricultural activity and a major source of income for producers. It helps the regional economy by creating around 16 000 jobs from May to November each year.

2.8 TRADE IN TOBACCO AND CIGARETTES

Brazil doubled its exports in the 1990s and the tobacco industry reached the end of the second millennium very well positioned in the world tobacco market. Brazil consolidated its position as the largest tobacco exporter in the world. It has shown record productivity – in large measure due not only to technologies adopted but also to integration of growers and the processing sector.

Over a decade, Brazil benefited from market forces that included short supply and growing demand. On the one hand, production declined in the United States of America and in Zimbabwe, Brazil's major competitors; on the other hand, markets benefited from the entry of major buyers such as China, Germany, Japan, the Republic of Korea, Russia and countries in the Far East.

Cigarette exports are increasing. In the late 1990s, exports to MERCOSUR countries accounted for almost one-eighth of Brazilian tobacco companies' total revenues from exports. At the same time, the Eastern European market expanded, and they and the Latin American countries were the main buyers of Brazilian cigarettes, primarily the international brands "Hollywood" and "Free", manufactured by Souza Cruz.

Markets for cigars abroad are mainly Côte d'Ivoire, France, Madagascar, Morocco, Senegal, Spain (especially the Canary Isles) and the United States of America.

Brazil is also an importer of tobacco leaf, cigars and cigarillos, cigarettes and other forms of tobacco processed products, and a net importer of cigars after 1996, with net cigar imports of US$1.7 million in 1998.

Tobacco leaf exports have grown consistently over the last 25 years, 128 000 tonnes in 1980 to 410 000 tonnes in 2001. Prices increased, going from US$2 214/tonne in 1980 to over US$3 000/tonne in 1996/1998. In 1990 and 1991 average export prices increased to such an extent that area increased in the major producing states. With the introduction of export taxes in early 1999, exports felt dramatically.

2.8.1 Future developments in the tobacco trade

Brazil's potential as exporter attracted the attention of foreign tobacco companies. Quality improvement and steady supplies are the key strategic elements to penetrate and hold an important market share in world markets.

Every effort is being made to meet world demand requirement, not only in the area of quality control, but also in the area of environment protection and other requirements (social clause). Residue and alkaloid level analyses have been introduced, and campaigns implemented to reduce foreign material in tobacco. Companies have implemented traceability practices to identify growers who have not yet adapted to "clean tobacco" requirements, and "The Future is Now" programme aims to remove child labour from tobacco growing and processing.

A critical problem is falling prices: from US$3.64/kg in 1996 to US$2.25/kg in 2001, and such falling prices influence production, as supply is highly responsive to export prices.

2.9 GOVERNMENT REVENUE FROM THE TOBACCO SECTOR

2.9.1 Source of government revenue

Tobacco is an important source of government revenues as tobacco products are considered luxury goods and have a heavy tax burden.

The proportion of fiscal revenues in total sales (see Table 2.15) was between 72 and 75 percent from 1990 to 1998. Taxes rose in the late 1980s (increased ICMS – a value-added tax for the states, and increased IPI – a federal tax on manufactured products). The taxes fell to 65 percent after legislation changed in 1999, and returned to levels similar to those of the mid-1980s. The total tax burden of direct taxes (without income taxes paid by industry) is currently 65.5 percent. Besides these taxes, there are other forms of taxation at state, municipal and local levels, and income tax and social security payments. Total taxes are estimated to reach around 70 percent of the final value of a cigarette packet. Since production and wholesale distribution are concentrated in a few large companies, these taxes are extremely difficult to evade. The revenues are very important sources of income for both state and federal governments.

Table 2.15: Fiscal revenues from sales of cigarettes in the domestic market

Year	Total sales [A]	Fiscal Revenues(1) [B]	Revenue to Industry(2)	Tax as % of sales [B]/[A] × 100
	US$'000	US$'000	US$'000	%
1990	5 283 550	3 996 480	1 287 070	75.6
1991	4 215 010	3 100 560	1 114 450	73.6
1992	4 800 000	3 530 400	1 269 600	73.6
1993	5 497 000	4 045 790	1 451 210	73.6
1994	6 260 630	4 604 690	1 655 940	73.5
1995	7 700 000	5 663 350	2 036 650	73.6
1996	8 445 600	6 211 740	2 233 860	73.6
1997	7 866 800	5 786 030	2 080 770	73.5
1998	5 184 480	3 874 360	1 310 120	74.7
1999	4 941 910	3 239 420	1 702 490	65.5
2000	4 567 500	2 993 996	1 573 504	65.6
2001	4 750 000	3 113 625	1 636 375	65.6

Note: (1) Includes all taxes. (2) Includes producer and retail revenues.
Source: Afubra and Abifumo.

Taxes and pricing of Brazilian cigarettes

Tax is a high proportion of the price of Brazilian cigarettes relative to other countries, around 74 percent (US$0.79), according to manufacturers' estimates. In comparison, within MERCOSUR, equivalent taxes are 68.3 percent in Argentina, 66.5 percent in Uruguay and 13.5 percent in Paraguay. On average, for the period 1998–2000, Brazil's total revenue from cigarette taxes was 5.4 percent of total federal tax revenue and 3.6 percent of total national tax revenue.

There are several different types of cigarette tax, including ICMS, a value-added tax. In the late 1990s two states (Minas Gerais and Rio de Janeiro) increased ICMS from 25 percent to 30 percent, making the total tax in those states about 78.5 percent of the average retail price.

The industry has complained most about IPI, a tax on industrialized products, which doubled – from 15 to 30 percent – early in the 1990s, and changed again in 1999. Raising taxes – besides the fiscal reasons – has been an efficient instrument to discourage production, but does little to discourage consumption, due to the availability of imported cigars and cigarettes. Industry blames the tax increases for the contraction of the tobacco sector in Bahia, where a state that produced 240 million cigars a year in the 1940s, now produces 30 million at most. The cash-flow situation of the tobacco industry has subsequently been eased by altering the arrangements for IPI tax payment. This tax is now collected after cigarettes are sold at the retailer, whereas previously it was collected when cigarettes left the factory.

Table 2.16: Cigarette industry turnover

Item	Turnover (1999)	
	US$ million	percent
Industrial products tax	1 639.2	33.2
Value-added tax (industrial) (ICMS)	1 096.1	22.2
Value-added tax (retail) (ICMS)	139.4	2.8
Control stamps	145.3	2.9
Social contribution (COFINS)	175.0	3.5
Social integration tax (PIS)	44.5	0.9
Subtotal tax revenue	3 239.4	65.6
Marketing margins:		
Industry	1 176.3	23.8
Retail	417.6	8.5
Producers' revenue	108.6	2.2
Total	4 942.0	100.0

Source: Sindifumo and Abifumo.

Government tax policy for tobacco

Export taxation has always been one option for government to raise fiscal revenues. However, it has a strong impact. After imposing a 150 percent export tax on tobacco in early 1999, cigarette exports dropped 90 percent, reaching the lowest export value for 20 years. Consequently, export earnings were only US$49.4 million, against US$607.6 million in 1998.

The domestic taxation of cigarettes is a major source of fiscal revenues. There are approximately 52 forms of taxation, rights, retentions and other burdens imposed by government. This tax burden encourages illegal and counterfeit products and smuggling, and curbs the competitiveness of legal products. Cigarette production – for both export and domestic markets – has dropped significantly, which Abifumo blames on new tax legislation.

Policy makers have considered increasing taxation of cigarettes in order to raise revenues, but experience shows that this would stimulate smuggling. In recent years, following the increase of taxes to 75 percent of total sales revenue, the illegal cigarette market in Brazil has grown substantially. Estimates by Abifumo for 2000 suggest that contraband could account for 30 to 34 percent of consumption – approximately 49 billion units (in 2000). In the case of cigars and cigarillos, taxation is 67 percent, and smuggling of those two products is also high, approaching an estimated 40 percent of the domestic market.

At least 366 brands are available on the illegal market, compared with 54 government-approved brands. Smuggling includes some counterfeit leading national brands, produced abroad but with tobacco of poor quality. Consumers know that the quality is poorer, but they buy them anyway because of the price difference. The illegal brands are easily marketed and sales are increasing. Meanwhile, legal brands are subject to extremely rigorous, bureaucratic and costly monitoring.

Industry figures show that the Brazilian market for legal cigarettes is some 97 billion units per year, generating receipts of $R 6.25 billion, while the illegal market is estimated to generate $R 1.85 billion. The volume sold illegally may reach 49 billion units, or around $R 1.3 billion in tax evasion (in 2000). This level of smuggling has affected producers, who now have considerable idle capacity, with consequent loss of jobs.

2.10 TOBACCO CONTROL MEASURES

2.10.1 Changes in legislation on cigarette consumption in Brazil

The first significant legislative move towards controlling cigarette consumption was in 1988, but the provisions at this time were weak. From 1995, relatively strong warnings and messages about the risks for the health of smokers have been required. Restrictions have been in place on advertising, and on distribution of free samples where young people below 18 years were present.

The Ministry of Health requires that warnings regarding potential damage to health, related to tobacco consumption, should be on cigarette packets and advertising.

However, effective legislation can only be enacted at the state level, or in terms of Resolutions, when regulation is federal. Currently, only 3 of the 27 states have anti-smoking legislation: Ceará has legislation against smoking; Rio de Janeiro has legislation to protect passive smokers; and Paraná has a comprehensive body of legal instruments to restrain smoking.

2.10.2 Non-price measures

Anti-smoking campaigns have been a powerful weapon in the government's attempt to restrain cigarette consumption in Brazil. These campaigns have gained extra support from a movement involving NGOs and private groups, but the tobacco industry has reacted with an information campaign of its own.

2.10.3 Bans on advertising and promotion

Publicity campaigns effectively affect cigarette consumption. The tobacco industry tends to invest more in advertising during downswings in consumption. For example, a dramatic increase in cigarette advertising expenditure in Brazil occurred during 1991–95, at a time when cigarette consumption was apparently declining significantly.

The Brazilian tobacco industry has been for some years about the sixteenth-biggest client of the local advertising industry, spending US$58.7 million in 1994, or about 8.8 percent of total advertising expenditure in Brazil.

The national council of ethics in advertising is responsible for controlling the accuracy of messages in advertising.

In 2002, government issued a resolution requiring six mandatory health warnings on all cigarette packets. These warnings are similar to those adopted in Canada, but softer.

Smoking is definitively banned in cinemas, theatres and schools; on government premises; in offices of private companies; in public transport; and internal and external flights of Brazilian and foreign airlines.

There may be potential to merge the interests of manufacturers, government and health agencies by more effectively enforcing anti-smuggling legislation. Stricter border and port controls could reduce smuggling drastically, thus improving the returns from legal products. This convergence of interests could avoid resistance from any one party, something that has prevented other measures from having full effect.

2.11 CONCLUDING REMARKS

The adoption of high yielding cultivars and improved cultural practices have led to overall quality improvement in Brazilian tobacco, and established a reliable export presence. Prices stimulated an export-oriented boom, which boosted production.

So far, research stations have not paid much attention to alternative crops to replace tobacco. A few crops have been proposed, particularly for the south, but no work has been done on the economics of substitution. Far more detailed research work is needed before any prescription can be made to replace tobacco in the south. In the absence of reliable substitute crops, tobacco will remain an important source of income to Brazilian small-scale farmers.

Concerns about the health risks of smoking have prompted some government action, with empirical evidence suggesting that anti-smoking campaigns are possibly the most efficient way to mitigate the health hazards of smoking. The effects of national campaigns have been in part offset by the export boom of the 1990s, otherwise the tobacco industry could have been severely damaged. The tobacco sector makes a large contribution to export earnings and government revenues. Both would suffer if world demand decreases in future. Employment in tobacco production, processing and manufacturing would suffer were demand to fall.

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3 TOBACCO IN THE PEOPLE'S REPUBLIC OF CHINA

3.1 INTRODUCTION

The People's Republic of China (China) is the largest tobacco producer in the world. In 1999, production of leaf tobacco was about 2.4 million tonnes, or nearly one-third of world output. Most tobacco was processed into cigarettes for domestic consumption. In 1998, total output of cigarettes reached about 83 billion packs (20 pieces/pack), representing more than 30 percent of world cigarette production. It was estimated that over 320 million Chinese were smoking and nearly 500 million Chinese were second-hand or passive smokers, which made China the world largest cigarette consuming country and hence most vulnerable to smoking health hazards.

Tobacco has been a very profitable product in China, in particular for the government. With less than one percent of sown agricultural land, tobacco production, along with manufacturing processes, generated about RMB 95 billion in tax and profit for the government in 1998, while the whole agricultural sector contributed only RMB 40 billion to government tax revenue. Total government revenue reached RMB 987.6 billion in 1998, but nearly one-third was used to subsidize state loss-making enterprises, which resulted in net revenue of RMB 654.1 billion before adjustments to include other government financing. As a result, taxes and profit from tobacco production accounted for nearly 15 percent of government net income. Given such an important role in government revenue, tobacco production has long been controlled by the government. While many industrial and agricultural enterprises have been partially or fully free of government control following the economic reforms of the past two decades, the government passed the "Law of the People's Republic of China on Tobacco Monopoly" in 1992 to re-enforce the state monopoly on tobacco. Obviously, to explore the current development and future trends in tobacco production, consumption and trade, one must bear in mind the importance of their contribution to government revenue and the monopoly structure for production, marketing and trade.

3.2 PRODUCTION OF TOBACCO

Since economic reforms were launched in 1978 and the tobacco monopoly law came into effect in 1992, production of tobacco is examined for three periods: 1970–1978, 1979–1992 and 1993–1999 to take into account policy effects (see Table 3.1).

Production of tobacco in China increased during the past three decades. Average annual outputs were 0.965, 2.106 and 2.921 million tonnes for the periods 1970–1978, 1979–1992 and 1993–1999, respectively. Since average unit yields did not increase during that time, the increase in production is attributable entirely to the expansion of planting area. The average planting area reached 1.75 million hectares between 1993 and 1999, 213 percent more than between 1970 and 1978. Yields declined a little over this time, largely due to the extension of tobacco production into marginal land and into non-traditional tobacco producing areas. The lack of skills and unfavourable agronomic conditions in these new production areas lowered the average yield in the country. Although almost every province in China plants tobacco, production has been concentrated in a few provinces, namely Yunnan, Guizhou, Sichuan (including the newly established municipality of Chongqing) and Henan. These four provinces accounted for nearly 60 percent of the total planting area in 1999.

Growth in tobacco production has, however, slowed in recent years. The annual growth rate was 6 percent between 1970 and 1978, 12 percent between 1979 and 1992, but only 1 percent between 1993 and 1999. The high level of production in 1997 resulted in an accumulation of stocks, and production remained well below that level for the subsequent two years.

Table 3.1: Area, yield and output of tobacco leaf, 1970–1999

	Area harvested (ha)	Average yield (kg/ha)	Production (tonne)
1970	383 000	2 050	785 000
1971	392 000	2 003	785 000
1972	422 000	1 991	840 000
1973	444 000	2 140	950 000
1974	471 000	2 089	984 000
1975	565 000	1 699	960 000
1976	667 000	1 454	970 000
1977	700 000	1 410	987 000
1978	783 000	1 586	1 242 000
Average 1970–78	555 500	1 796	964 750
1979	625 000	1 506	941 400
1980	512 000	1 758	900 000
1981	757 000	1 978	1 497 000
1982	1 124 000	1 939	2 179 000
1983	766 960	1 800	1 380 600
1984	897 000	1 994	1 789 000
1985	1 313 000	1 847	2 424 849
1986	1 124 200	1 519	1 707 142
1987	1 128 000	1 723	1 943 000
1988	1 554 667	1 759	2 734 000
1989	1 798 000	1 574	2 830 353
1990	1 592 600	1 650	2 627 082
1991	1 804 670	1 680	3 031 000
1992	2 092 900	1 672	3 498 561
Average 1979–92	1 220 714	1 743	2 105 928
1993	2 089 000	1 652	3 451 000
1994	1 489 750	1 502	2 238 000
1995	1 470 000	1 574	2 314 000
1996	1 853 000	1 745	3 234 000
1997	2 353 000	1 807	4 251 000
1998	1 361 000	1 737	2 364 000
1999	1 600 000	1 625	2 600 000
Average 1993–99	1 745 107	1 663	2 921 714

Chinese production of tobacco shows substantial volatility from year to year, and for the period 1979-1992, the standard deviation was 0.79 million tonnes against a mean of 2.11 million tonnes. For instance, production in 1981 was 66 percent higher than the previous year, while in 1986 it fell 30 percent compared with 1985. Although the volatility between 1993 and 1999 was lower than between 1979 and 1992, it was still very significant. Variations in yield were responsible for some of the fluctuations of production, but the major factor was the changes in planted area. The changes in yields from one year to the next over the past three decades have never been more than 15 percent, except for 1986, when severely bad weather swept several major producing regions. The planted area, however, experienced changes of more than 40 percent up or down from year to year during the same period. This volatility has often been attributed to direct government intervention under the central planning system.

3.3 PRODUCTION PLANNING AND MARKETING

Under the Law of the People's Republic of China on Tobacco Monopoly, the central government essentially controls tobacco production. The State Planning Committee issues a procurement plan, which is implemented by it agencies at the county level. Based on this plan, the China Tobacco Leaf Production Procuring and Sale Corporation, a business unit of the State Tobacco Monopoly Administration, signs procurement contracts with tobacco growers through its local agencies. Planting areas are specified in the contract. Inputs for tobacco production, such as seed and fertilizer, may also be specified and provided by state tobacco companies at fixed prices, which may be lower than the

market prices. These implicit input subsidies may not have important impacts on tobacco growers' production decisions because they are constrained by state tobacco companies procurement contracts and have to sell all their output to the state at the fixed procurement price. On the government side, the cost of subsidies on inputs is paid off by lower procurement prices. The limited impact of input subsides is also attributed to the government's monopoly on the marketing of tobacco leaf.

Under the law, the state tobacco corporations are sole buyers for all tobacco leaf produced by growers. No tobacco leaf produced under state plans can be traded in the market, and no individual or company is eligible to trade tobacco. Tobacco growers have to sell their entire production to the state at the procurement prices set by the state, based on standard grades. The state tobacco company has to purchase, at the fixed prices, all tobacco leaf produced by growers on the contracted planting areas.

Any exchanges of tobacco leaf among provinces and within provinces should be based on plans made by the state or provincial planning department. Without government permission, no tobacco leaf may be transported from one place to another. The government has effective control through planning production, contracting areas, setting prices and controlling marketing.

Local governments are also directly involved in controlling tobacco production. They implement the production plan assigned by the state planning department and assist state tobacco companies to negotiate and sign production contracts with tobacco growers. In return, local governments collect 20 percent so-called special agriculture product tax once the state tobacco companies have purchased tobacco leaf from tobacco growers. As a result, such tax revenue constitutes a major part of local government budgetary income in the major tobacco producing provinces. For instance, Xiao Shi Qiao, a town in Yunnan, had total revenue of RMB 3.2 million in 2000, of which RMB 2.3 million came from the special agricultural product tax on tobacco.

3.4 DEMAND FOR TOBACCO LEAF

Since most tobacco is used for the production of cigarettes, demand for cigarettes essentially determines the use of tobacco leaf in China.

National statistics show that annual per capita consumption increased from 38 packs in 1980 to 70 packs in 1995, but subsequently contracted to 65 in 1999 (Table 3.2). With an estimated 320 million cigarette smokers in China, annual consumption of cigarettes by each smoker would be about 240 packs (see appendix on Consumption Statistics).

Table 3.2: Cigarette consumption, price and income

Year	Consumption (packs per person)	Cigarette price (per pack; in 1978 RMB)	Rural household real income (per capita; in 1978 RMB)	Urban household real income (per capita; in 1978 RMB)
1980	38	0.27	139.00	347.03
1985	58	0.44	268.90	499.86
1990	71	1.08	311.20	684.79
1995	70	1.92	383.70	1 041.63
1996	67	1.98	418.20	1 050.63
1997	67	2.04	437.40	1 079.91
1998	66	1.86	456.80	1 146.25
1999	65	1.78	462.80	1 221.50

Sources: China Statistics Bureau, China Statistical Yearbook, various issues.

Demand patterns for cigarettes are undoubtedly more complex than for most consumer products and, in China particularly, factors other than price and incomes may affect demand:

There are more than 1 000 different brands of cigarettes, with a price range for popular brands of RMB 2 to RMB 40. The large number of brands and huge price differences provide substantial scope for smokers to switch types of cigarettes rather than adjusting the quantity consumed in response to changes in prices. Apart from failing to reduce consumption, such a measure might be counterproductive if, as seems likely, the lower quality cigarettes were more harmful to health.

- Cigarettes, in particular brand name cigarettes, have been one of the most popular gifts in China over the past decades. The standard demand theory may not apply for gift products, demand for which may be largely determined by other economic and non-economic factors.
- There has been increasing publicity of the health hazards associated with smoking, with restrictions on smoking in public places, including schools. In addition, policy changes have shifted some of the cost of health care to the individual. It has been reported that increasing numbers of smokers over 40 years of age are quitting smoking because of concerns over health. This has contributed to a decline in smoking since 1995.

Household survey data show that the decline in cigarette consumption evident in many provinces since 1995 has not resulted in any increase in consumption of food and other agricultural commodities. For instance, according to the 1999 China Rural Household Survey, national average cigarette consumption per rural household member declined by more than 20 percent, from 30 packs in 1995 to 23.6 packs in 1998 (Table 3.3). Since the average price of cigarettes changed little between 1995 and 1998 the decline in cigarette consumption coupled with increased incomes would enable households to purchase greater quantities of other goods. However, there were only small increases in household expenditures on food items. In fact, household expenditures in 1998 for cereal and for non-cereal item were about 8 percent and 4 percent less than the previous year, respectively. The most significant increases in household expenditures were seen in transport, communication, education and entertainment, as well as in housing.

Table 3.3: Per capita living expenditure in rural households, 1980–98

	1980	1985	1990	1995	1997	1998
Cigarette expenditure (RMB)	5.64	12.34	36.34	60.53	54.19	49.14
Packs purchased (No.)	18.20	26.00	31.80	30.00	25.00	23.60
Food (RMB)	100.19	183.43	343.76	768.19	890.28	849.64
Staple food (RMB)	60.58	83.24	135.47	316.72	329.01	303.45
Non-staple food (RMB)	35.27	73.01	146.09	316.40	381.50	364.11
Other food (RMB)	4.36	22.56	49.45	102.60	132.03	126.35
Clothing (RMB)	19.99	30.86	45.44	89.79	109.41	98.06
Residence (RMB)	22.46	57.90	101.37	182.21	233.23	239.62
Medicines and medical services (RMB)	–	7.65	19.02	42.48	62.45	68.13
Transport and communication (RMB)	19.57	5.48	8.42	33.76	53.92	60.68
Cultural, educational and recreational articles and services (RMB)	–	12.45	31.38	102.39	148.18	159.41
Other commodities and services (RMB)	–	3.40	4.34	23.06	34.27	32.87
Total expenditure (RMB)	162.21	317.42	584.63	1310.36	1617.15	1590.33

In the 1960s and 1970s, cigarettes were rationed, but the government has had no direct control over cigarette consumption since 1980. Smokers no longer need government-issued coupons to buy cigarettes from retailers. The abandoning of cigarette rationing in the late 1970s was largely responsible for the initial spike of cigarette consumption in the early 1980s. However, there are other ways by which the government influences consumption of cigarettes. Under the Tobacco Monopoly Law, any enterprise or individual engaging in the retail sale of tobacco products must obtain a tobacco retail licence from the Tobacco Monopoly Administration. The government also sets the prices of cigarettes. Under the law, the Tobacco Monopoly Administration, together with the State Price Administration, sets prices for certain selected brands of cigarettes. Prices of other brands of cigarettes

are set by the Tobacco Monopoly Administration or its provincial administrative agencies, with reference of the prices set for selected brands. Prices of these cigarettes are determined by the Tobacco Monopoly Administration without direct involvement of the State Price Administration.

The state monopoly in cigarette manufacturing has an important impact on the demand for tobacco leaf. There are about 150 state-run cigarette manufactures in China. Under the monopoly law, production of cigarettes in all manufactories was controlled directly by the State Planning Committee and the Tobacco Monopoly Administration through an annual production plan for each factory, which not only set the total output target, but also the quotas for different grades and brands of cigarettes. Once the total output target was set, demand for tobacco leaf was also set.

Technology changes in the cigarette manufacturing processes have also had significant impacts on demand for tobacco leaf. The adoption of modern cigarette manufacturing equipment and the introduction of new processing technologies and materials, such as tobacco-inflating and tobacco-reconstitution processes, have contributed greatly to reducing the volume of leaf needed in cigarette manufacturing (Table 3.4). According to the State Tobacco Monopoly Administration, the quantity of tobacco required to produce one cigarette now is about only two-thirds of that required fifteen years ago. In 1985, 41.26 tonnes of tobacco was used to produce one million packs of cigarettes. In 1998, one million packs of cigarettes required only 27.8 tonnes of tobacco. While the quantity of tobacco leaf used was essentially unchanged between 1985 and 1998, cigarette output increased by nearly 50 percent.

Table 3.4: Technical change and tobacco use

		1985	1990	1995	1998
Total tobacco used	(thousand tonnes)	2 430.4	2 431.1	2 437	2 325
Cigarette production	(million packs)	58 900	82 250	86 750	83 733
Unit use of tobacco	(tonne/million packs)	41.26	29.56	28.09	27.77

3.5 TRADE IN TOBACCO AND CIGARETTES

China's production and consumption of tobacco are huge, while trade has been of limited importance during the past few decades. During the 1980s, total exports of tobacco were around 30 000 tonne/year, accounting for less than 2 percent of total output. However, exports increased during the 1990s, and in 1998 they exceeded 100 000 tonnes, or more than 4 percent of total output. Exports of cigarettes exhibited a similar pattern. In 1980, about 300 000 packs of cigarettes were exported, but this trade had reached 1.14 billion packs – 1.3 percent of total cigarette production – in 1998. Imports of cigarettes have fluctuated over the past decades. The highest imports were recorded in 1996, about 8 billion packs, while in 1998 they were only 0.17 billion packs, which was roughly the same level as the early 1980s.

Market developments have little impact on trade because exports and imports of both tobacco and cigarettes are managed by the government. Under the law, the State Tobacco Monopoly Administration is the sole agency allowed to trade in tobacco. A special agency under the State Tobacco Monopoly runs all imports and exports of tobacco leaf and cigarettes. No individuals, state or private enterprises are allowed to engage in trade in tobacco leaf and cigarettes. Moreover, state permits are needed for all imports. In addition to tobacco products, trade in all tobacco manufacturing equipment and materials used in cigarette production are managed by the government. Foreign investment in the tobacco industries is also under state control. Any foreign enterprises wishing to engage in manufacture of either cigarettes or tobacco and cigarette processing equipment must obtain a licence from the State Monopoly Administration. Currently, there are no foreign enterprises engaged in cigarette production in China, although several joint ventures have been established for production of auxiliary materials for cigarettes.

In addition to the import licence requirement, all imports of tobacco leaf and cigarettes are subject to tariffs. The permitted tariffs were 65 percent, but the actual tariff applied was 36 percent in 1999. In its

commitments for WTO accession, China agreed to cut its average tariffs over all imports to 17 percent from 22 percent, allow foreign investment in its telecommunications industry, and open up its markets in other ways to foreign banks, food products, insurance companies and the entertainment industry. There was no specific commitment to the tobacco industry. It was reported, however, that a multi-national tobacco manufacturer was in discussion with the government regarding the establishment of a cigarette factory in China. If tariffs applied to tobacco and cigarette imports were to be reduced by the average reduction applying to all imports, i.e. by 24 percent, the price of popular foreign cigarettes sold in China might fall from about RMB 14 per pack to RMB 13 per pack, which is unlikely to induce any significant increase in demand for imported cigarettes. In terms of flavour and taste, imported cigarettes differ from those to which Chinese smokers are accustomed, and the price would still be higher than popular local brands.

3.6 ECONOMIC SIGNIFICANCE OF TOBACCO AND CIGARETTE PRODUCTION

3.6.1 Tobacco production and rural employment

Tobacco is a labour intensive crop in China. According to the 1997 national production and cost survey, total labour use in tobacco production was 46.2 workdays per *Mu* (1 Mu = 0.067 ha), which was more than twice that of other, food crops, such as rice and maize. However, tobacco is grown as a monocrop each year, while other crops are double cropped annually. Thus, wheat plus sugar cane (Yuanan and Guizhu are important sugar cane production regions) or oilseed plus cotton (Henan is a major cotton production province) or wheat in winter and rice in summer, require total labour use similar to if not greater than that for monocropped tobacco. For instance, oilseed plus cotton requires 54.3 workdays/Mu, which is higher than that needed for tobacco production. In particular, more labour would be needed if tobacco growers shifted to producing vegetables, which is in general the most labour intensive agricultural activity in China. Thus, substitution of tobacco by other crops would not necessarily result in lower employment in agriculture. This can be seen from the patterns of planting shown in Table 3.5.

The total area planted to tobacco in China dropped from 2.35 million hectares in 1997 to 1.36 million hectares in 1998, a decline of about 42 percent. In Yunnan, Guizhou, Sichuan and Henan, the tobacco areas in 1998 dropped by 43, 54, 35, and 26 percent compared to 1997. However, none of these provinces experienced any decline in total cropping areas. For instance, in Yunnan province, where about 10 percent of total agricultural land was used to produce tobacco leaf in some years, the tobacco area was reduced from 570 000 ha in 1997 to 323 000 ha in 1998. Despite this reduction, the total area used for all agricultural production remained constant at 5.23 million hectares in both 1997 and 1998. Land withdrawn from tobacco production was immediately used for other crops. This reinforces the suggestion that labour withdrawn from tobacco production might not become unemployed, but be transferred other crops.

Tobacco growing households shifted land to different crops in response to the reduction in area planted to tobacco. While the area planted to tobacco dropped by nearly 250 000 ha, Yunnan increased the area under food crops, sugar cane and vegetables, and similarly in Guizhou. While the area of food crops increased in Sichuan, the area under vegetables and oilseed species increased when the area of tobacco contracted. In Henan province, the increase in area under vegetables more than offset the reduced tobacco area. The various responses to the sharp decline in tobacco production indicate that alternative crops to tobacco were available and tobacco growing households made their production decisions based on market opportunities.

The structure of tobacco farming in China allows tobacco farmers to change their production with relatively little difficulty in response to changes in government procurement contracts. Small-scale growers have dominated agricultural production since the introduction of the production responsibility system in 1979. The average farm size in the major tobacco production provinces is about 0.3–0.4 ha, of which only about one third to half is allocated to tobacco production. There are very few specialized tobacco producers: most produce food and other crops for household consumption alongside tobacco production. This means that they also have the skills needed for producing other crops.

Another important feature of the small-scale and diversified tobacco growers in China is that tobacco production is undertaken largely using manual labour. With little fixed capital, the costs of adjustment in a switch between crops is trivial. The diversified production skills of household labour and low costs of adjustment provide households with both technical and economic capability to compensate promptly to any reduction in tobacco production.

The existence of huge numbers of marginal tobacco growers might also contribute to the insignificant impact that sharp changes in production have on rural employment. The expansion in tobacco production over the past decade was largely due to new entrants. It was reported that, at its peak in 1997, there were nearly 20 million rural households engaging in production of tobacco leaf, which was more than double the number in 1985. However, according to the State Tobacco Monopoly Administration, the number of tobacco growing households dropped to around 8 million in 1999 as the tobacco planting area contracted from 2.1 million hectares in 1997 to 1.2 million hectares in 1999. Most of the households that exited tobacco production were newer producers. These producers had less skill than average and the agronomic conditions in the marginal areas were not as good as in the traditional tobacco producing areas.

Table 3.5: Planting area in major tobacco producing provinces, 1997 and 1998

	Year	Area planted (thouand ha)						
		Tobacco	Vegetables	Sugar cane	Cotton	Oilseed	Food crops	Total
Yunnan	1997	570.6	226.2	249.5	1.7	138.5	3 719.1	5 225.3
	1998	322.6	247.3	283.8	1.8	142.8	3 886.3	5 225.9
Absolute area change		-248.0	21.1	34.3	0.1	4.3	167.2	0.6
Change 1998–1997		-43%	9%	14%	6%	3%	4%	0%
Guizhou	1997	436.6	296.6	10.3	2.8	442.5	2 927.5	4 492.5
	1998	199.0	314.6	13.2	3.1	448.1	3 128.6	4 514.2
Absolute area change		-237.6	18.0	2.9	0.3	5.6	201.1	21.7
Change 1998–1997		-54%	6%	28%	11%	1%	7%	0%
Sichuan	1997	199.7	888.8	33.2	140.4	991.2	10 099.0	13 102.9
	1998	129.0	965.7	32.0	140.5	1 028.0	10 238.3	13 328.9
Absolute area change		-70.7	76.9	-1.2	0.1	36.8	139.3	226.0
Change 1998–1997		-35%	9%	-4%	0%	4%	1%	2%
Henan	1997	215.6	760.4	3.6	868.0	1 208.5	8 879.9	12 276.7
	1998	160.5	934.5	3.7	800.0	1 235.9	9 102.0	12 567.1
Absolute area change		-55.1	174.1	0.1	-68.0	27.4	222.1	290.4
Change 1998–1997		-26%	23%	3%	-8%	2%	3%	2%

Sources: Provincial Statistical Yearbooks of Yunnan, Guizhou, Sichuan and Henan, 1998 and 1999.

3.6.2 Tobacco production and rural household income

Contrary to the situation in many countries, tobacco appears not to be the most profitable crop in China (Table 3.6). Although tobacco leaf prices reached a peak in 1997, the gross profit of tobacco production measured by per unit area of land was lower than for cotton and sugar cane production. The gross profit of tobacco production was RMB 678.3/Mu in 1997, which was significantly lower than the RMB 804.3/Mu for sugar cane and RMB 791.5/Mu for cotton. Income per workday of labour in producing tobacco (RMB 14.7) was lower than for soybeans (RMB 26.9), sugar cane (RMB 22.0), rice (RMB 21.1) or cotton (RMB 20.4). A major reason for farmers planting tobacco was that there was no market risk. Once they receive a contract from the government, the price is guaranteed. Other agricultural crops carry significant price risks. Moreover, since the State Tobacco Monopoly Administration was profitable, it had no difficulty in paying cash to farmers once the harvest was delivered. Other state agencies, which largely rely on government budget allocations and bank credits, have sometimes had difficulties in making immediate payment.

Income data for the major tobacco producing provinces and counties verify that tobacco production is no more profitable than other crops. For instance, in Yunnan, the total area planted to tobacco dropped

by about 46 percent between 1997 and 1998, and output tumbled from 1.1 million tonnes to less than 0.6 million tonnes. At the average price of tobacco leaf, RMB 7.5/kg, the loss of revenue due to less tobacco output in 1998 would have been around RMB 4 billion, nearly 20 percent of total agricultural revenue in 1997. However, a comparison of provincial agricultural revenues and average household income showed a slight increase in total agricultural revenue in 1998, suggesting that the sharp decline in revenue from tobacco production was more than offset by the increase in revenue from production of other crops.

Tobacco growers in some regions, such as those with poor agronomic conditions and without irrigation, could face significant income risk if they had to reduce their tobacco production. Those growers who reside near urban areas would face less income risk because tobacco income accounts for a much smaller proportion of total household income and off-farm employment would offer alternative income opportunities.

Table 3.6: Production cost, profit and labour productivity for major agricultural crops, 1997

	Unit output (kg/Mu)	Average price (RMB/kg)	Production cost (RMB/kg)	Gross profit (RMB/kg)	Total labour use workdays/ Mu	Labour income RMB/ workday
Rice	423.0	1.4	211.0	376.4	17.8	21.1
Wheat	227.0	1.4	190.0	128.3	12.2	10.5
Maize	350.0	1.1	162.0	227.7	15.9	14.3
Soybean	136.0	3.0	107.0	301.8	11.2	26.9
Cotton	75.0	14.1	266.0	791.5	38.8	20.4
Oilseed	116.0	2.5	112.0	181.2	15.5	11.7
Sugar cane	5 128.0	0.3	488.0	804.3	36.6	22.0
Tobacco	137.0	7.5	353.0	678.3	46.2	14.7

Note: 1 Mu = 0.067 ha
Source: Rural Statistical Yearbook of China, 1999.

3.6.3 Government revenue

The Chinese government operates tobacco businesses, and thus profits as well as taxes contribute to government revenue, providing 10 percent of total central government revenue in 1998. About 40 percent of the total revenue was spent on agricultural investment, education, health care, social welfare and defence.

At the regional level, particularly in the tobacco-dependent provinces such as Yunnan and Guizhou, tobacco production and cigarette manufacture have played much more important roles in government finances and provincial development. In particular, many local governments rely on the Special Agricultural Crop Tax for their revenue. Since this tax is based solely on revenue from tobacco leaf, a decline in tobacco production would result in lower tax revenue.

Cigarette manufacturing is a key generator of revenue for local governments. For instance, the 1 429 state-owned enterprises in Yunnan had total sales of about RMB 69.1 billion in 1998, while 8 cigarette manufacturing plants accounted for about 53 percent of total provincial industry sales, at RMB 36.2 billion. Cigarette manufacturing was the single largest sector in the province, ahead of chemical manufacturing, which had revenue of only RMB 5.1 billion. Cigarette manufacturers are among the few profitable state-owned industries, having paid provincial government corporate profit tax at the rate of 38 percent. From the total provincial government revenue of RMB 16.8 billion, various tax revenues from tobacco production and cigarette manufacturing accounted for nearly 70 percent. About 45 percent of total revenue was used for provincial rural development, education, social welfare and industry development. Guizhou was similar, with cigarette manufacturing accounting for more then 30 percent of provincial government revenue.

As a key industry in several provinces, cigarette manufacturers have played significant roles in local community development, such as the developments of Da Yin Jie Town, one of the towns close to

China's largest cigarette manufacturer, Hongta Group, where, over the past decades, its industrial revenue grew from less than RMB 200 million to more than RMB 2.2 billion, of which about RMB 2 billion was from producing cigarette accessories. The rapid growth in revenue derived from production of cigarette accessories made it one of the richest towns in the province. Raising taxes on cigarettes, which, in turn, increases the price of cigarettes, would in many countries result in higher government tax revenue and reduce demand for cigarettes. As the Government owns much of the cigarette industry in China and effectively receives profits from the industry as well as receipts of taxes, the relationship between these two would need to be carefully evaluated by a government contemplating increasing taxes.

3.7 CONCLUDING COMMENTS

Cigarette consumption reached a peak in the early 1990s, and it may be that any future growth will, at most, be limited. Slower population growth, increasing awareness of the health hazards of smoking, as well as nationwide reforms in health services, may preclude any significant growth in cigarette consumption in the coming decades. Technical progress in cigarette manufacturing may lead to further relative reduction in the use of tobacco per cigarette produced. It is expected that total tobacco production will fluctuate around 3 million tonnes in the next few years unless there were to be a significant government initiative aimed at reducing smoking.

The structure of both agriculture and the tobacco market are important factors determining the response of growers to changes in demand for tobacco, and the economic consequences of those changes. The results of this study suggest that a gradual reduction in demand for tobacco would have only a small impact on rural employment and household income, as tobacco farms are generally small, diversified and not mechanized. This situation enables tobacco growers easily to shift away from tobacco production to other crops, because household members have the skills required to produce other crops. With labour being the major input, adjustment costs are low.

Any reduction in smoking would be accompanied by diversification of manufacturing from cigarette production to other activities, so the dependence on cigarette production for revenue would decrease over time. However, there may be some justification for some assistance to growers to help them shift away from tobacco production to other crops. The underdeveloped marketing system and infrastructure often discourages farmers from producing other cash crops. Better roads, timely market information, developments in local processing facilities and easy access to transport would all facilitate the adjustment that may be required. With continuing economic growth, the demand for many agricultural products could be expected to increase, so that crops grown in place of tobacco are unlikely to be without a market.

3.8 APPENDIX ON CONSUMPTION STATISTICS

Estimates of cigarette consumption based on national data were very different from the statistics from the urban and rural household survey. According to China Statistical Yearbook 1999, the national average level of cigarettes purchased per capita based on the household survey was only 27.25 packs for urban households in 1998, while Rural Statistical Yearbook of China 1999 reported 23.6 packs for each member in rural households during the same period. Reports from provincial statistics revealed similar information to the household survey results. For instance, in 1997, average per capita cigarette purchases were 30 packs and 26 packs for urban and rural households, respectively, in Sichuan province, which accounts for about 10 percent of the total population. Thus, there exists a big gap in the data for per capita cigarette consumption between the aggregate statistics (66 packs) and the statistics from household survey (less than 26 packs).

Several factors may contribute to this discrepancy between national statistics and household survey statistics.

Trade in cigarettes accounted for a significant portion of cigarette production. In 1998, 1.14 billion packs of cigarettes were exported while about 0.2 billion packs were imported. The net exports

accounted for about 1 percent of production. Therefore, the national statistics based on sales of cigarettes may overstate actual cigarette consumption.

At the same time, the household survey might under-report cigarette consumption. Cigarettes have been a very popular gift over the past decades. Households might not report the purchase of cigarettes when used as a gift. Many hotels, restaurants, bars, teahouses, night clubs and entertainment places sell cigarettes. When cigarettes were bought and consumed in these places, they might not be recorded as household purchases. Moreover, as many young members in rural households were working in cities all the year, their purchase of cigarettes might not be recorded in the household survey.

No attempt has been made in this study to make any adjustments to the published statistics of cigarette consumption.

4 TOBACCO IN INDIA

4.1 INTRODUCTION

The study reviews the status of the tobacco sector in India, both raw tobacco and its manufactured products. An attempt has been made to identify major economic and social factors affecting tobacco production and consumption, and to explore the economic implications of government policy measures for tobacco control.

4.2 AREA, PRODUCTION AND YIELD

The area under tobacco, some 0.25 percent of the total cropped area, has fluctuated irregularly over the past three decades. The area under tobacco appears to be strongly influenced by prices in the preceding year. As a result of increasing yields, production of tobacco rose from 362 000 tonnes in 1970/71 to 646 000 tonnes in 1997/98 (Table 4.1).

Table 4.1: Area, production and yield of tobacco in India

Period	Area ('000 ha)	Production ('000 tonne)	Unit yield (kg/ha)	Proportion with irrigation (%)
1970/71	447	362	810	23.7
1975/76	368	350	950	29.8
1980/81	452	481	1 065	33.7
1985/86	397	441	1 111	39.9
1990/91	385	563	1 353	43.2
1994/95	381	567	1 486	45.3
1995/96	395	535	1 356	n.a.(1)
1996/97	432	599	1 386	N.A.
1997/98	464	646	1 393	N.A.

Notes: (1) n.a. = not available.
Source: Directorate of Economics and Statistics, Ministry of Agriculture. Various issues. *Area and Production of Principal Crops in India.*

During the last three decades, production of Flue Cured Virginia (FCV) tobacco increased at an annual rate of l.2 percent despite its area declining by 0.7 percent annually. Production of other varieties increased by over 2 percent, reflecting mainly higher productivity as the area sown registered only a marginal increase. An analysis of long-term performance indicates marked changes in trends between the 1980s and the 1990s. Total FCV production between 1981/82 and 1991/92 showed a small annual rate of growth (0.9 percent). The decline in area offset part of the gains from productivity. Of the increased output, almost 85 percent was due to increased productivity and 15 percent to expansion of area. The increasing yield of VFC tobacco during the 1990s reflected the boost from government policy, through the Tobacco Board, for this variety. The improved technology and the cultural practices recommended by the Central Tobacco Research Institute (CTRI) and other institutions also helped to boost production.

The widespread adoption of improved varieties released by CTRI and other research stations, combined with the adoption of improved cultural practices, have improved unit yields. Substantial increases in the use of fertilizers and insecticides for tobacco have also played an important role. Data on total quantities of these inputs used on the tobacco crop are not available for the country as whole, but research indicates that tobacco farmers in India use dosages of these inputs that are substantially higher than those recommended by research stations (cf. NCAER, 1994). However, in Andhra Pradesh, according to estimates (DES, 2000), fertilizer application per hectare on tobacco increased almost 250 percent in the five years from 1990/9l to 1994/95, while the use of insecticides doubled. Similarly, increased use of irrigation, which gives higher yields compared with rainfed production, has also made an important contribution. All of these inputs are supplied at subsidized prices. Finally, price increases also seem to have stimulated higher output. Farm harvest prices for tobacco have

increased three- to ten-fold in the last three decades, depending on region. Moreover, the increase in wholesale prices for tobacco has been higher than for cereals or other alternative crops, such as cotton, pulses, chili or groundnut.

A wide variety of tobaccos are grown in 16 states in India under diverse agroclimatic conditions. However, most of the varieties grown (other than Virginia, Burley and Oriental) are of non-cigarette types. These include *natu*, *bidi*, chewing, *hooka* (hookah), cigar and cheroot tobaccos and account for about 77 percent of the total output (Table 4.2). Cultivation of FCV tobacco was initially confined to the traditional black soil areas of Andhra Pradesh. However, to suit the quality requirements in internal and export markets, cultivation of FCV was encouraged in light soils in Karnataka and Andhra Pradesh. In the initial years, the varieties grown were limited to Havana tobacco used in cigars, and Lanka tobacco used in the manufacture of snuff and bidis. Subsequently, other forms, like FCV, were introduced.

Table 4.2: Distribution (percentage) of production of different types of tobacco in India.

Year	Percentage distribution of production of different tobacco types							Total harvest
	FCV	Natu	Bidi	Cigar	Hookah	Cheroot	Snuff	('000 tonne)
1975/76	27.7	10.9	31.4	4.3	7.1	17.2	1.4	349.8
1980/81	26.1	10.6	36.5	2.8	7.7	14.8	1.5	520.1
1985/86	18.0	13.8	39.3	4.0	6.8	17.0	1.8	441.2
1986/87	23.7	9.5	40.0	2.4	6.1	16.9	1.4	461.8
1987/88	15.4	9.8	37.6	2.7	8.7	24.1	1.7	367.4
1988/89	21.2	12.2	33.9	2.9	9.4	18.8	2.1	492.8
1989/90	18.8	12.9	33.4	2.8	6.2	23.5	2.4	551.6
1990/91	20.3	10.5	35.5	2.6	14.1	14.9	2.1	558.4
1991/92	28.2	12.3	28.6	2.4	12.4	13.5	2.6	584.4
1992/93	27.8	10.4	31.6	2.8	13.3	11.9	2.2	596.5
1993/94	22.0	10.7	33.4	2.8	17.3	11.7	2.1	562.9
1994/95	20.0	7.9	38.6	3.1	3.9	24.4	2.1	566.7
1995/96	22.0	9.0	38.3	3.2	3.2	22.2	2.1	535.2
1996/97	23.4	8.1	34.2	2.1	5.8	25.8	1.6	617.9
1997/98	23.6	8.1	29.5	1.5	6.6	29.1	1.5	646.0

Source: Directorate of Tobacco Development, Ministry of Agriculture, Chennei.

4.3 IMPACT OF GOVERNMENT POLICIES ON PRODUCTION OF TOBACCO

Even though tobacco comes under state jurisdiction, the Government of India plays an important role in the growth and development of the tobacco industry. In fact, at least six ministries of the Union Government – Agriculture, Commerce, Finance, Industry, Labour, and Rural Development – deal with one or another specified aspects of the industry. Following the increasing health concern about tobacco consumption, the central Ministry of Agriculture has not launched any development scheme for the crop since the completion of the Seventh Five-Year Plan (1985–90). However, in general, government policy has been to promote production, improve quality and ensure remunerative prices for growers.

Government interventions in support of the industry can broadly be classified into:

(i) institutional and regulatory support;
(ii) price and market support;
(iii) export promotion;
(iv) research and development (R&D); and
(v) direct fertilizer and credit subsidies.

All these interventions involve explicit or implicit subsidies for the tobacco industry.

The introduction of the auction system by the Tobacco Board brought an element of competition to the tobacco leaf market and freed the market from pricing and grading anomalies. Farmers intending to grow Virginia tobacco are required to register with the Board every year. Production quotas are fixed. Nevertheless, the Tobacco Board, which has responsibility for regulating production, marketing and exports of FCV tobacco grown in the states of Andhra Pradesh, Karnataka and Mahaarshtra, has not been completely successful in controlling the area under tobacco (Table 4.3). In fact, controlling the area to be planted is an ineffective instrument for controlling production since price incentives, climatic conditions and the expertise of individual growers can greatly change the yield per hectare on individual farms from season to season. The Board's attempts to reduce fluctuations in auction prices have met with mixed success. Moreover, cultivation and trade of non-FCV varieties, constituting over 75 percent of tobacco production, is still outside the purview of the Tobacco Board.

Table 4.3: Area registered and planted to FCV tobacco cultivars, and production

Year	Area ('000 ha)			Production ('000 tonne)			% change in price
	Recorded	Planted	Difference [(3) – (2)]	Expected	Actual	Difference [(6) – (5)]	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1986/87	111.20	104.871	-6.33	110.20	132.73	3.07	21.37
1987/88	83.20	68.31	–14.89	83.20	59.34	–23.77	–34.18
1988/89	92.08	105.52	13.44	100.00	116.21	16.21	98.66
1989/90	88.58	105.32	16.74	93.00	100.82	7.82	1.59
1990/91	103.52	122.40	18.88	105.00	109.48	4.48	–11.45
1991/92	122.26	153.55	31.29	144.83	159.19	14.36	–13.37
1992/93	113.56	140.71	27.15	124.06	158.86	34.80	–18.37
1993/94	86.11	122.84	36.73	92.64	125.50	32.86	1.68
1994/95	81.69	106.39	24.70	86.27	96.34	10.07	10.00
1995/96	94.28	124.14	29.86	99.67	114.40	14.73	26.32
1996/97	100.54	152.72	52.18	112.76	168.21	55.45	24.38
1997/98	105.38	154.03	48.65	141.81	177.09	35.28	37.61
1998/99	118.23	183.47	65.24	139.26	204.49	65.23	n.a.
1999/20	120.73	178.93	58.20	132.28	190.00	57.72	n.a.

Source: Tobacco Board (various issues). *Annual Administrative Report*.

The Directorate of Tobacco Development handles marketing of non-FCV tobacco. The Central Ministry of Agriculture continues its efforts to streamline the marketing of non-FCV tobacco in consultation with the State Departments of Agriculture. They provide limited facilities, such as market yards, and their impact on prices, etc., is restricted. In this sector, traders and manufacturers are more active and they take advantage of weak bargaining positions, especially in cases where they provide loans and or inputs on credit to farmers for raising the tobacco crop.

The Tobacco Board, established in 1976, provides marketing services for FCV tobacco, through its compulsory auction system. Virginia tobacco at the primary level is sold through auctions conducted by the Board. Exporters of tobacco, manufacturers of cigarettes and dealers in tobacco wishing to participate in the auctions have to register as a buyer for each auction floor, wherever they intend to operate. However, the auction system has not been successful in reducing fluctuations in the levels of auction and export prices. Table 4.4 compares price levels for selected representative grades at both the production and export levels. These grades include F2 at the farm level and its equivalent export grade, namely L2.

Table 4.4: Structure of tobacco prices (Rs/kg)

Year	MSP	MGP	Auction Price (F2 Grade)	MEP (L2 Grade)	Actual unit export value
1984/85	11.15	Nil	11.98	23.25	23.99
1985/86	11.15	Nil	13.01	23.25	24.92
1986/87	11.15	Nil	8.26	23.25	25.45
1987/88	11.25	Nil	19.9	24.55	25.35
1988/89	11.75	18.00	18.52	27.00	28.13
1989/90	12.50	15.10	34.49	27.00	31.47
1990/91	13.25	15.90	29.88	32.10	33.76
1991/92	14.75	21.50	29.88	48.50	58.45
1992/93	16.00	n.a.	24.39	n.a.	50.31
1993/94	18.00	n.a.	24.80	*	58.57
1994/95	18.50	25.00	27.28	*	54.63
1995/96	19.00	28.00	34.46	*	68.56
1996/97	19.00	31.00	42.86	*	80.64
1997/98	20.50	36.00	58.98	*	62.45
1998/99	22.50	38.00	34.47	*	71.14

Notes: n.a. = not available. * = not applicable, as the Minimum Export Price was abolished as of 1993/94.
Source: Tobacco Board (various issues). *Annual Administrative Report*.

CTRI is an apex research body for tobacco in India, and has been successful through its multidisciplinary programmes in evolving a number of high yielding cultivars of tobacco and in improving quality. In addition to the CTRI programmes, six research stations – located in Andhra Pradesh, Gujarat, Karnataka, Orissa and Uttar Pradesh – under the All India Coordinated Research Project on Tobacco have evolved high yielding varieties for different types of tobacco for various states. They have also developed improved crop management and crop rotation systems.

4.4 CROP SUBSTITUTION POSSIBILITIES

4.4.1 Economics of tobacco versus alternative crops

Tobacco in India, as in many other countries, yields higher net returns per unit of land than most other cash crops, and substantially more than food crops. Currently, there are a few specialized crops in various areas that provide similar incomes, but it is estimated that these crops would not remain remunerative if total production increased. The economics of alternative crops is generally based on experiments carried out on a limited area at research stations under optimal conditions. More detailed research work is needed on a wider scale at farmers' field level before firm recommendations can be made about them. In general, under farmers' field conditions, most other alternative crops, as discussed below, are currently not as remunerative as tobacco. Should tobacco farmers need to diversify into other crops, they are likely to suffer economic hardship.

These alternative crops also require high levels of irrigation. Tobacco is preferred due to its drought resistance and suitability for growing under rainfed conditions. Other problems associated with substitution by other crops include the capital invested in specialized facilities created for tobacco processing, which cannot be used for other crops; the difficulties of finding substitute crops for rainfed areas; and the dependency of millions of people on bidi rolling and tendu leaf collection. Moreover, with an assured market and prompt payment of sale proceeds through the Tobacco Board, it will be difficult to replace FCV tobacco as a crop.

It is worthwhile comparing rates of return from tobacco with competing crops such as groundnut or cotton. For this, Karnataka is taken as a representative state for FCV tobacco. The data show that while tobacco typically yields high profits, it can also show severe losses at times (Table 4.5). Of the three crops, groundnut consistently showed reasonable profits over cost of cultivation. In contrast, cotton and tobacco showed fluctuations in profits. Though data are not available for comparable years, it may be assumed that the trend observed for several years for these crops will not have changed much in recent years.

In the light of oversupply of FCV tobacco in recent years, some comparisons have been carried out on profits from growing tobacco versus other crops in FCV-growing areas. The comparison indicates that some other crops can be grown in that soil, and that some of the crops can be more remunerative than tobacco. For instance, the Central Research Institute found that combinations of hybrid maize and black gram yielded promising levels of net returns per hectare in black cotton soils of Andhra Pradesh, as did hybrid maize and soybean.

Table 4.5: Net return from different crops in Karnataka (Rs/quintal)

Crop year	Groundnut	Cotton	Tobacco
1982/83	71.11	46.77	313.71
1983/84	121.61	103.13	146.94
1985/86	77.27	–57.71	n.a.
1986/87	119.15	–17.72	–1 069.31
1987/88	n.a.	n.a.	–432.25
1991/92	145.50	n.a.	1 110.00

Notes: n.a. = not available. 1 quintal = 100 kg.
Source: Directorate of Economics and Statistics. *Cost of Cultivation of Principal Crops in India*. (various issues).

Bidi tobacco is generally less remunerative to farmers than is VFC tobacco. Some studies have shown other crops, such as chili or cotton, or a combination of soybean and *rabi* sorghum, as well as groundnut and rabi sorghum, could give higher returns than a sole crop of tobacco. However, other studies (e.g. Kiremath, 2000; studies conducted by the Department of Agricultural Economics, University of Agricultural Sciences, Dharward, on Economics of Bidi Tobacco in Nippani Area in Belgaum District; and a Centre for Multidisciplinary Development Research (CMDR) study in three Talukas in Dharward Districts) have shown different results, with bidi tobacco yielding higher net return per hectare than soybean, sorghum, cotton or groundnut, with only sugar cane being more profitable than tobacco. Sugar cane could be the most favoured crop in the region wherever irrigation is available. Moreover, the extensive research programme carried out by CTRI show that currently no alternative crop tested under monocropping gives returns comparable to tobacco. Intercropping or double-crop returns were equal to monocropped tobacco (CTRI, 1999). It is important to stress that tobacco is generally raised as a sole crop, except in areas where ample and assured irrigation facilities allow a second crop.

4.4.2 Micro-level information on shifting from tobacco to other crops

Field studies carried out by the National Council of Applied Economic Research (NCAER, 1994) and by CMDR showed a number of major socio-economic factors encouraging tobacco growing:

- Richer farmers tend to prefer tobacco to other crops.
- Small-scale farmers take to tobacco cultivation as something inevitable in the absence of a suitable alternative.
- Tobacco as a crop gives superior net economic returns compared with alternative crops.
- Tobacco is preferred due to its drought resistance and suitability for growing under rainfed conditions. Due to tobacco's soil preferences, cultivation is concentrated in certain states, and even within major tobacco growing states, the crop is grown in specific districts.
- A widespread belief prevails among farmers, especially in bidi growing areas, that no other crops should be grown in the same land where tobacco is cultivated, as it will lower the quality of the subsequent crops. However, this is contrary to scientific recommendation that tobacco should be grown alternate years.
- The prevalent practice of growing only tobacco every year is reinforced by bidi manufacturers through their agents, who may refuse to purchase tobacco if any other crop has been grown on the same plot. Marketing of non-FCV tobacco has been a major problem and there have been allegations of agents exploiting farmers.

- A well organized marketing system for FCV tobacco through the Tobacco Board assures prompt payment to farmers, which is not the case for many other crops.
- Farmers are reluctant to give up tobacco cultivation because of heavy investment in irrigation equipment and barns.
- A change in cropping is practicable only when some assured irrigation is available. For example, the coming online of Nagarjuna Sagar dam led to a radical change in cropping pattern – from tobacco to sugar cane.
- Failure of other crops raised in the past.

The farmers favour tobacco cultivation as it generally yields higher returns than other crops. However, the cost of cultivation of tobacco is also much higher. It seems that farmers often do not consider the full economic implications – both costs and returns – of tobacco cultivation.

The Tobacco Board declared a complete crop holiday for FCV tobacco in Andhra Pradesh and lowered production targets for Karnataka from 40 000 tonnes in 1999/2000 to 25 000 tonnes for the 2000/01 season. As a result, some of the progressive farmers devoted a part of their tobacco areas to other crops, such as sugar cane, chili, groundnut or cotton.

The CMDR team surveyed 74 non-tobacco growers in the tobacco region of Karnataka, to learn about reasons for not cultivating tobacco (Table 4.6). It seems that the majority of such farmers were convinced of the economic difficulties of tobacco cultivation. It should be stressed that more detailed studies of these aspects are needed to derive further insights useful for policy formulation.

Table 4.6: Reasons why selected farmers in Karnataka did not cultivate tobacco

Reason given	Percentage of farmers
1. Labour problems	10.8
2. High cost of cultivation	25.7
3. Risk involved	2.7
4. Low price of tobacco	1.3
5. Irrigation is available (facilitating other crop cultivation)	36.9
6. Disease of tobacco plant	2.7
7. Maintenance of tobacco crop is time consuming and costly	2.7
8. Other	17.6

4.4.3 Economics of inter-cropping systems as an approach to agricultural diversification

Field experiments on inter-cropping conducted by CTRI's station in Pusa, Bihar, from 1990 to 1997, showed that mixed cropping was more profitable than tobacco monocropping. Tobacco plus garlic; tobacco plus red kidney bean; and tobacco plus potato all showed potential to provide better returns than tobacco alone. Such inter-cropping systems may be the first step to moving away from tobacco. A package of mixed cropping, shifting to other crops with suitable crop insurance facilities, adequate farm inputs for the alternative crops, adequate marketing facilities, etc., would be needed to ensure the success of a policy of gradually shifting from tobacco.

4.4.4 Economic implications of diversification on tobacco land

An attempt is made below to assess the direct implications for farmers and agricultural labourers of shifting land from tobacco to alternative crops. CTRI identified certain next-best crops for different areas in a number of tobacco producing States. Net returns per hectare from all of these crops was generally lower than from tobacco alone. Thus, even if the farmers can grow these alternative crops, they are likely to lose rather than gain. Moreover, given the wide variations in quality and other specifications of tobacco and other alternative crops, the determining factors will not only be prices but also the capacity to expand production of alternative crops with requisite quality and to put in place support infrastructure. The results of the CTRI's studies are used here to assess the impact on farmer income of substitution of tobacco by the next best alternative crops, while the official data on

Cost of Cultivation of Principal Crops in India has been used to analyse implications for employment. The assessment has been worked out on a per hectare basis where such data are available.

The reduction in net income that might result from a shift to the next most profitable crop is estimated to average about 23 percent. This would amount to a considerable loss, especially for the marginal and small-scale farmers that constitute the bulk of the farmers in most States.

Bigger-scale farmers tended to adopt tobacco cultivation more than others. In rural areas, a large number of households depend largely on tobacco for their cash income, especially in the three major tobacco growing states. Most of the marginal and small-scale farmers practice tobacco monoculture and rely mainly on this crop for their livelihood. They have to buy staple grains and other essential items for family consumption.

A study on the Tobacco Industry in Andhra Pradesh, commissioned by the Tobacco Institute of India, assessed the expenditure of tobacco farmers on baskets of household goods and services. The marginal and small-scale farmers depended on tobacco as the main source of their family income and livelihood. The overall average annual income of the tobacco farmer in the State came to about Rs l5 000. The largest share of household consumption expenditure was devoted to food items, some 67 percent. In the absence of detailed information in the study on consumption patterns, results of the survey conducted by the National Sample Survey of Household Consumer Expenditure for 1993/94 for Rural Andhra Pradesh (NSSO, 1996) can serve as a proxy. Among food items, cereals and pulses accounted for 24 percent and 4 percent respectively, with annual cereal consumption per household about 800 kg. Other major food items included milk and milk products (9.7 percent); fruit and vegetables (7.7 percent); and meat, eggs and fish (3.3 percent). Of non-food items, fuel and light accounted for 7.3 percent, followed by clothing (5.3 percent), while cigarettes and bidi were 2 percent of total household expenditure. Tobacco farmer's household annual income and expenditure in Andhra Pradesh are summarized in Table 3.7.

To assess the impact on the food security of the tobacco-growing farmers if they were to shift their tobacco land to other crops, the overall reduction in income per hectare of 23 percent from the alternative crops has been used. With the loss of income from the tobacco crop, the farmer would need to readjust the family consumption expenditure pattern, either by devoting a higher share of family expenditure to food or by reducing food consumption, especially among the marginal and small-scale farming households. In the event of a total switch from tobacco production, with a consequent estimated average drop of 23 percent in annual household income, cereal consumption would contract by around 10 percent. Average family cereal consumption could decline from 800 to 720 kg. This would have an adverse affect on the health and well-being of marginal and small-farmer's families, who are already undernourished.

A shift away from the tobacco crop would be likely to reduce the demand for hired labour in most states, as the hired labour required for alternative crops is substantially lower. Total labour requirements for alternative crops, including family labour, would be some 35 percent lower.

Table 4.7: Tobacco farming household annual income and expenditure in Andhra Pradesh

Item	Annual consumption	
	Rs	Proportion (%)
1. Food	10 000	66.6
2. Clothing and travel	2 000	13.3
3. Housing	1 000	6.7
4. Entertainment	1 000	6.7
5. Other	1 000	6.7
Average income of tobacco farmers per year	15 000	100.0

Source: COSMODE, January 2000. Tobacco Industry in Andhra Pradesh: A Compendium.

Any reduction in employment of hired labour in rural areas would seriously affect the landless labourers, who depend for their livelihood by working mainly in the agricultural sector, as well as for the marginal and small-scale farmers who supplement their earnings by working on other large farms as hired labourers. Therefore, the reduction in employment for hired labour in areas where the tobacco crop is replaced with other crops would result in increased economic and food insecurity, not only among a large section of the landless in rural areas but also among the marginal and small-scale farming families.

4.5 MARKETING CHANNELS AND PRICE DETERMINATION OF CIGARETTES

In 1984, a compulsory auction system was introduced for the Virginia varieties normally used in cigarette manufacture and sold in overseas markets. Generally, the farmer delivers bales of leaf to the auction platform.

The market for bidi tobacco, in contrast, is largely unregulated. As marketing of bidi tobacco is not under the control of any government agency, bidi farmers do not get prices as remunerative as in the case of FCV tobacco. Bidi tobacco is sold to traders at negotiated prices. In most cases the agent buys the bidi tobacco crop based on the smoke of leaf, leaf spangle and nicotine content. In most cases, the trading community finances the farmers, and so price setting power lies with the trader, and in most cases the farmer is not paid until almost a year after the sale occurs.

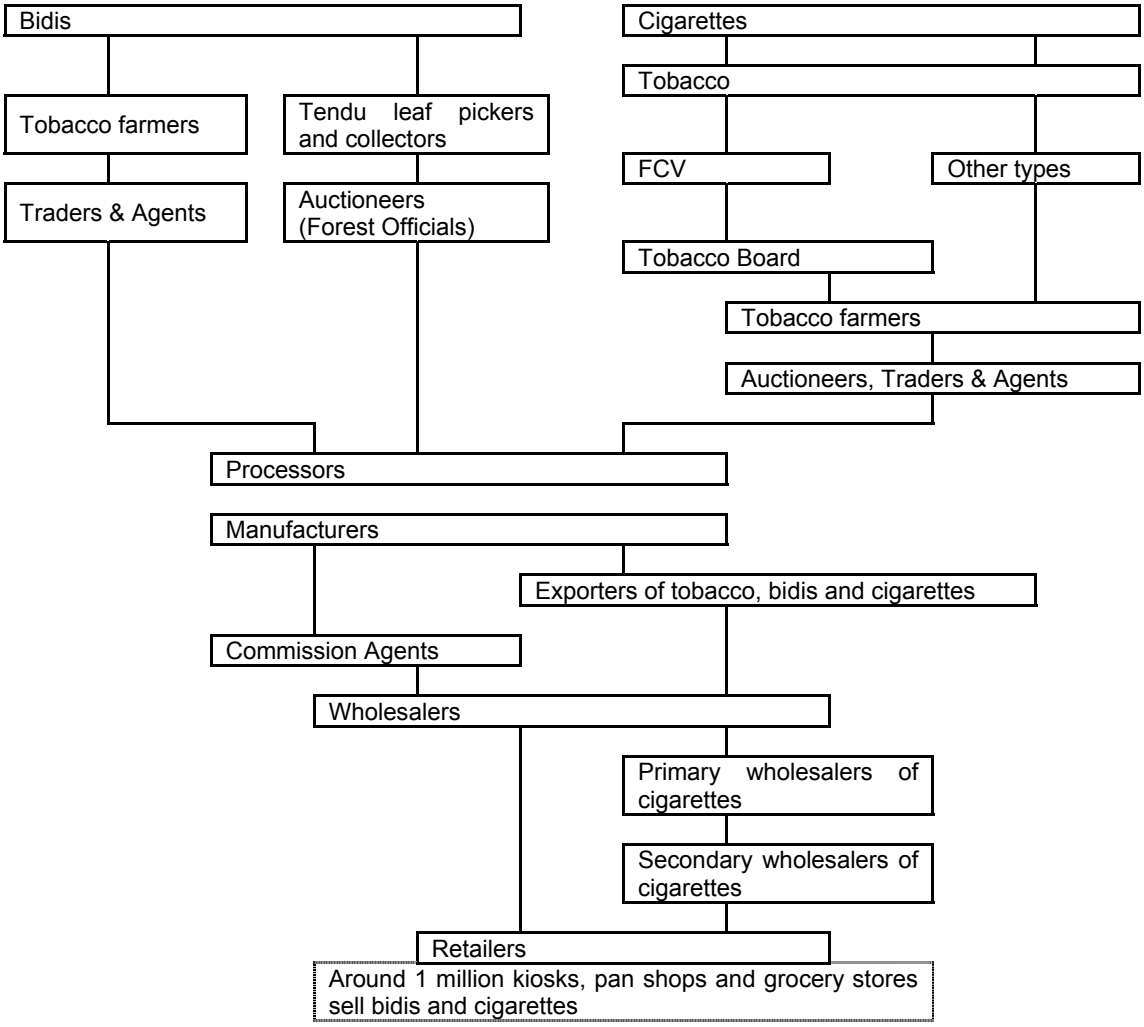
Processing of bidi tobacco is not a technology-intensive process. After the processing of the tobacco into flakes, the agent stores the tobacco until it is dispatched to the manufacturer. The processor also blends the tobacco according to the manufacturer's requirements. The purchase of bidi tobacco from the farmer begins in February and March. After processing, the tobacco is stored for a period of 6–12 months for ageing.

The marketing and distribution of bidi tobacco continues to be the domain of the private sector and the industry is totally free. Currently, no effective institutional arrangements for the regulation or marketing of bidi tobacco exist, due to strong opposition of bidi tobacco traders.

Marketing channels for leaf tobacco, bidi and cigarettes are shown in Figure 4.l. All the marketing agencies are in the private sector, except for the Tobacco Board and the State Trading Corporation.
The cigarette market is oligopolistic, with four large manufacturing companies. The Indian market for cigarettes and other tobacco products is highly price sensitive. Following the reduction in excise duty and consequently prices in 1994, there was an explosion in demand for micros (cigarettes shorter than 60 mm). Trade sources estimated that consumption of micros rose from 300 million pieces in 1993 to around 4 000 million pieces in 1994, 18 000 million pieces in 1995 and over 19 000 million in 1996. However, with the increased excise duty on these cigarettes since the 1996/97 budget, demand has declined, and led to a drift back towards small filter products by some smokers and towards bidis by others.

Prices of different types and size of cigarettes depend *inter alia* on the level of and changes in excise duty imposed by the central government in its annual fiscal budget. Any more than moderate increase in excise duty (say over 3 percent) effectively raises prices of cigarettes. At times, a modest increase in taxation has helped to maintain retail prices. Owing to the variations in prices as a result of differential changes of taxation on different types and size of cigarettes, their share in total sales have changed considerably.

Figure 4.1: Marketing channels for bidis and cigarettes



4.6 INDIAN BIDI AND CIGARETTE INDUSTRY

4.6.1 The bidi industry

Bidi is tobacco rolled in a tendu leaf and tied by a string. Tendu leaf accounts for 74 percent by weight of bidi. Dark and sun-dried tobacco varieties are used in bidi production. Almost 80 percent of bidi tobacco comes from Gujarat, and the rest comes from Karnataka. Bidis account for over 50 percent of total tobacco use, compared with less than 20 percent by the cigarette segment. There are an estimated 290 000 growers of bidi tobacco.

The collection of tendu leaf that is used to wrap bidis forms an important link for the bidi industry. Tendu leaf is almost wholly grown on government-owned forestland, with around 62 percent of tendu leaf being grown in Madhya Pradesh.

Annual production of tendu leaf in 1994/95 had an estimated value of Rs 14 700 million. About 2 million people are engaged in leaf collection, while another 4.4 million people are employed directly for bidi rolling. Bidi rolling is concentrated in the states of Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Uttar Pradesh and West Bengal. Bidis are manufactured largely in the independent small-scale and cottage industry sector. There are a few large manufacturers of branded bidis, which tend to be closely-held, family-run businesses. The bidi industry is estimated to have used 268 000 tonnes of tobacco in 1998/99, 54.4 percent of the total apparent tobacco use.

4.6.2 Cigarette industry

Currently, there four major cigarette manufacturers in India: ITC Limited (formerly Imperial Tobacco Co.); VST Industries Limited (formerly Vazir Sultan Tobacco Co.); Godfrey Philips India Ltd; and GTC Industries Limited (formerly Golden Tobacco Co., Ltd.). There are a couple of smaller-sized cigarette companies with manufacturing facilities. As they lack the necessary marketing infrastructure, they produce cigarettes for the large cigarette companies on a sub-contractual basis.

Production of cigarettes reached a peak of 96.1 billion pieces in 1984/85 and then declined. It recovered again in the 1990s (Table 4.8). The Indian cigarette market was reportedly worth Rs 66 billion in 1997 (ERC Statistics International, 1998).

The average price for a pack of ten cigarettes increased from Rs 4 in 1990/91 to Rs 6 in 1998/99. Currently, the retail price of a pack of 10 cheap cigarettes is Rs 6, against Rs 3 for a bundle of 25 bidis. Bidis largely escape tax as most are produced in cottage industries across the country. Attempts to raise the taxes on bidis are often interpreted as an attack on the poor, and therefore regarded as politically inexpedient. Prices of cigarettes and other tobacco products in 1998/99 are compared in Table 4.9.

Table 4.8: Production, exports and imports of cigarettes in India

Year	Production	Imports	Exports
	million pieces		
1950/51	20 700		
1960/61	35 000		
1970/71	63 100		
1980/81	78 600		
1981/82	90 600		
1982/83	89 100		
1983/84	87 300		
1984/85	96 100		
1985/86	82 400		
1986/87	81 100		
1987/88	77 800		
1988/89	80 300		
1989/90	83 500		
1990/91	86 100		800
1991/92	85 700		6 428
1992/93	80 800	51	2 410
1993/94	78 800	25	3 456
1994/95	84 000	86	3 463
1995/96	95 600	134	1 461
1996/97	102 300	157	1 206
1997/98	104 600	252	1 446
1998/99	101 000	35	2 543

Source: Union Budget, and foreign trade data from Directorate General of Commercial Intelligence

Table 4.9: Retail prices of cigarettes and other tobacco products .

Item	Average urban retail price
Bidi	Rs 3.50 per bundle of 25
Cigarette	Rs 6 per packet of 10
Cheroot	Rs 0.45 each
Snuff	Rs 17.10 per packet of 100 g
Tobacco – Huka (Huble-babal)	Rs 15.85 per 1 kg.
Pan Leaf Small	Rs 12 per 100
Pan Finished Ordinary	Rs 2 each
Raw Leaf	Rs 38.50 per 1 kg.

Source: National statistics.
As at September 2000

4.7 ECONOMIC ANALYSIS OF TOBACCO MANUFACTURING ENTERPRISES

It is estimated that over 2.3 million persons depended on this sector for their livelihood. The annual wage bill in these enterprises averaged Rs 4 300 million, and annual wages per worker varied from Rs 8 400 in bidi factories to Rs 55 730 in cigarette, cigar and cheroot factories. The total net value added by all enterprises averaged Rs 15 000 million per annum, of which bidi factories contributed 41.2 percent, and cigarette and allied industries 34.3 percent. The total annual wage bill in the cigarette and allied industries, despite wages per worker being substantially higher, was only 4 percent of its

gross value of output, compared to 16 percent in the bidi factories, because bidi manufacturing is more labour intensive. Bidi manufacturing is estimated to provide employment to more than 4.4 million workers, a large number of whom are women and children. If the forward and backward economic linkages are taken into account, bidis generated 1 310 million workdays, whereas cigarettes generated 340 million workdays (Table 4.10).

Table 4.10: Employment (formal + informal) in the bidi and cigarette industry, 1994/95

	Cultivator	Processor	Manufacturer	Wholesaler	Retailer	Total
Full-time equivalent						
Bidis	140 000	29 300	2 964 000	110 000	1 130 000	4 373 300
Cigarettes	124 000	2 200	10 620	110 666	886 066	1 134 128
Persons employed						
Bidis	290 000	44 000	4 461 000	83 000	757 000	5 635 000
Cigarettes	267 000	3 278	10 620	81 616	543 000	906 090
Workdays (million)						
Bidis	41.5	8.8	889.2	371.1	n.a.	1310.6
Cigarettes	37.1	0.7	3.2	299.0	n.a.	340.2

Note: n.a. = not available.
Source: *Bidi and Cigarette Industry – A Comparative Status.* Indian Market Research Bureau Report, 1996.

The bidi industry provides employment to a large number of workers – some 4.4 million workers employed in bidi rolling alone. Around 22 percent of these workers depend upon bidi rolling as their sole source of income. Table 4.11 shows comparative gross value addition per unit in the bidi and cigarette industries. The employment figures do not include the employment created in tendu leaf picking (in the case of bidis) or in the supplier industries for the cigarettes industry, such as the manufacture of paper, packaging and machinery used in cigarette manufacture.

4.7.1 Impact of introduction of new processing technologies and equipment

The cigarette manufacturing companies have been modernizing their processing and manufacturing facilities, with new or upgraded machines introduced for cigarette making. The impact of the advanced technology has been to improve processing, reduce component prices and improve quality and efficiency. It has also reduced cigarette damage and waste; reduced tar and nicotine levels through filterization; reduced usage of tobacco per cigarette; and improved cigarette paper and filter design. The share of filter-tipped cigarettes increased from less than 30 percent in 1970 to 66 percent in 1998. The reduction in tobacco used per cigarette has been significant. According to industry sources, currently about 750 g of processed tobacco is used to manufacture l 000 cigarettes, against the 1 000 g used three decades ago.

However, the cigarette industry in India has generally not kept pace technologically with the developed countries. For instance, the speed of cigarette makers and packers in India is 2 000 to 3 000 cigarettes per minute (cpm), compared to 7 000–10 000 cpm abroad. The plants abroad have a very high levels of automation in primary processing, material handling systems and secondary technology.

Table 4.11: Gross value addition by the bidi and cigarette industry

	Bidi	Cigarette
Gross value generated per workday (Rs)	47	192
Gross value generated per million pieces (Rs ‘000s)	87.3	724.4
Gross value added per workday (Rs.)	31	135
Gross value added per million pieces (Rs ‘000s)	58.9	508.3
Equivalent full employment (million)	4.37	1.13
Total employment created (million workdays)	1 310.6	340.1
Gross value generated (Rs million)	61 110	65 200

Source: *Bidi and Cigarette Industry – A Comparative Status.* Indian Market Research Bureau Report, 1996.

The introduction of modern technology has had little impact on prices. In fact, retail prices of cigarettes have continued to increase, due largely to increased excise duty, which now accounts for some 61 percent of the retail price of cigarettes in India.

4.8 DEVELOPMENTS IN TOBACCO CONSUMPTION

Total consumption of tobacco products has been increasing in India, as in many other developing countries, notwithstanding the increased awareness of negative health effects. Total tobacco consumption increased from around 300 000 tonnes in 1971/72 to 450 000 tonnes in 1998/99 – an increase of 1.6 percent annually. Only about 20 percent of the total tobacco consumed in India (by weight) is in the form of cigarettes. Bidis account for about 40 percent of tobacco consumption (about 950 billion bidis), with the rest divided among chewing tobacco, pan masala, snuff, hookah, zarada and other mixtures. Cigarette smoking is essentially an urban phenomenon: 80 percent of cigarette smokers are in urban areas, while 80 percent of bidi smokers are in rural areas.

Per capita consumption of cigarettes remains very low by international standards. This reflects the lower level of incomes and the substantial use of cheaper alternative tobacco products resulting from traditional habits that are supported by the very low or non-existent taxes on these products. Manufactured cigarettes, on which heavy excise duty is levied, remain unaffordable for many. Per capita consumption of cigarettes declined from 99 pieces in 1990 to 87 pieces in 1993. However, the reduction in taxation on small non-filter cigarettes in 1994 attracted more smokers to switch from bidis, and also encouraged downgrading, both of which have helped increase per capita consumption quite substantially in the latter half of the 1990s. Thus, per capita consumption had reached l08 pieces/year by 1997.

Annual average consumption of cigarettes per adult (aged 15+ years) increased from 170 pieces during 1970–72 to 180 pieces during 1980–82. However, it declined to 150 pieces during the next decade, but recovered to 170 pieces during the last three years. Annual average consumption per adult of bidi increased from 840 to 1350 during 1996–98 (Table 4.12). The increase in consumption in tobacco products in general has been due to population increase, especially the smoking population, higher per capita income in real terms, (which increased from Rs. 1650 in 1970/71 to Rs. 3780 in 1998/99), changing tastes accompanying increased income, changes in prices of various products over time, and, last but not least, government taxation policy. Data on the smoking population are not available except for a survey conducted by NSSO (1996), which provided information on tobacco users in terms of proportion of population. Based on this information, the tobacco using population is estimated to have increased from 201 million in 1986/87 to 203.7 million in 1993/94, or an increase of around half a million annually.

Table 4.12: Annual consumption of cigarettes and bidis by adults

Period	Annual average number consumed per adult (aged 15+)		
	Cigarettes	Bidis	Total
1970–72	170	840	1 010
1980–82	180	1 130	1.310
1990–92	150	1 220	1 370
1996–98	170	1 350	1 520

Sources: WHO, 2000; ERC Statistics International, 1998.

The consistent growth of the bidi segment in the smoking market has been partly due to taxation being lower then cigarettes, which has given bidis a considerable price advantage. Other factors supporting rapid growth in demand for bidis include the traditional habit of bidi smoking in the family, which is passed on to the children; the relatively low income level of a large part of the population, especially among the rural masses; and increased use of bidis by women in rural areas in certain states, as there is no inhibition to their smoking. By contrast, the government taxation policy seems to have restricted

growth of the cigarette market. From 1970/7l to 1997/98, cigarette taxes increased almost 15-fold (from Rs 31 to Rs 439 per 1 000 cigarettes). This resulted in smokers using more bidis. The Indian tobacco market is highly price sensitive. The price elasticity for cigarette consumption was estimated at -0.66 between 1967/68 and 1992/93, i.e. a 10 percent increase in price would result in a reduction in consumption of 6.6 percent. While increased prices have a constraining affect, the wide use of sponsorship of sport events, publicity and advertisement by the cigarette companies have helped introduce large numbers of young people to cigarette smoking (Vaidya, Vaidya and Naik, 1999).

Based on the NSSO (1998) survey data, the total population using tobacco was estimated at 203.7 million in 1993/94. Among these over 53 percent were smokers and the remaining 47 percent were using non-smoking tobacco products. Chewing tobacco was used by 34 percent of the tobacco using population. Around 12 percent used more than one product. Bidi smokers formed 78 percent of the smoking population.

Total annual private final consumption expenditure (PFCE), in current terms, on tobacco and tobacco products increased from Rs 8 billion in 1970/7l to Rs 236.7 billion in 1998/99. In real terms, based on official sources (CMIE, 1999) and industry estimates, it increased from nearly Rs 19 billion to Rs 54 billion. The share of tobacco and tobacco products rose from 2.6 percent of PFCE in 1970/7l to 2.9 percent. The cigarette segment accounted for 37 percent of total consumer spending on tobacco, while the bidi segment contributed 30 percent. The corresponding figure for the non-smoking sector was 33 percent. However, while for cigarettes as much as 61 percent of the total consumer spending went towards government excise revenue, the corresponding figure for the bidi segment was 5 percent. Moreover, the figure for the non-smoking sector, which has the highest share in consumer expenditure, was also only 4 percent in 1998/99. The annual spending per tobacco user was Rs 1 150. Annual expenditure per smoker is estimated to have been Rs 2 750 for cigarettes and Rs 835 for bidis, while for non-smoking tobacco users it was Rs 906.

Government policy regarding consumption of tobacco products applies mainly to its taxation measures and a limited control on use of tobacco products. The motivating rationale for tobacco taxation seems to be fiscal (i.e. to maximize the excise revenue). Measures to control the use of tobacco on health grounds seem to have had only a small impact, partly because only a few control measures are in place, and those are not fully implemented. These measures include bans on advertising cigarettes, but applied only on television and commercial radio stations; a single health warning on cigarette packets; and bans on smoking in public places, but in only three States.

Table 4.13: Trends in Indian tobacco use (thousand tonnes)

Year (1)	Cigarettes (2)		Bidis (3)		Smoking (2+3)		Other (4)		Total (5)	
	No.	%	No.	%	No.	%	No.	%	No.	%
1971/72	71	23.0	91	29.4	162	52.4	147	47.6	309	100
1981/82	86	21.2	189	46.6	275	67.7	131	32.3	406	100
1991/92	82	20.3	202	50.0	284	70.3	120	29.7	404	100
1992/93	77	18.6	217	52.4	294	71.0	120	29.0	414	100
1993/94	75	17.9	224	53.5	299	71.4	120	28.6	419	100
1994/95	81	18.6	231	53.6	311	72.2	120	27.8	431	100
1995/96	92	20.4	237	52.6	329	73.0	122	27.0	451	100
1996/97	98	20.6	255	53.7	353	74.3	122	25.7	475	100
1997/98	100	20.5	263	53.9	363	74.4	125	25.6	488	100
1998/99	97	19.7	268	54.4	365	74.1	128	25.9	493	100

Source: Tobacco Excise Tariff Committee reports on Indian Tobacco Statistics.

4.9 TRADE IN TOBACCO AND TOBACCO PRODUCTS

Exports of tobacco, along with other agricultural exports, receive various incentives. For example, export incomes are exempt from income taxation. Also, credit at subsidized interest rates is available

for tobacco exports. Moreover, tobacco exporters can import necessary inputs duty-free, while they can import capital goods at concessional duty rates provided they are able to fulfil an export obligation, which may vary from four to six times the value of the capital goods. To promote exports of various agricultural products, including tobacco, the government also extends financial assistance in the form of grants for certain export promotion activities.

Raw leaf accounts for around 80 percent of the total volume and value of tobacco exports. Of raw leaf, FCV, which forms less than 25 percent of total production in the country, accounts for the bulk of exports, in terms of both volume and value, although its share has declined during the last three decades.

India accounts for only 4 percent of the world exports of raw tobacco. Total export earnings from both leaf tobacco and manufactured products in India have increased almost 25-fold, from Rs 326 million at the beginning of the 1970s to about Rs 8 100 million in 1998/99 (Table 4.14). This was partly due to the general increase in tobacco prices at the world level. During the last decade, tobacco export earnings increased from Rs 2 600 million in 1990/91 to Rs 10 600 million in 1997/98, but declined in the next year. Earnings from raw tobacco during this period increased almost three-fold, from Rs 1 900 million to Rs 6 300 million. However, for manufactured tobacco products they rose by only 145 percent, from Rs 699 million to Rs 1 700 million. Among tobacco products, exports of hookah paste accounts for around 80 percent in volume but only 40 percent in value terms. The share of cigarettes has declined since 1993/94, following the reduced demand from the former Soviet Union, with which India had a bilateral trade agreement.

Nearly two-thirds of exports of raw tobacco were to European countries, with Russia being a leading importer. Saudi Arabia is the single largest importer of hookah paste. Bahrain, Oman, Singapore and the United Arab Emirates import bidis from India. Russia has been the largest importer of Indian-made cigarettes.

Globally, most tobacco is consumed in the form of cigarettes. In India, however, the bulk of India's consumption of tobacco is in non-cigarette forms. This mismatch between India's product mix and world demand has hampered India's export growth. To emerge as one of the leading players in the global tobacco market, India has to grow more cigarette-type tobacco (Virginia, Burley and Oriental) to integrate its economy with the world market.

Table 4.14: India's tobacco exports in selected years

Year	Unmanufactured		Manufactured		Total	
	Quantity ('000 tonnes)	Value (Rs million)	Quantity ('000 tonnes)	Value (Rs million)	Quantity ('000 tonnes)	Value (Rs million)
1960/61	46	146	2	11	48	157
Share (%)	*95.8*	*93.0*	*4.2*	*7.0*	*100*	*100*
1970/71	48	314	2	12	50	326
1980/81	79	1 248	12	163	91	1 411
1990/91	70	2 062	17	699	87	2.761
1991/92	72	3 427	15	477	87	3 904
1992/93	81	4 344	13	733	94	5 077
1993/94	92	4 060	9	797	101	4 857
1994/95	45	2 078	12	598	57	2 678
1995/96	72	3 614	12	597	84	4 211
1996/97	117	7 336	13	920	130	8 256
1997/98	137	9 722	8	890	145	10 612
1998/99	82	6 345	19	1 717	101	8 062
Share (%)	*81.2*	*78.7*	*18.8*	*21.3*	*100*	*100*

Sources: Tobacco Development Board (various issues) *Handbook of Tobacco Statistics*.
Directorate of Tobacco Development. *Status Paper on FCV Tobacco*.
Ministry of Finance, Government of India. *Budget Documents*.

FCV tobacco accounts for the bulk of the volume and value of exports, and generates around 80 percent of revenues from exports of raw tobacco.

With an average cost of production of Rs 25.60 per kg in 1997/98, Indian FCV tobacco has been perhaps the cheapest in the world market. Further, by virtue of absence of any governmental protection for this crop, unlike in many tobacco-producing countries, Indian FCV tobacco acquires an added edge in the competitive export market. Judged from the internationally accepted parameters of levels of protection, Indian FCV tobacco is the least protected and therefore has more favourable terms of trade.

The contribution of cigarettes to foreign exchange earnings is substantial. Cigarette exports touched nearly Rs 490 million in 1993/94 and accounted for 61 percent of the total earnings from manufactured tobacco products. The absence of an internationally acceptable brand name, non-conformity with international standards, and overseas marketing limitations imposed by foreign collaborators seem to be some of the reasons for India's limited exports of cigarettes. Bidis are exported to several West Asian countries.

If India could reframe its tobacco production strategy and maximize the marketable surplus in the export-oriented varieties, so as to raise its production levels – especially of exportable varieties –it could boost its exports. The present pattern of exports, where raw tobacco forms the bulk of exports in both volume and value, needs to be reversed and value-added manufactured products (cigarettes) should form a greater part of export earning from the tobacco sector as a whole by the end of the current (9th) Five-Year Plan.

4.9.1 Imports

India imports small quantities of raw tobacco required for blending purposes for manufacturing international-brand cigarettes in the country. In recent years, imports of raw tobacco totalled around 300 tonnes per annum.

4.10 ECONOMIC SIGNIFICANCE OF TOBACCO

India is the world's third-largest producer of leaf tobacco. It is also a very large consumer of tobacco products. Tobacco is one of the important cash crops in the country, and makes a significant contribution to the Indian economy in terms of employment, income and government revenue. It generates nearly Rs 20 billion of income per annum. The economic importance of the crop can be considered at three levels: farm households engaged in tobacco growing and processing; major tobacco producing States; and central government level.

Farm level

There are an estimated 850 000 growers of tobacco in the country, characterized by small family farms, with farmers owning less than 2 ha of land forming about half of all tobacco growers. However, based on field surveys carried out by Gujarat Agricultural University, Anand, in selected tobacco growing districts in Gujarat and Karnataka, the small-scale producers account for about a quarter of the tobacco area. In total, nearly 6 million farmers and workers depend on this sector for their livelihood. In addition, the tobacco sector provides direct and indirect employment to a large number of people in many related industries.

State level

The tobacco sector contributes to the States' economies through crop production and to the exchequer through excise duty, as well as from their share in the net central excise duties. Tobacco cultivation is concentrated in three states: Andhra Pradesh, Gujarat and Karnataka. The additional excise duties on tobacco, which is distributed only among tobacco growing states, increased from Rs 3 477 million in 1979/80 to Rs 18 532 million in 1999/2000. During the fiscal years 1995 to 1998, the State

Governments received annually 47.5 percent of the net proceeds of union excise duty levied on a number of commodities, including on tobacco products. It amounted to around Rs 240 000 million annually, of which the share from the tobacco sector is estimated to have been around 9 percent. These are an important source of revenue for the States.

Central government revenue

In India, excise duty is imposed on the entire range of manufactured tobacco products. In 1998/99, tobacco contributed about Rs 59 400 million to the central government's revenue (Table 4.15), or 10.6 percent of total excise collection. Tobacco contributed Rs 7 790 million to export earnings in 1998/99, which was around 5 percent of the foreign exchange earnings from agricultural products. In addition, the central government also realized on average around Rs 2 000 million per annum from tobacco enterprises in the form of corporate tax during the last three tax years.

However, raw tobacco was exempted from excise with effect from 1979/80, primarily because the administration and collection of excise duty on raw tobacco was expensive as well as cumbersome, and control was ineffective. The consequent revenue loss from the exemption was more than compensated for by steep increases in tax rates on manufactured items. Although most manufactured tobacco products attract excise duties, tobacco products from cottage industries (bidis, etc.) are taxed at a much lower rate than those from the organized sector (i.e. cigarettes).

Bidi manufacturers producing less than 2 million pieces annually do not have to pay any excise duty. Bidis (other than paper rolled) produced without the aid of machines pay Rs 5 per thousand pieces. Other bidi manufacturers currently pay Rs l5.5 per thousand pieces. Pan masala is taxed 40 percent *ad valorem* (24 percent basic duty plus a special duty of l6 percent). Chewing tobacco and snuff with a brand name attract 50 percent excise duty (*ad valorem*).

Table 4.15: Trends in excise collection (Rs million per annum)

Year	Cigarettes		Other tobacco		Total tobacco excise	Total excise revenue		
	Excise	Share (1) (%)	Excise	Share (1) (%)		Excise	Share (2) (all tobacco) (%)	Share (2) (cigarettes) (%)
1971/72	1 930	69.6	840	30.4	2 780	20 610	13.5	9.36
1981/82	6 840	82.0	1 500	18.0	8.350	74 210	11.3	9.22
1991/92	24 500	89.1	2.990	10.9	27 490	245 140	11.2	9.99
1992/93	27 680	89.1	3.370	10.9	31 050	281 100	10.0	9.85
1993/94	27 400	87.6	3 870	12.4	31.270	311 460	10.0	8.80
1994/95	30.750	87.8	4 090	12.2	35 000	373 470	9.45	8.23
1995/96	34 270	84.9	4 880	15.1	40 360	401 870	11.0	8.53
1996/97	39 827	85.7	9 667	14.3	46 494	450 080	10.3	8.50
1997/98	44 924	86.1	7 225	13.9	52 149	477 000	10.9	9.42
1998/99	51 118	86.0	8 322	14.0	59 440	559 100	10.6	9.14

Notes: (1) Percentage share in total tobacco excise. (2) Percentage share in total excise revenue.
Source: Government of India. *Budget Documents*.

4.11 COSTS OF SMOKING

A task force of the Indian Council of Medical Research conducted a research study from 1990 to 1996 on the Cost of Tobacco-Related Diseases in India. The average economic cost of major diseases due to tobacco use in India in 1999 was estimated at Rs 350 000 for cancer, Rs 29 000 for Coronary Artery Disease (CAD) and over Rs. 23 000 for Chronic Obstructive Lung Disease (COLD). Total losses from these tobacco-related diseases in 1999 was about Rs 277.6 billion, equivalent to US$6.5 billion (Table 4.16). The medical experts, however, consider the estimated total loss to be an underestimate as it is derived from only a small sample.

Table 4. 16 : Economic cost of major diseases attributed to tobacco use in India in 1999

	Tobacco-related diseases		
	Cancers	**Coronary Artery Diseases**	**Chronic Obstructive Lung Disease**
Number of cases attributable to tobacco use			
1996	154 300	4 200 000	3 700 000
1999	163 500	4 450 000	3 920 000
Average cost per case in 1999 (1) (Rs)	350 000	29 000	23 300
Total cost for all India (1999) (Rs billion)	57.225	129.05	91.336
Total loss (1999)	Rs 277.611 billion (≈ US$6.5 billion)		

Note: (1) Covers costs of treatment by the patient and by the medical institutions and loss due to premature death.
Source: Rath and Chaudhry, 2000.

4.12 TOBACCO CONTROL MEASURES

To control the use of tobacco, the Central and State Governments have launched a number of schemes in recent years, with further measures under consideration.

4.12.1 Pricing measures to control tobacco demand

In India the motivating rationale for tobacco taxation seems to be fiscal, i.e. to maximize excise collection, rather to control tobacco use. The tobacco taxation policy also seems to be governed by concern that the people in the lowest income strata should pay less tax. The non-smoking tobacco products, commonly used among rural masses, are not taxed. Bidis, which are used by people in lower economic strata, were not taxed till the early 1990s, and currently are taxed only lightly. Non-filter cigarettes attract a much lower tax than filter cigarettes. The central government policy of keeping the prices of certain tobacco products cheaper for low-income groups ignores the potential higher occurrence of tobacco-related diseases.

Discussion on base and rate structure of tobacco taxation brings into sharp focus the conflict between tax objectives: revenue maximization or tobacco consumption control. For the ease of tax administration, the narrow cigarette sector is taxed at increasingly higher rates to satisfy revenue needs, while as much as four-fifths of tobacco consumption is either lightly or not taxed. If the objective is to discourage tobacco consumption, the existing tax base and rate structure is skewed and not in alignment with production and consumption patterns. At the same time, other macro-considerations, such as employment and income generation, and the nature of industrial organization, hinder any serious effort towards such an alignment. The end result is that tobacco taxation in India pursues neither revenue optimization nor tobacco control as an objective.

4.12.2 Non-price measures to reduce demand for tobacco

Advertising restrictions

The central government regulates advertising and promotion of cigarettes. The state governments regulate, at most, advertising of other tobacco products. Advertising of cigarettes is currently banned on television and commercial radio stations, and in government owned premises. Cinema, press and outdoor advertising is permitted, as is sponsorship of sports and other events and cultural activities. The use of hoardings and billboards is, however, restricted in certain areas and some sports grounds. Some state governments have started to follow the policy of the central government. For instance, in 1997, the Government of Delhi State imposed a ban on tobacco advertising. During 1997/98, some other states followed in imposing such a ban, notably Himachal Pradesh and Goa.

The central government has considered imposing a total ban on advertising of cigarettes under a new Tobacco Products (Regulation of Production, Supply and Distribution) Bill. The code would have prohibited the use of personal testimonials by those well known or those specifically working with children. Advertisements were also to be banned in any media aimed primarily at those under 18.

However, the code had to be withdrawn in December, 1998, because of lack of cooperation from India's domestic manufacturers. In particular, the code came into conflict with the promotion of tobacco products at sport venues and the use of prominent celebrities for tobacco promotion. The Tobacco Institute of India is preparing a new code for possible adoption by the tobacco manufacturers, modelled on similar agreements between government and the tobacco industry in European countries, such as the United Kingdom and the Netherlands. The new code includes standardized health warnings, the publication of tar and nicotine levels, and the introduction of age restrictions for tobacco purchase.

Health warnings

A single health warning ("Cigarette smoking is injurious to health") is mandatory on packets and any advertisements.

Other restrictions

Smoking is currently banned in government offices, public transport (apart from air-conditioned railway coaches) and internal flights, cinema halls, theatres and government-run stadiums.

The Central Ministry of Health and Family Welfare set up an expert committee consisting of 21 professionals from various disciplines to examine various facets of the tobacco industry including economics of tobacco use. Following the submission of the report of this committee, if it is accepted by the government, additional tobacco control measures could be introduced, *inter alia* better enforcement of the control measures already in force and some new measures.

4.13 CONCLUSIONS

Tobacco production is an important source of income for India's farmers. While alternative crops are available in terms of agronomic suitability, in general a move away from tobacco production would result in reduced income and food security for a considerable number of farmers. Manufacturing, particularly of bidis, is also a source of employment and hence of income for a large number of people. Thus any attempts to control the use of tobacco would need to take into account the economic impact on these sectors.

To be effective, measures to control the use of tobacco would need to address all forms of consumption, not only cigarettes. In particular, this would mean dealing with the economic and political difficulties of taxing, or otherwise controlling, bidis and other non-cigarette forms of tobacco consumption.

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