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Course of Microeconomics

Do smoking policies affect smoking behavior?

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I. Introduction

In ancient times, tobacco was unknown in Europe. However, the men burned various herbs and used the smoke to heal or pray. The first tobacco seeds were brought to Europe in 1520.

In America, the Indians were familiar with tobacco, which they considered to be a precious plant that they used in rituals for the purification of adults. Tobacco was also used as a medicinal plant. In 1492, when Christopher Columbus discovered America, he noticed that the Indians smoked a plant called "petum" in the form of tubes of rolled leaves. He tells that some Indians burn a plant with small pieces of coal and suck out the fragrant smoke, others use hollow sticks filled with chopped leaves, others still smoke pipe, chew or breathe some kind of powder.

In 1493, the Spaniard Fray Romano Pane accompanied Christopher Columbus on his second voyage to the New World, to convert the inhabitants to Christianity. He sends tobacco to Charles V. Spain then chose Cuba to grow its tobacco. Later, when the ship docked on the Portuguese coast, the crew developed the habit of smoking, which they boasted about.

In 1561, Jean Nicot, French ambassador to Portugal at that time, sent grated tobacco leaves to Catherine de Medici, Queen of France. Tobacco was described to the queen as a plant that could relieve her terrible migraines. She gave the order to grow them in Brittany, Gascony and Alsace. This grass became very popular and the whole Court began to use it. In 1809, nicotine was discovered by a Norman, Louis Nicolas Vauquelin, professor of chemistry at the Paris Medical School. This alkaloid was called "nicotine" in reference to Jean Nicot.

Tobacco was a real success, so the state considered it as a possible source of income. In 1629, Richelieu created the first tobacco tax.

It was not until the 1950s that the first epidemiological studies proved the toxicity of tobacco.

Today we know that one in three cancers is due to smoking. The best known is lung cancer, 80 to 90% of which is related to active smoking. Active smoking can also cause cardiovascular disease: smoking is one of the main risk factors for myocardial infarction. Strokes, aneurysms and high blood pressure are also linked, in part, to tobacco smoke. Vascular damage can also cause erectile dysfunction.

The tobacco epidemic is one of the most serious threats to global public health ever. It kills more than 8 million people worldwide every year. More than 7 million of them are consumers or former consumers, and about 1.2 million are involuntary non-smokers exposed to smoke. More than 80% of the world's 1.1 billion smokers live in low- and middle-income countries.

If we consider tobacco consumption in terms of costs and benefits, we note that the main present benefit of tobacco consumption is the pleasure of smoking, associated with particular occasions, and complementary or substitutable to other consumption, or the desire to stand out, which could be particularly strong among adolescents. The main present cost of consumption is the market price of tobacco. Tobacco consumption also has future costs, in terms of the risk of addiction on the one hand and health risks on the other.

In response to changes in costs and benefits, consumers adapt their behaviour. A schematic summary of the economic model is to assume that an individual smokes if the net benefit of smoking is greater than if he or she did not smoke. This net profit is written:

Net profit = present profit - present costs - discount factor × probability that future risks will be realized × future costs if risks are realized

Consequently, the public authorities have several levers of intervention at their disposal to reduce the net benefit of cigarette consumption:

- The increase of the market price by taxes, which would induce an increase of the present cost ;
- The enactment of consumption or sales bans, which would also lead to an increase in the present cost ;
- Dissemination of information on the level of risks involved and the amount of potential future costs and restrictions on cigarette marketing, which would lead to an increase in future costs and a decrease in present profits.

In 2003, the WHO Framework Convention on Tobacco Control was opened for signature. It is a treaty that reaffirms the right of all peoples to the highest attainable standard of health. The basic provisions on demand reduction are subject to financial, fiscal and non-financial measures to reduce the demand for tobacco. In 2007, WHO introduced the MPOWER programme as a practical and cost-effective method to accelerate the implementation of the demand reduction provisions of the WHO Framework Convention in the field. Indeed, tobacco is the leading preventable cause of death in the world today and kills up to half of its users. The MPOWER program encourages policy makers and the rest of society, including civil society and health care providers, to imagine a world without tobacco. This programme consists of six measures:

- Monitor: Monitor tobacco consumption.
- Protect: Protect the public from tobacco smoke.
- Offer: Offer help to those who want to quit smoking.
- Warn: Warn about the dangers of smoking.
- Enforce: Enforce the ban on tobacco advertising and promotion.
- Raise: Increase taxes on tobacco products.

These measures are directives, not obligations for nations. Their application remains free and specific to each country. Depending on the degree of application of these measures the results are more or less visible and important. It is therefore essential to observe the implementation and effects of these policies in different countries around the world to determine the impact they have on smoking behaviour.

II. Taxation: the most powerful policy

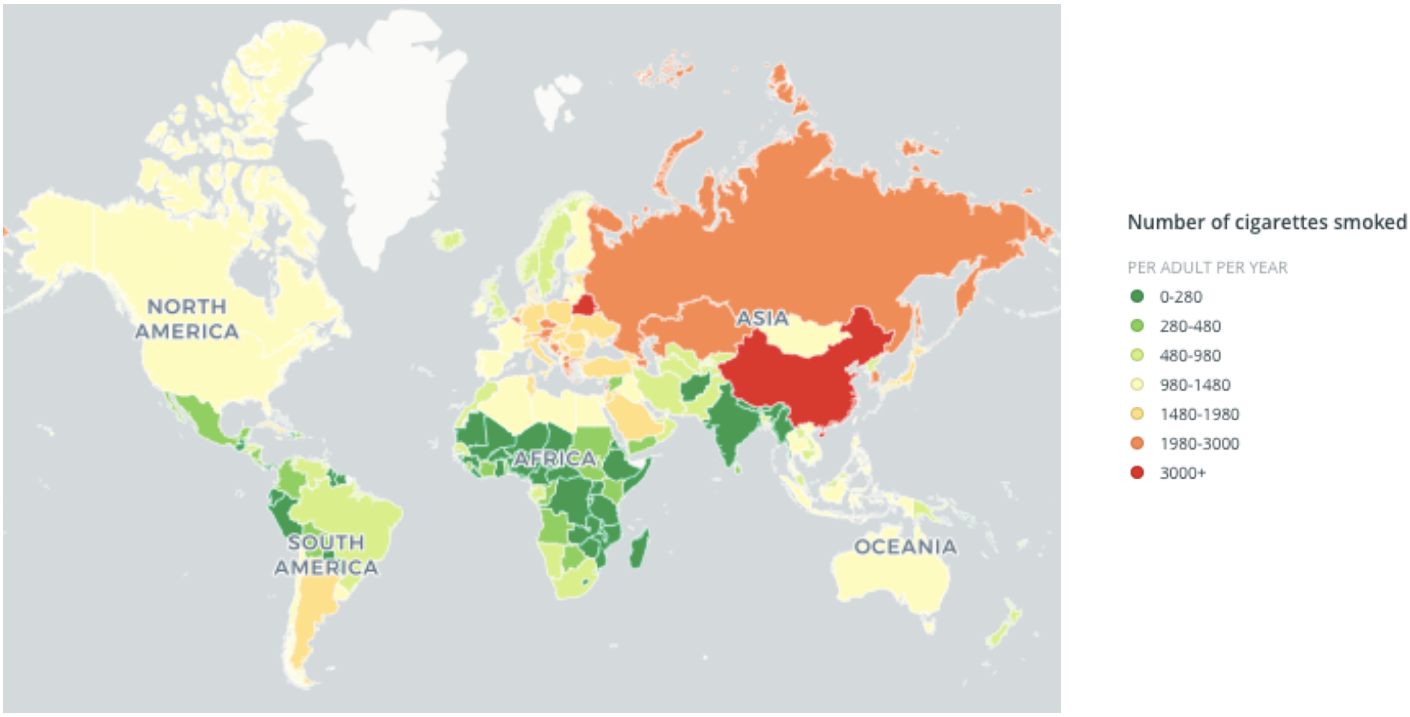
The most powerful and cost-effective option, for all governments, to control tobacco is simply to raise tobacco prices through consumption taxes. A tax is a mandatory financial levy collected by a government in exchange for a given service. Revenues collected through a tax can be directly earmarked for a specific cause. Without even realizing it, we pay taxes every day. The price of a packet of cigarettes is made up of taxes, manufacturers' margin and retailers' margin. Thus, the gain for the state, the manufacturer and the retailer is specific to each country and is distributed in different percentages.

A. Status in some countries

Tobacco has been a cultivated plant for 3000 years but remained unknown to Europeans until the end of the 15th century. This plant was brought back from South America and used mainly for medicinal purposes. It was only towards the end of the 16th century that tobacco consumption was normalized and its sale was considered as a possible source of income. It was based on this observation that the first tobacco tax was introduced by Richelieu in France in 1629. The aim was therefore to enrich the state through sales. Thereafter its sale and production were entirely managed by the French state. The composition of tobacco, made of nicotine, was discovered in the 1800s. But it was not until 1950 that the first studies were made to prove the toxicity of tobacco and the more than harmful effects that its consumption can have on humans. Faced with this, the States had to intervene to curb this growing consumption at the time, which is still a scourge today. The most effective solution is the introduction of tobacco taxation. The purpose of taxing tobacco products is to limit the harmful effects of cigarettes. Indeed, it is very harmful to health since it causes many coronary and cardiovascular diseases. Cigarette consumption is even seen as the leading cause of preventable death in the world. The World Health Organization estimates that in 2019, 8 million tobacco-related deaths occurred worldwide each year, and this number is increasing. In addition to the negative impact on public health, it represents a significant cost to health services. For most developed countries, with a subsidized health system, as is often the case in Europe, spending on smoking-related diseases is very high. Tobacco consumption is linked to and aggravating six of the eight leading causes of death worldwide, such as lung diseases and cancers, which require very expensive treatment to be cured. It therefore seems essential for a State to provide an income to cover these expenses. Such taxation represents a source of tax revenue for a country, enabling it, among other things, to invest in health systems and in research into diseases linked to tobacco consumption. For other countries such as the United States, which has a large number of smokers but does not offer a health system for all, it is important to act because possible complications will not necessarily be treated and will therefore be synonymous with death.

Besides, taxation is used as a deterrent to those who already smoke, those who are considering starting again and those who are thinking of starting over. For taxation to be truly effective, the WHO recommends that it should represent at least 75% of the sale price. High taxation of tobacco products would reduce overall consumption, thus leading to a reduction in mortality rates from diseases caused by smoking. In the same way, it would therefore be less expensive for a State.

Cigarette consumption is unevenly distributed around the world. The World Health Organization has created a ranking based on the average number of cigarettes consumed each year by a smoker in 182 countries around the world. China and Belarus are at the top of this ranking with an average of 4124.53 and 3831.62 cigarettes by smoker by year respectively. The top 65 countries include almost all countries in Europe, North America and Australia, regions of the world where government intervention is well established. On the contrary, most countries in Africa, South America and Southwest Asia are at the bottom of the list, which could explain the lack of tobacco-related measures in these countries. (Appendix 1)



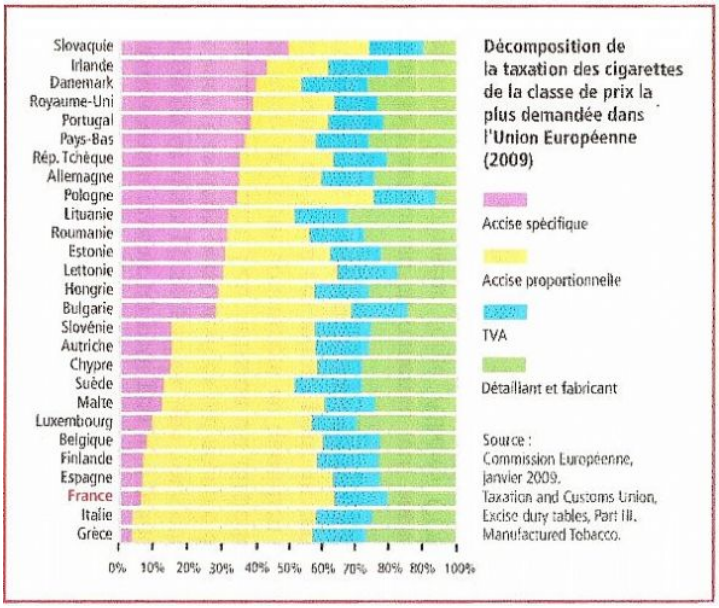
<u>Appendix 1 : The average number of cigarettes smoked per person per year</u>

(Source : WHO)

Among countries where the government has intervened in tobacco control, however, there are differences in the taxes applied. Of the 53 countries in the European region, 26 countries apply a minimum of 75% taxation. These data, therefore, place this region as the world leader in the taxation of tobacco products. In Europe, the price of a packet of cigarettes is composed of a value-added tax and two specific taxes called consumption duties that can be levied on the producer, manufacturer, wholesaler, importer and customer. The first duty is called specific or fixed excise duty, it applies to a number of cigarettes or packets of cigarettes or a weight of tobacco. The second duty, called proportional or "ad valorem" excise duty, is a percentage of the selling price of the product, in our case the packet of cigarettes. The rate of these duties

varies from country to country. The advantages and disadvantages of each of the taxes are different, so it is up to the States to gauge the rates assigned to each of them. In the case of specific excise duties, since they do not apply to the value of the product, they provide each State with tax revenue that is independent of changes in manufacturer prices and predictable concerning tobacco demand. The main advantage of this duty for tobacco control is that it directly increases the price of the product. Governments can, therefore, increase the price of packets of cigarettes to discourage consumers from continuing to smoke. As regards proportional excise duty, its main advantage is that it is directly indexed to inflation because it is linked to the value of the cigarette packet, unlike the specific excise duty. On the other hand, it reduces manufacturers' margins because part of the price increase will form part of the State's tax revenue. But it is also a disadvantage because it encourages manufacturers to keep prices low when selling their products.

It can be observed that within the European Union, taxes are applied differently. Some countries have chosen to tax by weight rather than as a percentage of the price and vice versa. Other countries, such as Poland, Estonia and Hungary, have chosen to tax in the same proportion by weight as they do as a percentage of the selling price. These variations in rates are to be expected by the respective governments of each country and should be assessed according to demand, even if all countries should favour specific excise duties which have a direct effect on the selling price. It can be seen that the VAT rate is relatively uniform, varying between 14% and 20%. Moreover, it can be seen from the graph that the most important part of the selling price of a package is systematically paid to the State. Slovakia and Poland are the countries with the largest share of the sales price of a packet of cigarettes going to the State, with 80% and 95% of VAT and consumer rights on the packet respectively. On the other hand, it can be seen that the share accruing to the retailer and the manufacturer never exceeds 30%, which is the case in Lithuania. (Appendix 2)



Appendix 2: Breakdown of taxation of cigarettes in the most popular price category in the European Union in 2009

(Source : European Commission)

Only 19 of the 193 countries in the world do not impose excise duties, including the Maldives, the United Arab Emirates, Kuwait and North Korea. The taxation policies implemented on the European continent are therefore based on the same principle in all countries. On the other side of the Atlantic, these interventionist policies are similar to those applied in Europe. In the United States, tobacco can be subject to federal, national or local taxes. The US government is therefore not the sole decision-maker in terms of tobacco control. Products are taxed in two ways: the unit tax, equivalent to the specific excise duty, and the ad valorem tax. The unit tax is based on a constant nominal rate per pack of cigarettes. The ad valorem tax is the same as in Europe, based on a constant fraction of the wholesale or retail price. Currently, federal taxes on cigarettes are unitary taxes.

In China, non-essential or luxury items, including tobacco products, are subject to consumption taxes. This country is first in the ranking of the average number of cigarettes consumed each year by a smoker with 4124.53 on average. China's tobacco consumption, with 350 million smokers, accounts for a third of world consumption. It therefore seems important to take action to reduce these figures. Tobacco products are subject to four different taxes. The main tax is the same as for the rest of the world, namely excise duties, both specific and ad valorem, all of which go to the central government. The other taxes are value added tax, a tobacco leaf tax and finally a tax on urban maintenance and buildings and surcharges on school fees. The total tax was 56% in 2016 compared to 42% in 2001, thus increasing the real price of a pack of 20 cigarettes from US$11.56 to US$25.58, an increase of 121%.

B. Effects on consumers

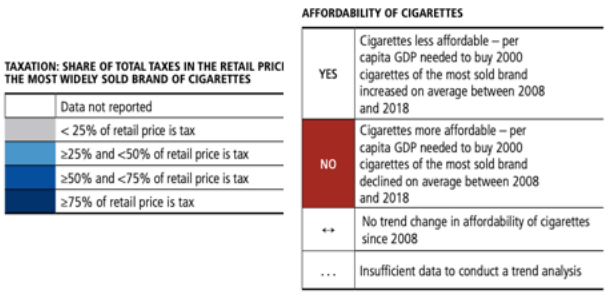
In general, it is effective for low-income people and youth. In addition, raising taxes regularly is a deterrent and a decisive factor in stopping. There is evidence that a 10% price increase leads to a 4% decrease in demand for cigarettes in high-income countries and a 4% to 8% decrease in middle- and low-income countries. Consumers react to these measures in two ways: either they stop their consumption altogether, which leads to a drop-in sale, or they decide to reduce their consumption, which amplifies the drop in sales. The proportion of each of these reactions is the same, half stop and half reduce consumption. These results are positive because they show that the measures put in place by governments are effective and they have every interest in continuing.

The increase in the price of cigarette packages due to increased taxation is directly related to the number of sales recorded. In most countries, the effect of such taxation is inversely related to the sale of cigarette packages, the so-called scissor effect. As prices rise, sales decline. In France, for example, in 2000, the unit price of a cigarette packet was €3.20 and generated sales of 83.3 billion units. By 2014, the price had more than doubled to €7.20 per pack, and 45 billion units were sold that year, a 46% decrease compared to 2000. The same phenomenon can be observed in the United Kingdom and Australia. Indeed, the results on the

British side are just as favourable to the tax increase, between 2000 and 2011 sales have decreased by 27% while the price has gone from 4 pounds to 6.63 pounds, an increase of 66%. The British therefore react slightly less than the French to changes in cigarette prices.

Another point raised by the WHO, in addition to the importance of applying significant increases, at least 10%, is the need to implement these increases regularly. Periodic increases in taxes applied to tobacco products will lead to better results. This recommendation is based on the observation that the standard of living in some countries is improving rapidly. Smokers' incomes and therefore their purchasing power can increase very rapidly and therefore the increase in the price of a packet of cigarettes will have no impact on their behaviour as it will be fully compensated. The implementation of a regular increase programme will therefore guarantee a real increase in the price of cigarettes, which will be less affordable. This type of measure has been applied in Australia and the results are very positive. At the beginning of 2020, the Australian government announced an additional 12.5% increase in tobacco taxes, whereas the percentage of taxation was already very high in 2018 with 77.5% tax. This represents the eighth consecutive annual increase of 12.5%. Australia is one of the most expensive countries in the world for cigarette packets. Indeed, in 2020, to buy the cheapest packet it will cost 29 Australian dollars or 18 euros. For the best-selling brand of cigarette, Marlboro, it will take 49 Australian dollars or 30 euros, so 12 euros more. These measures are effective because in 1990, the country had 27% of smokers, in 2015 it had only 15%. On the other hand, it can be observed that in China, despite an increase in the percentage of cigarette taxation between 2014 and 2018, from 44% to 55.7%, the cigarette packet is no less affordable. (Appendix 3)

Country	Percentage of taxation		Cigarettes less affordable since 2008
	2014	2018	
Australia	57%	77.5%	YES
Brésil	65%	83%	↔
China	44%	55.7%	NO
France	80%	82.4%	YES
Jamaica	43%	43.6%	YES
Singapore	66%	67.1%	NO
United States of America	43%	43%	↔



Appendix 3: Comparison of Tax Distribution in Selected Countries between 2014 and 2018

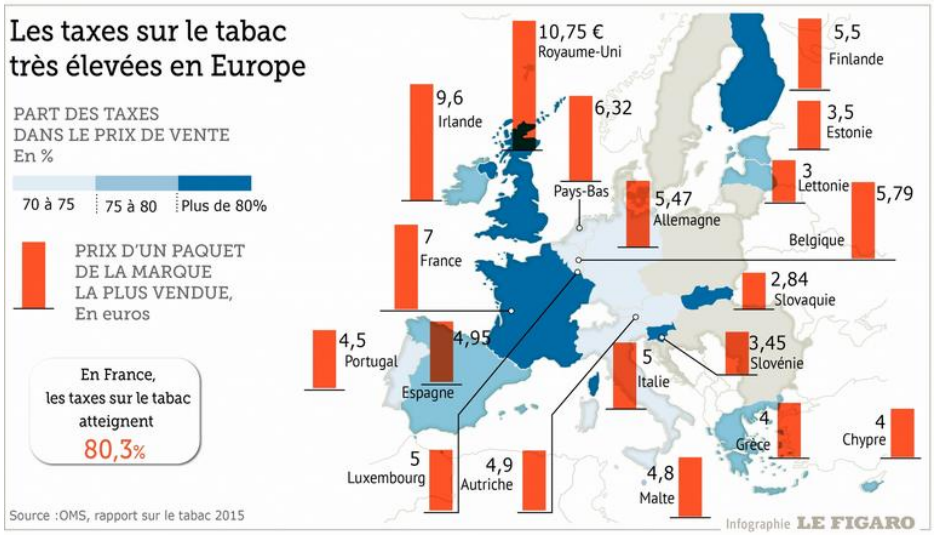
(Source : WHO)

China's economy is growing rapidly, so the income of the Chinese population is increasing and the standard of living is improving. The increases applied by the Chinese government do not allow to exceed this

economic development so for the Chinese it is as if the packet of cigarettes cost the same price. This explains the country's not very positive results in terms of the reforms applied. Yet China is the world's largest consumer of cigarettes and despite these tax measures, tobacco sales continued to increase until 2014, only since 2015 have these sales decreased slightly.

The demand for goods and services is influenced by various factors, including the price of those goods and services, the number of consumers, their income or wealth, their preferences and the price of other related goods. The factor that most influences demand remains the price offered on the market as it has a direct impact on the quantity demanded by consumers. When prices increase, the quantity demanded for that product decreases so there is an excess of supply. It is therefore estimated that the higher the prices of cigarette packages, the lower the quantity demanded. This explains the decrease in cigarette sales, but it also explains the decrease in cigarette consumption in the various countries of the world.

In Europe, the price of the top-selling brand of cigarettes varies from country to country, as does consumption within those countries. In the United Kingdom, the country with the most expensive cigarette packet for EUR 10.75 in 2015, the average number of cigarettes smoked per person each year is about 826. This country is one of the best ranked in Europe, ranking 74th in the ranking. On the contrary, if we take the case of Belgium, whose packet cost 5.79 euros in 2015, this country is in 7th place in the ranking of countries with an average consumption of cigarettes per person per year, with an average number of 2353 cigarettes. The same is true for Austria, Slovenia, Greece and Estonia, whose prices varied between 3.45 and 4.9 euros in 2015, and which are placed 16th, 6th, 14th and 20th respectively in the same ranking. (Appendix 4) These findings clearly show that there is a relationship between the evolution of prices and the evolution of consumption. The taxation policies pursued have an effect on consumers.



Appendix 4: Tobacco taxes in Europe in 2015

(Source : WHO)

In the United States, the increase in taxes and therefore in the price of a packet of cigarettes has made it possible to reduce the number of smokers by almost 22% between 2000 and 2015, from 46.5 to 36.5 million smokers. Unfortunately, these measures are not always effective, and this is the case in China.

Tobacco is one of the main causes of death, disease and impoverishment. Nearly 80% of the world's 1.1 billion smokers live in low- and middle-income countries, where the burden of tobacco-related disease and death is highest. Tobacco use contributes to poverty by diverting household expenditures from basic needs such as food and shelter to tobacco products. This behaviour is difficult to reverse because of the high addictive power of tobacco. This factor could be responsible for the lack of effect of the introduction of tax measures on consumer behaviour.

In addition, in order to compare the prices of a packet of cigarettes in different countries, the price of the best-selling packet of cigarettes was converted into a virtual currency, called the international dollar and expressed in purchasing power parity. Purchasing power parity is a currency conversion rate that expresses the purchasing power of different currencies in a common unit. This rate expresses the ratio between the number of currency units needed in different countries to purchase the same "basket" of goods and services. In 2018, cigarette pack prices in terms of purchasing power parity are estimated at 3.09 international dollars in low-income countries and 5.53 international dollars in high-income countries. The taxes applied by the governments of these low-income countries are, for nearly 90% of them, well below 50%. This very low price could therefore explain the lack of change in smoking behaviour. The country where cigarettes are most expensive is Jamaica with 13 international dollars, followed by Singapore with 12.3 international dollars. In 5th, 6th and 7th place are Ireland, the United Kingdom and Australia respectively with about 11 international dollars. Tobacco consumption has declined since the introduction of taxes in these countries. While France is 20th, with 7.76 international dollars for a packet. It is above the average and is therefore well on the way to limiting consumption by smokers.

III. Other policies

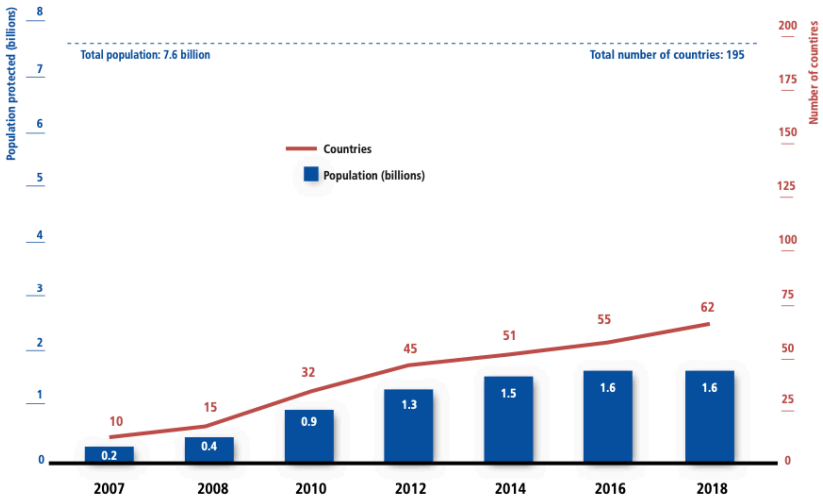
The WHO recommends six anti-smoking measures which it presents in the MPOWER programme dating from 2007. In order to achieve the P-O-W-E-R measures, measure M: monitoring tobacco consumption is required. The purpose of this measure is to obtain periodic, nationally representative data on key indicators of tobacco use among youth and adults.
We have seen the taxation that corresponds to the Raise measure of the WHO program. The Protect and Enforce measures make more general use of bans. The measure that has as its principle the dissemination of information and deterrence is for the WHO the W for Warn. The Offer measure is the one that aims to offer help to those who want to quit smoking.

A. Prohibitions

Bans are crucial in the fight against tobacco. There are three types of bans: bans on smoking in public or collective places; bans on advertising, promotion or sponsorship; and bans on the sale of cigarettes to minors, i.e., depending on the country, at least 18 or 21 years of age. It is important to define and therefore restrict the places where smoking is permitted in order to protect non-smokers from passive smoking. Indeed, passive smoking is a real scourge, of the 8 million people killed by tobacco each year, 1.2 million are non-smokers involuntarily exposed to smoke. This is why in many countries it is established that in public places such as parks, cinemas, theatres, restaurants and shops smoking is prohibited. In France, the Veil Law of 9 July 1976 is the first major law explicitly aimed at combating the harmful effects of smoking. It mainly attacks advertising, provides for smoking bans in certain places for collective use and requires the inscription of the words "Dangerous abuse" on cigarette packets. It was reinforced 15 years later by the Evin law of 10 January 1991 on the fight against smoking and alcoholism. It considerably strengthens the existing legislative framework. Thus, the Evin law prohibits "any propaganda or advertising, direct or indirect, in favour of tobacco or tobacco products as well as any free distribution". And since 1 February 2007, in France, it has been forbidden to smoke in all enclosed and covered places open to the public or which constitute workplaces, in health establishments, in all public transport, and in all public and private schools, colleges and high schools, as well as establishments intended for the reception, training or accommodation of minors. The ban on smoking in public places and enclosed spaces has been in force in Beijing since June 2015 after the WHO expressed concern that out of the 1 million deaths from smoking in China, 100,000 were passive smokers. With 350 million regular smokers, the world's largest tobacco-consuming country confirmed in November 2016 that it would extend the ban on smoking in enclosed public places to its entire territory. However, in China, bans remain relatively little enforced. In Italy, the 1975 law bans smoking in taxis, buses, subways and hospitals. Another more restrictive law, passed in

December 2002 and implemented on 10 January 2005, bans smoking in all public places except in designated smoking rooms. As for Germany of the Third Reich, within a few years it became the first nation to adopt a real anti-smoking policy. In 1938, smoking was banned in health care institutions, certain public services and schools. In 1941, its consumption was banned in trams and was prohibited in the streets of sixty German cities. The nascent advertising, which at the time was highly regulated, was banned from stadiums and public transport. The entire propaganda apparatus of the Reich was deployed to launch prevention campaigns, particularly among young people. Even in the army, cigarettes were rationed: six per soldier per day.

This anti-smoking legislation therefore protects passive smokers but also encourages smokers to reduce their consumption. In fact, by limiting the places where smoking is allowed, we are limiting smokers' consumption. If it is no longer possible to smoke anywhere and at any time, we smoke less. This is the idea on which the WHO based its program to set up as many places as possible around the world where smoking is banned. Their goal is that all public places should be smoke-free because it is the only effective environment against second-hand smoke.



Appendix 5 : Evolution in smoke-free legislation between 2007 and 2018

(Source : WHO)

Since the establishment of its programme, the number of countries implementing smoke-free legislation, where all public places are smoke-free or at least more than 90% of the population is protected by this measure, has been steadily increasing. Indeed, in 2007, when the MPOWER programme was published, only 10 countries had achieved such a level of protection, with a combined population of 200 million. In the space of 11 years, more than 52 countries have been added to this list. These 62 countries represent 1.6 billion people who, thanks to the implementation of this measure, are protected from cigarette smoke and are able to breathe better quality air. In total, seven times as many people are protected and worldwide this corresponds to almost 16% of the population. In addition, 15 other countries have just withdrawn the law

allowing enclosed and ventilated smoking rooms in public places. The removal of these smoking rooms makes it possible to double the number of people best protected by non-smoking laws. Indeed, these 77 countries represent a population of more than 3.3 million people, or 44% of the world's population in 2018. Another way to reduce consumption is to impose warnings on cigarette packages and regulate advertising, marketing and sponsorship by tobacco companies. Article 13 of the WHO Framework Convention on Tobacco Control prohibits all tobacco advertising. This Convention entered into force on 27 February 2005. As of June 2013, the Convention has been signed by 168 countries. Advertising in the print media, on radio and television and sponsorship of events with cross-border effects are banned in all EU Member States. In addition, all EU countries, except Germany and Bulgaria, have a national ban on tobacco poster advertising. In Australia, as of 1 December 2012, cigarette manufacturers are required to sell their cigarettes in a single type of packaging, the first country to implement such a measure. The cigarette pack, which is dark green and covered with impact warnings, is identical for all brands; only the brand name may appear on the pack. This decision aims to reduce the influence of a brand and its logo through advertising on smokers. Following this regulation, former World Health Organization Director Margaret Chan called on other countries to follow Australia's example in tobacco marketing. The European Commission, for its part, has indicated that it will closely monitor the impact that this initiative will have on the population. The introduction of the neutral pack reduces the attractiveness of the cigarette pack and the countries that have adopted it are: Australia, France, the United Kingdom, New Zealand, Norway, Ireland, Thailand, Uruguay, Saudi Arabia, Slovenia, Turkey, Israel and Canada. On the other hand, it is pending implementation in Singapore, Belgium, Hungary and Georgia.

1930's Lucky Strike advertisement

Neutral cigarette packet from 2012 in Australia

Another ban that is essential to limit the health damage caused by tobacco is the setting of a legal age for obtaining cigarettes and therefore smoking. Tobacco is considered a legal drug for which its production and distribution is regulated by governments. In order to protect minors and to prevent them from becoming smokers as much as possible, countries have established a legal age for smoking. Depending on the country,

consumers start smoking at different ages; in less developed countries the age of the youngest smokers may be very low. It is in the face of this statistic that researchers at the Institute of Medicine have begun a study to see the effects of a policy restricting the age allowed to buy cigarettes. The results are clear, the Institute of Medicine estimates that raising the legal age to 21, compared to 18 in some countries, would prevent an estimated 223,000 premature deaths due to smoking each year.

When a legal age is set, it is very often 18. This has been the case in the United Kingdom since 2007, prior to which it was 16. It has been shown that the effects of this increase have been positive, resulting in a reduction in regular smoking among young people across all socio-economic groups. France and Portugal have also required a legal age of 18. On the other hand, in Belgium, which has one of the highest per capita annual cigarette consumption per person in the world, the 7th highest smoking ban applied only to young people under 16 years of age before 1 November 2019, after which the ban was increased to 18 year olds. This year in the United States, a federal law was passed prohibiting the sale of cigarettes and e-cigarettes to anyone under 21 years of age throughout the country. Prior to this law, only 20 out of 50 states had enforced it.

B. Spread of information

Another measure in the fight against tobacco is the dissemination of information to deter current and would-be consumers. A major step in this type of measure was the introduction of illustrated warnings on cigarette packages. These warnings are messages written on the packages to inform consumers of the risks they take when using this substance. They are there to arouse fear and/or disgust. They must cover a certain surface of the cigarette packet. Depending on the country, they represent a greater or lesser percentage of the surface of the packet.

Example of a warning shown on a cigarette packet

Canada is the forerunner of these warning messages, since four messages were made mandatory as early as 1989. As of 2001, the dissuasive slogans are accompanied by a photograph often representing a lesion caused by tobacco. Canada subsequently added a leaflet explaining the dangers of tobacco, specifying the contents of a cigarette and indicating the minimum and maximum rate inhaled per cigarette based on the different ways in which consumers inhale smoke. Today, Canadian packages must carry a message covering at least 75% of each of the front and back panels. In Canada, cigarette package health warnings have thus become one of the most important sources of information for smokers about the risks of smoking, second only to television. In the U.S. in 1966, every cigarette packet in the U.S. carried the warning: "Caution: Cigarette smoking may be hazardous to your health." The warning label on the cigarette packet was changed in 1966. As far as the European Union is concerned, the warnings on cigarette packets are harmonized. They must be printed in bold, black on a white background, surrounded by a black frame. The warning must occupy at least 30% of the surface of the packet on the front and 40% of the surface on the back. The amounts of nicotine, tar and carbon monoxide inhaled for a standard smoker must also be indicated. This regulation comes into force after the European Parliament Directive of 5 June 2001 on the presentation and sale of tobacco products. As of October 31, 2004, the directive has been transposed to all members of the European Union except Estonia.

The introduction of the illustrated warnings has been delayed in several countries, due to fears of negative consequences, particularly the decline in cigarette sales. The pictorial warnings have been criticized in particular because they could cause unnecessary anxiety, because smokers would simply ignore or avoid them, and because the illustrations would undermine the credibility of the messages, and even because smokers would react by increasing their tobacco consumption. They are intended to change behaviour, including increasing the perception of the risks associated with smoking. Being aware of these risks is of course not enough to stop smoking, but it does have a strong influence on smoking behaviour. Indeed, the health risk is the most common reason given by smokers for quitting. It is often thought that smokers are often well informed about the risks of smoking, but this is not always the case. The WHO aims, through its Framework Convention, to ensure that all potential smokers are aware of the health consequences, addictiveness and lethal risk of smoking. It has been observed that in Canada warnings are better retained and that the impact is greater than in the United States. Indeed, the American warnings are more commonplace and smaller than those in Canada. In addition, studies have shown that in the United Kingdom, the increase from 6% to 30% in the front surface of the cigarette packet occupied by the warnings has had a strong impact on smokers, particularly in terms of their perception of the risks, their motivation to quit smoking, and the percentage of smokers reporting that they sometimes give up a cigarette. Shockingly enough, surveys of Canadian picture warnings show that those who had felt the most fear were the most likely to have quit after three months. By choosing images that evoked fear, the federal authority therefore felt that the end justified the means, and that it was worth generating anxiety in smokers if it led them to quit. In addition, opinion surveys in Canada have asked smokers whether these pictorial warnings

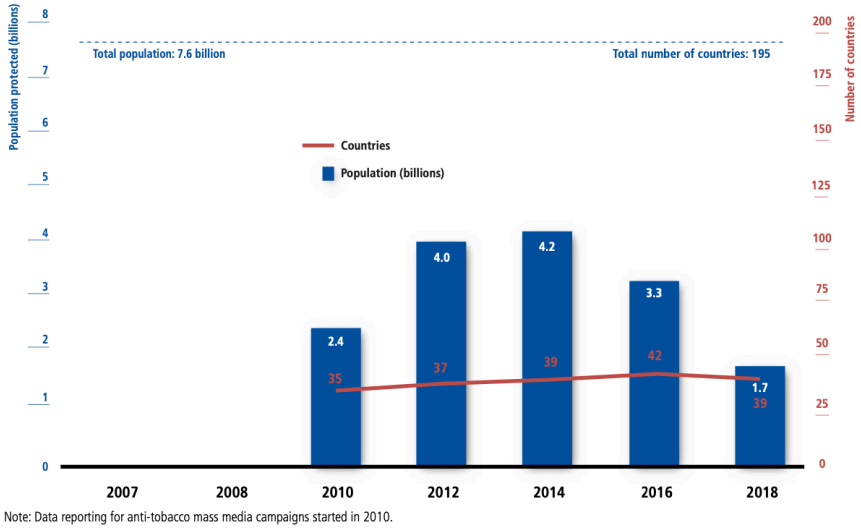
had an impact on their smoking. They reported that the warnings led them to smoke less or to quit smoking. In a survey in the Netherlands, smokers also reported that the warnings prescribed by the European Union motivated them to quit smoking. In Australia, pictorial warnings also had a positive impact on teenagers' intention to quit smoking.

In addition, illustrated warnings are particularly suitable for informing the less educated, who are less easily reached by other sources of information. Indeed, in China, in 2015, only 26.6% of adults know that smoking causes lung cancer, coronary heart disease and stroke. Finally, this measure does not cost the taxpayer anything, so it is very easy to implement and therefore represents a very attractive cost-effectiveness ratio.

Another means of informing people about the risks of smoking is the mass media campaign against tobacco. Mass media programmes include communication through television, radio, newspapers, billboards and posters. Their objectives are to encourage smokers to quit and to maintain abstinence among non-smokers. Such campaigns help to convince people of the urgent need for action. Properly designed and effective media campaigns have been proven to reduce tobacco consumption. They have the effect of discouraging young people from starting to smoke, increasing quit attempts for consumers and finally reducing the exposure of passive smokers.

By 2018, 39 countries worldwide had implemented campaigns with more than 7 appropriate features including radio and television. In addition, national campaigns with 5 appropriate features or 7 excluding radio or TV broadcasting were implemented in 28 countries. WHO's guidance for tobacco control through mass media campaigns is therefore widely applied around the world.

However, the number of smokers covered by these campaigns has been decreasing since 2014. After the implementation of its campaigns in 2010, the share of the world population protected by this measure had exceeded half of the total population, with 4.2 billion people protected by 2014. Since then, this figure has declined by almost 60%, to 1.7 billion in 2018. (Apprendix 6)



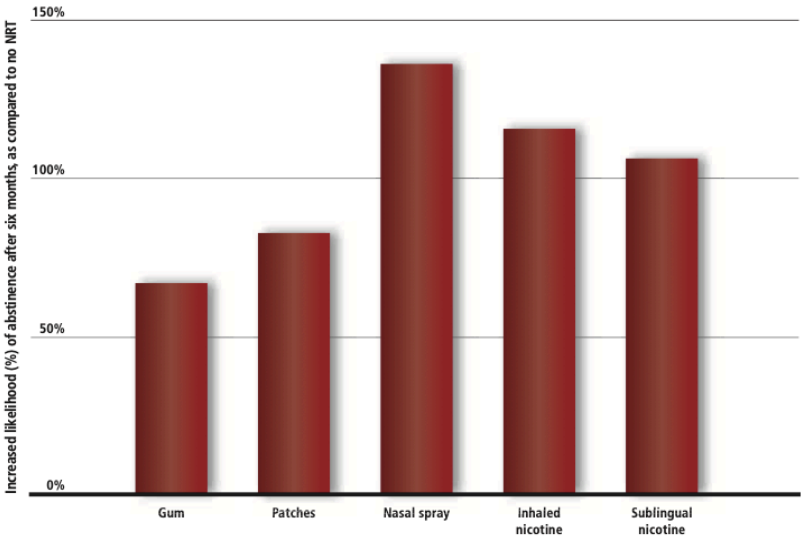
Appendix 6 : Progress in anti-tobacco mass media campaigns between 2010 and 2018

(Source : WHO)

Less than a quarter of the total population lived in a country that has had a major national anti-smoking campaign in the past two years. This is due to the very high cost of these mass media campaigns. The countries where they are most widely applied are middle- and high-income countries. Using mass media such as television, radio and newspapers is very expensive. Governments can try to convince their mass media to disseminate information about tobacco, but this is not always easy. Otherwise, they must pay for these services. This type of measure is very effective but it is not applied everywhere in the world and for very long periods of time.

C. Help to quit smoking

Most tobacco users are addicted to nicotine, an addictive substance, and find it difficult to quit, even if they try in a group. Those who know that smoking exposes them to disease and premature death are more likely to want to quit. Once the decision is made, most quit smoking without help, but help greatly increases smoking cessation rates. Between 90 and 95% of daily smokers who try to quit without any help recidivate. WHO therefore recommends that health systems be strengthened to provide counselling on smoking cessation as part of primary health care, telephone services and other community-based initiatives, combined, where appropriate, with easily accessible and inexpensive pharmacological treatment. Management of tobacco dependence is primarily the responsibility of a country's health system, including government, social security, NGOs and private clinical services. The pharmacological treatment offered to smokers who want to quit is called Nicotine Replacement Therapy (NRT). There are several: gum, nasal spray, patches, inhaled nicotine and sublingual nicotine. It is observed that the nasal spray is the most effective NRT. NRTs represent factors that facilitate abstinence from smoking after six months.
(Appendix 7)



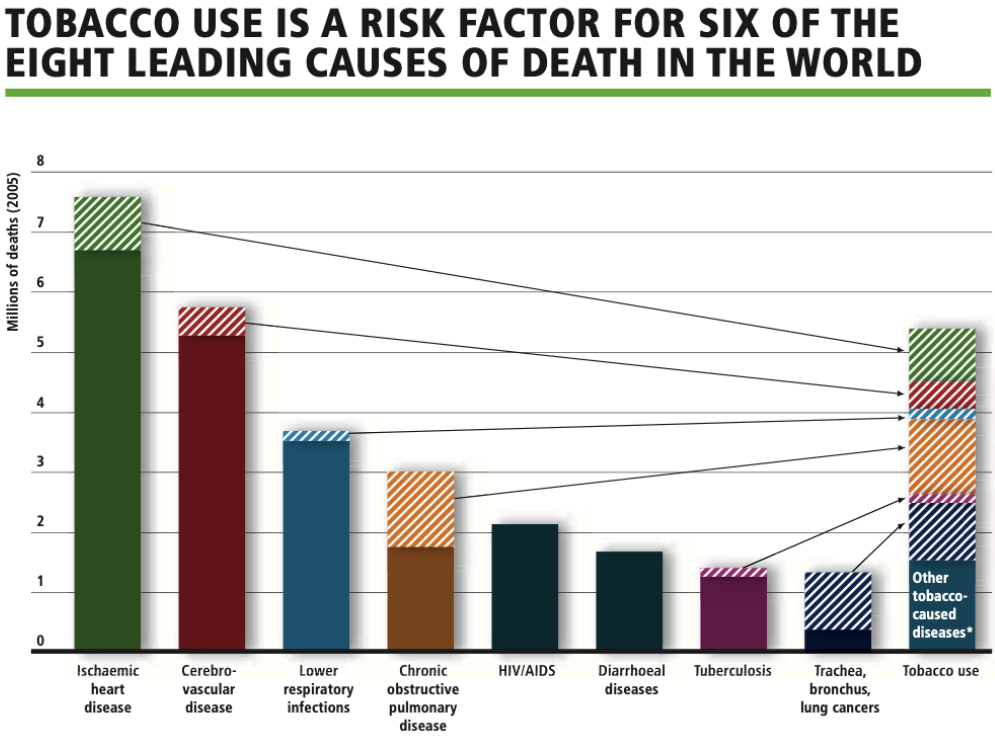
Appendix 7: Effects of Nicotine Replacement Therapy (NRT) on smokers' six-month abstinence

(Source: WHO)

IV. Consequences of successful smoking policies

A. Public health

Tobacco is the world's leading cause of preventable death. On average, one out of every two regular smokers dies as a result of tobacco use. In fact, active or passive smoking causes multiple diseases. Lung cancer is, in 80% to 90% of cases, linked to tobacco consumption. It can also cause cancers of the throat, mouth, lips, pancreas, kidneys, bladder and uterus. Smoking is one of the main factors in heart attacks and strokes.



Appendix 8 : Eight causes of death in the world

(Source : WHO)

Since the discovery of the harmful health effects of smoking in the 1960s, numerous studies have been conducted to quantify the economic cost of this scourge on society. It has been possible to quantify these costs in different countries around the world, those with high, middle and low incomes. Data from 152 countries were collected, representing 97% of the world's smokers. The economic costs of smoking are divided into two parts, direct costs such as hospitalization costs and indirect costs such as productivity losses due to morbidity and mortality.

The economic cost of smoking-attributable diseases, PPP international dollars

	Direct Cost		Indirect Cost		Total Cost	
	SAHE	THE	Disability	Mortality	Total	GDP
	(PPP$ mn)	Per cent	(PPP$ mn)	(PPP$ mn)	(PPP$ mn)	Per cent
High-Income	369 002	6.5	275 097	478 833	1 122 932	2.2
Upper-Middle-Income	75 031	4.0	74 456	205 091	354 578	1.2
Lower-Middle-Income	21 236	3.9	91 447	246 365	359 048	1.7
Low-Income	2011	4.0	5272	8300	15 583	1.2
World	**467 279**	**5.7**	**446 273**	**938 589**	**1 852 141**	**1.8**
Africa	4566	3.5	5571	9317	19 454	1.0
Americas	239 559	6.7	159 445	226 886	625 890	2.4
Eastern Mediterranean	6583	2.0	13 291	24 807	44 680	0.6
Europe	141 787	6.6	134 552	339 503	615 843	2.5
Southeast Asia	15 299	4.1	83 880	220 320	319 499	1.8
Western Pacific	59 485	3.8	49 534	117 756	226 775	0.9

- GDP, gross domestic product; THE, total health expenditure; PPP, purchasing power parity; SAHE, smoking- attributable health expenditure

Appendix 9 : The economic cost of smoking-attributable diseases in international dollars

(Source : WHO and American Cancer Society)

We have more precise data on these costs thanks to the work of Mark Goodchild and Edouard Tursan d'Espaignet, WHO affiliates, and Nigar Nargis, affiliated with the American Cancer Society. In their research paper, they explain that direct costs include the costs of smoking-attributable diseases such as Indirect costs include the cost of physical illness and loss of labour. Contrary to popular belief, these costs are much higher than direct costs. In 2012, there were 2.1 million tobacco-related deaths; this figure actually reflects only part of a total of 5 million deaths directly attributable to smoking. At that time, 12% of total deaths in the world's working-age population were due to smoking-attributable diseases. The regions of the world where this proportion is highest are Europe and the Americas. The total cost accounted for by the three researchers in 2012 was $1.852 billion in purchasing power parity, which represented 1.8% of annual global GDP. However, more than two thirds of these costs are shared between the two continents mentioned above, Europe and the Americas. This can be explained by the high rate of smoking within these continents. The share of the total cost associated with indirect costs is 75% with a total of 1,384.8 billion PPP dollars. Within this share, there are two elements - disability and mortality - which have a greater or lesser weight on the economy. Mortality costs are the costliest with a total of $938.6 billion PPP each year, accounting for almost 68% of total indirect costs and more than half of the total costs of smoking each year. Disability

costs almost as much as direct costs, with $446 billion P3 each year compared to $467 billion P3. Health expenditures attributable to smoking account for 5.7% of total health expenditures each year. Nearly 80% of the total economic cost of these expenditures occurs in high-income countries, where it accounts for 6.5% of total health expenditures. The economic burden is therefore very high overall, which confirms the importance of acting as quickly as possible to limit this burden, particularly within the countries of Europe and the Americas. Indeed, the total costs attributed to smoking-related diseases represent 2.5% and 2.4% of the annual GDP of these regions respectively. These data are even higher for some countries such as Eastern European countries for which these costs correspond to 3.6% of their annual GDP. The United States and Canada have a share of 3% of their GDP associated with these expenditures, unlike the rest of the countries of the Americas, for which this share is only 1%. The areas with particularly high expenditures are those with the highest smoking prevalence and intensity of tobacco consumption. This also explains the rather low statistics recorded for the countries of Africa, the Eastern Mediterranean and the Western Pacific. In addition to its expenditures, related to direct and indirect costs, there are also expenditures made to promote tobacco control. The dissemination of information, especially mass media campaigns, and subsidies to pay for some of the tobacco substitutes such as nicotine patches, represent huge costs to States. The final economic result is that smoking costs the state more than it brings in. Taxes imposed help to reduce this gap in two ways. First of all, taxes are revenues, so they directly make up for part of the expenses. But also, taxes are also put in place to reduce health costs by encouraging consumers to stop or reduce their consumption.

COUNTRY	
DEBIT	***CREDIT***
- *Direct and indirect health care costs* - *Tobacco control expenditures* - *Spending on the environment*	- *Tax revenues*

B. Producers, Manufacturers and Retailers

China National Tobacco Corporation (CNTC) is China's national company responsible for regulating tobacco consumption and production. It has a monopoly on the manufacture and sale of tobacco in the People's Republic of China. Exact figures are not known, but CNTC is estimated to produce 40% of the world's cigarettes annually. It distributes more than 900 different products, the best known being Hongtashan cigarettes. It employs 510,000 people at various sites in 33 Chinese provinces. Revenues from production contribute 11% of the country's tax revenues. China, with China Tobacco, is the world's largest

tobacco producer, ahead of Indonesia. Domestic consumption accounts for 40% of global consumption. China's 350 million smokers consumed 2,500 billion cigarettes in 2013, three times more than the production volume of the leading US manufacturer, Philip Morris International.

Philip Morris International is one of the largest cigarette manufacturers in the world, with 73,500 employees. It owns six of the world's fifteen largest cigarette brands, present in more than 180 markets, including Malboro, the world's number one. They operate 38 cigarette production sites in 32 different countries.

Smoke-free policies are clearly an impediment to the prosperity of these businesses. In 2012, several of the tobacco-producing countries are launching an appeal against Australia before the Dispute Settlement Body of the World Trade Organization over its decision to impose the plain pack of cigarettes. Philip Morris International has also launched an appeal against Australia under a free trade agreement between Australia and Hong Kong. The Hong Kong-based Philip Morris Asia subsidiary had bought Philip Morris Australia a few months before Australia's neutral pack law was enacted. But the various appeals were lost by PMI. Indeed, the impact of neutral packages on the marketing and image of tobacco and cigarette producers is very negative. They lose a large part of their differentiation since the package is the same for all brands, they remain only the name of the brand but with the same typography and colour for everyone. This loss of brand image and differentiation in packaging leads to a loss in sales volume. Those who already smoke are accustomed to a brand and are likely to remain loyal to it, whereas for new smokers it is difficult to differentiate and be attracted to one brand more than another since there is no longer any marketing. This inability to exploit its marketing, the prohibition for smokers to smoke anywhere, the deterrent messages and the taxes that are only increasing represent a loss of sales volume for tobacco companies.

One wonders what these businesses can do to compensate for these losses. By relying on the creation and maintenance of a certain form of addiction that government tobacco control policies are trying to address, businesses must bounce back.

As far as tobacco producers are concerned, they are farmers, so they can turn to other types of crops and production.

For cigarette manufacturers, as a first step, it is possible to save time by, for example, trying to buy out smaller companies to gain more market share.

It is also possible to fight through lobbying to delay or succeed in having all regulations and other arrangements put in place by governments cancelled. Philip Morris International has a team of more than 400 scientists, engineers and technicians developing products that are potentially less harmful than cigarettes at their research and development centers in Switzerland and Singapore. They seek to replace cigarettes with smokeless products. In 2017, they began developing and marketing products that are alternatives to cigarettes, including heated tobacco. Heated tobacco involves the use of tobacco sticks that are inserted into a device with a heating element powered by a battery. This heating element heats these mini tobacco cigarettes in order to release an aerosol containing nicotine in particular. Unlike cigarettes,

there would be only partial combustion. Independent scientific studies are underway to judge the harmfulness of other products but heated tobacco, like the electronic cigarette, do not convince scientists at this time.

A solution would also be to find an activity that has greater durability, a more promising future ahead of it and for which they would have a proximity of know-how that would make them legitimate. For example, oil companies can be legitimated for energy and chemicals. The former oil group Société Nationale des Pétroles d'Aquitaine, which later became Elf Aquitaine, was the main competitor of the French leader Total, which specialized in the exploitation of hydrocarbon deposits, refining and distribution, but also had significant interests in chemicals and pharmaceuticals. In 1965, Jean-François Dehecq joined the Société Nationale des Pétroles d'Aquitaine in the economic services department and then as an operations engineer. With Jean-René Sautier, he founded the Hygiene and Health Subsidiary Elf Sanofi in 1973. Today, Sanofi is the French leader in the health sector. In 2000, Total acquired Elf Aquitaine. But Sanofi becomes independent and after more than 300 mergers and acquisitions, it is the 2nd largest pharmaceutical group in the world and 1st in Europe. An oil company has therefore the opportunity to convert to energy or chemicals. The domain of a cigarette manufacturer can be pleasure products such as alcohol or cannabis.

Cigarette manufacturers have the choice of converting, diversifying or disappearing.

The retailers who would suffer from the situation would be retailers specialising in the sale of cigarettes, as is the case in France with tobacconists. They would then have the choice of becoming a small multi-product retailer where they would rely on other products.

For those who do not specialize, they would only have to concentrate on the other products on sale and see what substitutes there are for chewing gum, candy and drinks.

The more specialized businesses may eventually disappear.

V. Conclusion

In the face of the tobacco epidemic that kills a huge number of people every year, governments are forced to respond. There has been an increase in tobacco control measures and awareness around the world. Possible measures in this fight are therefore bans, dissemination of information and taxation.

In terms of effectiveness, the introduction of tobacco taxes is the most effective. These taxes apply directly to the sale of the cigarette packet because it increases the price of the packet. They therefore act as a disincentive to consumers and induce them to reduce or even stop their consumption altogether. The percentage of taxation is specific to each country. Thus the results are more or less positive depending on the country. The WHO recommends a significant and regular increase in these taxes. Indeed, even if the overall result is positive since tobacco consumption is decreasing, some countries, such as China, do not tax enough to have a real impact on the price and therefore on consumption. The more expensive a packet of cigarettes is in terms of purchasing power, the fewer smokers there will be.

Another way of reducing the number of consumers in the world is to push countries to introduce bans: bans on smoking in public or collective places, bans on advertising, promotion or sponsorship and bans on the sale of cigarettes to minors, i.e., depending on the country, at least 18 or 21 years of age. The purpose of these bans is to limit the number of new smokers and passive smokers. Banning smoking in public places protects passive smokers and puts more constraints on current and future smokers. The advertising ban ensures that new smokers are not incited to smoke. And a ban on sales to minors reduces the number of new teenage smokers. In conclusion, bans play an important role in tobacco control because they limit the number of new smokers.

In addition to these measures, it is also important to communicate the risks through the dissemination of information. Too few people are still aware of the risks of smoking. The aim is to make countries and citizens aware of the dangers of smoking. Illustrated warnings and prevention messages allow people to see the risks associated with tobacco consumption and tend to dissuade them. These measures still lack effectiveness and represent very high costs. They are therefore not a very good value for money.

The consequences of a successful smoke-free policy on the economies of countries would be positive. The reduction in the number of consumers represents considerable savings for nations. Taxes are a source of revenue for countries, but compared to the costs and expenses generated by smoking, they are minimal. Reducing the number of consumers would reduce direct and indirect health-related expenditures. Moreover, if more and more taxes are levied, the measures could be increasingly developed since the money collected could be reinvested in the fight against tobacco. With an effective policy, the number of smokers will decrease, so health-related expenditure will decrease.

In conclusion, existing tobacco control policies around the world have a real impact on consumers. Nevertheless, it is necessary to adapt these measures to each country.

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