Department of Economics and Finance

Chair of Public Economics

Italian Government Intervention Over Conventional and Innovative Tobacco Products

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Introduction

"I firmly believe that a future without smoking can be a reality. Today we have the scientific and technological ability to offer smokers better alternatives that have the potential to reduce the harmful consequences of smoking"[1]. These words by André Calantzopoulos, CEO of Philip Morris International, highlight the innovative strategy adopted by the multinational tobacco companies, such as British American Tobacco and Philip Morris itself. The trends in the last decade have shown the profitability of the e-cigarette market and after a few years of monitoring, tobacco giants have started developing and releasing their own products.

The choice of taking IQOS as a case study derives from the willingness to understand its effects on individuals' health and analyze the Italian government intervention on this new tobacco product. In order to do so, I divided this paper in two chapters: the first studies the Italian tobacco industry, the second makes an in-depth analysis of IQOS, the heat-not-burn tobacco product introduced in 2014 by Philip Morris International.

Chapter one is divided in three Sections, each fundamental in order to understand the context in which the paper develops. The first section provides a theoretical definition of tobacco products in welfare economics by underlining the relevant characteristics that make tobacco a demerit good. Then, the negative externalities produced by demerit goods are pointed out in order to justify the government intervention on tobacco products. Furthermore, two opposite perspectives are given on how the government should act in the demerit goods' regulation: a liberal one that suggests that individuals should choose what should or should not be consumed on the basis of their personal needs and wants, and a paternalistic one according to which the government should intervene in the best interest of citizens regulating the consumption of the tobacco products. The second section provides a short overlook of the tobacco industry analyzing: the various forms of monopoly, the leading tobacco producers worldwide, the equilibriums that characterize the legal monopoly instituted by the Italian government and the inefficiencies associated to it. The third and most important section defines the theoretical features of optimal taxation, the taxation of traditional tobacco products in Italy, the tax incidence and the other restrictions applied by the Italian government to these products.

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[1] *Extracted from the interview of André Calantzopoulos with Kathimerini English Edition editor in chief Tom Ellis at the Metropolitan Club of New York on December 30th, 2017.*

Chapter two focuses on IQOS, the heat-not-burn tobacco e-cigarette released by Philip Morris International and firstly introduced in Italy and Japan in 2014. The aim of this second chapter is to understand how this new generation products are taxed, and which are the effect of IQOS on individuals' health. The first section is devoted to the introduction of the product, its functioning and the sales strategy applied by Philip Morris International. The second section focuses on the debate over the health effects of IQOS and the Italian government intervention over Heets – the tobacco sticks smocked through the e-cigarette -. Furthermore, the section compares the taxation of IQOS with the one applied to other heat-not-burn tobacco products and to the inhalation liquid e-cigarettes. The last section provides a rough analysis of the prospects of the tobacco industry.

Chapter 1
The Italian Tobacco Industry

This first chapter will provide a detailed definition and classification of tobacco products in welfare economics, then, the focus will be moved on the tobacco product industry in order to understand who the main actors are, and which is the industry's market form. Finally, the spotlight will be on the Italian government intervention, with a detailed look to the application of taxation theory, the tax incidence and the other regulations imposed on tobacco products consumers.

1.1. Tobacco products in welfare economics

This first section concerns the tobacco products in welfare economics: it begins with a definition of tobacco products, that in welfare economics are part of the demerit goods, then is moves to the externalities caused by these products and terminates with an open debate over two opposite perspectives on how to regulate the consumption of the tobacco products.

1.1.1. Tobacco products as demerit goods

In economics, a demerit good is a good whose consumption is considered to be harmful, degrading or otherwise socially undesirable due to the perceived negative effects that can arise for its consumers. Another important characteristic is that negative externalities arise from demerit goods as the social benefit that arises from their consumption is significantly lower than the private benefit, creating a notable deadweight welfare loss.

In the absence of externalities, the efficient market equilibrium would be at the intersection between the marginal social cost curve and the marginal social benefit curve. However, the existence of a negative externality from consumption due to the demerit goods causes the marginal private benefit curve to be higher, underlying an excess demand for the product. A direct consequence of this excess demand is the rise not only in the quantity demanded and hence, also produced, but in the price paid by consumers too.

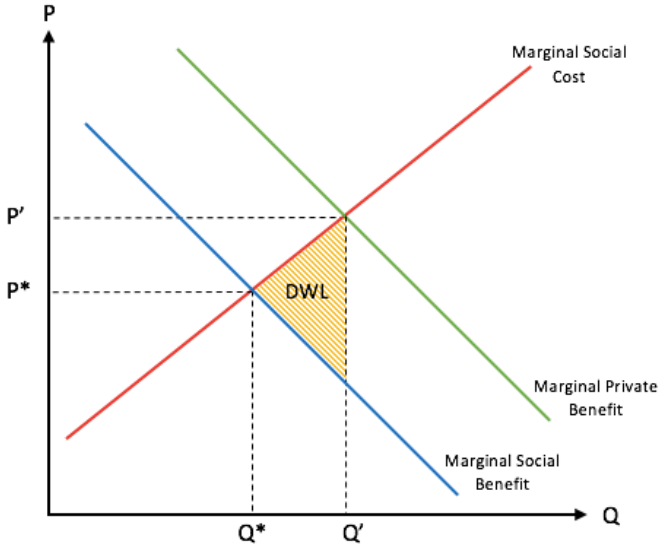

Figure 1.1 - Negative externality from consumption of demerit goods

In the absence of externalities, the efficient market equilibrium would be at the intersection between the marginal social cost curve and the marginal social benefit curve. However, the existence of a negative externality from consumption due to the demerit goods causes the marginal private benefit curve to be higher, underlying an excess demand for the product. A direct consequence of this excess demand is the rise not only in the quantity demanded and hence, also produced, but in the price paid by consumers too.

Demerit goods include cigarettes, alcohol, drugs, gambling, prostitution and in some cases also junk food. Tobacco products are classified as demerit goods as they cause dangerous illnesses to whoever consumes them and to people who surround smokers. Among the various diseases caused by tobacco, the most dangerous ones are lung cancer, early menopause, chronic obstructive pulmonary disease (COPD), heart disease, infertility, erectile dysfunction and blood cancer. Studies from the "Istituto Superiore di Sanità" show that tobacco products are responsible for 3.5 million deaths each year throughout the world (one death every nine seconds) and that smoke-related pathologies account for 10% of the adult population. The social costs attributed to the tobacco addiction are massive and can be divided into tangible costs such as prevention, medical assistance, loss in productivity due to illness or death, pollution and early retirement assistance, and intangible costs for instance pain for smokers and passive smokers.

Governments typically restrict the consumption of these products through policies such as taxes or direct government control in a Paternalistic fashion. Government Paternalism is intended as

the effort by the State to limit the autonomy of citizens in order to promote their own safety. It is based on the concept that, in some cases, people may not act in their own best interests, even when they are fully informed. In the last century, demerit goods consumption has been subject to heavy taxes or illegalization. In a number of areas, such as government policies towards drugs and the US liquor prohibition in the 1930s, an extreme paternalistic position over demerit goods has been taken, banning the consumption of those demerit goods. Although most argue that the state has certain basic responsibilities towards individuals, some economists and social philosophers go upstream, claiming that once the government assumes a paternalistic role, special interest groups (such as multinationals), will attempt to exploit government intervention to further shape individuals' consumption and behavior habits. This point of view that seeks to maximize political freedom and autonomy, emphasizing freedom of choice and individual judgement is called libertarianism and has grown in support since the second half on 1990s.

1.1.2. Negative externalities caused by tobacco products

Instances in which one individual's actions impose a cost on others are referred to as negative externalities. Whenever such externalities exist, the resource allocation provided by the market will not be efficient. Due to individuals not bearing the full cost of the negative externalities they generate, they will engage in an excess amount of such activities, causing a market failure. Market failures arise whenever a resource allocation is not Pareto optimal or Pareto efficient, that is, whenever the property "that no one can be made better off without someone being made worse off"[2] is not respected and a Pareto improvement can be achieved.

The relationship between the Pareto principle and efficient markets is described by the fundamental theorems of welfare economics. The first theorem states that if the economy is competitive, it will also be Pareto efficient. The second theorem affirms that every Pareto efficient resource allocation can be obtained through a competitive market process with an initial redistribution of wealth, meaning that a Pareto optimal allocation of resources can be provided even by means of a decentralized market mechanism. This in turn highlights the possibility to achieve an efficient equilibrium through the market, where enterprises compete in order to maximize profits. However, this utopian perspective collapses whenever market failures such as public goods, incomplete markets, information failures, unemployment, inflation and externalities are included in the picture.

[2] *Economics of the Public Sector, Joseph E. Stiglitz & Jay K. Rosengard (2015)*

There are two types of externalities: positive and negative ones. A negative externality is a cost suffered by a third party as a result of an economic transaction. A positive externality is a benefit conferred to a third party by the actions of an individual. Externalities can have two opposite effects on the welfare of the society: a positive externality causes a welfare gain as an individual receives a certain private benefit that is lower than the one acquired by the community, while the opposite is true for a negative externality as the individual gains a benefit to the detriment of the society. It is straightforward then that the most common outcome will result in an overproduction of goods generating negative externalities and an undersupply of goods generating positive externalities. Furthermore, externalities whether positive or negative, imply a private-social cost differential or a private-social benefit differential, depending on the fact that the externality arises from the production or the consumption of the good, generating a potential welfare gain or a deadweight loss. A positive externality from consumption (*Figure 1.2*) arises whenever the consumption of the good provides a higher utility for the society than for the individual who consumes the good. Merit goods such as public parks, education or health care are typical examples of goods which provide positive externalities from consumption. By contrast, the opposite is true for demerit goods like alcohol, cigarettes gambling or drugs which provide negative externalities from consumption – shown in *Figure 1.3* -, and hence, a marginal private benefit for the consumer that is higher than the marginal social benefit. *Figure 1.4* and *Figure 1.5* show the positive and negative externalities that arise from the production of certain goods. The clear difference between externalities form consumption and production is in the way that these goods affect the population by adding or deducting a cost or providing a marginal private-social benefit differential.

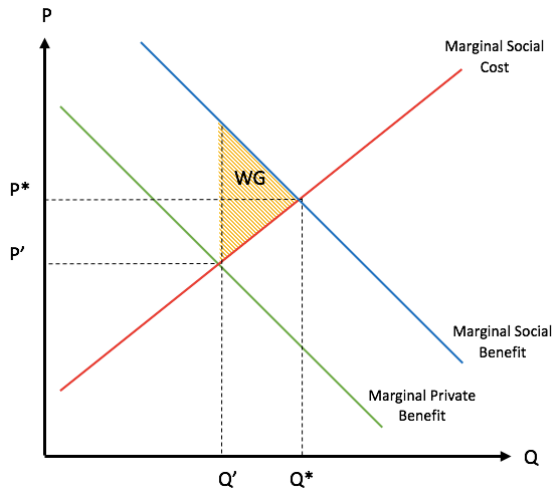

Figure 1.2 - Positive Externality from consumption

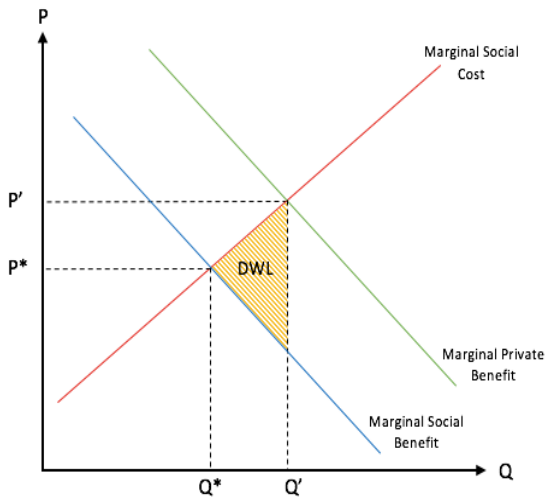

Figure 1.3 - Negative Externality from consumption

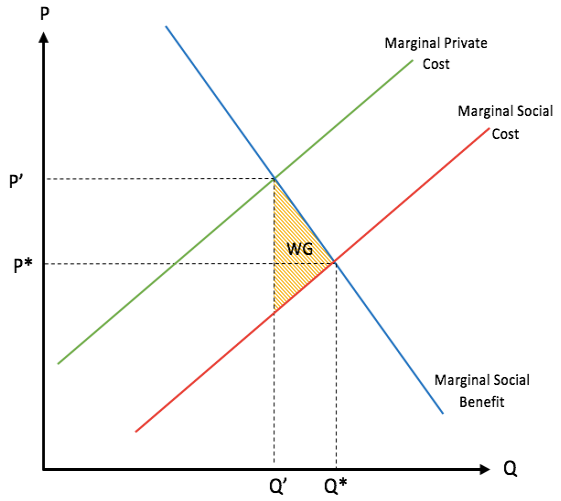

Figure 1.4 - Positive Externality from production

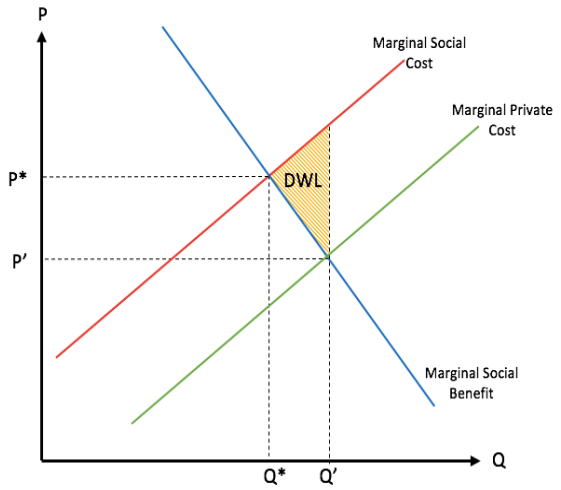

Figure 1.5 - Negative Externality from production

As we mentioned before, tobacco products provide a negative externality from consumption and have a strong impact on the body, causing painful and lethal diseases. Those effects are not observed only on tobacco consumers but also on whoever surrounds them. It is clear nowadays, after many studies on the subject, that cigarettes contain many noxious components such as butane (usually used as a lighter fluid), acetic acid, cadmium (employed for batteries), stearic acid (component of candle wax), hexamine (common barbecue lighter), arsenic, methanol, toluene (an industrial solvent), ammonia and carbon monoxide. All these toxic substances are just few of the elements we inhale every time a cigarette is lighted and smoked, even if in lower quantities with respect to smokers. In addition, these notorious carcinogenic substances contained in tobacco products bear an economic effect on public health, as not only smokers cause a health damage to the whole society, but also provide a cost as they have to be aided for the numerous diseases correlated to smoke. As a proof, a research published by the "Osservatorio sul Fumo, l'Alcol e la Droga" underlines how, in 1999, in Italy, 14,9% of the hospital recoveries were due to smoke habits and related diseases.

1.1.3. Welfarism and Paternalism

Different approaches have been discussed by economists on how to solve the market inefficiencies caused by externalities. One dominant view in the eighteenth century, which was particularly persuasive among economists, was that the government had the duty to actively promote trade and industry. Advocates of this view were called mercantilists. The opposite view was proposed by economist Adam Smith in his "The Wealth of Nations", first published on March 9th, 1776. His ideology influenced economist of his generation so much that a new doctrine, known as laissez faire was widely approved by nineteenth-century economists and governments. This doctrine, promulgated

by John Stuart Mill and Nassau Senior, proposed that the government should not attempt to regulate or control private enterprises, leaving the private sector undisturbed. Nonetheless, some important economists, that have left their mark on history such as Karl Marx, Robert Owen or Jean Charles Léonard de Sismondi, shocked by the grave inequalities that they saw around them, developed theories that not only attempted to uphold government intervention, but also suggested ways in which society might be reorganized. Some of these countertrend economists - also defined as "Social Thinkers" – like Marx, advocated a greater role for the state in controlling the means of production, while others like Owen proposed an organization of the society in smaller groups that could act cooperatively for their mutual interest.

Nowadays, there is widespread agreement that markets and private enterprises lay at the heart of e successful economy, but that the government plays an important role as a complement to the market. The precise nature of that role, however, remains a source of contention, differing both between countries and within nations over time.

For what concerns the influence of the government over tobacco consumption – but more in general over demerit goods -, two different perspectives can be analyzed: welfarism and paternalism. Welfarism is based on the idea that actions should be weighted in terms of their consequences, that is, on the basis of the utility extracted by the individual. Nobel prized economist Amartya Sen defined welfarism as "the judgement of the relative goodness of alternative states of affairs must be based exclusively on, and taken as an increasing function of, the respective collections of individual utilities in these states"[3]. Following this logic, advocates of tobacco consumption argue that the act of smoking confers a certain level of utility to smokers who, even if aware of the diseases caused by cigarettes, prefer not to confer to much importance to these side effects. Moreover, even if the exhalations caused by cigarettes are inhaled also by non-smokers, the side effects of passive smoking are lighter than the ones caused to tobacco users, and hence, in a utilitarian fashion, cigarettes smoking should not be prevented as it increases way more the utility of smokers than it decreases the utility of non-smokers. This perspective over tobacco advocacy is widely criticized for many reasons: first, as tobacco users are a minority (only one male every four and one female every twenty in the world actively smoke), second as the side effects of smoking cause not only a deterioration of the health status but bear also an economic effect as smokers must be aided by the government as they get sick. Paternalism, on the other hand, is the most widely accepted perspective and nowadays, regulation over tobacco

[3] *Extracted from "Utilitarianism and Welfarism" in The Journal of Philosophy vol. 76, No. 9, published in September 1979.*

consumption is based on this conception. Paternalism is defined as "thinking or behavior by people in authority that results in them making decisions for other people that, although they may be those people's advantage, prevent them from taking responsibility for their own lives"[4]. When put into practice, paternalism can assume different forms: it can be soft and hard, pure or impure and moral or welfare. The difference between soft and hard paternalism lies in the willingness behind an action and can be explained by a notorious example by economist John Stuart Mill: if a person is about to walk on a precarious bridge and it is not possible to inform this individual about the danger he is incurring as he doesn't speak our language, according to soft paternalism it is optimal to force this person to not cross the bridge until he is aware of the danger, while hard form paternalism implies that the ban should be imposed even if the individual knows that the bridge is unstable. Paternalism is said to be pure whenever the person or people having their autonomy taken away are those being protected, while it is impure when the class of people whose liberty is constricted is wider than the group of individuals thereby protected. Moral paternalism is based on ethical considerations while welfare paternalism is guided by welfare improvements considerations. Supporters of moral paternalism argue that prostitution should be banned as it is considered to be unethical even if it would convey to the individual the possibility to live decently and have his or her health protected. On the other hand, advocates of welfare paternalism argue that even if it is considered to be an unethical profession, it should be legalized as it would increase the health safety of the profession and would also increase government revenues, as taxes could be levied. Applying the definition of the different forms of paternalism to tobacco products, we can conclude that the consumption of these goods takes the soft paternalism form as information over the side effects of smoking are widely advertised but its consumption is not banned. Hence, people are continuously informed about the dangers related to smoking but are not forced to quit their habits. Some extremist advocates of government intervention underline how information is inefficient in reducing drastically these bad habits and that a hard form paternalism should be applied over tobacco products.

1.2. Monopoly analysis

The second section describes the types of monopoly that are most famous in economic theory, then it provides information over the main actors of the tobacco products industry, analyzing the multinationals that dominate the market and finally, it provides an economic analysis of the optimal

[4] *Definition from the Cambridge English Dictionary*

production choice that a monopolist faces when he wants to extract the highest possible profit from every single unit produced.

1.2.1. Types of monopoly

A monopoly is a market form, characterized by a lack of economic competition in the production of a specific good or service and by the absence of viable substitute goods or services. In many jurisdictions, monopolies are restricted by competition laws. Nevertheless, in some particular cases monopolies are the only viable market form, hence, they are accepted but heavily regulated. Two forms of monopoly exist, the natural monopoly and the government-granted monopoly – also known as *de jure* monopoly -.

A natural monopoly occurs whenever the market of a specific good or service is characterized by increasing returns to scale over the relevant range of output and high fixed costs. Hence, in the absence of government intervention, the market will naturally evolve into a monopoly as it is cheaper for a single, large corporation to supply the whole market than for many small companies. A typical example of a natural monopoly can be identified in the nuclear power industry, where usually, a single company serves the whole market.

A government-granted monopoly consists in a normative provision that confers to a single enterprise the right to exercise a specific economic activity and, simultaneously inhibits all other competitors from carrying out the same economic activity. This type of monopoly can be divided into two categories: fiscal and non-fiscal, depending on the interest that induces the government to institute a monopoly for himself or another public entity. If the government-granted monopoly is fiscal, the government aim is to increase the tax revenues, like in the case of tobacco products and national lotteries.

1.2.2. The "Big Six"

The tobacco products' industry is subject, in most jurisdictions, to a government-granted fiscal monopoly, where the government grants only to himself the possibility to sell the tobacco products. However, while the sale of the products is completely managed by the government, the production of these goods lies in the hands of six powerful multinationals who supply a 346.2 billion revenue world market with their products. These "Big Six" companies are: Philip Morris, British American

Tobacco, Japan Tobacco International, Reynolds American, Imperial Tobacco and Altria. Moreover, these multinationals alone, are responsible for the production of over six trillion cigarettes every year, 43% of which are produced in China in order to cut costs and exploit the underpaid Chinese labor force.

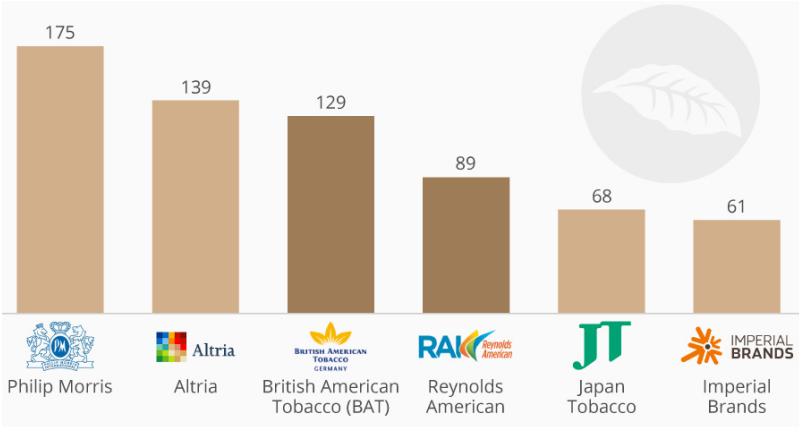

Figure 1.6 - Listed tobacco companies worldwide in 2016, based on enterprise value (in billion U.S. dollars). Enterprise value is defined as market value of common stock plus market value of preferred equity, market value of debt and minority interest, writing off cash value and current investments –Source: Seeking Alpha.

This astronomic quantity of revenues, says World Health Organization, is due to a sustained marketing campaign and to the entry barriers provided by the high fixed costs and the increasing return to scale. Due to the economic power of these six multinationals, the tobacco industry is a full-fledged lobby, that has achieved a strong influence over the legislation of many countries.

1.2.3. Economic Analysis

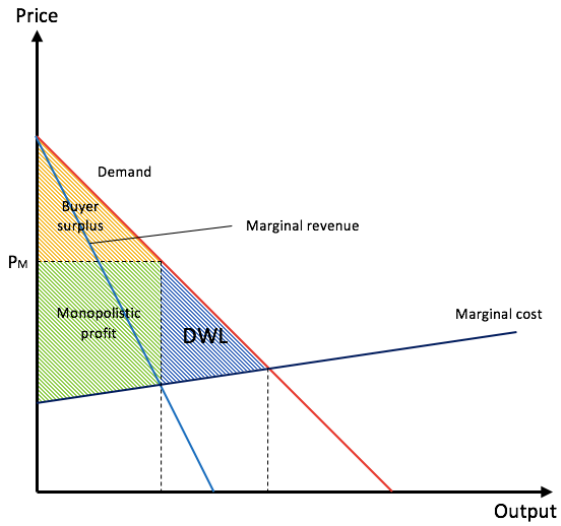

Figure 1.7 - Market equilibrium under monopoly

In the absence of competition, the monopolist becomes a price setter, this means that he has the opportunity to set the price at a certain level where he can achieve the highest possible profit for himself. Hence, the monopolist sets the output level where the marginal cost of producing one more unit equals the marginal revenue of producing one more unit, thus choosing simultaneously the price and the quantity to be produced.

Algebraically, considering *p(y)* as the inverse demand function and *c(y)* as the cost function, *r(y)=p(y)y* will be the monopolist's profit function, who will maximize his profits *max r(y)-c(y)*. The optimality condition is straightforward: at the optimal choice of output we must have marginal revenue equal to marginal cost. If marginal revenue would be lower than marginal cost it would pay the firm to decrease output, since the savings in cost would more than make up for the loss in revenue. If the marginal revenue were greater than the marginal cost, it would pay the firm to increase output. Finally, the only point where the firm has no incentive to change output is where marginal revenue equals marginal cost.

1.2.4. Inefficiencies

In a perfectly competitive market, each firm would set the price at the marginal cost of producing one more unit, achieving a Pareto efficient equilibrium. Instead, the monopolist creates a deadweight loss maximizing his profits by setting the marginal revenue equal to the marginal cost. A monopolist produces less than the competitive amount of output and is therefore Pareto inefficient. The inefficiency of the monopoly can be quantified measuring the deadweight loss, that is the welfare loss for the consumer who has to pay a higher price for the same good or service. The deadweight loss can be quantified by measuring the variation in the profits of the firm – the change in the producer's surplus – that measures how much the owners would be willing to pay in order to set a higher price, and the change in the consumers' surplus, which measures how much the consumers would have to be paid to compensate them for the higher price. Thus, the difference between these two numbers should give a sensible measure of the net benefit or cost of the monopoly.

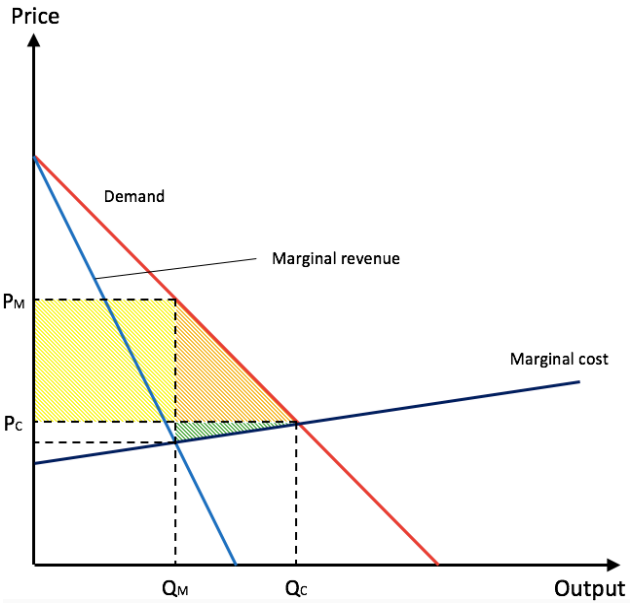

Figure 1.8 – Inefficiencies caused by the monopoly

The monopolist's surplus goes up by the yellow rectangle due to the increase in price from Pc to Pm, but at the same time it goes down by the small green triangle as he is decreasing the amount of output sold. Similarly, the consumers' surplus goes down by the yellow rectangle and up by the green one. The yellow area represents a transfer of wealth from the consumer to the monopolist. Finally, we can conclude our analysis by stating that the deadweight loss due to the change from a perfectly competitive market to a monopolistic

one, is represented by the sum of the areas of the orange and the green triangles.

The inefficiency captured by the deadweight loss provides a measure of how much worse off people are, paying the monopoly price rather than the competitive price. The deadweight loss due to monopolistic pricing shows the same effects associated with a tax imposed on the sale of a good or service, the only difference is that in the case of a monopoly, the abnormal profit is gained by the monopolist, while the revenues due to a tax are collected by the government.

1.3. Government Intervention

The third and last section deals with the principles of taxation then, it explains how the taxation principles are applied on the tobacco products by the Italian government, suddenly it describes who bears the tax burden and the incidence of the taxes applied on those products, ultimately, it explains other methods that the Italian government applies in order to restrict partially the consumption of the tobacco products.

1.3.1. Taxation theory

A tax is a mandatory financial charge imposed upon a taxpayer by a public entity. Taxation is compulsory and is levied in order to support special interest groups, the provision of public goods or to discourage noxious behaviors. Taxes can be divided into two broad categories: direct taxes on individuals and corporations; and indirect taxes on a variety of goods and services.

Governments, in deciding how best to raise the revenue they require, have looked for general principles. There are five accepted features of a "good" tax system[5]:

I. *Economic efficiency:* the tax system should not interfere with the efficient allocation of resources.
II. *Administrative simplicity:* the tax system ought to be easy and relatively inexpensive to administer. Good tax systems rely on self-compliance, so the system should be designed to make compliance easy and voluntary.

[5] *Extracted from "Economics of the Public Sector" fourth edition written by Joseph E. Stiglitz and Jay K. Rosengard, published in 2015 by W. W. Norton Company, Inc.*

III. *Flexibility:* the tax system ought to be able to respond easily, in some cases, automatically, to changed economic circumstances.

IV. *Transparent political responsibility:* the tax system should be designed so that individuals can ascertain what they are paying and evaluate how accurately the system reflects their preferences.

V. *Fairness:* the tax system ought to be fair in its relative treatment of different individuals.

A sixth feature for an efficient tax system could be identified in the "corruption resistance", especially for what concerns developing countries. As a matter of fact, some tax systems are more corruption prone than others, principally the ones that make multiple distinctions and numerous categories that are treated differently.

In the absence of market failures, taxation would be useless as the economy would automatically allocate resources efficiently. Information provided by market prices would already lead to production, exchange, and product mix efficiency, and the economy would be Pareto efficient. As taxes modify relative prices in order to reach efficiency, they alter the allocation of resources and distort the behavior of individuals. Hence, influencing work, education, retirement, savings and investment decisions. Another behavioral effect of a tax is the effort devoted by individuals to avoid tax payments by trying to lower their tax liability choosing, for example to work less or to by less expensive products. The behavioral effects of taxation are strongly linked to the financial and organizational effects of taxation as the economy is shaped by individuals' choices. Hence, a tax can encourage or discourage an enterprise from making risky investments by borrowing money from banks, it can influence the decision of an enterprise to become incorporated or not, or even the formation and composition of families by affecting the distribution of well-being. Taxation is usually associated with indirect repercussions of the tax that alters the equilibrium of the economy, bearing important distributional consequences, sometimes in a direction quite opposite to the intent of the legislation. These effects are referred to as general equilibrium effects and are usually associated with wage or interest taxes. Generally, a tax on interest reduces the supply of savings – as individuals see in increasing their current level of consumption as a method to decrease the tax liability – and the stock of capital, reducing the productivity of workers and their wages. Another important distortion caused by taxes is the announcement effect or impact effect of a tax, which may be quite significant. An announcement concerning the future tax treatment of an asset has an immediate impact on the value of the asset. Due to the distortions associated to a tax, taxation theory highlights the optimal taxation system to be non-distortionary in the sense that there should be nothing an individual or firm can do to alter the tax liability. These non-distortionary taxes are also called lump-sum taxes and they are imposed on non-alterable characteristics, such as age or sex. Distortionary taxes are inefficient as

they don't provide Pareto improvements, and the government could replace those taxes with a lump-sum tax, raising more revenue and having the same effect on the welfare of individuals. Governments don't impose lump-sum taxes for equity reasons, in order to protect some special interest groups of individuals. Another important reason why lump-sum taxes are not applied, is that taxation is sometimes used as a corrective tool for market failures or special categories of goods like tobacco products, spirits or gambling.

The reason why an efficient tax system must be administratively simple is that the management of the tax system by the government entails significant costs. There are direct costs – the cost beard by the government for running the tax system – and indirect costs, borne by taxpayers. The indirect costs, also called compliance costs, imply the cost of the time spent by individuals filling out tax forms, record keeping, and the cost associated to the service of accountants and tax lawyers. Hence, the more complex a tax system is, the more it will bear direct and indirect costs both for the government and the taxpayers.

As the economy goes through periods of recession and expansion, the tax system must stabilize. Depending on the tax structure, the stabilization can be automatic, or it can require extensive political debate. A progressive tax structure, adjusted to take account of inflation, provides automatic stabilization in periods of recessions and economic expansion. The indexation of tax brackets, that is the adjustment for inflation of the cutoff values for taxable income, grants an automatic stabilization even in a period of stagflation – when the inflation rate is high, the economic growth rate slows, and unemployment remains steadily high -. On the other hand, in some cases, an adjustment of income tax rates is considered desirable, but a political debate is necessary. This adjustment is usually very demanding, given the complexity of the tax code, as important dilemmas must be solved: which rates ought to be adjusted? Should the tax rates increase proportionately or less than proportionately? Bu a percentage amount or by a dollar amount? The solution of the debate, which isn't usually unambiguous, lies behind a deep analysis over the tax burden suffered by rich and poor individuals, that is usually influenced by the personal political view of fair taxation. The political difficulty of adjusting the income tax rate should be contrasted, for instance, with that of property tax. The property tax is beset by a number of administrative problems, not least of which is the difficulty of assessing the value of the property. The advantage of adjusting the property tax is that it is made annually, depending on the revenues needed for the provision of the local public services. Finally, from the flexibility of the tax system depends the time needed for the economy to adjust. The faster the tax

system adjusts to changes in the economic conditions, the more efficiency it will prove when the fluctuations are fast.

One of the most widely embraced features of the "good" tax system is the transparent political responsibility: the tax system should be designed so that individuals can ascertain what they are paying, clearly identifying the burden of payment and valuate how accurately the system reflects their preferences. In this view, the individual income tax is a transparent one, however, in some cases the government deliberately misrepresents the true costs of the services provided or who actually bears the costs. A typical case of a blurry tax is the corporation tax as it is not apparent who is really paying the tax. Taxes are paid by people, not by institutions: so, the tax weights on the corporation's shareholders, workers and customers. The corporate income tax is levied for equity reasons as otherwise a corporation would become like an individual retirement account, making it possible to accumulate savings without paying taxes.

Most criticism of tax systems begin with their unfairness, even though it is not an easy task to define precisely what is and what isn't fair. The tax system should be horizontally equitable - whenever the individuals that present the same characteristics over some relevant aspects are treated equally - and vertically equitable, in the sense that some individuals are in a position to pay higher taxes than others. Although the concept of horizontal equity seems clear at first glance, moving deeper into the argument it becomes straightforward that no two individuals are ever identical and that as a consequence, it is not possible to treat two individuals equally. Even though this seems to be the inevitable ending of the discussion, in the real world some differences are economically more relevant than others and constitute the basis for the minimization of the inefficiencies arising out of the tax system. Furthermore, the vertical equity of the tax system poses three important problems: determining who, in principle, should pay the higher rate; implementing this principle, writing tax rules; and deciding, if someone is in a position to pay the higher rate, how much more that individual should pay than others.

1.3.2. Taxation of tobacco products in Italy

The prices of the tobacco products are not set by the sellers, nor by the government but from the producers. Cigarettes cover 92,7% of the tobacco products market, and the costs associated with the production of these products – the estimated value floats between €0,10 and €0,15 per pack - are way lower than the prices at which cigarettes are sold to the public. Differently from many other

industries, when the producer sets the sale price, he primarily considers the fiscal component and the competition in the market rather than the production costs. The importance given to the fiscal component is due to the double tax applied to cigarettes: the value added tax (VAT or IVA in Italy) that amounts to the 22% of the final price and the excise tax. An excise tax is an indirect tax on the sale of a particular good or service – in our case tobacco products – that is not levied directly on the individual consumer but, instead, on the producer or the merchant who shifts the tax burden to the consumer by including part or all of the tax in the sale price. In Italy, the excise tax, correlated to the final price, has a specific and a variable component. The specific component amounts to the 10% of the weighted average price (WAP) of all the packs sold in Italy. In 2015, the WAP corresponded to €233 per kilogram – €4,66 per pocket – and the specific component of the excise tax was €0,47 per pack no matter the final price at which the product was sold. The specific excise tax in Italy is the lowest in all Europe and, as it is currently esteemed, it weighs more on the cheaper packs, whose price is lower than the WAP, than on the more expensive ones. The variable component of the excise tax corresponds to the 51,03% if the final price of the pack. Summing up the two components of the excise tax and the value added tax, the fiscal duty on a random pack of cigarettes sold in Italy amounts to the 76,73% of the final price. Moreover, a 10% fee on every pack is due to the retailer whose profits rise as cigarettes become more expensive. The surplus, after subtracting the excise tax, the value added tax and the 10% retailer fee, is the amount due to the producer, who sets the final price at which the product is sold. The Italian government, since January 1st, 2015[6], has fixed the total minimum excise tax to €170 per kilogram – which corresponds to €3,40 per pack – in order to set a minimum price threshold for cigarettes. Given these fixed values, the share due to the producer amounts to 13,27% of the final price. Even though, the minimum price threshold has caused a balanced increase in prices, consumption has not been depressed by the fiscal reform, leading to 260 million euros increase in tax revenues.

1.3.3. Tax Incidence

Economic reality does not always follow the laws passed by legislatures: in some cases, there is a distinction between those who bear the tax burden and those on whom it is imposed or levied. The tax burden represents the true economic weigh. Hence, whenever the actual incidence of the tax differs markedly from the intended incidence, it is said to shift. The fairness and transparency of the

[6] *Legislative Decree n. 188/2014*

tax strongly depend from its incidence, which in turn is bounded to the competitiveness of the economy and the shape of the demand and supply curves.

If the economy is competitive, firms produce at the level at which price equals marginal cost. At the firm level, if a tax is imposed on the firm - in perfect competition – the effective cost of production increases by the amount of the tax, decreasing the optimal level of output to supply for a specific price.

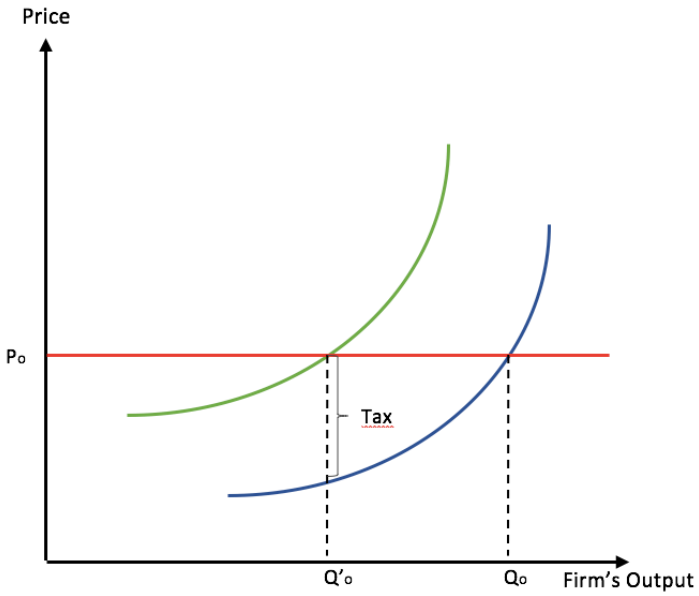

Figure 1.9 – Effect of a commodity tax on a firm

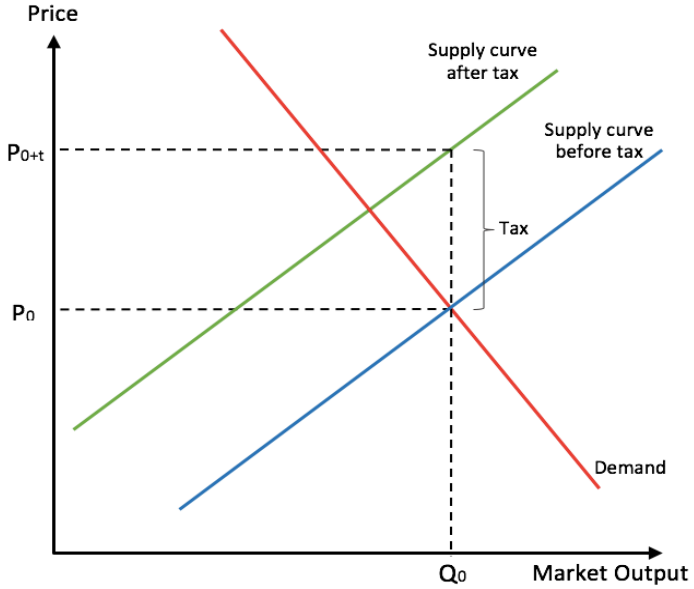

Figure 1.10 – Effect of a commodity tax on market supply curve and equilibrium

Figures 1.9 and 1.10 show the change in output for the market equilibrium when a tax is levied on a specific commodity. The tax can be thought of as increasing the marginal cost of production, leading to an increase in the price from p_0 to p_{0+t} for a given quantity q_0.

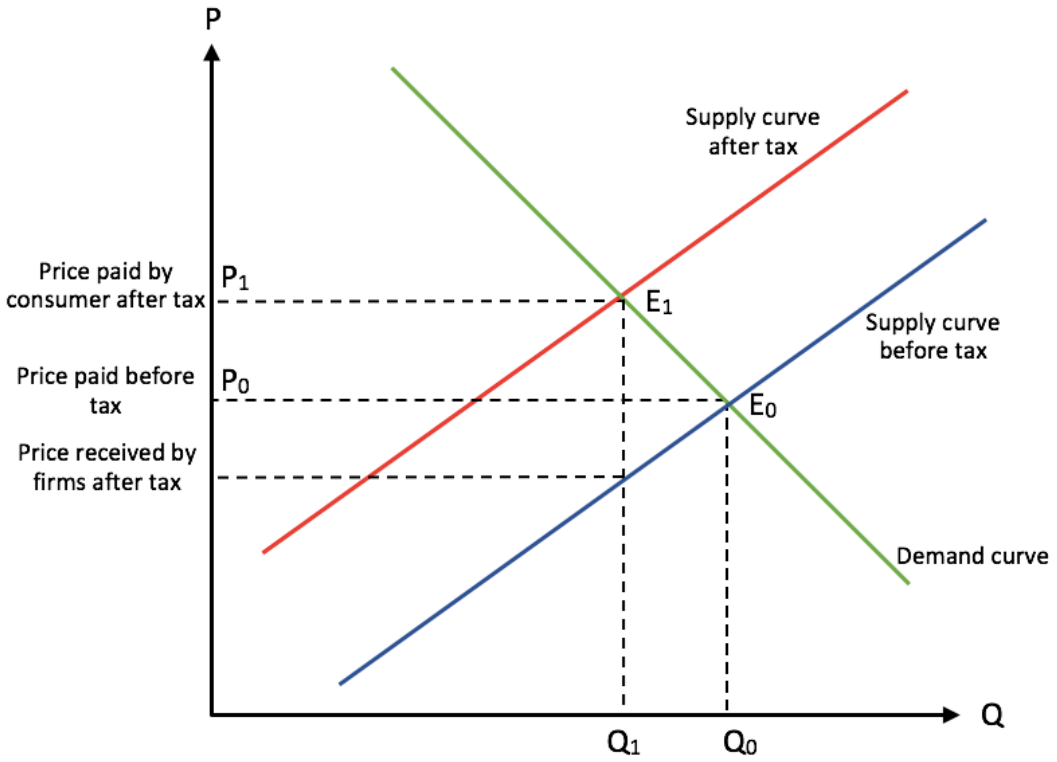

Figure 1.11 – Effect of a tax on equilibrium price and quantity

Figure 1.11 shows the equilibrium level before taxes at the intersection of the demand and supply curve, where Q_0 units are produced at a price of P_0 each. After the tax is imposed, the supply curve shifts up, increasing prices. Even though the supply curve shifts up, the price of the commodity doesn't rise by the full amount of the tax, as producers cannot shift the entire cost to consumers – this would lead to an excessive decrease in the quantity demanded -. Hence, depending on the elasticity of the demand function, the tax is shifted to the consumers by a certain amount: the more elastic the curve, the more the demand will be sensible to changes in prices. As a direct consequence, is it straightforward to understand that it makes little difference whether a tax is levied on consumers or on producers, the key element in the analysis of the tax incidence is the elasticity of the demand and supply curve.

Not only does it make no difference on whom the tax is levied, it also makes no difference whether the tax is levied as a given percentage of the price – *ad valorem* - or as a fixed amount per unit output –*specific* -. The ad valorem tax shifts down the demand curve, with the amount by which

it is shifted depending on the price. Applying a specific tax of the same magnitude, the results would be the same in terms of equilibrium level of output, tax revenues, prices paid by customers and prices received by manufacturers. In practice, the two taxes often differ, as tax authorities cannot adjust proportionately for differences in qualities of goods. When a specific tax is applied by the government, it represents a higher percentage of the price for low-quality goods than it is for higher-quality products. Hence, even though a specific tax discriminates against lower-quality goods, it facilitates the auditing process as it is easier to monitor the quantity of the product sold, rather than its price.

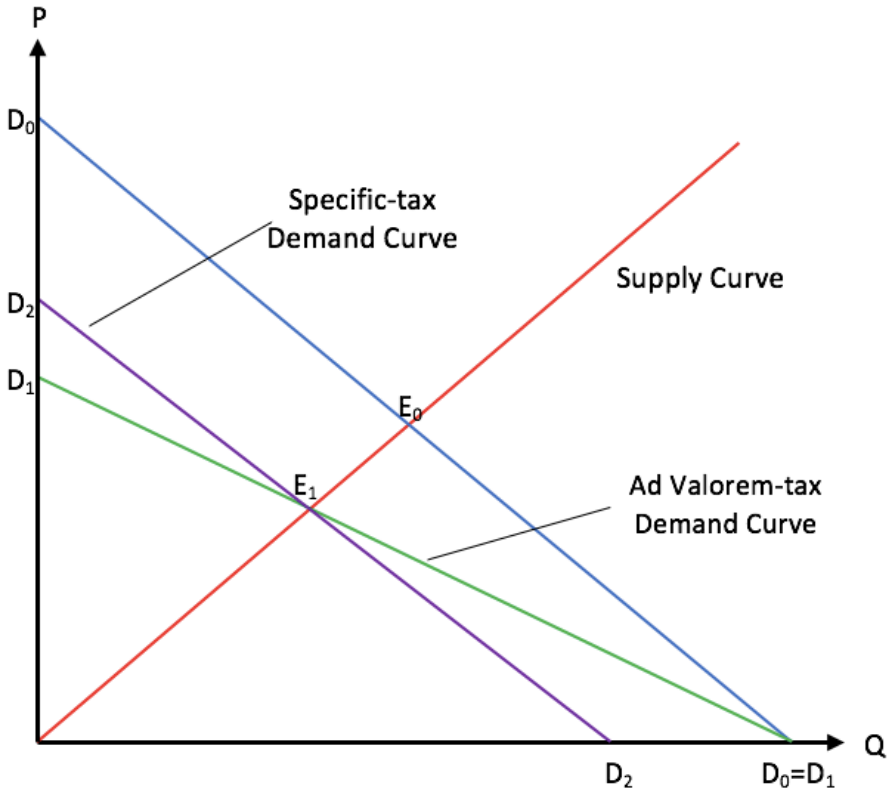

Figure 1.12 – Effects of an ad-valorem and a specific tax on the equilibrium

The difference between the two taxes is expressed in figure 1.12: if the government levies a specific-tax on a good, the demand curve shifts backwards from D_0-D_0 to D_2-D_2, while if an ad-valorem tax of the same magnitude is levied, the demand curve rotates becoming flatter and moving to D_1-D_1. As the figure shows, the equilibrium level moves from E_0 to E_1 for both taxes, reducing the quantity produced at a certain price.

1.3.4. Regulation and restrictions of tobacco consumption

In addition to taxation, the Italian government applies other forms of regulation on the tobacco products. A ban on consumption has been introduced in 1934 by art. 25 of the Regio Decreto n°2316[7], which establishes a sale and consumption prohibition of tobacco to individuals younger than 16 years old. The article also prohibits to those individuals to smoke in public areas. The restriction has been embittered when, in 2012, legislative decree n°189, 2012 was enacted, raising the consumption ban from individuals' younger than 16 to all minors. As a consequence, all retailers are required to ask potential buyers to prove their adulthood, if their age is not apparent. Furthermore, legislative decree n°165,1962, clearly prohibits the advertisement of tobacco products stating: "The advertising propaganda of any smoking product, domestic or foreign, shall be prohibited".

[7] *"Testo unico delle leggi sulla protezione e l'assistenza della maternità e dell'infanzia"*

Chapter 2
The *IQOS* case

In this second chapter the focus shifts on the revolutionary products introduced in the last years by Philip Morris International. The chapter is divided in three parts: the first section introduces the entrepreneurial revolution enacted by the tobacco multinational and the marketing and sales strategies applied to promote the brand. Further on, the second section explicates the Italian government intervention on IQOS analyzing the possible side effects of the product on individuals' health and the effective difference between taxation of traditional cigarettes and e-smoking. Finally, a brief market analysis hypothesizes the possible economic effects of IQOS on the Italian tobacco industry.

2.1. Philip Morris International and the entrepreneurial revolution

Since 2014, Philip Morris International has started its entrepreneurial revolution. Revolution here is identified as a strong will to change the negative perception of tobacco companies, launching a product that is considered less harmful for consumers' health. This section introduces the revolutionary product IQOS and its functioning and the new sales strategy used by Philip Morris International to increase its profits.

2.1.1. The revolutionary product: IQOS and its functioning

IQOS – acronym of "I Quit Ordinary Smoking" - was first introduced on the 26th of June 2014 in the Italian and Japanese markets and marketed by Philip Morris International under the Marlboro brand. After the initial beta test, the product has been gradually introduced in other countries, reaching in 2016 a total of 20 nations. By the end of 2016 Philip Morris International stated that the product would have been launched in the U.S. market. Nevertheless, the American Food and Drug Administration (FDA) has shown some reserves on the product as it is widely publicized to be less harmful. In fact, the FDA's scientific committee has declared that IQOS is not proved to reduce the illnesses caused by tobacco products but only the exposition of individuals to some noxious components. The reason behind the reserves shown by the FDA are the irregularities involving clinical trials that underpin the tobacco giant's application to the Federal agency. Notwithstanding the harsh rejection by the FDA, Philip Morris International has tried to get it right, by repositioning IQOS as a noxious product that provokes addiction but with less side effects.

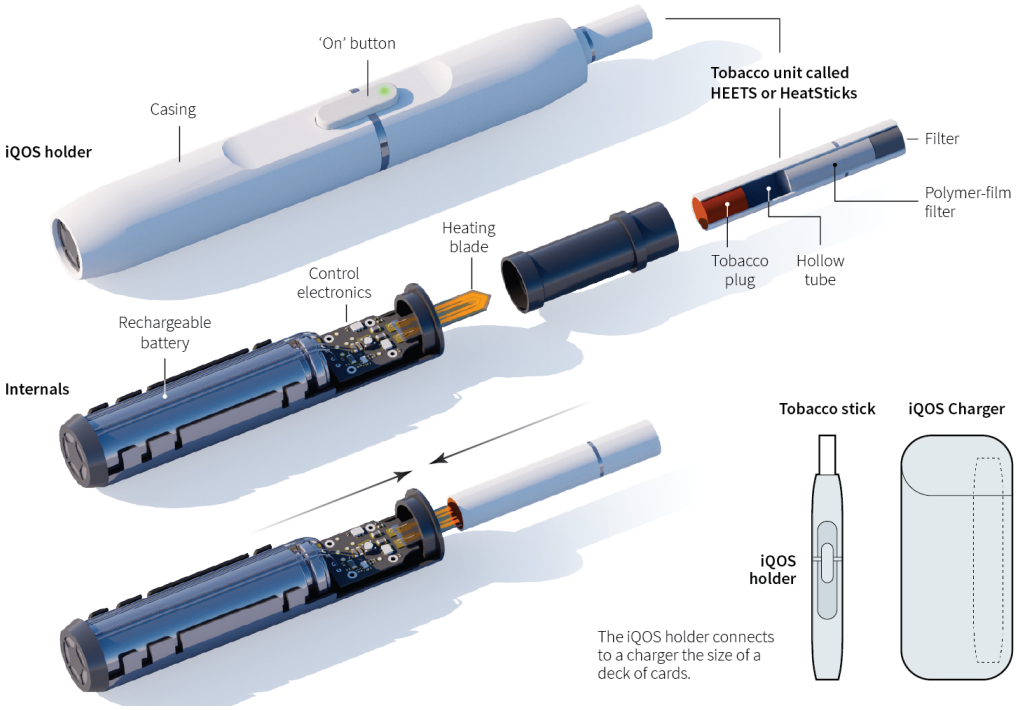

Figure 2.1 – IQOS and its components, source: Reuters Investigate

The technology behind this revolution by Philip Morris International is based on the possibility to heat tobacco – rather than burning it –. The device is composed by a portable pocket charger, tobacco sticks and a holder with a gold and platinum blade at the inside that, through a highly sophisticated software, heats tobacco at a certain temperature. The single use tobacco sticks are sold separately from the charger and the holder such as traditional cigarettes. In order to smoke an IQOS, the consumer has to pick a tobacco stick, insert in into the holder and press the power button on the device. The software activates the blade at the inside, heating the tobacco stick to 350° Celsius. When the tobacco has reached the optimal temperature, the consumer can start enjoying the product.

Differently from traditional cigarettes, IQOS doesn't leave the typical smoky smell on clothes like traditional cigarettes. This difference gives the possibility to IQOS users to smoke freely even in public areas - such as bars, restaurants, cinemas – without having to renounce to their habits. The possibility to smoke in public areas is not conferred by the lack of smell of the e-cigarette, but also by the chemical aspects of the product: while traditional cigarettes are burned, IQOS is heated, creating a light aerosol inhaled by the consumer. The inhalation for the user has a rich taste similar to the one of cigarettes, but the exhalations do not reach third parties, reducing drastically the problematic of passive smoking. Hence, this fundamental characteristic is the key that enables smokers to smoke in public areas without causing side effects to the health of the people who surrounds them.

2.1.2. Sales strategy: The Multi-Level Marketing and the Loyalty Enforcement

With the advent of IQOS, it is no longer sufficient to go to a tobacco shop and buy cigarettes: a lump sum payment to Philip Morris International (PMI) is required to have the durable components - such as the holder and the charger – which are fundamental in order to heat the tobacco sticks. Hence, Philip Morris International has created a sort of second line business on which the company has entire power – differently from cigarettes on which the Italian government has imposed a government granted monopoly –. Another fundamental aspect is the fiscal one: Philip Morris International only pays the value added tax on the durable components as those products alone do not contain tobacco.

Especially in the first couple of years after the launch of IQOS in the Italian market, Philip Morris International has adopted a Multi-Level Marketing strategy for the sale of the durable components. The strategy consisted in providing free trials to new users. If satisfied by the free trial, the new user was persuaded to promote and sell the product to friends and family in order to gain a commission on the sale or a discount on new products. Using this strategy, Philip Morris International created a strong sales force composed by active consumers of IQOS.

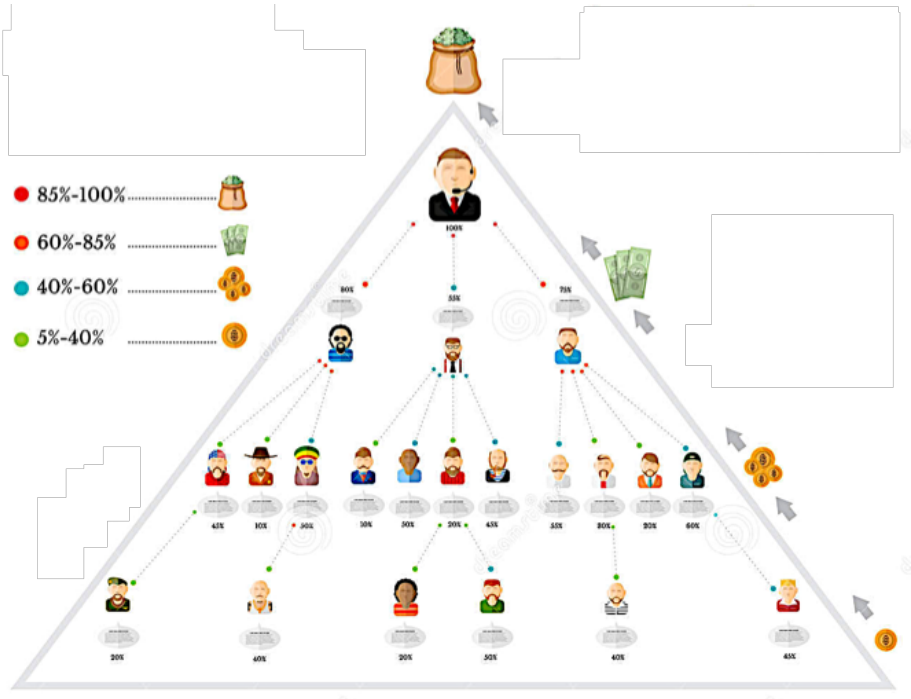

Figure 2.2 – The Multi-Level Marketing strategy applied by PMI.
Source: Dreamstime.com

Moreover, the durable components of IQOS confers to the tobacco giant a conspicuous extra profit as the sticks are realized in order to be used only through the holder provided by Philip Morris

International. This clever strategy forces the consumer to use the products sold by the company and at the price required. Hence, there from the point of view of the consumer, there is no possible room for choice. In fact, this loyalty enforcement strategy applied by Philip Morris International, gives the smoker only two options (apart from not changing his habits): the first is to stop the habit, which is usually very difficult, the second it to switch to traditional cigarettes, which are more wasteful for his health. Both options imply the waste of the initial investment for buying the durable components and discourage users from changing their habits.

2.2. Italian government intervention

This section analyzes the reasons behind the Italian government intervention over IQOS consumption. The first theme discussed is the effect that IQOS has on smokers and the relevance of the phenomenon of passive smoking. Furthermore, the focus will shift to the current taxation of IQOS by the Italian government and the debate over the inequality between the taxes levied on traditional cigarettes, lower-risk tobacco products and electronic cigarettes.

2.2.1. Debate on the effect of IQOS on smokers

As a revolutionary product in the tobacco industry, clinical considerations over the safeness and health effects of IQOS are deeply correlated to the government intervention in the regulation of its consumption. Hence, the optimal government intervention on the consumption of IQOS needs independent clinical studies over the short and long periods of time to test the effects of the product on humans. Therefore, it is too early to understand well the results of the clinical studies and the debate on the effect of IQOS on smokers. The debate is currently still opened and so it will be for the next years. Despite the issue, IQOS is already advertised as “the cigarette that doesn’t hurt”. The first independent studies on IQOS conducted in Italy have shown the presence of black carbon, a carcinogenic particulate released in greater quantities also by cigarettes. The studies revealed that IQOS cigarettes also diffuse a significant quantity of aldehydes, including formaldehyde that has been included by the International Agency Research on Cancer in the list of the carcinogenic substances for humans. Nevertheless, in order to better understand the properties of this product and its effects on human health, more time is needed. As a matter of fact, in 2018 the outcomes of the first 12 months exposition experiment are still expected. This uncertainty will be dispersed on by time, with the execution of new clinical studies on the effects of IQOS on the long run. Still, a great majority of medical experts agree on the potentiality of the product to be less harmful than traditional cigarettes.

In addition, a recent research guided by professor Reto Auer (Auer, 2017) and published by JAMA Internal Medicine magazine has compared a sample of smoke produced by IQOS and Lucky Strike Blue Light. The research has shown that IQOS releases a similar quantity of chemical agents as traditional light cigarettes and hence, its consumption indoor should be banned. The results of the clinical test, says Doctor Mitchell Katz, director of the magazine, should not be taken as unambiguous, but provide a positive hint on the approach that should be preferred regarding the limitation of this product until the outcomes of further and deeper studies are available. Short after the publication of the research, Philip Morris has replied that: "The company accepts and welcomes the clinical studies conducted on the new product. Even though the methodologies applied to conduct these studies and hence, also the outcomes reached are not always shared" (Morello, 2018). Moreover, the tobacco company further justifies remarking that never the product was advertised as non-toxic but only as a less harmful alternative to traditional cigarettes. Despite the attempts by Philip Morris International to defend its own product, a preventive position on the new products released by one of the industries with the higher mortality rate from consumption seems legitimate. That is why most part of the scientific community strongly agrees on the preventive measures to be applied on IQOS. Roberto Boffi, director of the Centro Antifumo dell'Istituto Nazionale dei Tumori di Milano, expresses his opinion through the Fondazione Umberto Veronesi magazine (May 2018). It is not consequential – says Boffi – that if IQOS heats tobacco without burning it, it is a less harmful product. From the studies available, IQOS contains and releases important quantities of nicotine and aldehydes which are toxic for humans and that are listed as carcinogenic products. Moreover, one of the most appreciated flavors of tobacco sticks for IQOS, menthol will be banned in Europe by 2020 as it is considered as an addictive and noxious aroma. Doctor Boffi concludes stating that it is still not possible to assess the real damages caused by IQOS but for sure, it should be regulated as a traditional product containing tobacco. As a typical outcome of studies that give opposite results, prudence is suggested and preventive measures – such as the ban on smoke in public indoor areas – should be applied in order to prevent the damage of individuals' health.

As the effects of IQOS on smokers is still not univocal, even less data is available on the phenomenon of passive smoking. Sure enough, IQOS releases a great part of the noxious particulates – formaldehyde, nicotine, acetaldehyde, etc. - that characterize traditional cigarettes, even if in smaller amounts. This should result in a restriction of the indoor consumption of this product, especially in public areas, that is still not regulated at the moment. The reasons behind this political uncertainty over the regulation of Heat-no-smoke (HNS) products stem from a variety of misbeliefs on the health effect of these products and from the slowness of the bureaucratic machine.

2.2.2. Taxation of IQOS

As a heat-not-burn tobacco product, Heets - the tobacco sticks used by IQOS - are entitled by Legislative Decree n° 188/2014[8] to a tax rebate with respect to traditional cigarettes. For the products contained in the category, the excise tax is equal to 50% of the excise that weights on the same quantity of cigarettes. As the excise tax on cigarettes has a variable and a fixed component, its value is calculated on the weighted average price measured in 2018 of a conventional kilogram of cigarettes.

The taxation of Heets is based on the use of a benchmark system: the process starts by considering a sample of the five most sold brands of cigarettes in 2018. Then, it is measured the average time needed to smoke the cigarettes of the five brands of the sample. The average time to consume a cigarette follows a technical procedure – defined by the provision 24/12/2014, art. 1 – that states that each consecutive puff must last 2 seconds. Following this procedure, the average time to smoke a cigarette results to be 349,1 seconds. The same technical procedure is then applied to, measuring the average time to smoke a Heets tobacco stick. Marlboro Heets Yellow Label are here taken as example: the average time needed for the consumption of a tobacco stick is 348,90 seconds. Hence, the product is benchmarked, using the average time of the sample of the five most frequently bought brands of cigarettes: a unit of Marlboro Heets Yellow Label equals the consumption of 0,9988 conventional cigarettes. The weighted average price of conventional cigarettes is €239 per kilogram, and on this price is levied a €141,249 excise tax – corresponding to €0,141249 per conventional cigarette -. If the same excise tax applied to conventional cigarettes, had to be levied on Marlboro Heets Yellow Label, it would correspond to a €0,14108 excise tax on the heat-not-burn product. Nevertheless, art. 39-terdecies, clause 3, of Legislative Decree n°504,1995 applies a 50% fiscal relief to the corresponding €0,14108 excise tax per unit. Hence, the excise tax levied on each tobacco stick of Marlboro Heets Yellow Label is €0,07054.

The benchmarking method used in the previous example is applied to all heat-not-burn tobacco products. Furthermore, also the 22% value added tax (IVA) is applied on the tobacco sticks packs. Until now, as the price of the products has been the same for all heat-not-burn brands, the IVA amounts to €1,1 each.

[8] *Article 39-terdecies*

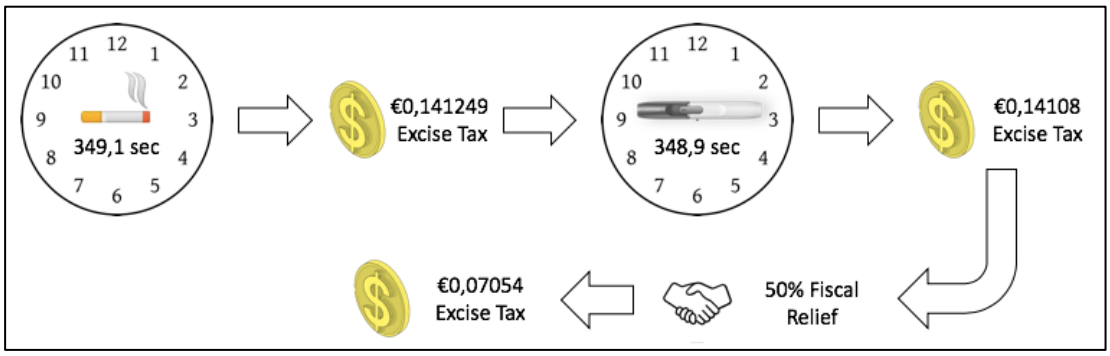

Figure 2.3 – Benchmarking method for the determination of the excise tax levied on Marlboro Heets Yellow Label

2.2.2.1. Comparison with other heat-not-burn tobacco products

The market of heat-not-burn tobacco products presents at the moment a duopoly. As a matter of fact, nowadays only two companies provide this type of product: Philip Morris International and British American Tobacco. The two tobacco giants have adopted the same type of strategy, commercializing their products with a new and fresh brand. Philip Morris International has been the first company to enter into this segment in Italy, introducing IQOS, acronym that stands for "I Quit Ordinary Smoking". At the beginning of 2018, British American Tobacco (BAT) has started investing heavily on the Italian market, releasing a new competitor for IQOS: Glo. BAT proposition is to enter into the market heavily by investing over one billion euros in the next five years in order to defeat the competitors. Common feature to both e-cigarettes is the inflexibility of the device, designed to be used only with its own tobacco sticks – Marlboro Heets produced by PMI and Dunhill Neosticks by BAT -.

As a result of the conspicuous investments made by the two tobacco companies, the potential growth of the heat-not-burn sector can be noticed from available data: in Italy in 2018, 2,7%[9] of the population (1.633.067 individuals[10]) has admitted having tried smoking the heat-not-burn tobacco products. Of this 2,7% of the population, 54,5% of the sample is composed by active smokers, 11,4% by ex-smokers and 34,1% by individuals who never smoked before. This last information is fundamental in order to understand the attractiveness of the product: the constant advertisement -

[9] *Source: Rapporto Nazionale sul Fumo 2018.*

[10] *Italian population in 2018 as measured by Istat amounts to 60.483.973*

especially of IQOS – has generated a tangible awareness of the heat-not-burn tobacco products, convincing over half million of individuals that had never smoked before to give it a try.

MARCA	€/1000 pezzi	€/confezione da 20 pezzi	€/confezione da 10 pezzi	€/accisa/ pezzo	€/accisa/ confezione	€/accisa/ 1000 pezzi	€/IVA/1000
HEETS AMBER LABEL	250,00	5,00		0,07062	1,4124	70,62	45,08
HEETS AMBER LABEL	250,00		2,50	0,07062	0,7062	70,62	45,08
HEETS BLUE LABEL	250,00	5,00		0,07062	1,4124	70,62	45,08
HEETS BRONZE LABEL	250,00	5,00		0,07042	1,4084	70,42	45,08
HEETS BRONZE LABEL	250,00		2,50	0,07042	0,7042	70,42	45,08
HEETS TURQUOISE LABEL	250,00	5,00		0,07066	1,4132	70,66	45,08
HEETS TURQUOISE LABEL	250,00		2,50	0,07066	0,7066	70,66	45,08
HEETS YELLOW LABEL	250,00	5,00		0,07054	1,4108	70,54	45,08
HEETS YELLOW LABEL	250,00		2,50	0,07054	0,7054	70,54	45,08
NEO STICKS ULTRAMARINE	250,00	5,00		0,04240	0,8480	42,40	45,08
NEO STICKS AEGEAN	250,00	5,00		0,04242	0,8484	42,42	45,08
NEO STICKS BERYL	250,00	5,00		0,04240	0,8480	42,40	45,08
NEO STICKS YELLOW	250,00	5,00		0,04238	0,8476	42,38	45,08

Table 2.1 – The taxation of heat-not-burn tobacco products. Source: Portale dell'Agenzia delle Dogane e dei Monopoli

As we can see from Table 2.1, the Italian government has authorized the sale of thirteen types of tobacco sticks: four provided by British American Tobacco and nine by Philip Morris International. The tobacco sticks are differentiated in order to gain as much market share as possible, providing products with different flavors and strengths. Nevertheless, the most interesting fact that can be noticed from Table 2.1 is the difference between PMI and BAT in the excise tax per pack of tobacco sticks. Even though both products are sold at the same price (€5), Philip Morris International pays an excise tax (for each twenty sticks pack of Marlboro Heets) that floats between €1,4084 and €1,4132, while the excise tax levied on British American Tobacco for the same amount of sticks goes from €0,8476 to €0,8484.

	Marlboro Heets	Dunhill Neosticks
N° on sticks per pack	20	20
Price per pack	€5	€5
Price per 1000 sticks	€250	€250
Excise per stick	€0,07042 - €0,07066	€0,04238 - €0,04242
Excise per pack	€1,4084 - €1,4132	€0,8476 - €0,8484
Excise per 1000 sticks	€70,42 - €70,66	€42,38 - €42,42

Table 2.2 – Comparison in the excise taxes applied to Marlboro Heets (PMI) and Dunhill Neosticks (BAT)

This difference, due to the average time needed to smoke a stick, seems negligible but has a huge effect in terms of profits for the company. Considering that the two products are perceived by consumers as complements, the lower amount of taxes paid by British American Tobacco provides greater margins for the company. As it can be noticed from Table 2.2, for every 50 packs of tobacco sticks sold – 1000 sticks -, British American Tobacco pays an excise tax between €28,04 and €28,24 smaller than its direct competitor Philip Morris International.

2.2.2.2. Comparison with inhalation liquid e-cigarettes

Inhalation liquids and heat-not-burn (HNB) tobacco are both smoked through an e-cigarette and they are taxed using the same process even though they are associated with different factors of risk. As a matter of fact, on the inhalation liquids is imposed an excise that amounts to €0,37344[11] per milliliter (plus IVA) independently from the amount of nicotine contained. It is important to notice that inhalation liquids are composed mainly of glycerin – which isn't harmful - and, at discretion of the consumer, nicotine and flavors. Hence, the taxation of the product should depend on the level of nicotine per milliliter. Nevertheless, since January the 1st 2018, also the liquids not containing nicotine are taxed and have been set under the domain of the Agenzia dei Monopoli e delle Dogane. This decision taken by the Italian government in the 2017 Stability Law, implies other important restrictions on inhaling liquids: e-cigarettes must be sold by tobacco shops or authorized retailers, the online sale of liquids is forbidden – in order to monitor the provenience of liquids - and the price of glycerin, that can be bought in pharmacies and herbalist's shops and has multiple uses, is affected by taxation and has increased from €20 to €450 per liter. This fundamental changes in this market segment have created an important controversy between the Italian government and the inhalation liquids retailers and producers as the price of these products for 10 milliliters of liquid have rose from €2,50 to €7,50.

Comparing the current taxation of smoking products in Italy with the one applied by other developed countries, the Italian government goes countertrend keeping the taxes on traditional cigarettes constant while increasing the impositions on reduced-risk smoking. To give an example, in the United Kingdom the liquid inhaling e-cigarette is given for free to smokers by the National Sanitary System as it is recognized as an efficient method for reducing the risks associated with tobacco smoking.

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[11] *Information taken from the article "E' allarme tasse sulle sigarette elettroniche" published on the newspaper Il Sole 24 Ore Italia on January 9th, 2018.*

2.3. The economic effect of e-cigarettes on the Italian tobacco industry

The objective of this section is to analyze the current trends on conventional cigarettes, identify and classify the users of e-cigarettes and prospect the future of the tobacco industry.

2.3.1. Current trends of traditional cigarettes in Italy

Since the beginning of the 21st century, the consumption of traditional cigarettes has decreased as a consequence of the growing level of information available to individuals. As it can be noticed by Figure 2.4, at its peak, in 2002, more than 103 million kilograms of cigarettes were sold and hence, also consumed each year. Since then, the consumption of cigarettes has decreased constantly, showing the necessity for tobacco companies to develop new and safer products that could capture the attention of smokers. The decreasing trend in cigarettes consumption is also due to a stricter regulation applied by governments who have increased the level of taxation of these harmful products and have sensitized individuals through awareness campaigns.

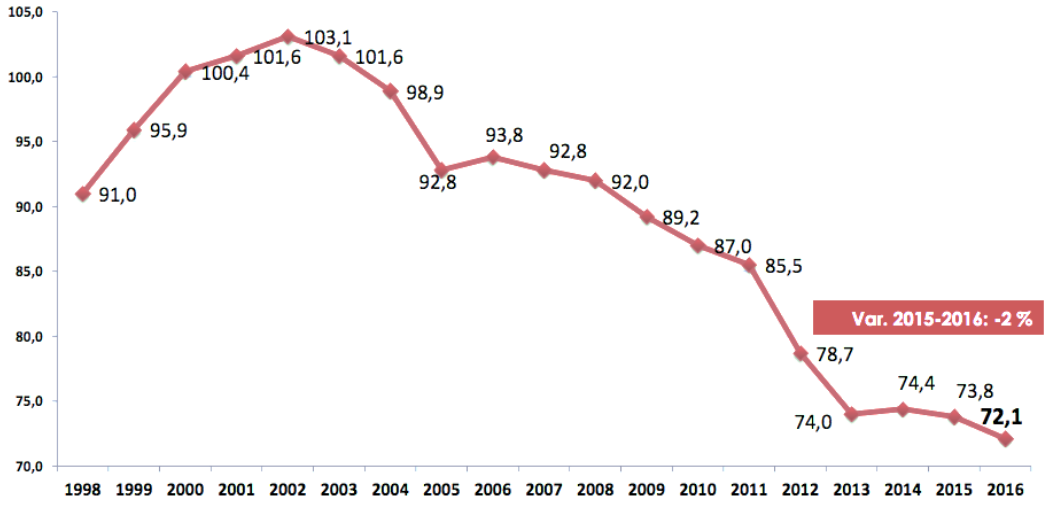

Figure 2.4 - Sales trends (million kg) of cigarettes in Italy in the last 18 years. Source: OSSFAD.

Moreover, even though the number of cigarettes sold each year is constantly decreasing, so can't be said for the number of average cigarettes smoked daily. As Figure 2.5 shows, the average daily quantity of cigarettes consumed has reached its lowest level in 2013 and has grown by 7,1%, showing that not only the general level of sales is decreasing but that also the number of active smokers quitting or shifting to other products is increasing. This conclusion is supported by the fact that, analyzing the volume of sales from 2004 to 2017, the decrease in the daily consumption of

cigarettes doesn't justify a decrease in the volume of more than 26 million kilograms of cigarettes – considering that a kilogram of product equals 1000 cigarettes-.

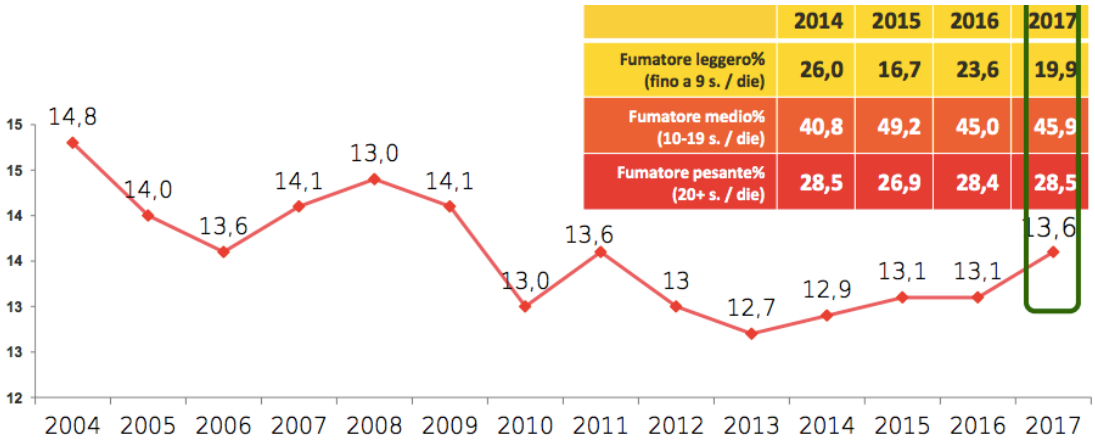

Figure 2.5 - Classification of smokers based on the number of cigarettes consumed daily. Source: OSSFAD.

The whole argument is finally supported by data collected the Global Burden of Disease that has registered a 28,4% global decrease in consumption for men and 34,4% decrease for women in the period 1990 - 1995. Data collected in Italy by the same research in the same period of time are even more positive, with a decrease of 34,5% for men and 34,7% for women.

2.3.2. Prospects on the consumption of heat-not-burn tobacco in Italy

Thanks to the development of new technologies, new products like e-cigarettes are becoming more and more sophisticated and provide a more faithful sensorial experience to the user. A clear example of this developing technologies is IQOS and the heat-not-smoke products. The development of these e-cigarettes aims at shifting the consumption of smokers towards less regulated and more healthy products that provide to the tobacco companies higher profits and a renewed brand image.

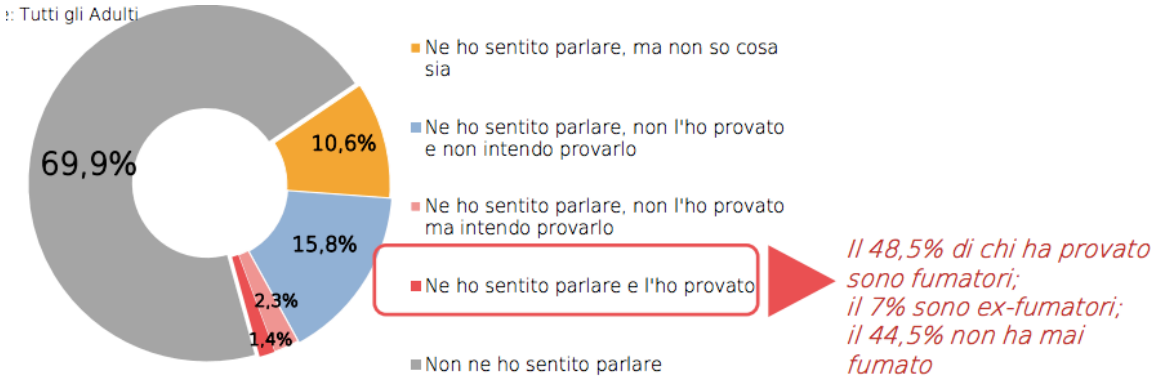

Figure 2.6 – Popularity of e-cigarettes. Source: OSSFAD.

Figures 2.6 divides e-smokers in two categories: 48,5% of them are traditional cigarettes smokers who are trying to quit their habits, while 44,5% of e-smokers never smoked before. This second category shows the potentiality of the product that, in the future, will surpass the profits of conventional cigarettes. Moreover, as 70% of adults are not aware of heat-not-burn e-cigarettes, the potentiality of these e-cigarettes in the future is exponential.

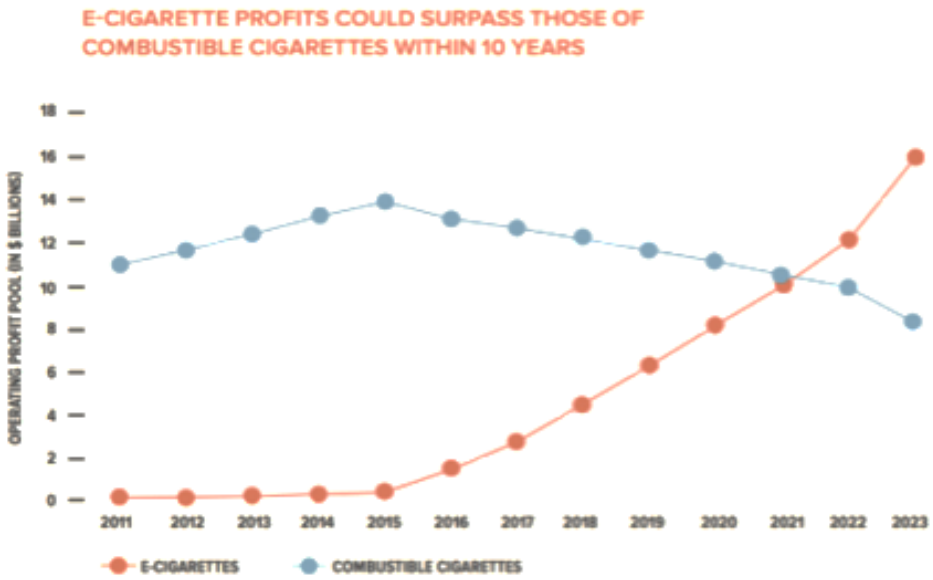

Figure 2.7 - Trends in Tobacco Industry profits. Source: Harvard Magazine

The possible scenarios glimpsed in Figure 2.6 for the Italian market are supported by a global trend in the tobacco industry. Figure 2.7 provides a possible global prospect of the near future, when the profits for tobacco companies will consist majorly of e-cigarettes sale. Following the data analysed in the figure, 2021 will be a critical year as the growing profits of e-cigarettes will match the ones of traditional cigarettes in their decline. Analysts have agreed upon this prospect as there is a global growing trend towards deregulation of inhalation liquid e-cigarettes and lighter regulation of new heat-not-burn e-cigarettes.

Conclusion

In conclusion, the Italian tobacco industry is starting to change, following the preferences of consumers, who are fostering the development of healthier products. Nevertheless, the tobacco multinationals such as Philip Morris International and British American Tobacco have acknowledged the profitability of the e-cigarette market but, until now, they have chosen not to give up on tobacco production. The heat-not-burn tobacco products such as IQOS are associated with lower health risks with respect to traditional smoke but still do not erase completely these externalities from the equation. Furthermore, IQOS stands as a step-back in the progress towards a smoke-free world as it contains tobacco and releases more carcinogenic chemicals with respect to liquid inhaling e-cigarettes which have been released in the Italian market far before the heat-not-burn e-cigarette. Moreover, the results from the independent clinical studies on IQOS are still not unambiguous and more time is needed in order to have a clear understanding of the side effects associated to the product. Hence, only time and the world market will give us a final and objective answer on the bet made by the tobacco multinationals who have made heavy investments in this heat-not-burn e-cigarette market. As a matter of fact, the risky choice to ignore the inhalation liquid market in favour of an embryonic one opens multiple scenarios which may be extremely positive or negative, depending on the response from the customers.

For what concerns the Italian government intervention over IQOS, the product is taxed as all other e-cigarettes, proving that the Italian bureaucracy is playing for time in order to acquire greater knowledge on the side effects associated with the heat-not-burn products. This lack of tax differentiation has created remarkable controversies by the liquid inhaling e-cigarettes producers who felt disadvantaged as their products are less harmful but still taxed as more noxious ones.

Finally, data acquired by the OSSFAD – Osservatorio sul Fumo l'Alcol e la Droga – proves that the Italian tobacco industry is going with the flow, taking advantage of new technologies in order to release new and less harmful products with the aim to increase profits, brand awareness and rebuild the brand image.

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