



# **Analysis of Price Elasticity of Tobacco Products in Bulgaria and Examination of Affordability Issues in Respect to EU Harmonization Policy on Excise Duties (2007-2018)**

This report is part of IME project "Law and Economics of Illegal Trade of Tobacco Products in Bulgaria".

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## Introduction

Tobacco products are in fact the most heavily taxed products in the EU member states. The tobacco market is totally dominated by cigarettes, and in Bulgaria, over 85% of the price of a cigarette pack is actually taxes. The huge budget revenues from cigarette taxation – nearly 10% of all tax and social security revenues in Bulgaria, make the developments in the cigarette market particularly important and interesting from the point of view of public policies. Issues of price elasticity of demand and affordability of tobacco products are of great interest to both companies in the industry and the objectives of various public policies, in particular health and tax policies.

In the recent analysis of excise policy<sup>2</sup>, we have clearly shown that the sharp increase in the tax burden on cigarettes and, respectively, sudden rise of prices may result in a various negative effects – a drop in tax revenues, an increase in illegal trade and, ultimately, the undermining of health goals. A detailed analysis of the price elasticity of demand for tobacco products is needed to gain insight in the attitudes of consumers and to better assess the potential effects of one or other policy change. The study of different groups, incl. focusing on the most vulnerable groups from the point of view of illegal consumption allows preventing potential negative effects.

An in-depth assessment of the affordability of tobacco products is particularly important in terms of the harmonization of excise policy within the EU. The great differences in incomes and purchasing power between the Member States make it extremely difficult to pursue a unified policy that is becoming a serious challenge for the poorer countries. An analysis of price affordability allows a soberer assessment of the harmonization process and a more objective comparison between richer and poorer countries in the EU. Bulgaria as the country with the lowest prices of tobacco products in the EU is a particularly interesting case in this regard.

This report is predominantly focused on cigarettes, as they concentrate a huge part of consumption and tax revenues from tobacco products. At times, the report is highly detailed, especially with regard to methodological issues, which seeks both to clear out any potential issues and to allow the use of the data provided (and their verification) by any interested party. We believe that the data provided here is important in terms of shaping the future EU policy in the process of harmonizing the excise taxation of tobacco products. In this direction, a brief overview of the current EU-wide discussion on the development of this policy is made.

## Excise Policy and Effects on the Tobacco Market

This report is in fact a continuation of IME economic analysis of excise policy on tobacco products in Bulgaria and the effects on illegal trade<sup>3</sup>. In the first report, we made a detailed overview of excise policy in Bulgaria over the past ten years, with the main focus being on illegal trade, which undermines both the tax revenue and health objectives of the government. The conclusions of the analysis, incl. the review of some examples of tax shocks in the new Member States clearly pointed out that short-sighted excise policy can have highly negative effects on the market.

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<sup>2</sup> See IME, [Economic Analysis of the Excise Duty Policy on Tobacco Products in Bulgaria and Its Effects on the Illegal Market](#) (2018)

<sup>3</sup> See IME, [Economic Analysis of the Excise Duty Policy on Tobacco Products in Bulgaria and Its Effects on the Illegal Market](#) (2018)

Excessive and sharp increases in excise duties have consistently led to the growth of an illegal market that cannot be prevented solely by control mechanisms. For the entire 10-year period (2007-2016), illegal cigarette trade in Bulgaria has earned revenues for the criminal world between BGN 2.5 billion and BGN 3.5 billion according to IME estimates. The big boom is in 2010, when the criminal revenues are between BGN 450 and 640 million. While the share of illegal trade in cigarettes at the moment is around 5-6% from the market<sup>4</sup>, criminal revenues are not negligible, being estimated between BGN 100 and 140 million for 2017. This is a resource, which largely finances organized crime and creates opportunities for corrupting in the all levels of power.

The review of the developments and effects of excise policy in Bulgaria also provides some lessons for pan-European policies. Harmonization should take into account differences in socio-economic factors, especially purchasing power. The enormous growth in illegal trade in Bulgaria and other Eastern European countries in the early years of EU membership could have been avoided by better targeting and a far-sighted catching-up policy.

It is exactly this conclusion that underlies the current analysis, which is already looking at excise policy at EU level, and takes into account factors such as price affordability and elasticity of demand for tobacco products. Price affordability studies in Europe are important in terms of the development of the future excise framework and the harmonization process. At present, there seems to be insufficient focus on analyzes and data in this direction, and this study seeks to fill this niche. There is also a lack of clear calculations of the price elasticity of tobacco products in Bulgaria, which should be of interest to the policies pursued, at least because Bulgaria is the country with the lowest incomes within the EU and consumer reaction to price changes may be strong. The goal of this analysis is to contribute for better understanding of the tobacco market from the point of view of price affordability and consumer behaviour.

## **Price Affordability of Tobacco Products**

The analysis of excise policy clearly shows that rising prices due to higher excise duties can have serious effects on both the legal and the illicit tobacco market. However, the change in tobacco products prices should be analysed in terms of the country's income levels, i.e. the change in the purchasing power of the population with regard to tobacco products. In other words, there is a difference between raising excise duty and the price of products in a year of a crisis – when unemployment is growing and incomes are stagnating, and this increase to happen in a year of economic boom when new jobs are created and incomes are growing.

The focus on price affordability also makes it possible to make more accurate international comparisons. Within the European Union, there are large differences in both income levels and excise rates on tobacco products that do not allow for simple comparison without clear analyse of price affordability. That is what we will argue in this analysis and we will apply to the picture in the EU, which will allow us to comment more deeply on good and bad European practices.

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<sup>4</sup> See KPMG, [Project SUN: A Study of the Illicit Cigarettes Market in the European Union, Norway and Switzerland](#) (2017)

Specifically, the case with Bulgaria in terms of price affordability of tobacco products is particularly interesting due to at least two reasons. The first is that such an analysis may be based on observations of a relatively long period of excise policy on tobacco products, covering both periods of economic crisis and recovery. This will allow in more detail to distinguish the effect of the changes in excise duties, incl. on illicit trade. The second is that Bulgaria remains among the countries with lowest income levels and prices of tobacco products in the EU, and the price affordability analysis will allow for a clearer comparison with the different examples within the EU as well as more knowledge on the process of harmonizing of excise duties on tobacco products.

## **Laffer on Affordability of Tobacco Products**

Arthur Laffer, in 2014, made a detailed review of research on the affordability and elasticity of demand for cigarettes<sup>5</sup>. Here we will outline some of the main conclusions by bringing them into the European context, as Laffer looks at global trends and some processes are different within the EU due to the policy of harmonization of excise policy. It is additionally valuable that Laffer looks at data on different price categories of cigarettes in individual markets.

At first, Laffer comments that cigarette prices are significantly higher in richer countries, but this is by no means decisive, as it is important to take into account the differences in income across countries, i.e. to examine the affordability of cigarettes, not just their price. Interestingly, however, on the basis of nominal price data, Laffer reveals that the relative price difference between the cheapest cigarettes and the premium brands is more obvious in low-income countries, with the price of cheapest cigarettes being less than 50% of the price of premium brands.

In spite of the large income disparities in Europe, however, this conclusion does not apply within the EU. The reason is that EU-wide excise policy sets such rules that poorer countries (the new member states) have significantly increased their excise rates in a way, which basically prevents a huge difference in price between cheap and premium cigarettes. Such large differences are to be found in more exotic markets in Latin America and the Far East.

Laffer uses three methods for calculating the affordability of cigarettes that we have followed and applied in this study. These methods, which in some detail have been modified to answer specifically EU markets and the available data, are described in detail in the report below. Currently, we are just setting the framework with Laffer's main findings, which are based on a wider range of markets. The overall conclusion of Laffer confirms that affordability of cigarettes is lower in poorer countries, with differences being further exacerbated if we look into individual groups, such as lower paid professions, and so on. Countries with higher levels of income inequality should be more closely studied in this respect as individual groups may react more sharply to changes in the market. A similar analysis for Bulgaria is made in this report.

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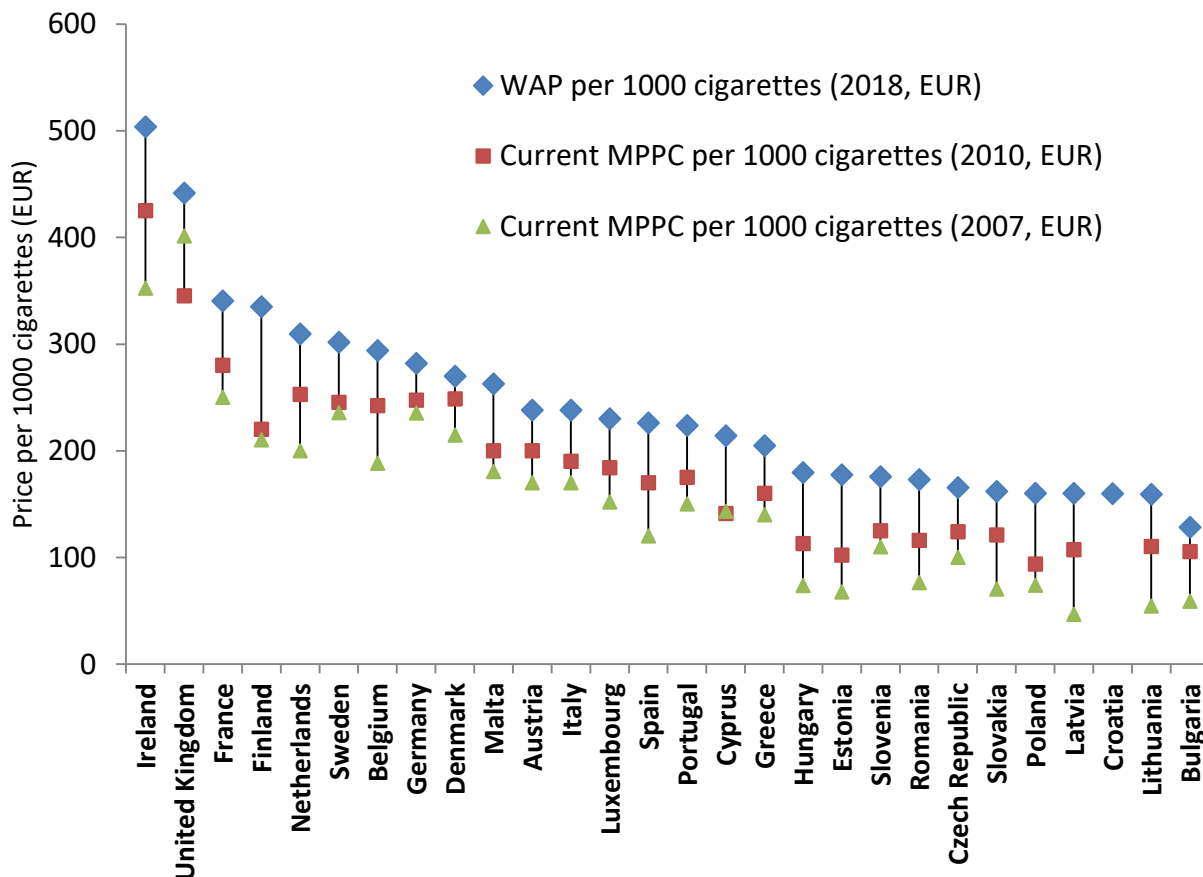
<sup>5</sup> See Arthur B. Laffer, Handbook of Tobacco Taxation: Theory and Practice (2014)

## The Price of a Pack of Cigarettes in the EU

Comparisons of prices and affordability of cigarettes will be made across the EU, as the focus of this analysis is on the process of harmonizing excise policy on tobacco products in the EU. First of all, it is important to show the big differences in the price of a pack of cigarettes in the member states at current prices. For this purpose we will use the weighted average price that is available in the European Commission's Excise Duty Tables<sup>6</sup>. As of January 1, 2018, the weighted average price in Bulgaria of 1 000 cigarettes is EUR 128.3 and remains the lowest within the EU.

Other member states in Central and Eastern Europe, as well as in the Baltics, also have relatively low cigarette prices for the EU – within 25-30% above the average price in Bulgaria. These are Lithuania – EUR 159 per 1 000 pieces, Croatia – EUR 159.6 per 1 000 pieces, Latvia – EUR 160 per 1 000 pieces, Poland – EUR 160.2 per 1 000 pieces, Slovakia – EUR 161.7 per 1 000 pieces and the Czech Republic – EUR 165.4 per 1 000 pieces. Cigarettes are nearly 40% more expensive than Bulgaria in Romania – EUR 172.8 per 1 000 pieces, Slovenia – EUR 175.5 per 1 000 pieces, Estonia – EUR 177.5 per 1 000 pieces and Hungary – EUR 179.6 per 1 000 pieces.

**Graph 1: Price per 1000 cigarettes in the EU**



Source: [Excise Duties Tables](#), European Commission

<sup>6</sup> See [Excise Duties Tables](#), European Commission (2007-2018)

In the beginning of 2018 there are 11 countries with an average cigarette price of EUR 200 per 1 000 pieces, 11 between EUR 200 and EUR 300 per 1 000 pieces and 6 countries with prices above EUR 300 per 1 000 pieces. The highest prices are observed in Ireland – EUR 503.5 per 1 000 pieces and UK – EUR 441.6 per 1 000 pieces. The latter, however, are rather exceptions for the EU, as they significantly exceed the third ranked country within the EU with the highest cigarette prices – France with EUR 340.3 per 1 000 pieces. In practice, cigarettes in Ireland are nearly 50% more expensive than cigarettes in France.

The data shows that cigarette prices in Bulgaria remain the lowest within the EU, reaching 70-75% of the average level in Central and Eastern Europe and the Baltic States, as well as about 50% of prices in Western Europe. In this case, we exclude Ireland and the UK, where prices are extremely high even within the EU. Here again, we can make the point that the comparison of affordability of cigarettes, that is, taking into account the incomes of individual countries, will be extremely important. Gross domestic product per capita in Bulgaria is only about 25% of the EU average (EU-28). The latter shows that, despite the significantly lower cigarette prices in comparison to Western Europe, the affordability of these products is likely to be noticeably lower.

## Price Affordability of Cigarettes in the EU

There are different methods to compare the affordability of cigarettes in different markets. The guiding principle is to compare price levels to country income levels. We can outline the following methods:

- 1) the relation of the price of cigarettes to national income in the different countries – a classical macro approach, in which case macroeconomic indicators are referred to;
- 2) the calculation of the time it takes to work in order to buy a pack of cigarettes – here the focus is on labour income and in particular on hourly wages in individual countries;
- 3) the percentage of daily income needed to buy a pack of cigarettes – a popular and easy to understand method that covers all groups in society.

All of these methods and applied in this report. For some indicators we use IME conservative forecast for 2018, so that all estimations of affordability are up to the present date. To these methods we can add some other provoking methods, like referring the price of cigarettes to the Big Mac Index, i.e. how many cigarettes can be bought at the cost of a Big Mac in any country. Although the latter is a fun calculation method, it will not be used in the current analysis due to the high degree of subjectivity and dependence on the price of a particular product, which does not necessarily reflect the actual income differences in the EU.

The current state of affordability of tobacco products reveals differences across the EU, but it does not give a clear picture of changes over the years and, in particular, of the sharp change in price affordability in the new member states (those that joined after 2004). The analysis of the dynamics of price affordability will show to what extent the general trend for increasing EU excise duty on tobacco has changed the actual purchasing power of smokers in individual countries.

## Methodological Comments on Prices

In each of the methods for calculating the affordability of cigarettes within the EU, we will use the same data base on prices in individual countries. These figures are derived from the so-called Excise Duty Tables of the European Commission and we are using data as of July 1 for each year from 2007 to 2018. The tables show two cigarette prices for each country: 1) the price of the most popular price category (MPPC) of cigarettes of the respective market and 2) the weighted average price (WAP) of all packs on the relevant market.

From a methodological point of view, it is more appropriate to use the second price – the weighted average price for the market as it covers the processes of all price segments rather than focusing only on the most popular price category. That is why we will use this price predominantly. Since the average price is available in the Excise Duty Tables only after 2011, we will use the MPPC for the period 2007-2010 and the WAP for the period 2011-2018 for the purposes of our report. This breakdown also fully corresponds to the periods covered by the excise policy, because precisely 2010 is the year in which all member states reached the minimum levels of excise duties as written in the prior version of the Excise Directive – Bulgaria was the last member state to reach those levels in 2010.

## Macroeconomic Approach to Price Affordability

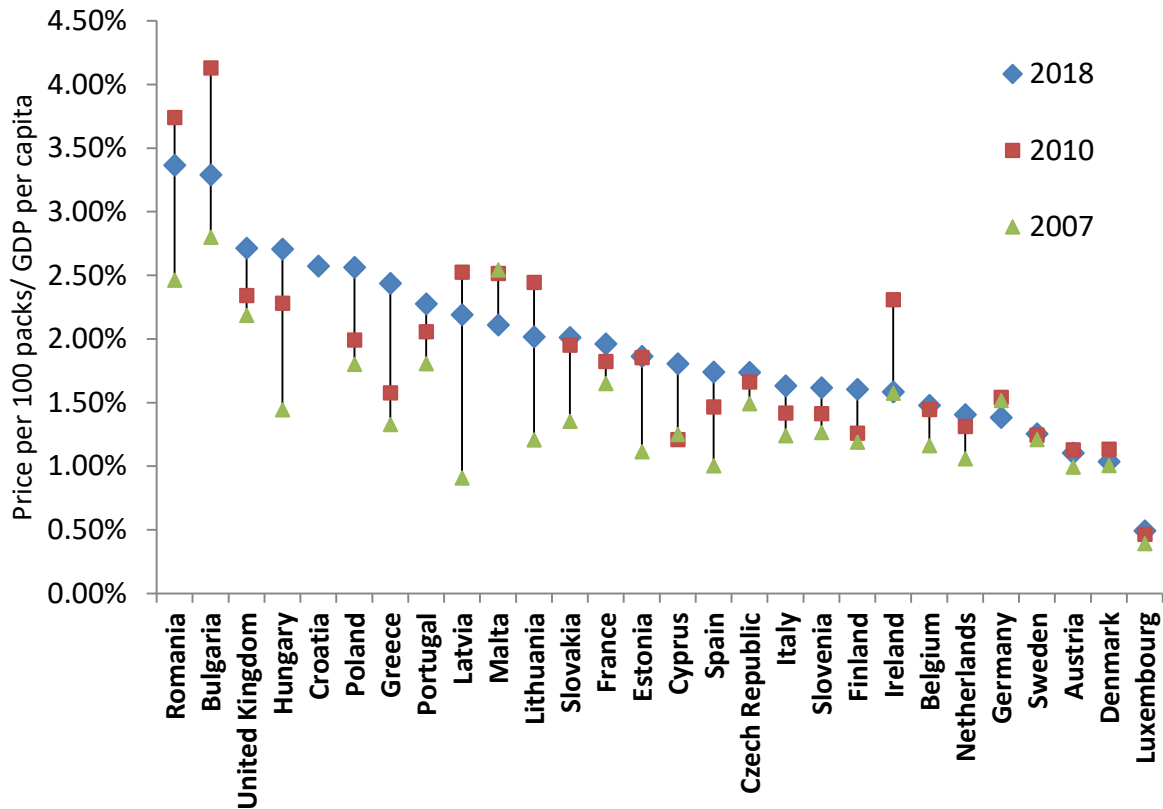
One of the easiest ways to estimate the affordability of cigarettes in individual countries is to compare cigarette prices with differences in national income. Macroeconomic data – often pertaining to the gross domestic product (GDP) per capita is available and timely – that is, up-to-date data for all member states can be found. It is, of course, necessary to look at GDP per capita, not the overall indicator of aggregate production for the country.

The specific indicator, which is used, compares the cost per hundred packs of cigarettes to GDP per capita at current prices. Within the EU, the indicator ranges from 1.4-1.5% in 2007-2008 on average to 1.9-2.0% in recent years (price per 100 cigarettes / GDP per capita at current prices). More interesting is not just the general tendency in affordability of cigarettes, but differences and dynamics in individual member states. Despite the lower prices of cigarettes in Bulgaria, the indicator for Bulgaria is 3.3% in 2018, which is among the highest in the EU together with the one in Romania.

The period from 2007 to 2010, when the new Member States sharply increased excise duties on cigarettes, is significantly more dynamic. In this period, the affordability of cigarettes has been drastically reduced in the new member states, reaching a record level in 2010 – the price of 100 cigarettes of the most popular category reaches 4.1% of GDP per capita in Bulgaria compared to levels of 2,8% in 2007. Similar is the picture in Romania, where the index reaches 3.7% in 2010. A huge decline in affordability of cigarettes is also observed in the Baltics – Latvia, Lithuania and Estonia.



**Graph 2: Cost per 100 packs of cigarettes relative to GDP per capita in the EU**



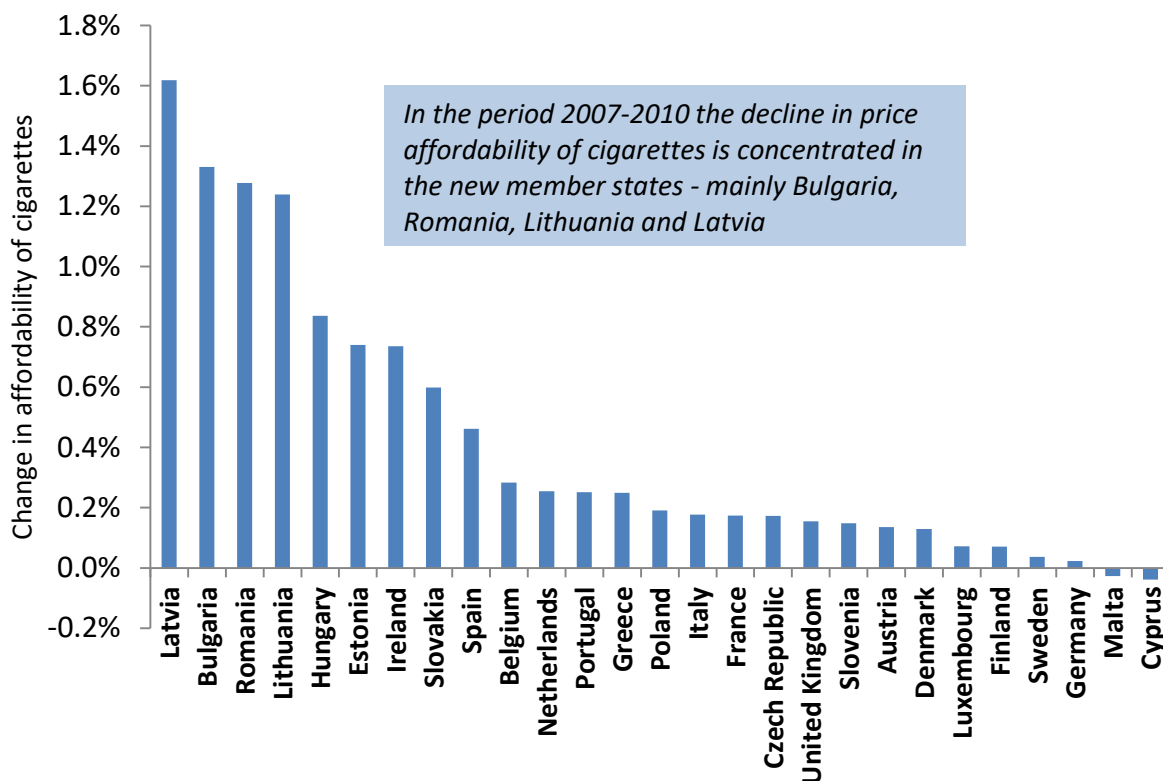
Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

It is important to note that the reason for the large decline in affordability of cigarettes in the new member states in the period 2007-2010 is not only the sharp increase of excise duties on cigarettes during this period but also the effect of the economic crisis in 2009-2010. In all the countries mentioned there is a contraction of the economy, which also reduces the GDP per capita indicator during the period under review. Only in Bulgaria there is no reduction in GDP per capita in this period, but there is almost no growth in 2009 and 2010, when there are more significant increases in excise duties on cigarettes.

In other words, in the period 2007-2010, we have a very negative combination of an increase in excise duties on cigarettes and an economic crisis, which has resulted in a drop in affordability. This is particularly noticeable in the new member states where excise duties were increasing too sharply. The effect is a huge loss of purchasing power over cigarettes, which leads to a boom in the illegal market – in some of the new member states, including Bulgaria, the levels of illegal trade of cigarettes reached more than 30% of the market<sup>7</sup>.

<sup>7</sup>See IME, [Economic Analysis of the Excise Duty Policy on Tobacco Products in Bulgaria and Its Effects on the Illegal Market](#) (2018)

**Graph 3: Change in p.p. of the cost of 100 packs relative to GDP per capita (2010/2007)**

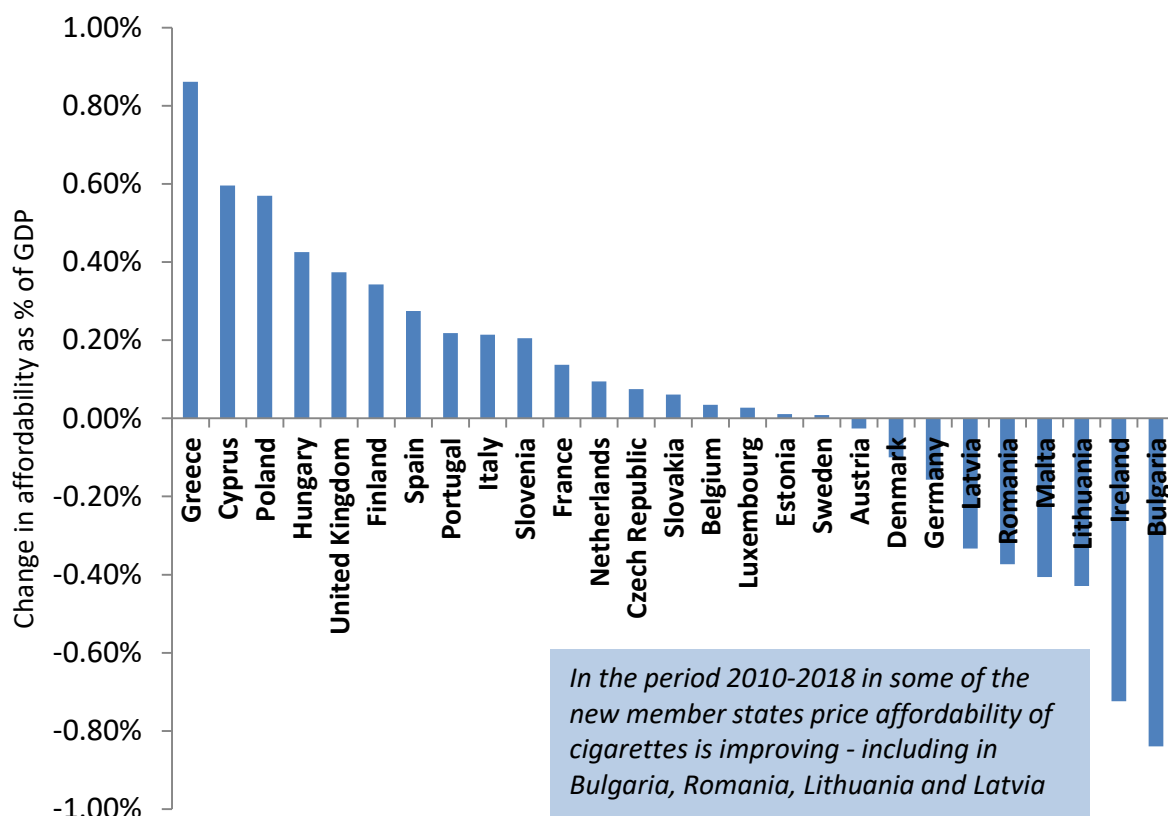


Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

After 2010, the market is considerably less turbulent, including in the new member states, compared to the previous period. The affordability of cigarettes remained fairly stable in the period up to 2014-2015, as on the one hand, there were no sharp changes in excise duties and cigarette prices respectively, while on the other hand there was modest economic growth that compensates for some isolated cases of higher prices. Affordability in Bulgaria remained within 4% (cost per 100 packs of cigarettes / GDP per capita). This is also a period in which illegal trade declined and returned to more normal levels.

The period 2015-2018 is interesting, as in these years there is a new increase in excise duties, albeit not so drastically, while at the same time the economy is pulling ahead and registering a healthy growth rate of GDP per capita. In practice, this is a period in which overall affordability of cigarettes in the new member states is improving, i.e. the growth of the economy outpaces the rise in prices. In Bulgaria, the indicator shrinks to 3.3% in 2018, which is still high in comparison to the data for the EU. Romania's excise tax increases have been more serious in recent years, and while affordability has also improved over the past three years, Romania now has the worst affordability in the EU – the indicator in 2018 is 3.4%.

**Graph 4: Change in p.p. of the cost of 100 packs relative to GDP per capita (2018/2010)**



Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

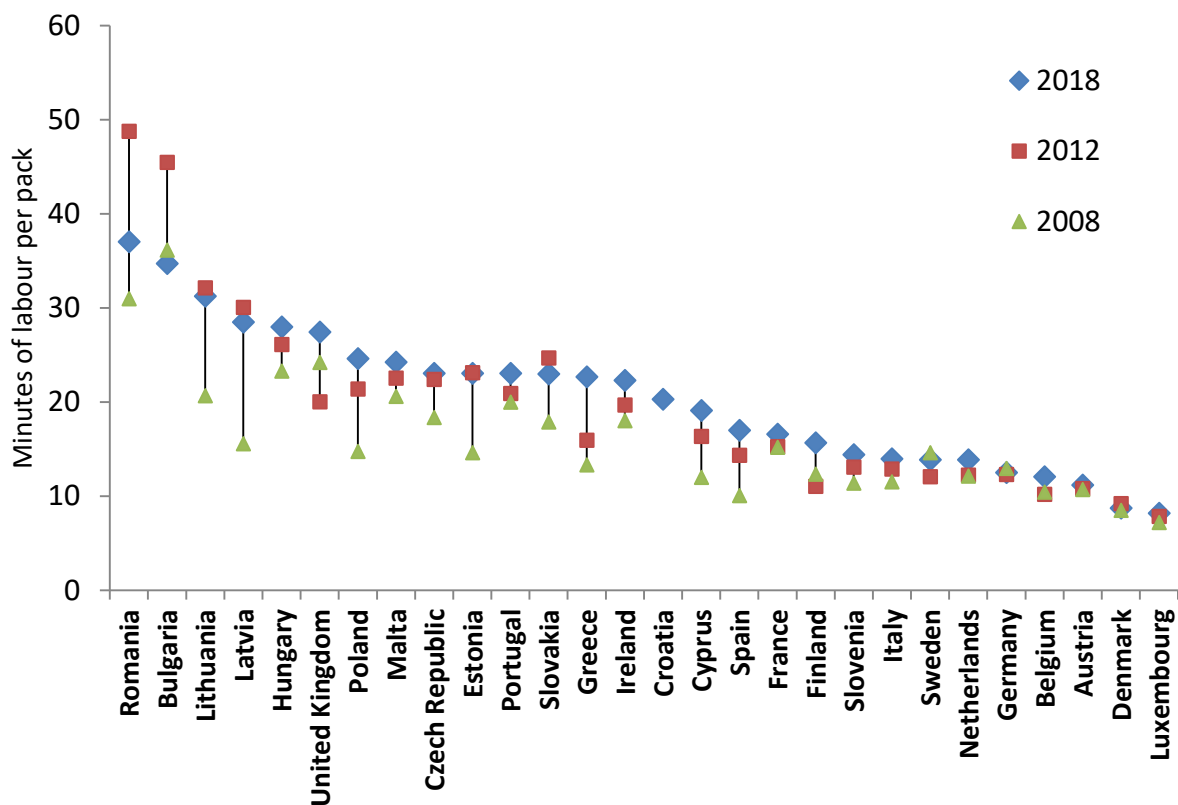
The overall picture shows that affordability of cigarettes in Bulgaria is within 1.7 times lower than the EU average. The difference was similar in 2008-2009. At the peak of 2010 and 2011, the difference in affordability was about 2.2 times. Expectations for 2019 are that affordability will improve additionally, as there are no plans for increasing excise duties, while economic growth will stay healthy.

### Minutes of Labour for a Pack of Cigarettes

This approach is somewhat more understandable as it goes down from macroeconomic data at the micro level using data on wages and prices of cigarettes. The problem here is that the account omits all income other than labour (for example from pensions) and it is entirely for the employees, that is, the wage earners. Unemployed or retirees do not enter this account, and they probably have lower affordability of cigarettes. However, this approach gives a clear idea of the affordability of cigarettes to workers, which ultimately reflects country differences well enough and is also valuable.

In this case, we will use the data on hourly labour cost per country within the EU. In particular, we use data on wages in industry, construction and services that exclude certain public sectors, such as defence or public administration. The data is from Eurostat and no additional estimations have been applied that could cause methodological disputes.

**Graph 5: Minutes of labour required to purchase a pack of cigarettes in the EU**



Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

Hourly labour cost in Bulgaria in 2017 is around EUR 4.1 per hour, while the EU-28 the average is EUR 20.3 per hour, that is, the difference is nearly 5 times. The estimate for 2018 shows that in Bulgaria it requires about 35 minutes of labour in order to buy a pack of cigarettes. It takes an average of 20 minutes within the EU, meaning that in Bulgaria it takes 1.7 times more hours of labour than in the EU in order to secure the funds for one pack of cigarettes.

It is noteworthy that the recovery in affordability of cigarettes in Bulgaria is considerably faster when it comes to labour cost and wages. This is due to the fact that wage growth is faster than the growth of the economy – hourly labour costs per person are growing at almost double the rate of growth in the economy in the period 2008-2018. In practice, in terms of hourly labour costs per person, the affordability of cigarettes in Bulgaria in 2018 is now better than the 2008 levels, that is, just before the 2009 and 2010 excise tax increase.

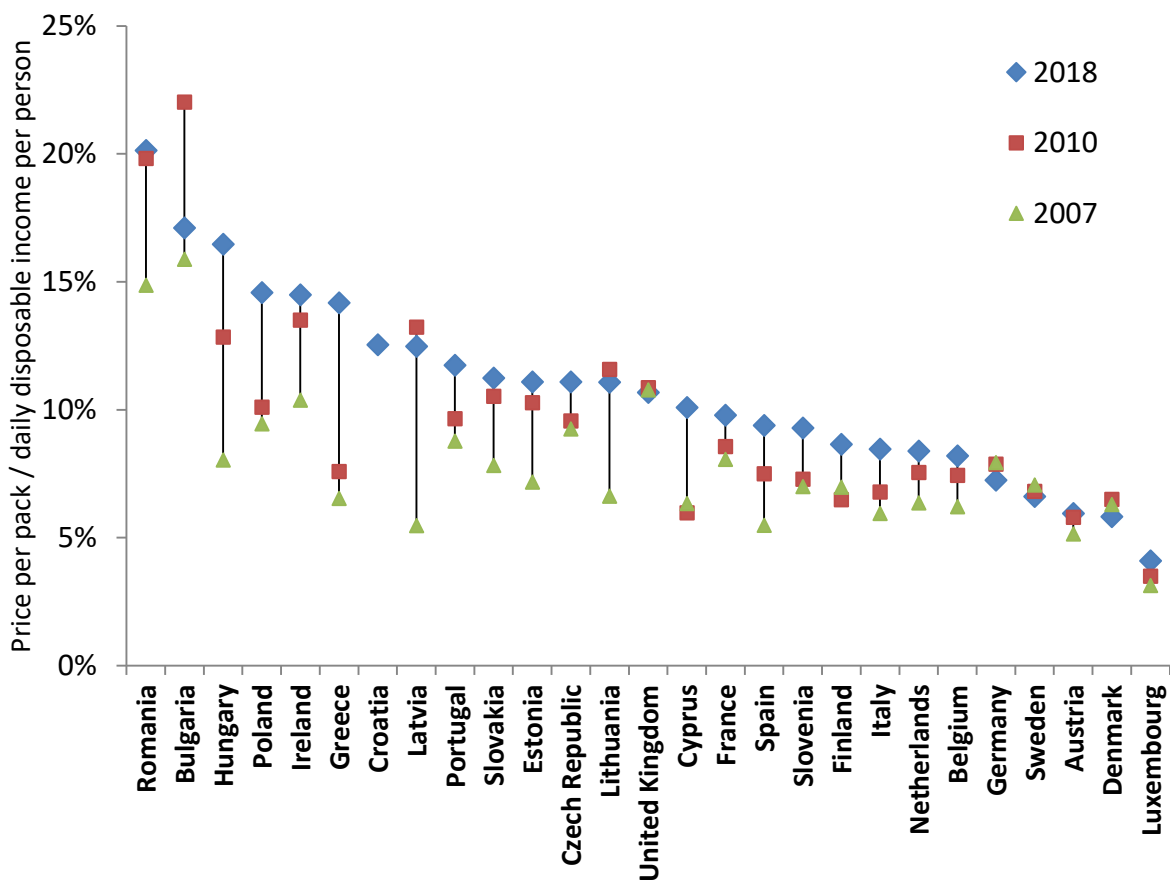
The important thing here is that Bulgaria almost constantly melts the difference in the affordability of cigarettes to the EU – the difference in 2008 was 2.2 times, while in 2018 it is now 1.7 times. This is due to a faster wage growth than the economy, which is also visible in the years of economic crisis. This is to be expected from a country that is supposed to gradually catch-up with Europe on income levels and wages.

## A Pack of Cigarettes as a Percentage of Daily Income

An interesting approach in determining the affordability of cigarettes is to refer the cost per pack to the disposable daily income per capita. In this case, we will use the data for adjusted net disposable income per person per day. This income is standardized by Eurostat and allows for a good comparison that does not focus only on employees, but includes all incomes in society. The end result is also much more comprehensible than the first method – the comparison with GDP per capita, so we will often refer to this approach in this report.

The calculations for 2018 show that, on average, for the EU-28, the price of a pack of cigarettes is about 11% of the daily disposable income per person. In Bulgaria a pack of cigarettes is as much as 17% of the daily disposable income per person. Here too, the two periods of worsening of price affordability in the EU-28 are 2009-2010, driven by an increase in excise duties in the new member states, and 2012-2013, driven by an increase in excise duties in some of the largest cigarette markets in the EU. In 2010, the price affordability was the lowest in Bulgaria – the price of a pack of cigarettes reached 22% of the daily disposable income per person, and in 2018 the last place in the EU is for Romania – the price of a pack of cigarettes is 20% of the daily disposable income per person.

**Graph 6: A pack of cigarettes as a percentage of daily disposable income per person in the EU**

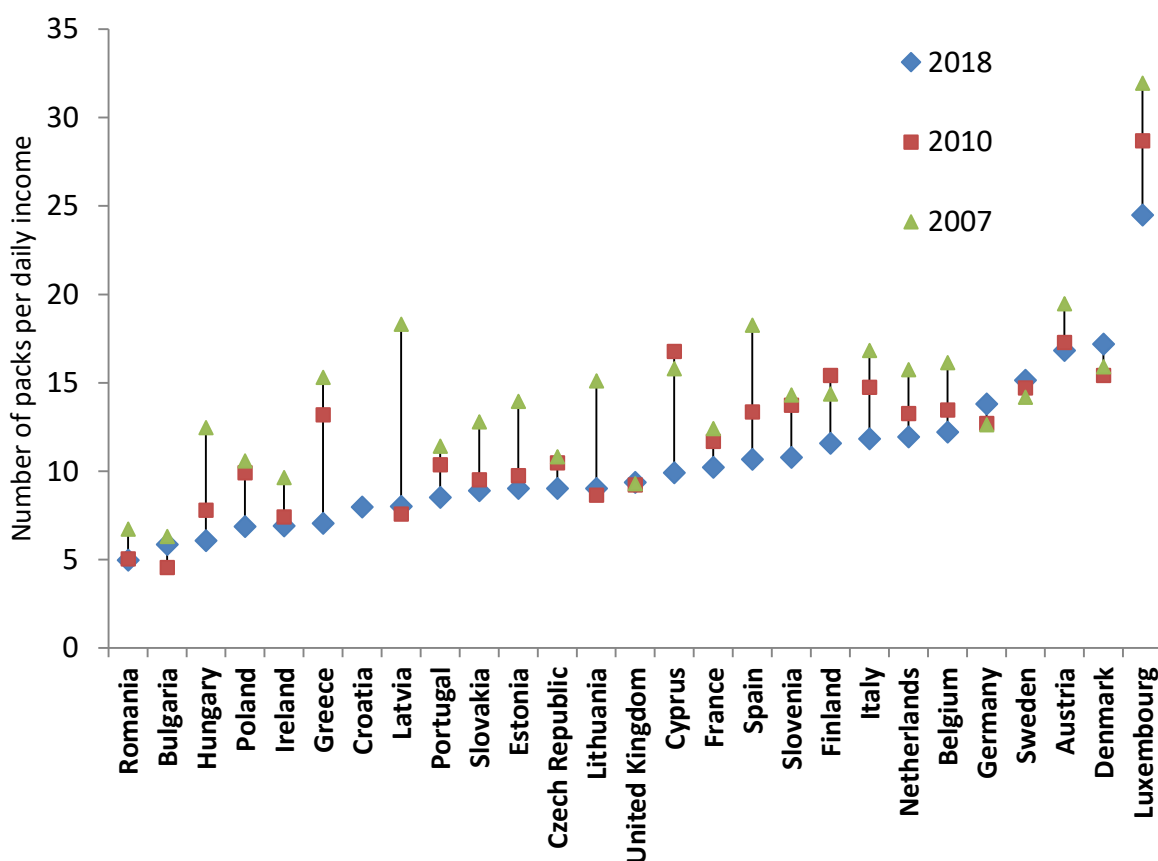


Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

Improving price affordability in Bulgaria is distinct in the period 2015-2018, coinciding with positive trends in the cigarette market – shrinking of illegal trade, increasing of legal consumption and more revenue in the treasury. By this method of calculating affordability Bulgaria has not yet reached the levels of price affordability from before 2010, but the movement is in that direction and, in the absence of changes in excise duties for 2019, the price of a pack of cigarettes is expected to be around 15-16% of the daily disposable income per person.

Generally, within the EU-28, for the past 10 years, there is a lower price affordability of cigarettes, which is most obvious in the new member states, as well as in the southern countries - Portugal, Spain, France, Italy and Greece are clearly losing with regard to the affordability of cigarettes. However, after 2015, there is a reversal of the trend, with many countries succeeding in stabilizing or even gaining in terms of the affordability of cigarettes – in some of the new member states, including Bulgaria, there is a clear tendency to improve price affordability, which is a result of the good performance of the economy over the past 3-4 years.

**Graph 7: Number of packs per daily disposable income per person in the EU**



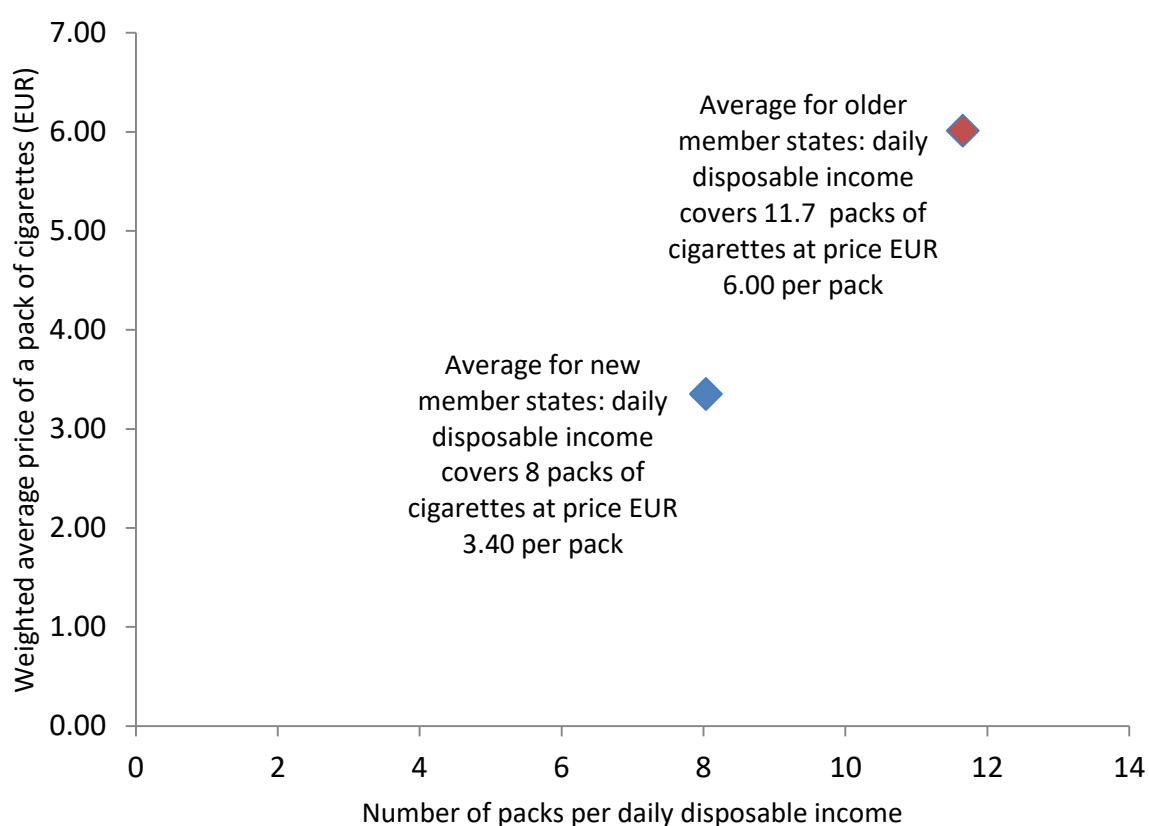
Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

The affordability of cigarettes in Bulgaria, calculated in terms of net daily disposable income per person, is 1.6 times lower than the EU average in 2018, and at the peak (2010) it has reached a 2.3-times difference. To put it in another way, in 2018, 5.8 packs of cigarettes can be purchased with the net disposable daily income per person in Bulgaria, while 9.3 packs of cigarettes can be purchased on average for the EU-28.

## Difference in Prices and Affordability in the Member States

The overview of prices and affordability of cigarettes clearly shows the differences between the older and the new member states. By older member states we refer to those, which joined the EU before 2004 (EU-15), while the new member states are those, which joined after 2004. The division in prices is obvious – all of the older member states have a weighted average price of cigarettes above EUR 200 per 1 000 pieces, while the new member states, except Cyprus and Malta, have a weighted average price of cigarettes below EUR 200 per 1 000 pieces. This mark of EUR 200 per 1 000 pieces is basically a price of EUR 4 per a pack of cigarettes. Nevertheless, affordability of cigarettes in the new member states is 1.4-1.5 times lower in comparison to affordability in the older member states.

**Graph 8: Prices and affordability in the new and older Member States**



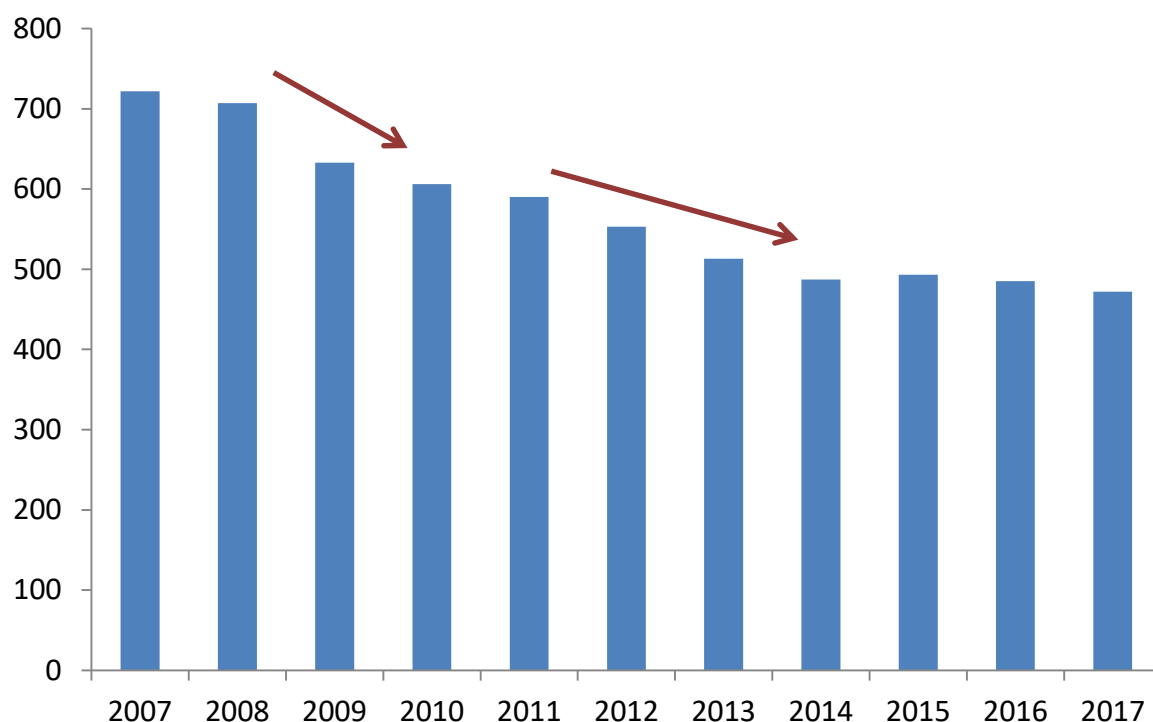
Source: [Excise Duties Tables](#), European Commission; Eurostat; IME

The estimations for the graph above include all of the older member states (EU-15), except Luxemburg, and all of the new member states, except Malta. The price is intentionally shown per pack of cigarettes. Data shows that with the net disposable daily income per person in the older member states one can buy 11.7 packs of cigarettes with average price of EUR 6.00 per pack, while with the net disposable daily income per person in the new member states one can buy 8.0 pack of cigarettes with average price of EUR 3.40 per pack.

## Effects on Consumption from Changes in Affordability

Data on consumption of cigarettes in the EU follows the general dynamic of affordability. The major decline in legal consumption is first in 2009-2010, when there is the shock increase in excise duty and the large drop in affordability in the new member states, as well as in 2012-2014 when there is an increase in excise duties and a decrease in affordability in some of the biggest markets in Europe – headed by Spain, France, Italy, Poland and the UK. In one period, the fall in legal consumption was within 101 billion pieces and in the other – 103 billion pieces. In these two periods more than 80% of the total decline in legal consumption over the period 2007-2017 is concentrated. The overall decline is from 722 billion in 2007 to 471 billion in 2017.

**Graph 9: Releases for consumption of cigarettes in the EU (2007-2017)**



Source: [Excise Duties Tables](#), European Commission

Indicative for the relation between affordability and consumption is the period 2015-2018, especially in Bulgaria. The new increase in excise duties, this time at a bearable pace, was made in years of stable economic growth, which in practice even improved affordability. This, along with stricter control over illicit trade, has led to a rise in legal consumption and a corresponding increase in excise revenue. This combination of higher excise duties and growth in consumption reflects the fact that affordability is actually improving. We can safely say that, along with all the principles of successful excise policy – as commented in the previous report<sup>8</sup>, an assessment of the economic environment and effects on affordability should be included, i.e. limiting the rise in excise duties in bad times for the economy, when the negative effects (illegal trade and loss of revenue) are very strong.

<sup>8</sup> See IME, Economic Analysis of the Excise Duty Policy on Tobacco Products in Bulgaria and Its Effects on the Illegal Market (2018)



## Price Elasticity of Cigarettes

Price elasticity of demand measures the change in demand (consumption) of a commodity as a result of the change in the price of the commodity in question. The relationship between the price movement and the demand of a commodity is generally inversely proportional, which means that the elasticity is most often a negative value. The specific value is obtained by dividing the percentage change in demand (consumption) by the percentage change in price.

Thus, if a 10% increase in the price of a product leads to less than 10% contraction in consumption, the elasticity will be between -1 and 0. This means that the commodity is relatively inelastic – the price changes lead to smaller in scale changes in consumption. For example, if we have a 10% increase in price and a drop of 5% in consumption, the elasticity in this case is -0.5. Conversely, if a 10% price increase leads to more than 10% decrease in consumption, for example a drop of 20% in consumption, the elasticity will be lower than -1 (in this case -2), meaning that the commodity has a relatively high elasticity – price changes lead to larger in scale changes in consumption. If the two coincide, i.e. a 10% increase in price leads to a 10% drop in consumption, then the elasticity is exactly -1, which is defined as "unit elastic".

Two effects need to be taken into account when we talk about price elasticity of demand and relate the discussion to the tobacco products. The first is the so-called income effect. This is, in fact, the effect that determines the backward relation between the change in price and the change in the demand. The rise in the price of a good leads to a change in the purchasing power of consumers – if they keep their consumption unchanged, then their disposable income and their purchasing power will shrink. That is why the focus on price affordability, which takes into account differences and changes in the purchasing power of smokers, is also important. The analysis of price elasticity should take into account not only the change in the price of cigarettes, but also the change in the affordability of cigarettes.

The second effect is the so-called substitution effect. A rise in the price of a product means that it gets relatively more expensive than any other product, especially its potential substitutes. This is extremely important in terms of the price elasticity of tobacco products and cigarettes in particular, as the substitution effect on cigarettes can be observed with respect to other tobacco products, such as rolling tobacco and cheap cigarettes that are not subject to (or subject to lower) excise duty.

In short, the price elasticity of cigarettes should take into account the changes in purchasing power – the so-called affordability of legal cigarettes and the demand not only in the legal cigarette market, but also for the market for potential substitutes, especially illegal cigarettes. Ultimately, consumer reaction to higher excise duties and cigarette prices on the legal market, with equal other conditions, will be a combination of the two effects of income and substitution and will depend on which effect dominates.

## Elasticity of Demand for Cigarettes in Bulgaria

Some of the most commonly cited studies<sup>9</sup> of the price elasticity of demand for cigarettes reveal elasticity within the range of -0.3 to -0.5, which indicates a relative inelastic demand. This should mean that an increase in the price of cigarettes – usually caused by an increase in excise duties, leads to a smaller in scale decrease in the demand for cigarettes. In other words, smokers are less likely to be affected by rising prices and are less inclined to limit their consumption. Such a hypothesis can be said to be beneficial to tax authorities as it allows them to raise excise duties on cigarettes and to collect more revenue in the budget as changes in consumption are not so drastic.

A closer review of the literature<sup>10</sup>, however, shows that for specific countries, consumer groups and time periods the elasticity of demand for tobacco products and cigarettes in particular may be significantly higher. All in-depth studies show that there are large differences in the elasticity of demand by user groups and, respectively, by product price categories, with generally higher elasticity being seen among people with lower incomes. This means that even in a market that is generally considered to be inelastic, there are groups whose behaviour can be greatly influenced by price changes. These groups are also the riskiest to form a demand for cheaper substitutes, incl. illicit tobacco products.

The only available so far and internationally quoted study<sup>11</sup> of the price elasticity of demand for cigarettes in Bulgaria gives an average elasticity of -0.8, which is significantly higher than the cited average above. Moreover, the breakdown shows that the price elasticity of the high-income groups in the country is -0.52 (i.e. close to the quoted averages above), while for those with low incomes it is -1.33, which falls in the definition of relatively high elasticity of consumption, i.e. demand that is heavily dependent on price.

The data for Bulgaria during the period under review (2007-2018) show a very diverse picture. This is a period in which we have a tax shock for cigarettes (mainly in 2010), a changing economic environment (recession and subsequent recovery), and the effect from strict measures against illegal cigarettes (specifically after 2015). All this makes the picture extremely turbulent and therefore it is very difficult to calculate the price elasticity of the demand in a pure form.

However, a more general look at the period shows price elasticity of demand for cigarettes, which is higher than originally expected. According to our calculations, the price elasticity of demand for cigarettes in Bulgaria reaches -0.95, i.e. demand is reacting at a rate similar to the rate of changes in affordability of cigarettes. The calculations are based on:

- ✓ Data on the consumption of cigarettes in Bulgaria weighed against changes in the reduction of population of the country – on equal terms the reduction in population should also lead to a decrease in consumption, so this must be taken into account when considering the real changes in demand;

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<sup>9</sup> See WHO Technical Manual on Tobacco Tax Administration, World Health Organization (2011)

<sup>10</sup> See Arthur B. Laffer, Handbook of Tobacco Taxation: Theory and Practice (2014)

<sup>11</sup> See Sayginsoy, Yurekli, de Beyer, Cigarette Demand, Taxation, and the Poor. A Case Study of Bulgaria, Health, Nutrition and Population Discussion Papers, World Bank and World Health Organization (2002)

- ✓ Data on prices of cigarettes that are weighted in terms of affordability – in this case we use data for the most popular price category of cigarettes (MPPC) that are weighted against GDP per capita, which is the most conservative method to estimate affordability. We use the data for the most popular price category of cigarettes, as the data is available for the entire period – the weighted average price of cigarettes is calculated after 2011, which does not work in this case;
- ✓ Smoothing the data at the beginning and end of the period with a three-year average that aims to protect us from specific deviations in each year – without this the results will be heavily dependent on the choice of years to which the calculations are made;
- ✓ The specific periods we compare are: 1) 2007-2009, that is, the period before the 2010 tax shock and 2) 2015-2017, which is the last available period and covers the years after the stabilization of the market in 2015

Applying everything described above leads us to a price elasticity of demand for cigarettes in Bulgaria of -0.95. The decline in demand for legal cigarettes for the period 2015-2017 compared to 2007-2009 was 27.6%. At the same time, although cigarette prices doubled over the period 2007-2017, the loss of affordability in the period 2015-2017 compared to 2007-2009 was only 29%. We can conclude, having in mind all the conditionality over the years that the price elasticity of demand for cigarettes in Bulgaria is relatively high, especially in the light of the available literature on the issue.

Probably the most important methodological question in our calculation is the smoothing of consumption of cigarettes and it deserves a special attention. Official data for consumption of cigarettes in Bulgaria may vary substantially, as a result of various effects. For example, the so called hoarding, that is to say, the release of large quantities of cigarettes at the end of a given year (at a lower excise duty) to be sold next year. Such cigarettes can be found on the market in the first and second quarter of the next year, but statistically they are consumed (released for consumption) the year before. That is precisely why we need to smooth the data. Such approach is also used by others sources, which give their own estimates for consumption of cigarettes – such is the case with the yearly Project Sun report<sup>12</sup> of KPMG LLP. The data for consumption of cigarettes in Bulgaria in Project Sun reports are very similar to the ones we estimated and used in our calculation of elasticity.

The breakdown by individual years shows different periods in consumer behaviour. In 2008, despite the rise in prices, consumption also increased. The reason is the rapid growth of incomes in 2008, that is, affordability was actually improving despite the higher prices. In 2009 and 2010, there was a significant drop in affordability and a corresponding drop in consumption. Interestingly, there is a relatively small price change in 2011, but a further contraction in consumption, which is most likely triggered by inertial processes from the rise in prices in 2010. These inertial effects are visible over the years and again suggest that it is more appropriate to look for elasticity over a longer period rather than a specific year.

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<sup>12</sup>See KPMG, [Project SUN: A Study of the Illicit Cigarettes Market in the European Union, Norway and Switzerland](#) (2017)

After 2010-2011, we have improved affordability in each year except for 2013. Prices of cigarettes stayed mostly unchanged for a few years, which allowed the market to stabilize and the consumption increased. This continued further after 2015, together with a stronger income growth. Increased legal consumption after 2015 is also linked to the contraction of illegal trade, which shows the effect of other policies on the demand for cigarettes on the legal market.

The breakdown of consumption of legal and illegal cigarettes allows us to trace the extent to which price changes lead to the manifestation of the income effect (lower consumption) and the substitution effect (redirection of consumption). In 2009 and 2010, which are also the years with the most noticeable decline in consumption, the figures show a similar picture – nearly 75% of the decline in legal consumption is the result of less cigarette consumption<sup>13</sup>, while the rest is shifting demand to the illegal market. In 2008 there was an increase in both the consumption of legal cigarettes and not illegal ones – this is explained by the increase of the excise duty and the prices respectively, but also by the increase of affordability due to the strong income growth. In this case, the effect of income has led to more legal consumption and the effect of substitution to growth in consumption of illicit cigarettes – most likely among various groups that have not experienced growth of their income.

A more severe decline of total consumption is also observed in 2011, but this is entirely due to a shrinking in illicit trade, in which excess quantities of illegal cigarettes in 2009 and 2010 are virtually disappearing. The latest tangible change is in 2015 when the growth in legal consumption is shared – half comes from growth in demand in general and half from the contraction in the illicit market. In this case, the increase in affordability leads to both effects – however, it is worth noting the better work of the control authorities in limiting the illegal market.

### Consumption by Price Categories

The detailed data from the National Customs Agency on the consumption of cigarettes by price categories for the period 2009-2016 allow the tracing of consumer preferences over the years. Bulgaria has a strong concentration of cigarette consumption in the low price segment. In 2016, for example, with a total consumption of 13.8 billion cigarettes, 9.2 billion pieces or 2/3 of all have a price within the range of BGN 4.60 to BGN 5.00. To this we can add up to 3 billion pieces, which are 50 cents above or below this interval.

Interesting is the movement in 2015, when there is no real price change, but there is an overflow of consumption from the illegal to the legitimate market – most likely as a result of the physical control in the factories. Growth in consumption in the legal market is mainly concentrated in the two most preferred segments – between BGN 4.00 and BGN 5.00 per pack, which shows that smokers have returned from illegal products to the low segment of the legal market. At the same time, however, growth in the higher segment (BGN 5.60-6.00) has been also observed, which shows loyalty to certain brands and is supported by the increased affordability of cigarettes in 2015.

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<sup>13</sup> Here one should also take into account the effect of consumption shifting toward rolling tobacco. This effect is important, but still rather limited – less than 10% from the overall decline in consumption of legal and illegal cigarettes in 2010 is due to consumers switching to rolling tobacco.

In 2017 there is already a huge concentration of cigarette consumption in the price segment of BGN 4.60-5.00, with the consumption of cigarettes in this price range reaching over 10 billion pieces or nearly  $\frac{3}{4}$  of the whole cigarette market. This is the result of the increase in excise duties and almost the disappearance of cigarette packs below BGN 4.60 from the market. Data for 2018, where there was a new rise in excise duty, shows that the low-end market is now almost evenly divided between the segments BGN 4.60-5.00 and BGN 5.10-5.50. Until September 2018, in the first segment were sold 4.7 billion pieces, and the second 4 billion pieces.

## Consumer Attitudes

The sociological survey conducted among 5 200 smokers<sup>14</sup> in Bulgaria contained a question about attitudes to possible changes in the price of cigarettes. The responses received give some insight into the potential consumer reaction to four different scenarios for rising cigarette prices – increase with 20 cents (about 4% rise), 50 cents (about 10% rise), BGN 1 (about 20% rise) and BGN 2 (about 40% rise). The percentage increase is given relative to the weighted average market price. Respondents' replies should rather be taken as a guide, as sometimes consumer assessment of their potential response to price changes differs from what is happening in practice.

What is observed in the different scenarios is that the relative elasticity of demand gradually increases with the higher step of a possible increase in price. If we combine the answers "I will stop smoking", "I will switch to another alternative – rolling tobacco" and "I switch to cigarettes without excise labels", we have 2.2% and 5% respectively of smokers giving one of these answers (meaning that they will limit their consumption of legal cigarettes) in the scenario where the price for cigarettes increase by 4% and 10%. Leaving all other consideration aside, this shall mean a price elasticity of demand within -0.46/-0.47.

With 20% and 40% more expensive cigarettes, responses are much more pronounced, with 25% and 44% of smokers choosing one of the three options, i.e. the price elasticity of demand jumps significantly to -1.07/-1.16. In this case, it should be borne in mind that this is a hypothetical reaction of the people, which is most likely exaggerated in response to the options that provide for a boom in cigarette prices.

Interestingly, the substitution effect from legal cigarettes to illicit ones and to smoking tobacco is dominating in the first two scenarios – a rise of 20 and 50 cents, whereas the effect of income, that is, attitudes to stop cigarettes, is more and more pronounced in case of higher price rise and dominates the smoker's possible behaviour. We already established earlier that the income effect dominates in cases with higher increase in prices. It is also important to note that in each of the options the alternative to switch to illegal cigarettes is more preferable to switching to rolling tobacco.

The breakdown of smokers by income groups allows us to analyse their potential behaviour in various scenarios. The available income ranges do not allow us to divide the smokers into two equal groups – using the median income, so we will split them in the following manner: the first

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<sup>14</sup> The sociological survey was done by Alpha Research in March-April 2018

group includes the two upper quintiles – the 40 percent of smokers with higher incomes, and the second group includes the lower three quintiles – the 60 percent of smokers with lower incomes.

The data show a different behaviour, which is particularly pronounced in the case of lower price changes, i.e. those that do not greatly disturb the affordability of cigarettes to those with higher incomes, but are obviously a burden for those with lower incomes. In the first two scenarios – a 20 and 50 cents increase of the price of cigarettes, the "richer group" registered an elasticity of -0.24, while for the "poorer group" it was -0.61/-0.62. At a higher price increase – by BGN 1 or BGN 2, the price elasticity in the "richer group" is -0.96/-1.01 while for the "poorer group" it reaches -1.11/-1.30.

Similar observations can be made in the breakdown between smokers that are working (have labour income) and smokers that are retirees (receive pension). For workers, the price elasticity varies from -0.39 to -0.79 for the different options, while for pensioners the elasticity varies from -0.61 to -1.32. Interestingly, retirees have a very low tendency to switch to illegal cigarettes, and are more likely to stop smoking than to switch to illegal cigarettes.

## Harmonization within the EU

The process of harmonization of excise duties on tobacco products in the EU has gone through two main periods over the past 15-20 years. The first one had a clear target for minimum levels of excise duties that the new member states had to reach by 2010<sup>15</sup>. The new member states (those that joined the EU after 2004) had to undertake serious increases in excise duties, which had many negative effects. Illegal trade of cigarettes in some countries, such as Bulgaria, Lithuania and Latvia, jumped to more than 30% in 2010. In the period before 2010, in the new member states there was a severe decline in affordability of cigarettes, which has lagged far behind the rich old EU members.

The second period was until 2018<sup>16</sup> when a new target was set, although already noticeably more achievable than in 2010. During this period (2010-2018), there was a normalization of markets in almost all new member states. In recent years, despite some steps to raise excise duties, economic growth and, respectively, stronger incomes in the new member states have led to an increase in the affordability of cigarettes. The latter, however, remains significantly below that in Western Europe, i.e. smokers from the new member states and in particular from Bulgaria have to spend significantly more than their income to cover their cigarette consumption.

A public consultation on a possible change in the Excise Directive was held in 2018. Although most of the consultation was focused on the regulatory framework for new products – focus on heating tobacco products and electronic cigarettes, some of the key points in the EU excise framework to traditional products were also discussed. It is important to note, that such consultation should not be seen as a representation of the opinion of all the EU citizens, but rather as the opinion of the various stakeholders that have expressed actively their views.

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<sup>15</sup> Directive 2002/10 /EC

<sup>16</sup> Directive 2011/64/EU

For the goals of our study, the consultation is particularly important in the part that discusses the prices of tobacco products. While the issue of cigarette prices has received relatively polarized responses, the discussion is dominated by those who claim that prices are rather high. As a leading issue in the event of a possible new rise in price of cigarettes, the respondents are predominately pointing at the risk of the shifting of consumption to illegal cigarettes on the black market. That is, the size of the illicit trade still has a central role in the discussion of excise duties on cigarettes and each policy must take into account precisely this potential effect.

An interesting question is the one, which discusses the main objective of the EU excise policy on tobacco products. This is in a way a central question that is always open for interpretations. The objective, which receives highest degree of support from all the sub-groups, is to establish rigorous and clear common rules to define and classify tobacco products subject to taxation. Other objectives, which are predominately supported from the various sub-groups, are: to ensure that tax regimes applied by EU countries to tobacco products sufficiently protect public health; help EU countries to curb illicit trade of tobacco and tax fraud; ensure that tax regimes applied by EU countries to tobacco products do not distort competition between market operators.

The objective, which receives limited support, is to reduce the differences in tax levels between EU countries, so that price differences are also reduced. The results of the public consultation in regard to the main objective of EU excise policy are well in line with the argument that the blind pursuit of nominal harmonization in excise duties and prices does not take into account economic disparities between the EU member states – mainly affordability issues, and can have various negative effects – especially in respect to illicit trade. This is one of the main points in this report also, that economic disparities should be considered in order to have an effective EU-wide policy.

Concerning the issue of minimum levels of excise duty on cigarettes, most of the opinions in the consultation are in the direction that they should not change at the moment. This applies to both the 90-euro minimum excise duty per 1 000 cigarettes and the rule that the excise duty is at least 60% of the retail price. It is no surprise that the opinions that favour the increase of minimum excise are mainly from those countries, which already have higher excise yield – such rule will have no effect in those countries.

The data show that the rule for the excise to be at least 60% of the retail price (the proportional rule) encounters more scepticism and some sub-groups are even proposing for it to be eliminated. The experience of the new member states shows that the rule leading to the increase of the excise duties is the nominal one. The proportion rule is not as effective when it comes to its effect on increasing the excise burden on cigarettes.

Although there is no endorsement of a possible increase in the minimum excise duty, the disapproval of a possible sharp increase in excise duties in an attempt to sharply shrink consumption is far more pronounced. The responses to the potential effects of such an increase in excise duties on cigarettes show that expectations are not so much on reducing consumption of traditional cigarettes, rather on increased demand for various alternatives – mainly innovative products (heated tobacco products) or illegal cigarettes.



## Conclusions and Recommendations

The present study aims to shed more light on excise policy on tobacco products within the EU, focusing on the dynamics of the affordability of cigarettes in the EU over the last 10 years, as well as on the price elasticity of cigarettes in Bulgaria. The relevant data in the report is up to date in 2018, which makes them relevant to the current debate on the direction of excise policy on tobacco products in Europe. In this regard, the recent EC public consultation on possible changes to the excise framework in the EU, which could potentially affect traditional tobacco products, has also been considered.

The review of the affordability of cigarettes clearly shows that the latter is much lower in the new member states and in particular in Bulgaria, despite the lower prices of cigarettes. Although in Bulgaria prices are on average 25-30% lower than those in the new member states and half the average EU prices (excluding the UK and Ireland), the affordability of cigarettes remains lower – within 1.6-1.7 times lower than EU-28. The only country with lower cigarette price affordability, compared to Bulgaria is Romania, which is provoked by a relatively more significant increase in excise duties in 2015 and 2016.

Generally, within the EU-28 for the past 10 years there has been a worsening of the affordability of cigarettes, which is most pronounced in the new member states, as well as in the southern countries – Portugal, Spain, France, Italy and Greece. However, after 2015, there is a reversal of the trend, with many countries succeeding in stabilizing or even gaining in terms of the affordability of cigarettes – in some of the new member states, including in Bulgaria, has a clear tendency to improve price affordability, which is a result of the good performance of the economy over the past 3-4 years.

The price affordability of cigarettes in Bulgaria, calculated in terms of packs, which can be bought with the net daily disposable income per capita, is 1.6 times more negative than the EU average in 2018, and at the peak of the excise shock (2010) the difference was at its highest – cigarettes were on average 2.3 times more affordable in the EU in comparison to Bulgaria. To put it in another way, in 2018, up to 5.8 packs of cigarettes can be purchased with the net daily disposable incomes per person in Bulgaria, while 9.3 packs of cigarettes can be purchased on average for the EU-28.

The calculations show a comparatively high price elasticity of cigarettes in Bulgaria, which for the period 2007-2018 reached -0.95. The decline in demand for legal cigarettes for the period 2015-2017 compared to 2007-2009 was 27.6%. At the same time, although cigarette prices doubled over the period 2007-2017, the loss of affordability in the period 2015-2017 compared to 2007-2009 was only 29%. We can conclude, having in mind all the assumption that we explained in great detail in the report, that the price elasticity in Bulgaria is relatively high, especially in the light of the expectations in the literature on the issue.

The sociological study, conducted with Alpha Research among 5 200 smokers in Bulgaria allows us to reveal more details about consumer behaviour in the event of an increase in the price of cigarettes. It is noteworthy that the elasticity of demand gradually increases with the various price rises – from around -0.50 when the prices increase with 4% or 10%, to over -1.00 with an increase



in prices of 20% and 40%. In this case, it should also be borne in mind that respondents are most likely to react more sharply when asked about their future behaviour than they would in reality. However, the difference in elasticity between the richer and the poorer, as well as between working and pensioners, is visible. The latter shows that differences in social status and income lead to different behaviour and should be taken into account when conducting policy.

IME review of EU consultation on the possible revision of the EU-wide excise policy framework shows that the objectives of the EU policy should not be directed towards nominal harmonization in excise duties and prices, but mainly towards clear common rules and definitions, protection of public health and limiting illicit trade of tobacco products. In that respect, the discussion on affordability of cigarettes and price elasticity is extremely important, as it allows understanding better consumer behaviour and evaluating the risk of illicit trade. The current general discussion within the EU suggests that the overall excise framework will probably stay unchanged, which, in light of growing economies, will lead to improvement in affordability of cigarettes and potentially lower illicit trade.

The findings for the new member states and specifically for Bulgaria reveal that in the last 3-4 years there has been a real recovery in the affordability of cigarettes despite the increase in excise duties. No changes in excise duties are expected in Bulgaria in 2019, which means that the price affordability will further improve against the expected growth of the economy. In the medium term, even without a new target in the EU Excise Directive, the discussion of a gradual increase in excise duties on cigarettes is likely to continue.

It will be unrealistic to expect that price affordability of cigarettes will equalize in EU-28 in mid-term. This shall not be the main objective of the EU-wide excise policy. Changes in EU policy, as well as in national legislation, should respect the differences in purchasing power and shape policy in a way that will not harm the poorer countries. The new member states, including Bulgaria, should stick to excise policy, which aims at predictability and graduality, and takes into account changes in the economy. Excise duties shall be increased predominately in good years, as income growth will counter the potential negative effects from loss of affordability.

## Annex: Prices of Cigarettes in EU-28 (2007-2018)

Cigarettes	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
MS	Current MPPC per 1000 cigarettes (EUR)				WAP per 1000 cigarettes (EUR)							
Belgium	188.25	207.87	236.84	242.11	226.37	233.32	238.67	244.11	265.41	275.74	286.29	293.98
Bulgaria	58.80	63.29	74.01	105.33	112.49	109.93	117.85	118.88	120.67	121.18	125.78	128.34
Czech Republic	99.87	102.59	120.34	123.92	138.94	136.35	138.00	143.76	139.04	147.46	155.36	165.42
Denmark	214.56	214.62	214.47	248.49	232.28	262.96	266.67	271.88	274.43	273.72	270.93	269.80
Germany	235.29	235.29	235.29	247.37	229.80	243.20	246.50	254.50	256.98	266.98	273.55	281.88
Estonia	67.43	70.62	102.83	101.97	110.25	121.50	131.00	141.00	150.00	153.50	162.00	177.50
Ireland	352.50	372.50	422.50	425.00	423.50	423.50	446.00	454.50	464.00	484.00	503.50	503.50
Greece	140.00	150.00	150.00	160.00	156.56	162.27	164.10	175.15	181.80	185.40	187.30	204.78
Spain	120.00	120.00	150.00	170.00	166.52	188.03	202.14	215.00	218.74	222.00	222.00	226.00
France	250.00	265.00	265.00	280.00	270.00	285.00	305.00	325.00	336.76	337.47	337.75	340.33
Croatia	N/A	N/A	N/A	N/A	N/A	N/A	126.54	134.99	144.74	149.82	152.42	159.62
Italy	170.00	175.00	185.00	190.00	205.00	214.00	228.00	229.00	226.00	233.00	238.00	238.00
Cyprus	143.06	141.00	141.00	141.00	163.50	191.00	195.50	204.00	207.00	210.50	215.00	214.00
Latvia	46.70	59.66	104.36	107.30	110.59	117.81	128.35	129.88	139.66	144.46	144.46	159.98
Lithuania	54.30	72.41	88.33	110.06	108.03	112.52	119.03	123.38	130.00	138.50	149.50	159.00
Luxembourg	152.00	160.00	172.00	184.00	180.11	191.92	197.26	208.51	218.05	224.82	225.56	229.89
Hungary	73.68	106.76	117.61	112.95	110.57	121.98	146.74	170.60	169.21	169.14	177.67	179.60
Malta	180.53	180.53	179.67	200.00	188.00	206.80	203.43	203.43	214.24	245.91	262.63	262.63
Netherlands	200.00	231.58	236.84	252.63	236.72	251.74	264.62	291.91	291.91	302.50	307.89	309.45
Austria	170.00	175.00	180.00	200.00	189.40	197.40	202.10	208.80	216.50	224.20	229.70	238.10
Poland	73.85	77.59	85.01	93.64	116.04	114.20	132.74	140.04	154.11	156.60	158.76	160.15
Portugal	150.00	165.00	170.00	175.00	172.50	186.50	192.41	194.88	206.68	214.50	206.68	223.50
Romania	76.37	82.68	96.35	115.96	119.56	130.07	131.95	140.54	157.69	164.03	170.70	172.84
Slovenia	110.00	110.00	117.50	125.00	132.00	143.00	147.50	165.50	170.50	175.50	175.50	175.50
Slovakia	70.39	77.58	104.82	121.05	132.78	135.80	143.58	150.11	150.11	153.17	156.28	161.73
Finland	210.00	215.00	220.00	220.00	216.09	225.09	244.59	250.41	273.35	283.76	305.99	334.90
Sweden	235.76	258.32	251.88	245.36	248.29	255.48	295.72	286.96	288.26	301.57	294.73	301.58
United Kingdom	401.24	405.82	369.36	345.28	313.51	349.00	407.74	420.01	478.03	524.64	447.22	441.64

Source: Excise Duty Tables, European Commission