

The excise duty gap on tobacco products in Poland

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Abstract. One of the ways to raise budget revenue from taxes involves sealing the tax system. This includes eliminating evasion of the payment of excise duty on tobacco products, especially traditional cigarettes and tobacco used for roll-your-own cigarettes. The aim of the research described in the article is to estimate the excise duty gap on tobacco products in Poland on the basis of a survey addressed directly to consumers. The data were drawn from reports prepared for the Polish Chief Sanitary Inspectorate (Pol. Główny Inspektorat Sanitarny – GIS), covering the years 2013, 2015, 2017 and 2019. The number of consumed traditional and roll-your-own cigarettes was calculated. Therefore, the estimates are more consistent with the definition of a tax gap as they include the consumption of roll-your-own cigarettes. According to the research, the excise duty gap on tobacco products was relatively stable between 2013 and 2017 (fluctuating from PLN 5.69 bn to PLN 6.98 bn) and then dropped considerably in 2019 (to PLN 0.94 bn). Nonetheless, increasing the state budget revenue from excise duty on tobacco products is still possible. The growth in the number of smokers in the years 2021 and 2022 allowed the predication that, if other conditions remained the same, the excise duty gap in 2022 would increase in comparison to 2019.

Keywords: tax gap, excise duty gap, excise duty on cigarettes, excise duty on tobacco products

JEL: H20, H26

Luka w podatku akcyzowym od wyrobów tytoniowych w Polsce

Streszczenie. Jednym ze sposobów na zwiększanie wpływów budżetowych z tytułu podatków jest uszczelnianie systemu podatkowego, m.in. zapobieganie uchylaniu się od płacenia podatku akcyzowego od wyrobów tytoniowych. W szczególności dotyczy to akcyzy od papierosów tradycyjnych oraz tytoniu przeznaczanego do samodzielnego skręcania papierosów. Celem badania omawianego w artykule jest oszacowanie luki w podatku akcyzowym od wyrobów tytoniowych w Polsce za pomocą metody opartej na ankiecie skierowanej bezpośrednio do konsumentów. Dane uzyskano z raportów przygotowywanych dla Głównego Inspektoratu Sanitarnego, które sporządzono za lata 2013, 2015, 2017 i 2019. Oszacowano liczbę zarówno spożytych papierosów tradycyjnych, jak i papierosów skręcanych samodzielnie, dzięki czemu przedstawione szacunki są bardziej spójne z definicją luki podatkowej. Z badania wynika, że luka w akcyzie od wyrobów tytoniowych w latach 2013–2017 była dość stabilna (wahała się od 5,69 mld zł do 6,98 mld zł), a w 2019 r. drastycznie spadła (do 0,94 mld zł). Nadal

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jednak istnieje możliwość zwiększenia wpływów do budżetu państwa z tytułu podatku akcyzowego od wyrobów tytoniowych. Wzrost liczby palaczy w latach 2021 i 2022 pozwala przypuszczać, że przy niezmiennych pozostałych warunkach luka podatkowa w 2022 r. będzie większa niż w 2019 r.

Słowa kluczowe: luka podatkowa, luka w podatku akcyzowym akcyza na papierosy, akcyza na wyroby tytoniowe

1. Introduction

The COVID-19 pandemic and the period of high inflation forced governments to seek additional sources of tax revenue to deal with the economic problems resulting from the above-mentioned crises. One of the preferred sources should be excise tax, which has a high fiscal potential, allowing for the correction of resource allocation and which is relatively easy to administer (Cnossen, 2020, p. 2). Increase in revenues from excise tax may result from the adjustment of any relevant exemptions or the elimination of tax evasion. In the first case, a policy gap should be considered, while in the other the tax gap. According to its definition, a tax gap is a compliance gap 'estimated as the difference between the total amounts of tax theoretically collectable based on the applicable tax law and the total amounts of tax actually collected in a given period' (European Commission & Tax Gap Project Group, 2016, p. 14). The policy gap in excise duty is measured in many countries as 'tax expenditure'. These estimates are presented as the fiscal impact of the tax relief that is permitted by law (Thackray & Alexova, 2017, p. 3). For Poland, such calculations were performed by the Polish Ministry of Finance (2010). The estimations accounted for 0.13% of GDP (2.89% of excise duty revenue). A similar value of tax expenditure estimates, reaching about 0.1% of GDP for each year between 2009 and 2012 was presented by Dziemianowicz et al. (2014, p. 99). The fiscal impact of tax exemptions was analysed by Sygut (2018). The total exemptions in the total excise duty were estimated at: 8.64% in 2012; 5.59% in 2013; 5.49% in 2014; 6.27% in 2015 and 8.06% in 2016, i.e. 6.81% on average (Sygut, 2018, p. 55). The presented values do not leave much room for an increase in excise duty revenue resulting from the policy gap.

The analysis of the relevant literature showed no estimates of the tax gap for excise duty in Poland. There are, however, calculations presenting the values for the consumption of illegal products (shadow economy) from which excise duty should be collected. In the case of tobacco products, several studies have been conducted for the Polish market in the years 2012–2022. The reports prepared by the Center for Social and Economic Research (Pol. Centrum Analiz Społeczno-Ekonomicznych – CASE) and the Institute of Economic Forecasts and Analyses (Pol. Instytut Prognoz i Analiz Gospodarczych – IPAG) present estimates based on data provided by the

Almares research company. The Almares survey is based on a research system involving the collection of discarded empty cigarette packets from streets and public waste bins (Almares Institute for Consulting and Market Research, 2019). The estimates of the loss in budget revenue due to the illegal cigarettes market were as follows: PLN 2.65 bn in 2019 in the CASE report (Hagemejer et al., 2020, p. 60) and PLN 5.9 bn in 2015, PLN 5.3 bn in 2016, PLN 4.7 bn in 2017, PLN 4 bn in 2018 and PLN 3.6 bn in 2019 in the IPAG report (Fundowicz et al., 2020, p. 31). An international study on the illicit cigarette market was prepared by the KPMG organisation. This study was based on internationally conducted surveys of discarded empty cigarettes packets, which allowed the estimation of the illegal flows of cigarettes¹ between countries (KPMG & Project SUN, 2016). This report does not present the loss in the budget revenue in 2015, but shows the main countries (Belarus and Ukraine) from which illegal cigarettes came to Poland. The reports described above focus on the illegal consumption of cigarettes, which does not fully allow for the calculation of the tax gap according to its definition. Revenue from excise duty on tobacco products is collected from traditional cigarettes and tobacco for roll-your-own cigarettes, which means that the estimates of the latter must be included. Such calculations were conducted by Ernst and Young (EY, 2015). The loss in budget revenue resulting from illegal tobacco consumption amounted to PLN 5.2 bn (UN Global Compact, 2016, p. 100).

The estimates above indicated that the revenue from excise duty on tobacco products could have possibly been greater. However, considering the absolute values of the presented data, a downward trend in the illegal consumption of tobacco products may be observed, suggesting certain limitations for the potential increase in revenue. More research which would depict the situation on this market is needed, especially estimations which analyse not only the consumption of traditional cigarettes, but also other tobacco products. The research described in this article involves an analysis of the consumption of traditional cigarettes and the consumption of tobacco for roll-your-own cigarettes. None of the above reports, except the one compiled by EY, present such an approach, so this analysis complements the research above. The aim of the study is to estimate the excise duty gap on tobacco products in Poland. The calculations relate to selected years from the 2013–2019 period. The study period was determined by the availability of reports prepared for the Chief Sanitary Inspectorate (Pol. Główny Inspektorat Sanitarny – GIS) in Poland (2019 is the last year in which the study was conducted).

¹ Flows consist of counterfeit, contraband and illicit whites.

2. Excise duty revenue

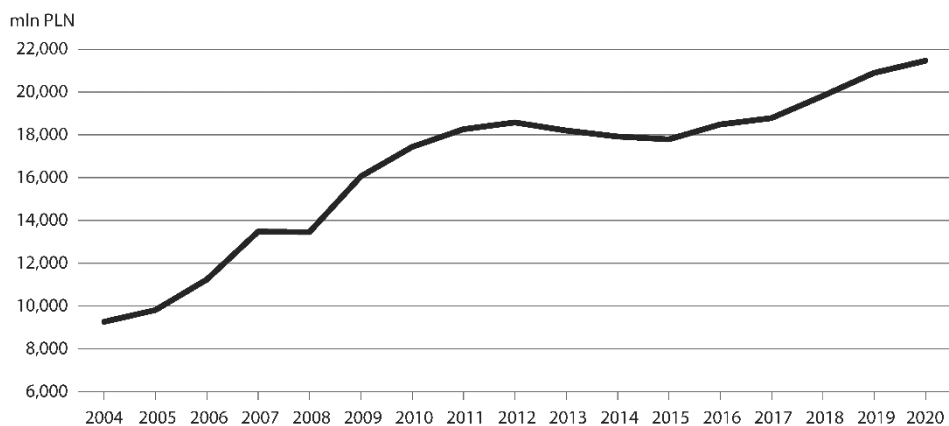
Excise duty in Poland is fiscally very important as it constitutes the second largest source of central government revenue. In 2020, excise duty revenue amounted to PLN 71.8 bn, which accounted for 17.1% of the total budget revenue. Tobacco excise duty is the second major source of excise duty revenue after the fuel excise tax (Table 1), and its revenue was steadily increasing from 2015 (Figure 1).

Table 1. Excise duty revenue

Specification	2019		2020	
	in mln PLN	in %	in mln PLN	in %
Total	72,396.1	100.0	71,787.2	100.0
Fuel	33,891.2	46.8	32,572.8	45.4
Gas for vehicles	1,048.6	1.4	891.8	1.2
Oil	132.7	0.2	318.7	0.4
Oil for heating	216.3	0.3	189.6	0.3
Carbon products	70.8	0.1	64.6	0.1
Gas	146.6	0.2	146.5	0.2
Alcohol	8,347.5	11.5	9,424.1	13.1
Beer	3,350.3	4.6	3,527.9	4.9
Wine	392.2	0.5	427.0	0.6
Tobacco products	20,892.6	28.9	21,459.9	29.9
Dry tobacco	0.8	0.0	1.2	0.0
Cars	3,035.8	4.2	2,310.5	3.2
Electricity	749.9	1.0	437.0	0.6

Source: author's work based on data compiled by the Polish Ministry of Finance.

Figure 1. Revenue from excise duty on tobacco products in Poland in the years 2004–2020



Source: author's work based on data compiled by the Polish Ministry of Finance.

The steady increase in the revenue from excise duty on tobacco products observed from 2015 indicates that this market should be analysed in more detail. A well-developed excise tax policy is likely to increase budget revenue and, at the same time, improve public health.² Estimating the tax gap may allow collecting potentially higher taxes resulting from excise duty on tobacco products.

3. Research method

Due to the nature of the excise duty tax and the limited availability of data that can accurately reflect the actual tax base, estimating the tax gap involves a non-direct procedure. The top-down and the bottom-up methods are most commonly used in estimations. As Thackray and Alexova (2017, pp. 3–4) state,

The top-down approach provides a comprehensive estimate of all tax losses from noncompliance, but does not identify compliance behaviors creating the losses [...]. Top-down excise gap estimates use independent statistical data to estimate total potential collections and compare this figure to actual collections, to derive the excise gap. [...] Bottom-up techniques, such as auditing a random sample of taxpayers, or analysis of compliance risk and intervention results, can instead be used to estimate the impact of specific behaviors.

The top-down method requires a database which must be independent of the base of tax payers. The database should be as detailed and structurally aligned with the actual database as possible. The bottom-up estimation of the tax gap, on the other hand, requires information from taxpayers about their tax evasion. Besides these two methods, others can be used as alternatives (Thackray & Alexova, 2017, pp. 3–6). The alternative methods are based on surveys and the most popular ones include (UN Global Compact, 2016, p. 101):

- surveys on discarded empty cigarette packets collected from streets and public waste bins;
- supplementing data on official sales with statistics on the traceability of illegal production or smuggling attempts, e.g. from the police or customs;
- surveys addressed directly to consumers.

Every method, however, has its limitations. In the case of surveys on discarded empty cigarette packets, no information is available on the illegal tobacco consumption used for roll-your-own cigarettes, the survey is limited to a certain number of brands and the packets collected from homes and workplaces are not covered by the survey (Almares Institute for Consulting and Market Research, 2019,

² The policy created by the UK government can be an example. The World Bank states 'The UK experience demonstrates that the illicit tobacco trade can be addressed effectively even in the presence of high tobacco taxes' (Dutta, 2019, p. 166).

p. 2). Supplementing data on official sales with statistics on the traceability of illegal production or smuggling attempts has no clear relationship with the current tobacco products consumption and only reflects the values obtained through the successful results of tax administration services (UN Global Compact, 2016, p. 100). Surveys addressed directly to customers may be underreported, especially since the respondents are asked about delicate or controversial matters. Thus, these surveys show a tendency to underreport some values, which occurs when such issues as e.g. tobacco products and alcohol (Jałowiecka & Jałowiecki, 2013, pp. 123–124) are addressed. These limitations require the estimates to be interpreted with caution in comparison to other data or results.

This analysis is based on data obtained through a survey addressed directly to consumers, compiled in reports by TNS³ and Kantar⁴ and prepared for GIS. They were carried out in 2013, 2015, 2017 and 2019 (TNS Polska, 2013; Kachaniak et al., 2015; Trzasańska et al., 2017; Trzasańska & Krassowska, 2019). The survey data allowed the estimation of the number of the consumed traditional and roll-your-own cigarettes. According to the Polish Excise Duty Act (Pol. Ustawa z dnia 6 grudnia 2008 r. o podatku akcyzowym), tobacco products include: traditional cigarettes, tobacco for roll-your-own cigarettes, cigars and cigarillos. The last two are consumed in very small amounts and so can be omitted in the estimations. The theoretical excise duty revenue must include the consumption of traditional and roll-your-own cigarettes, and be comparable to the actually collected excise duty revenue.⁵ Therefore, the estimates based on the consumption of traditional and roll-your-own cigarettes are more consistent with the definition of the tax gap.⁶

The tax gap in excise duty for a tobacco product is based on the scheme for Canada⁷ (Canada Revenue Agency, 2017, p. 17), but modified to meet the specificity of the Polish market. In Canada, the potential tax revenue is calculated using data concerning what follows: the smoking rate and intensity, the number of people aged over 15 and the number of days they smoke. In addition, an uplift factor⁸ for the underreporting of cigarette consumption is used. As stated above, applying this scheme for Poland requires certain modifications. Firstly, there is no data which could be used as an uplift factor. Consequently, the upper limits of the consumption range of cigarettes are used in the estimation. Secondly, the smoking population also includes people who smoke roll-your-own cigarettes. Due to the limitation of the

³ TNS – Taylor Nelson Sofres, a global market research and market information group with offices in over 80 countries. A local TNS agency is also located in Poland (TNS Polska – TNS Poland).

⁴ International group of firms specialised in data gathering, knowledge transfer and advisory services. In Poland the company is known as Kantar Poland (Kantar Polska).

⁵ Budget classification No. 75612 – Excise duty tax from tobacco products.

⁶ The more types of cigarettes are included in the estimates, the more they match the reality and the collected excise duty revenue.

⁷ A similar scheme is also used in the UK (HM Revenue & Customs, 2018).

⁸ Since survey data is often subject to underreporting, an uplift factor is used to correct for this bias. It amounted to 1.35.

collected data, the group of smokers who make their own cigarettes from tobacco is separated only from those who smoke daily.⁹ There is also no need to estimate the consumption of illegal cigarettes, because in order to calculate the tax gap, data reflecting the actual revenues from excise duty on tobacco products can be compared to the potential ones.

4. Results

Based on the modified Canadian scheme for Poland, the potential revenue from excise duty on tobacco products in Poland for 2013, 2015, 2017 and 2019 was estimated. The size of the smokers' group is calculated as the percentage of the 15+ population in Poland using Statistics Poland (Główny Urząd Statystyczny [GUS], 2018, 2021) data. The population of smokers is divided into two groups. The first group consists of occasional smokers and the other one of daily smokers (Table 2).

Table 2. Number and percentages^a of smokers in Poland

Specification	2013		2015		2017		2019	
		in %		in %		in %		in %
Total	9,490,134	.	8,168,200	.	8,157,523	.	7,178,416	.
Occasional smokers	654,492	2	326,728	1	326,301	1	326,292	1
Daily smokers	8,835,642	27	7,841,472	24	7,831,222	24	6,852,124	21

a As the percentage of the 15+ population.

Source: author's calculations based on TNS Polska (2013), Kachaniak et al. (2015), Trząsalska et al. (2017), and Trząsalska and Krassowska (2019).

From 2013, the number of smokers decreased, but starting from 2015, the number of occasional smokers remained stable. Between the years 2017 and 2019, the number of daily smokers dropped by about 1 mln (i.e. almost by 13% of the total number of daily smokers). According to data from the reports prepared for GIS, some daily smokers smoke roll-your-own cigarettes. In 2019 it was 21%, 19% in 2017, 28% in 2015 and 18% in 2013.

The structure of daily smokers remained relatively stable in time (Table 3). The largest number of them smoke 1.5 packets of cigarettes a day. In 2019, the number of smokers who smoked the most dropped to 1%. This structure is used to calculate the number of smoked packets of traditional cigarettes.¹⁰ It is assumed that smokers who consumed roll-your-own cigarettes smoked one packet of cigarettes a day.¹¹ In the

⁹ It seems reasonable to assume that it is much easier for occasional smokers to buy traditional cigarettes than to make them themselves.

¹⁰ In the Kantar report from 2019 (Trząsalska & Krassowska, 2019), the data about the intensity of smoking is labeled for traditional cigarettes. In the previous edition of this report, there was no such description. For the sake of consistency, the estimates were adjusted according to the 2019 version.

¹¹ This assumption is conservative and based on mid-size data reported in Table 3 for daily smokers.

case of occasional smokers, it is assumed that they smoked one packet of traditional cigarettes per week. Rounding up, it was 50 packets of cigarettes per year. Based on this data, the total consumption of cigarette packets was calculated and reached: 2,843,348,405 in 2019; 3,470,242,196 in 2017; 3,300,925,143 in 2015 and 3,680,855,154 in 2013.

Table 3. Characteristics of daily smokers by number of packets of cigarettes smoked between the years 2013, 2015, 2017 and 2019

Year	Share of daily smokers by number of packets of cigarettes smoked daily (yearly)			
	0.5 (182.5)	1 (365)	1.5 (547.5)	2 (730)
	in %			
2013	15	38	43	3
2015	15	36	42	7
2017	11	41	44	4
2019	14	40	45	1

Source: author's work based on TNS Polska (2013), Kachaniak et al. (2015), Trząsalska et al. (2017), and Trząsalska and Krassowska (2019).

The excise duty on tobacco products, which is paid in Poland is a combination of a lump-sum tax and ad valorem tax.¹² The amount of tax due largely depends on the maximum retail price printed on the packet of cigarettes or tobacco, but it cannot be lower than the minimum rate. The minimum excise duty is calculated as the sum of the fixed amount for 1,000 cigarettes (PLN 367.36 in 2022) plus the percentage rate of the maximum retail price (32.05% in 2022). The maximum retail price cannot currently be lower than 105% of the weighted average retail selling price of cigarettes in the previous year. This price is announced in the regulation of the Minister of Finance and aims to secure the state budget revenue against the negative effects of lowering cigarette prices by the producers. Raising the lump-sum tax rate results in a price increase of the cheapest cigarettes, while increasing the ad valorem rate is unfavourable for the 'premium cigarette segment'.¹³ A similar system is used for tobacco, but the lump-sum rate is paid from 1 kg of tobacco (PLN 250.91 in 2022).

The tax gap is estimated for the minimum excise duty for a tobacco product. In case of a packet of cigarettes it was: PLN 8.54 in 2019, PLN 8.41 in 2017, PLN 8.17 in 2015 and PLN 7.18 in 2013. It is assumed that from one kilogram of tobacco

¹² Lump-sum tax is a fixed amount of money that a taxpayer has to pay for a given number of cigarettes and ad valorem tax is a value tax calculated as a percentage from a given price of cigarettes.

¹³ The price for premium cigarettes is higher than for the cheapest cigarettes, so the increase of the ad valorem tax influences this segment much more than the increase of the lump-sum tax. In other words, if a relatively low price is paid (e.g. cheap cigarettes), the lump-sum tax included in their price weighs much more than the percentage tax. The situation changes as the price increases. The lump-sum tax becomes increasingly less significant, and the ad valorem tax begins to weigh.

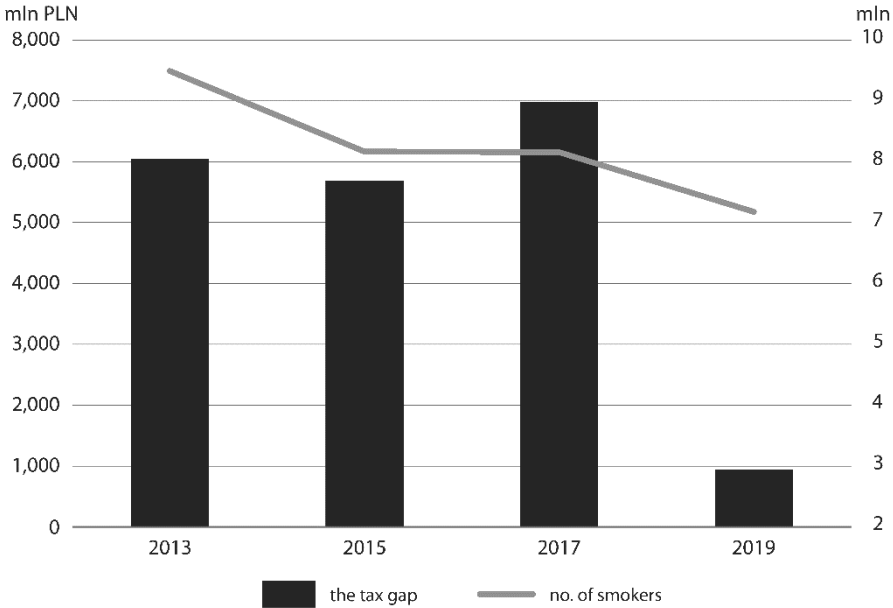
75 packets of roll-your-own cigarettes are made, so the excise duty for one packet of such cigarettes was: PLN 3.87, PLN 3.99, PLN 3.82 and PLN 3.43, respectively. The tax burden for one packet of roll-your-own cigarette is twice as low as in the case of a traditional packet. Applying the minimum excise duty may underestimate the value of the tax gap, but a cautious approach to the estimates seems to be a better solution than risking overestimation.

Table 4. The tax gap of excise duty on tobacco products in Poland

The tax gap	2013	2015	2017	2019
In bn PLN	6.05	5.69	6.98	0.94
As the percentage of the revenue	33.2	32.0	37.2	4.5

Source: author’s calculations based on TNS Polska (2013), Kachaniak et al. (2015), Trzasałska et al. (2017), and Trzasałska and Krassowska (2019).

Figure 2. The tax gap of excise duty on tobacco products and the number of smokers in Poland



Source: author’s calculation based on TNS Polska (2013), Kachaniak et al. (2015), Trzasałska et al. (2017), and Trzasałska and Krassowska (2019).

The tax gap of excise duty on tobacco products was relatively stable between the years 2013 and 2017 (it fluctuated from PLN 5.69 bn to PLN 6.98 bn) and then dropped significantly in 2019 (to PLN 0.94 bn – see Table 4 and Figure 2). The

fluctuations observed during this period can be partly explained by the changes in the number of smokers (Table 2) and the minimum excise duty rate, although other factors must also be considered. The minimum excise duty rate had been steadily increasing until 2014. Thus, the consumption of illegal cigarettes was on the rise, generating a decrease in the excise duty revenue on tobacco products between 2012 and 2014 (Figure 1; PwC, 2014, p. 6). Furthermore, in 2014 all of the minimums in excise duty resulting from EU regulations were achieved and the tax policy changed. For a certain period, the excise duty rates on tobacco products were frozen (Hagemejer et al., 2020, p. 62).

An increase in the excise duty revenue on tobacco products was observed from 2016 (Figure 1). It seems that this was related to a decrease in the relative price for cigarettes.¹⁴ Between the years 2013 and 2015, about 1.3 mln people stopped smoking (-13.7%), but the minimum excise duty from a packet of cigarettes increased from PLN 7.18 to PLN 8.17 (13,9%). This can partly explain the small decrease in the tax gap observed between the years 2013 and 2015. The increase in the tax gap between 2015 and 2017 can be explained by a drop (from 28% to 19%) in the share of roll-your-own cigarette consumers and a change in the structure of daily smokers (an increase in the two middle groups which have the biggest influence on the tax gap – see Table 3). Between 2017 and 2019, approximately 1 mln people stopped smoking (-12%), but the minimum excise duty from a packet of cigarettes increased from PLN 8.41 to PLN 8.54 (by 1.5%).

The drop in the tax gap in 2019 cannot be explained by these numbers and the ‘economic accessibility’ of legal cigarettes for people with lower income, caused by frozen excise duty rates. On the other hand, the factors which could cause this drop were: a higher detection rate of illegal activities and operations undertaken by the relevant investigative services (Hagemejer et al., 2020, p. 62), introducing legislative changes to prosecute the tobacco shadow economy, and the price increase of illegal cigarettes (Fundowicz et al., 2020, p. 31). To be specific, the creation of the National Revenue Administration in 2017 significantly enhanced the prosecution of illegal activities and promoted cooperation between different investigative services.¹⁵ Furthermore, legislative changes introduced in 2016, including the obligation to register intermediaries in tobacco products and the clarification of the catalogue of taxable activities related to drought tobacco provided additional instruments to fight

¹⁴ Since 2022, a 105% rate for calculating the maximum retail price on the weighted average retail selling price of cigarettes in the previous year was introduced. Previously it was 100%, which meant that as inflation increased, the relative price of the cheapest cigarettes decreased. The consumption of legal cigarettes was thus ‘more accessible’ even to people with lower income.

¹⁵ For example, the results of such institutions’ activities are reflected in the data relating to the number of illegal cigarettes secured by the police: in 2018 it was 156,307,118 cigarettes and 2019 saw an over 40% increase, reaching 221,751,304 (UN Global Compact, 2023, p. 87).

the tobacco shadow economy (UN Global Compact, 2023, p. 88). The combination of the factors above resulted in a drop in the tax gap of the excise duty for tobacco products in 2019.

The presented estimates, however, show some limitations which occur due to the fact that certain assumptions must be made in order to calculate the tax gap. A minimum excise duty rate is assumed, but in reality, the excise tax due from a more expensive packet of cigarettes can be higher. According to the Polish Ministry of Finance data, in 2016, the minimum excise duty rate was paid from 52% of packets of cigarettes (Poniatowski & Głowacki, 2018, p. 43). In 2021, this share was estimated at 70% (Ministerstwo Finansów, 2021, s. 13). If a higher rate is not applied,¹⁶ the tax gap may be underestimated. Moreover, the assumption that individuals who smoke roll-your-own cigarettes smoke one packet a day may distort the estimates. If this number is higher, then the tax gap may be underestimated.

Another limitation is that the consumption of innovative tobacco products is not included in the estimates. There are at least two reasons here: firstly, excise duty on innovative tobacco products was introduced in 2019, which made the tax gap incomparable in time, and secondly, according to the Kantar data for 2019, the share of smokers of this group of products amounted to about 1–2% of the total number of smokers, which would not have a significant influence on the estimates of the tax gap. In the future, however, the consumption of innovative tobacco products should be included in the estimates in order to better align the calculations with the definition of the tax gap.

Due to the limited availability of the reports prepared for GIS, the estimates close with the year 2019. Therefore, determining the more recent scale of the tax gap was not possible. However, current data on the number of smokers in Poland is provided e.g. by Medonet. According to the information presented by this health portal, 27% of the 18+ population smoked (19% daily, 8% occasionally) in 2021, and in 2022 this number rose to 30% (22% daily, 8% occasionally; Zimny-Zajac, 2022, p. 40). The Medonet¹⁷ data does not provide information on the intensity of smoking. The increase in the number of smokers in the years 2021–2022 may indicate that, if other factors remained the same, the tax gap in 2022 was likely to increase in comparison to 2019. The probability of this rise is high due to several factors. Firstly, during and following the COVID-19 pandemic, government services focused on responsibilities other than prosecuting the tobacco shadow economy. Secondly, those involved in selling illegal tobacco products faced serious losses during the pandemic, which they later may have wanted to make up for. Thirdly, people who had worked in Ukraine

¹⁶ Due to the lack of this share data for every analysed year, its use was abandoned.

¹⁷ A Polish internet portal devoted to health, medicine and healthy lifestyle. It is owned by the editorial home Ringier Axel Springer Poland (<https://www.medonet.pl/>).

in the tobacco shadow economy might have moved to Poland because of the war (Fundowicz et al., 2022, pp. 32–33).

5. Conclusions

In the article, the tax gap for tobacco products in Poland was analysed. Although this topic is presented in the literature, the differences in the methods used to analyse its scale leave space for new research. The database used in this study allows the estimation of not only the consumption of traditional cigarettes, but also the consumption of tobacco used for roll-your-own cigarettes. The analysis is complementary to the existing research.

The aim of the study was to estimate the excise duty gap on tobacco products in Poland in the years 2013–2019. According to the calculations, the tax gap of excise duty on tobacco products was relatively stable between the years 2013 and 2017 (it fluctuated from PLN 5.69 bn to PLN 6.98 bn) and then dropped considerably in 2019 (to PLN 0.94 bn). This may indicate that there is a potential for collecting increased amounts of tax from excise duty on tobacco products.

The growth in the number of smokers observed in the years 2021–2022 may suggest that, if other factors remained the same, the excise duty gap in 2022 was likely to increase in comparison to 2019. More detailed research is needed to monitor smokers' behaviour in Poland, not only to formulate an adequate health policy, but also to provide year to year estimates of the tax gap in excise duty from tobacco products.

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