



CAUSES AND CONTROL OF ILLEGAL TOBACCO

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1 Illegal Tobacco at a Glance



What's the problem?

The illegal tobacco trade undermines public health objectives, contributes to underage smoking and funds organized crime and terrorist activities, as well as costing \$40-50bn in lost global tax revenue every year that could be invested in essential services.



What have we found?

On average, for each additional percentage point of personal disposable income (PDI) needed to purchase a pack of cigarettes, the share of illegal tobacco increases by around two thirds of a percentage point. If tax rises mean that cigarettes become 10% more expensive relative to consumers' income, the consequence will be a rise of almost 7% in illegal tobacco's share of total consumption.



What's causing it?

Tobacco taxes are typically increased with the twin objectives of reducing the adverse health outcomes of smoking and strengthening tax revenues. However, increasing the price of tobacco and reducing affordability encourages smokers to seek cheaper products and creates opportunities for criminals. Even with the moderating effect of enforcement, less affordable tobacco products result in more illegal trade. The COVID-19 pandemic has made this situation even more sensitive.



What can be done?

- Relevant stakeholders should be aware of the impacts that tax decisions have on the affordability of tobacco and hence on consumer switching to illegal products.
- Attention should also be paid to understanding and establishing the appropriate level of enforcement to mitigate the destructive impact of illegal trade.

2 Executive Summary

Having analysed a majority of the world's most important cigarette markets, excluding China, we show in our report that:

Illegal trade grows when legal tobacco products become less affordable. When cigarette prices rise more quickly than consumer incomes, consumers begin to seek cheaper options and switch to illegal products. As the dominant component of retail prices and the driving factor behind less affordable tobacco products, taxation should be regarded as the most important lever by which policymakers can prevent illegal trade.

Pricing changes that make cigarettes less affordable result in increased illegal share across markets. We find that on average, for each additional percentage point of personal disposable income (PDI) required to purchase a pack of cigarettes, the share of illegal tobacco in that market increases by around two thirds of a percentage point. If cigarettes become 10% more expensive for consumers relative to their income, the share of illegal tobacco will rise by an average of almost 7%.

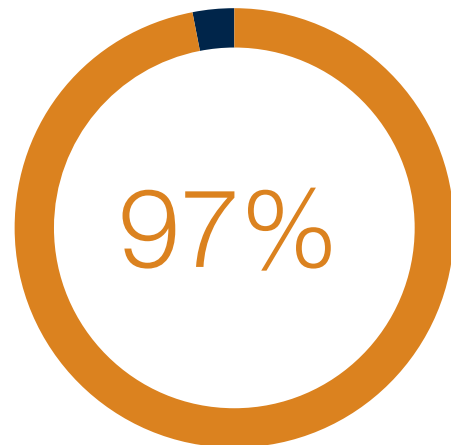
COVID-19 threatens to undo years of progress in tackling illegal trade. The pandemic has affected consumer purchasing power, prompting increased switching to illegal consumption exacerbated by growth trends such as online purchasing. Policymakers seeking to bolster public finances should carefully consider the risks of less affordable tobacco, which may only result in higher demand for illegal products, lower revenues and weaker public health outcomes.

Strong customs and border enforcement can help combat illegal tobacco, but enforcement alone is not a solution. The share of illegal tobacco is lower in countries with stronger enforcement against illegal trade. However, enforcement is not a silver bullet: it alone cannot offset taxation policies that make cigarettes less affordable.

Our analysis covers

71 countries across 15 years (2005-2019), representing 82% of global cigarette volume and 92% of global cigarette retail value, excluding China.

The correlation between taxation and cigarette prices:



If cigarettes become

10% more expensive relative to consumers' income, the result will be growth of almost **7%** in illegal trade share.

Of legal tobacco smokers in the U.K.

1 in 6 switched to consume illegal tobacco during 2020's COVID-19 lockdown.



3 Background

According to the International Monetary Fund (IMF), “The consensus among experts puts the annual revenue loss in tobacco taxation [...] worldwide at \$40-50 billion – that is, about 600 billion [cigarette] sticks, or 10% of global consumption.”¹

Global illegal trade volume grew by 11.5% between 2017 and 2019 (excluding China), with volumes in Eastern Europe increasing by 78% over the same timeframe, driven by a significant illegal trade increase in Russia.² Overall, European counterfeit and contraband (C&C) consumption accounted for 38.9 billion cigarettes in 2019, comprising 7.9% of total tobacco consumption. In particular, consumption of counterfeit cigarettes accounted for more than 50% of C&C consumption in the European Union (EU) for the first time.³

Illegal tobacco is viewed as a victimless crime by many consumers. This is, of course, not the case. The United Nations Security Council’s investigative body, and national enforcement agencies around the world, have reported that the illegal trade in tobacco has become a major security challenge and is being increasingly used to fund terrorism.⁴ According to the OECD, “[t]he illicit trade in tobacco is perhaps the most widespread and most documented sector in the shadow economy.”⁵

Additionally, because criminals do not care who buys their products, illegal trade also results in easier and earlier access to tobacco for young people. In the North East of England, for example, an estimated one in every 10 cigarettes smoked is illegal, with one in six smokers in the North East purchasing illegal tobacco.⁶ The World Bank has suggested that in general, young people and lower socio-economic groups have a higher smoking propensity and susceptibility to illegal product than higher socio-economic groups within markets.⁷

Tobacco taxation policy and its effect on the affordability of tobacco products is an important factor in the global illegal tobacco trade. Better understanding the relationship between taxation and pricing – and hence affordability and illegal trade – will aid the work of governments, regulators and enforcement agencies. In particular, society stands to benefit from a more cohesive and collaborative approach that maximises tax revenue and combats crime effectively.



The trade in counterfeit and diverted cigarettes and illicit whites resembles and sometimes intersects with the trade in drugs and humans. Ignored by many law enforcement agencies, illicit cigarette trade provides an ideal funding source for states, corrupt officials, criminals, and terrorists.”

U.S. House Financial Services Committee, 2018



“

Whilst drug smuggling appeared to be one of the most common means of financing terrorist organisations in previous decades, the counterfeiting or smuggling of legal goods have been their fastest growing source of revenue for approximately ten years.”

Center for the Analysis of Terrorism

4 Relationship Between Tobacco Tax Policy and Illegal Trade

KEY INSIGHTS



Modelling 71 markets over 15 years, we demonstrate a causal relationship between the affordability of cigarettes and the consumption of illegal tobacco.



When taxes on tobacco increase, tobacco prices rise. Fiscal policy decisions that raise taxes on tobacco therefore generally make cigarettes less affordable.



The impact of COVID-19 could further damage governments' efforts to control illegal trade, harming tax revenues and undermining public health objectives in the years ahead.

The economics of the tobacco category work in the same way as any other consumer product category.

When consumers are confronted with rising prices, some will switch to take advantage of cheaper options. Here we explore the connection between taxes on tobacco, the affordability of tobacco products, and the effect on the illegal tobacco trade.

Effects of affordability pressure on illegal trade

The price of tobacco is not simply a product of market forces: it is just as much a matter of public policy. Our analysis demonstrates a 97% correlation between the tax⁸ on each pack of cigarettes and the corresponding level of retail prices (Figure 1).

With retail prices being so closely correlated with taxation, it follows that tax policies which result in price increases and growing pressure on affordability can contribute to consumers' uptake of illegal products.

To quantify the strength and validity of the relationship between affordability and illegal consumption, we conducted a panel data analysis that examined 71 national markets between 2005 and 2019, including all of the largest tobacco markets outside China. Our modelling confirms a causal link between the taxation-driven affordability of cigarettes and growth in illegal trade.



On average, we determine that for each additional percentage point of personal disposable income (PDI) required to purchase a pack of cigarettes, the share of illegal tobacco increases by around two thirds of a percentage point. If consumers need to spend 10% more of their incomes to buy cigarettes, this translates to growth of almost 7% in illegal trade. In any given year and market, the data may be affected by unobserved factors unique to that year or to that particular country (see ‘Modelling the effect of affordability on illegal tobacco consumption’ box for more detail).⁹

It is reasonable to question whether any increase in illegal share could be prompted by falling legal consumption, i.e. contraction of the size of the market for legal tobacco products. By factoring in legal and illegal volumes in our tests, as well as share of total consumption, we were able to confirm substitution from legal to illegal tobacco as a result of pressure on affordability.¹⁰

This effect can be observed by analysing affordability and illegal share in a range of markets (Figure 2).



Illicit tobacco provides a significant revenue stream to illicit actors... fuels transnational crime, corruption and terrorism. So, for these reasons... the report declared that the global illicit trade in tobacco poses a threat to national security..”

U.S. Helsinki Commission on Security and Cooperation in Europe

Modelling the effect of affordability on illegal tobacco consumption

Our conclusions on the impact of affordability on illegal tobacco consumption are underpinned by econometric analysis of a panel data set across 71 countries and 15 years. We used this panel data structure to gauge whether the affordability of cigarettes causes changes in illegal consumption.

To go beyond correlations and identify a causal relationship, we needed to analyse relevant variables without worrying about whether our findings were being skewed by effects that we couldn’t monitor. We did this by using fixed effects estimation, controlling for the effects of differences between countries that are constant over time, whether or not they were actively analysed as part of our modelling. (For example, one such factor might be a country’s proximity to other countries.) Using this approach, we were able to measure the impact of changes in affordability through time on illegal share within different countries.

We find that the impact of affordability on illegal consumption is both statistically significant and economically meaningful. On average, for every additional percentage point of personal disposable income required to purchase 20 legal cigarettes, the share of illegal tobacco increases by around two thirds of a percentage point. Additional tests supported the validity of this causal link:

- We modelled the impact of affordability on illegal consumption levels directly, determining that growth in illegal share is not only down to declining legal consumption.
- We also looked at the impact of changes in taxation as a proportion of personal disposable income on the share of illegal tobacco, which – as expected due to the strong correlation between tax and legal tobacco prices – confirmed a causative effect.
- We conducted a broad range of further tests including: samples of countries and years; exclusion/inclusion of potential outliers; estimation using alternatives to fixed effects, and tests for any potential reverse causality of illegal consumption to affordability.

Figure 1: Cigarette taxes correlate strongly with retail price per pack (2019)

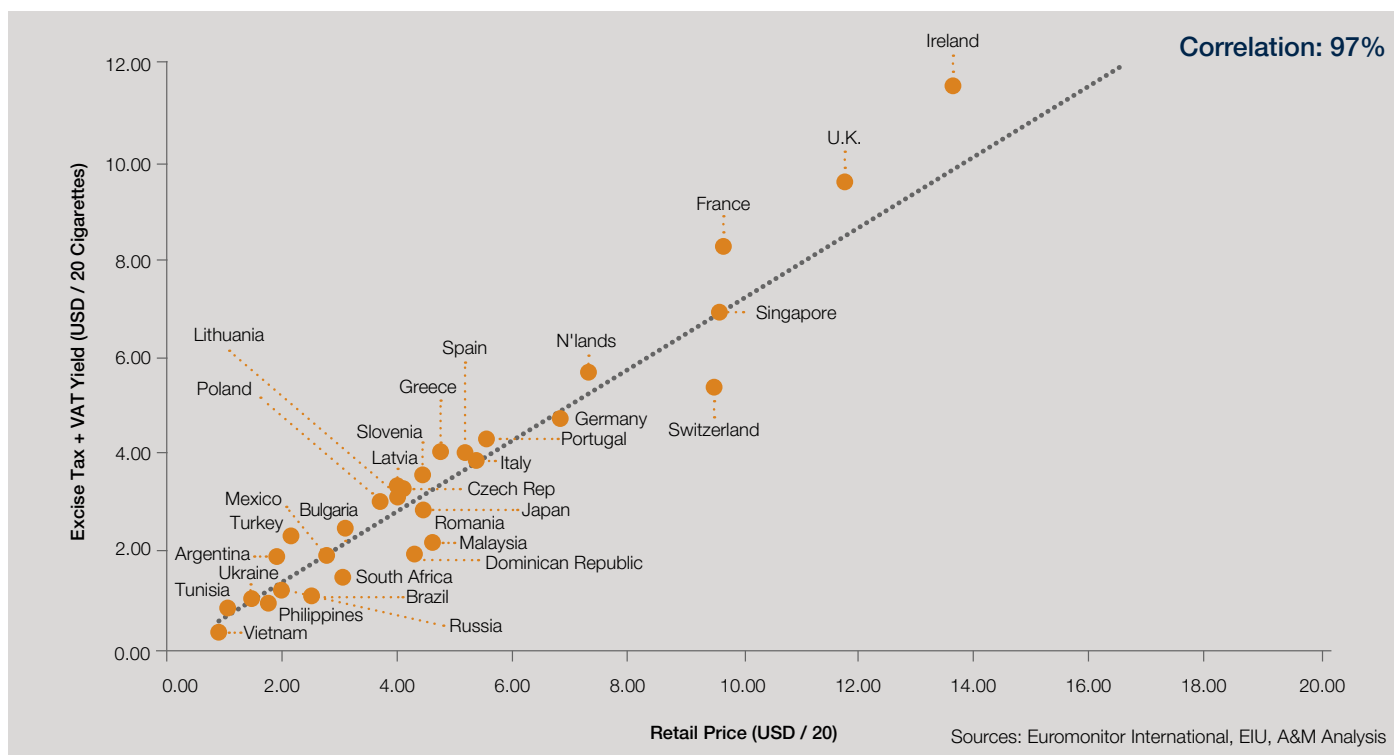
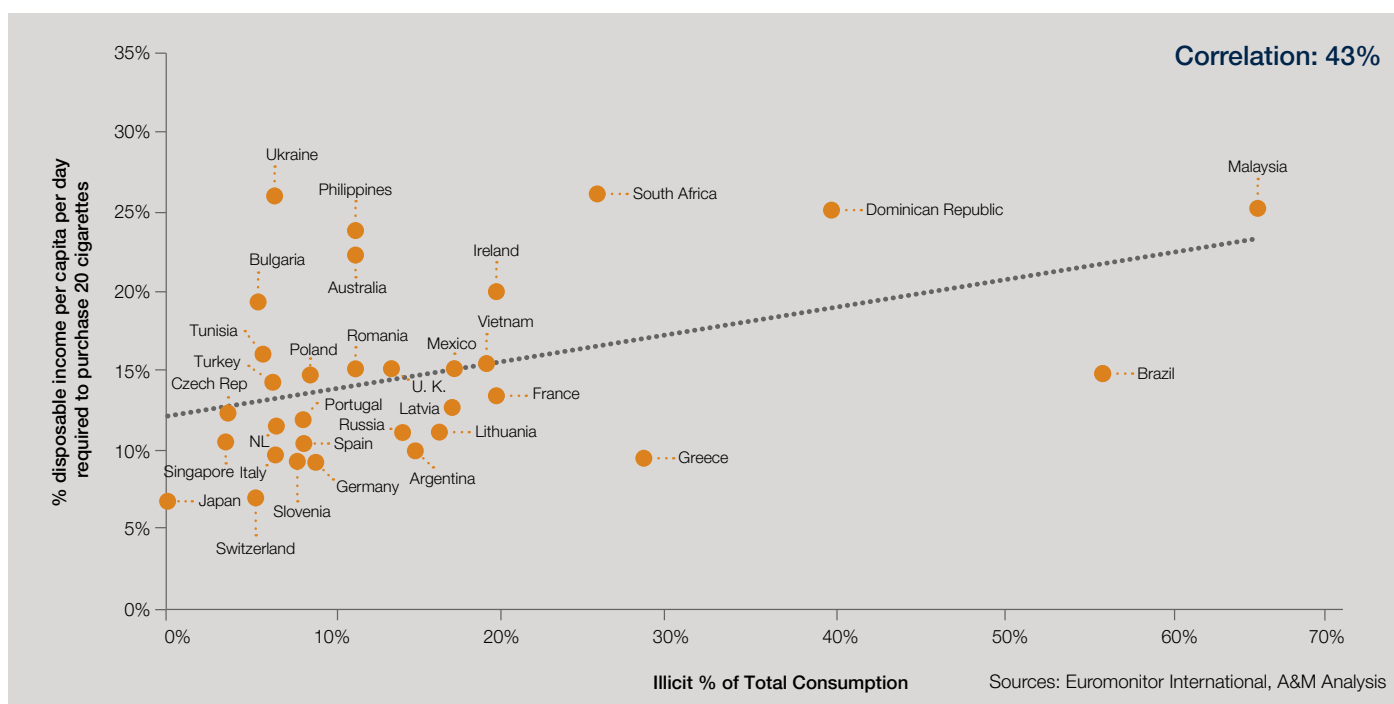


Figure 2: Less affordable cigarettes are linked to higher illegal consumption (2019)

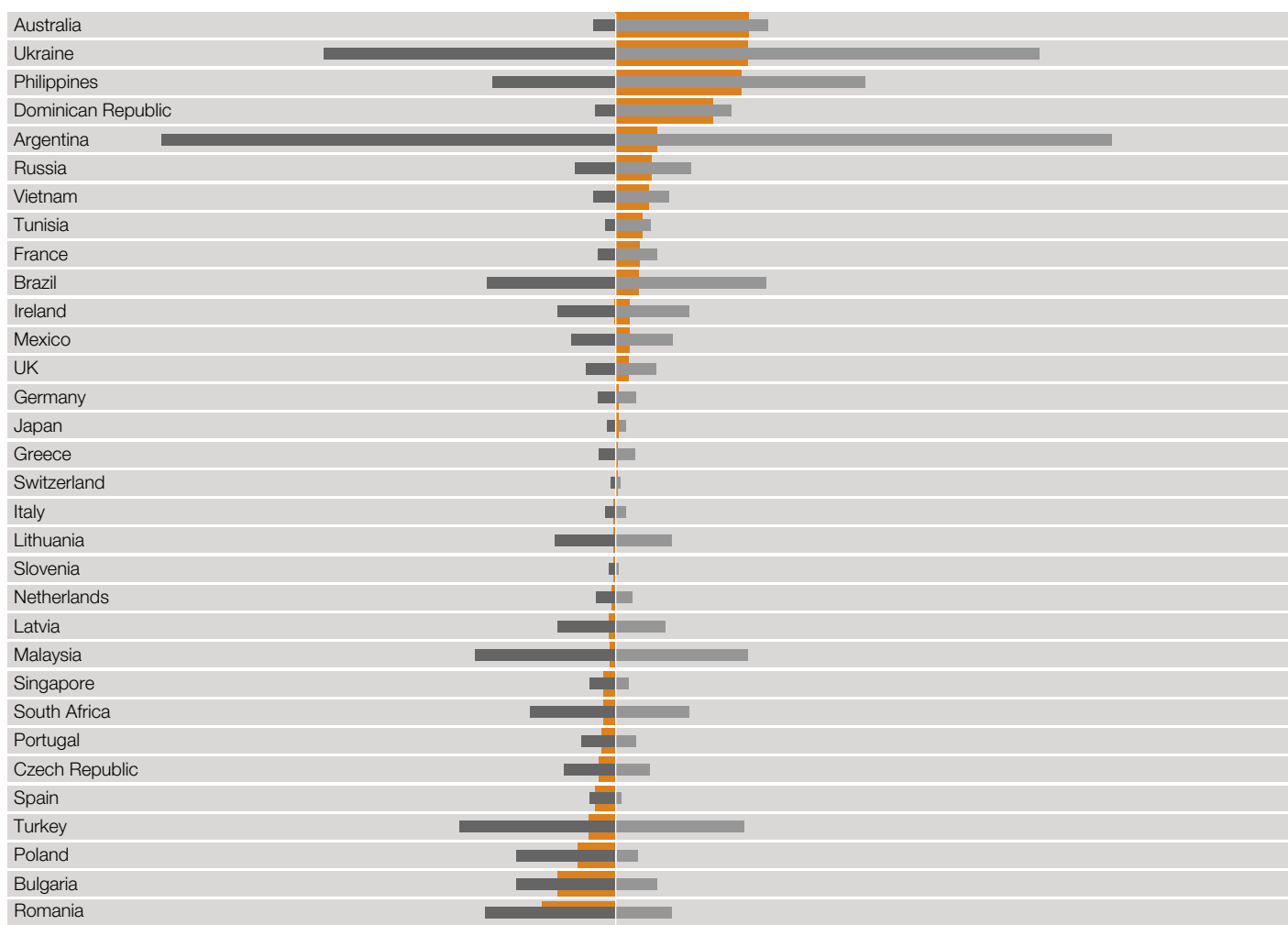


Illegal trade is primarily determined by the affordability of legal tobacco products. As Figure 1 indicates, the tax levied on tobacco is the most important component of retail prices. However, policymakers may expect rising incomes to soften the impact of increasing tobacco prices and maintain a level of legal consumption that bolsters tax revenues.

Net changes, shown in grey, indicate that price-related changes are on average more significant than those relating to growth in income. Despite income growth softening the impact of increasing prices, cigarettes have generally become less affordable over time.

We tracked changes in cigarette prices and PDI over time (Figure 3) to examine how the affordability of cigarettes has changed over time in different markets around the world.

Figure 3: Growth in incomes has failed to offset the impact of cigarette price rises over a five-year period (2014–2019)



*Countries are listed in order based on their net change in affordability.

Sources: Euromonitor International, EIU, EU Tax Tables, A&M Analysis

“

The tobacco tax basically turns bricks of cigarettes into gold bars [...] it's another sign the government has to rethink its tobacco tax policy.”

David Seymour, ACT Party Leader, New Zealand (2017)



Generally speaking, the five-year period covered in Figure 3 did not feature significant changes to existing tobacco market trends and consumer buying patterns. This state of affairs changed abruptly with the onset of the COVID-19 pandemic in early 2020. COVID-19's effects on incomes, job security and the broader retail climate risk undermining efforts to control illegal trade, harming tax revenues and causing much wider societal damage.

Our modelling and analysis confirms that less affordable legal tobacco products, driven primarily by taxation, is the major driver of illegal consumption. When more income is required to buy cigarettes, some consumers switch to cheaper options and cause growth in illegal trade.

The price of cigarettes has already risen faster than growth in incomes over the last five years. Now, the COVID-19 crisis is already leading to significant income losses around the world,¹¹ implying that cigarettes will become less affordable even without tax-driven price increases. This is exacerbated by radically altered consumer behaviours in some countries and new pressures on governments to raise taxes to bolster revenues in the years ahead. Short-term tax increases aimed at funding economic recoveries could have unintended consequences for public health and government revenues by causing hard-pressed consumers to look for other, cheaper options.

COVID-19 threatens to destroy efforts to combat illegal trade

National lockdowns through 2020 changed the ways consumers accessed and consumed tobacco.

In the U.K., for example, lockdowns changed consumer behaviours and encouraged more people to consume illegal products. In a July 2020 survey conducted by research firm Intrinsic Insight, 21% of respondents had bought tobacco through illegal or non-domestic duty paid (NDDP) channels prior to lockdown. This rose to 28% during the lockdown period. In all, 1 in 6 'traditional' smokers – who purchase cigarettes from mainstream retail outlets like supermarkets and petrol stations – switched to consuming illegal tobacco. In addition, around a third of traditional smokers reported feeling 'more open and understanding of people buying illicit tobacco'.

In South Africa, the government went a step beyond other countries in outlawing the sale of non-essential goods, including alcohol and tobacco, for several months. A University of Cape Town report, 'Lighting up the Illicit Market', suggested that previous progress in tackling illegal trade was undermined by the lockdown ban, which "fuelled the illicit market". The report stated that traditional retailers like supermarkets, previously the channel of choice for 56% of smokers, were only used by 3% of smokers during the ban on cigarette sales. Meanwhile, illegal channels that played a negligible role prior to lockdown – such as street vendors, friends and family or messaging apps – became established purchasing channels for many smokers during the lockdown period.

As COVID-19 drags economies into recession in the years to come, incomes will come under increased pressure, potentially making cigarettes less affordable and prompting more switching to illegal products.



5 Controlling Illegal Tobacco Trade: The Role, and Limits, of Enforcement

KEY INSIGHTS



Enforcement can help disrupt the supply of illegal tobacco products. Our A&M Enforcement Index shows that countries with stronger enforcement enjoy generally lower illegal share.



Governments cannot rely solely on enforcement to control illegal trade and disregard the more important influences of taxation and affordability pressure.



Enforcement is most effective when all key stakeholder groups collaborate to share information, establish appropriate legislative frameworks and implement robust AIT strategies.

Illegal trade is affected by the resolve with which different countries police it

However, without appropriate and reasonable tax policy as a basis, policymakers' ability to effectively tackle illegal trade is limited and the problem is almost impossible to control.

Our A&M Enforcement Index approximates the level of enforcement per country by assessing the strength of regulation and the effectiveness of the criminal justice and administrative systems in each territory. Our assessment is based on the World Justice Project's¹² Regulatory Enforcement and Criminal Justice indices, which contribute to its annual Rule of Law Index. We find that strong enforcement can help cushion the predictable effects on illegal trade of less affordable legal products.¹³ We find that there is a general correlation between the level of tax placed on cigarettes and strength of enforcement (Figure 4):

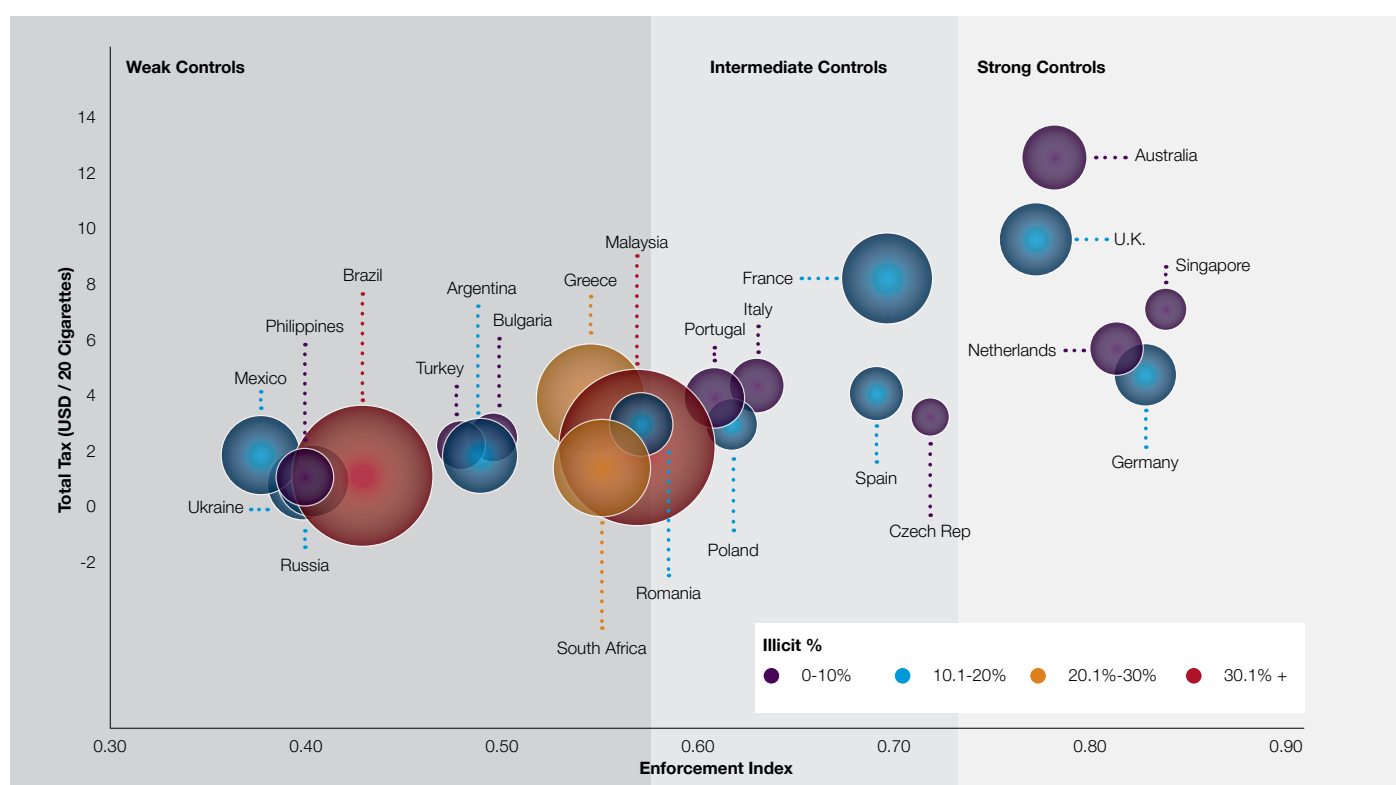


In our assessment, we are not only looking at increasing duties on cigarettes, but also the effect of taxation on illicit cigarettes. The lower-income group will turn to illicit cigarettes if prices of cigarettes get too expensive.”

**Datuk Seri Dr. D Dzulkefly Ahmad,
Malaysian Health Minister (2018)**



Figure 4: Countries with lower levels of illegal trade exhibit stronger enforcement controls (2019)



Sources: Euromonitor International, EU Tax Tables, A&M Analysis

The size of each country's 'bubble' represents that market's level of illegal share. The level of illegal trade is connected to the strength of enforcement across different markets.

It makes sense that countries which levy higher taxes on cigarettes can devote more resources to enforcement. However, there are inevitable limits to the effectiveness of enforcement in different markets. Each country reflects different geographic, political or cultural circumstances which affect the types and robustness of the enforcement required to best control illegal trade. In addition, the investment needed to deliver an appropriate enforcement strategy will vary dramatically from country to country.

More generally, it is appropriate to question the sustainability of policies that raise taxes on cigarettes in the expectation that enforcement will mitigate the predicted effect on illegal trade. The principal determinant of the level of illegal trade in a market is tax policy, which affects the affordability of tobacco products for consumers. Strategies to control illegal trade should therefore start by considering how affordable cigarettes are for consumers. Our modelling suggests that such strategies, combined with appropriate enforcement, can deliver more predictable tax revenues and lower illegal trade.

Fighting illegal trade: a question of collaboration and cooperation

Because of the complexity involved in delivering a balanced enforcement strategy, effective collaboration between all relevant stakeholders – governments, regulators, enforcement agencies and tobacco companies – is essential. The most effective solutions to tackle illegal trade have involved collaboration and coordination between governments, the health community, enforcement agencies and industry. Such collaborative efforts have, for example, succeeded in halting and rolling back illegal trade over several years in the U.K. and Romania.¹⁴

As illegal trade is a global problem, it can only be tackled with international cooperation. This can be achieved through collaboration between individual countries, such as through customs cooperation or expertise sharing; through regional cooperation, such as at EU level; and at global level, for instance through the World Customs Organization, Interpol or the World Health Organization's Framework Convention on Tobacco Control (FCTC) and its Protocol to Eliminate Illicit Trade in Tobacco Products¹⁵ (the AIT Protocol).

Track and Trace (T&T) systems, which record the movement of legitimate tobacco products through identifiers embedded in each unit, increasingly form part of international enforcement efforts. The AIT Protocol includes T&T requirements as part of its implementation timetable. The EU included T&T as a requirement in its 2014 Tobacco Products Directive (TPD).¹⁶ In addition, T&T also features as an element of individual countries' enforcement strategies, such as in Russia or the United Arab Emirates.



[T]he principal cause of smuggling, of course, is the high level of duty in the U.K., which not only has the world's most expensive cigarettes apart from Norway but is raising their price rapidly."

**Taylor Report to the U.K.
Chancellor of the Exchequer (1999)**





“

Conflicts in the Middle East and North Africa are making smuggling [tobacco] a very profitable source of income for terrorist groups because of the penetrable borders.”

European Economic and Social Committee








While T&T programmes are undoubtedly beneficial, it is important for policymakers to understand that they can only address legitimate supply chains, and are therefore not a ‘silver bullet’ solution. Additionally, and inevitably, T&T can only help identify cross-border flows if approached from an international perspective.

Crucially, effective AIT measures must directly target criminal operations, increasing the risk and reducing the reward of trading in illegal products through measures such as high fines, criminal liability for smuggling offences and a high probability of being caught as a result of stronger enforcement.

Enforcement actions against illegal tobacco also depend on effective public-private collaboration between governments (as lawmakers and enforcers) and major, legitimate tobacco companies. Legitimate tobacco manufacturers’ business objectives regarding illicit trade are aligned with those of policymakers and enforcement agencies. The sector expertise and global experience of legitimate tobacco companies should be a material consideration when countries are formulating legislation that reflects their commitments to the AIT Protocol. Also, as outlined below, the intelligence provided by international tobacco companies to national and international law enforcement continues to significantly contribute to global AIT efforts.

Indeed, major legitimate tobacco companies view the prevention of illegal trade as a major business priority and have made significant investments in developing and implementing AIT measures and compliance programs. For example, Japan Tobacco International (JTI) has agreed around 50 AIT Memoranda of Understanding (MoUs) with government agencies in 33 countries around the world. These MoUs call for a close working relationship between the public and private sectors to combat the illegal tobacco trade. Major tobacco companies have also invested in establishing sizeable teams and codes of conduct to ensure requirements stipulated in cooperative agreements and MoUs are met (Figure 5).

Figure 5: Examples of AIT programs established by major tobacco companies

Program Name	Program Description
 <p data-bbox="333 577 501 651">Know Your Customer</p>	Policies to ensure tobacco companies will (a) only do business with and supply product to customers who have a reputation for honesty and integrity and are not involved in the diversion of product into the illegal trade, and (b) only supply product that meets fiscal, legal and regulatory requirements of the intended retail market
 <p data-bbox="333 775 501 848">Know Your Supplier</p>	Policies to ensure that tobacco company suppliers are known for honesty and integrity (e.g., that a warehouse or trucking company will not illegally sell goods) and does not engage in providing materials, machinery or services to illegal trade operators
 <p data-bbox="333 947 485 1021">Security Programs</p>	Measures that specifically lower the risk of product theft during transportation, thereby reducing the likelihood of genuine stolen product entering into the legal market
 <p data-bbox="333 1097 512 1171">Anti-Money Laundering</p>	Policies to mitigate the risks of tobacco products being used by money launderers as instruments in financial systems
 <p data-bbox="333 1261 576 1335">Legitimate Market Demand</p>	Monitor market and volume developments to ensure products are only supplied in quantities commensurate with legitimate market demand and consumption in the intended market of retail sale
 <p data-bbox="333 1424 655 1498">Detection of Genuine Product Diversion</p>	Product seizure investigation and track and trace capabilities, which enable the tobacco companies and law enforcement to detect where genuine products could become diverted from legitimate supply chains into unintended markets
 <p data-bbox="333 1597 596 1671">Cooperation with Government</p>	Cooperative partnerships (e.g., with EU member states) and memoranda of understanding (MoUs) with law enforcement agencies

Major tobacco companies have also contributed directly to some notable successes in the fight against illegal trade. For example, between 2015 and 2019, JTI notifications to law enforcement authorities across the globe led to the seizure of over nine billion cigarettes or grams of illegal tobacco (equivalent to the annual cigarette volume of Switzerland or Belgium), raids of more than 210 illegal factories and storage depots and the removal of over 20,000 links to illegal trade advertisements online.¹⁷

At the end of the day, we have shown that taxation is the primary driver of tobacco product affordability and, therefore, growth in illegal trade. While enforcement, collaboration and AIT strategies can help disrupt illegal trade, they cannot eradicate the problem on their own. They are most effective when combined with fiscal policies that prevent sudden pressure on affordability that gives rise to growth in illegal consumption.

6 Conclusions

Governments, regulators and enforcement agencies can only address the persistent growth of illegal trade by understanding its causes. Evidence demonstrates that increases to tobacco taxes that make cigarettes less affordable contribute to growth in illegal trade as consumers seek out cheaper products. Our data goes further than previous editions in identifying a causal relationship between cigarette affordability and growth in illegal trade.

Governments need to be aware of the risk that fiscal and public health policies can inadvertently expand opportunities for organised criminal gangs and terrorist networks and open up new avenues for consumers seeking cheaper tobacco products. Enforcement can only make a worthwhile contribution to controlling illegal trade if it accompanies tax policies that limit incentives for consumers to switch from legal to illegal products in search of cheaper options.

It must be said that our modelling does not yet account for the spread of the COVID-19 pandemic and the measures implemented by governments around the world to slow the spread of the virus and stabilise their economies. In certain markets illegal trade has grown very quickly as a result, counteracting years of gradual progress in mere months.

Governments planning responses to the pandemic and seeking to bolster public finances have a delicate balance to strike. Raising revenues on excisable goods may seem like an ‘easy win’. But, as we have seen, tax increases can also result in affordability pressures – even more so if COVID-19 continues to result in declining incomes. Subsequent growth in illegal share will only harm tax revenues and limit the desired public health benefits.

Successfully tackling illegal trade is critically important and can only be achieved through a coordinated effort involving all key stakeholders including policymakers, regulators, fiscal authorities, law enforcement agencies, public health professionals and legitimate tobacco companies. When planned together, taxation policies and enforcement can help policymakers deliver proportionate and targeted programmes that respond to the specific circumstances that impact different countries.

It is our hope that by understanding the relationship between tax policy, affordability and consumers’ propensity to buy illegal products, we can aid the formulation of practical but ambitious policy goals that support government revenues and help tackle illegal tobacco’s destructive influence on society.



I think we are just about done with upping the tobacco tax. I worry about the costs for poorer families: there are people suffering because of the cost.”

**Paula Bennett, National Party Deputy Leader,
New Zealand (2019)**

I Appendix I: Methodology

This annex describes the panel dataset used for the analysis, as well as the econometric modelling strategy and results that underpin our conclusions on the link between affordability and illegal consumption.

Dataset construction

The analysis utilises a panel dataset tracking 71 countries, representing 82% of global cigarette volume and 92% of global cigarette retail value, excluding China. Over a 15-year period from 2005 to 2019, we tracked:

- Volume: Domestic duty paid retail volume measured in million sticks (Source: Euromonitor Passport report for Tobacco 2020)
- Price: Price per 1,000 sticks measured in local currency (Source: Euromonitor Passport report for Tobacco 2020)
- Illegal share: Share of illegal tobacco volume as a proportion of total (retail and illegal) consumption volume (Source: Euromonitor Passport report for Tobacco 2020)
- Population (Source: The Economist Intelligence Unit)
- Personal Disposable Income (Source: The Economist Intelligence Unit)

- Affordability: Share of daily personal disposable income required to purchase 20 domestic duty paid cigarettes (Source: A&M calculation based on Euromonitor and EIU data)
- Tax burden: Excise burden measured in local currency (Source: JTI research based on price from Euromonitor)
- Rule of Law Index: metric from the Worldwide Governance Indicators (Source: World Bank)
- Corruption Control Index: metric from the Worldwide Governance Indicators (Source: World Bank)
- A&M Enforcement Index: Constructed as an average of selected World Justice Project indicators, available from 2008 onwards (Source: World Justice Project)

The data provides a maximum of 1,065 country-year observations on each of these variables, facilitating the use of standard panel data econometric methods.¹⁸

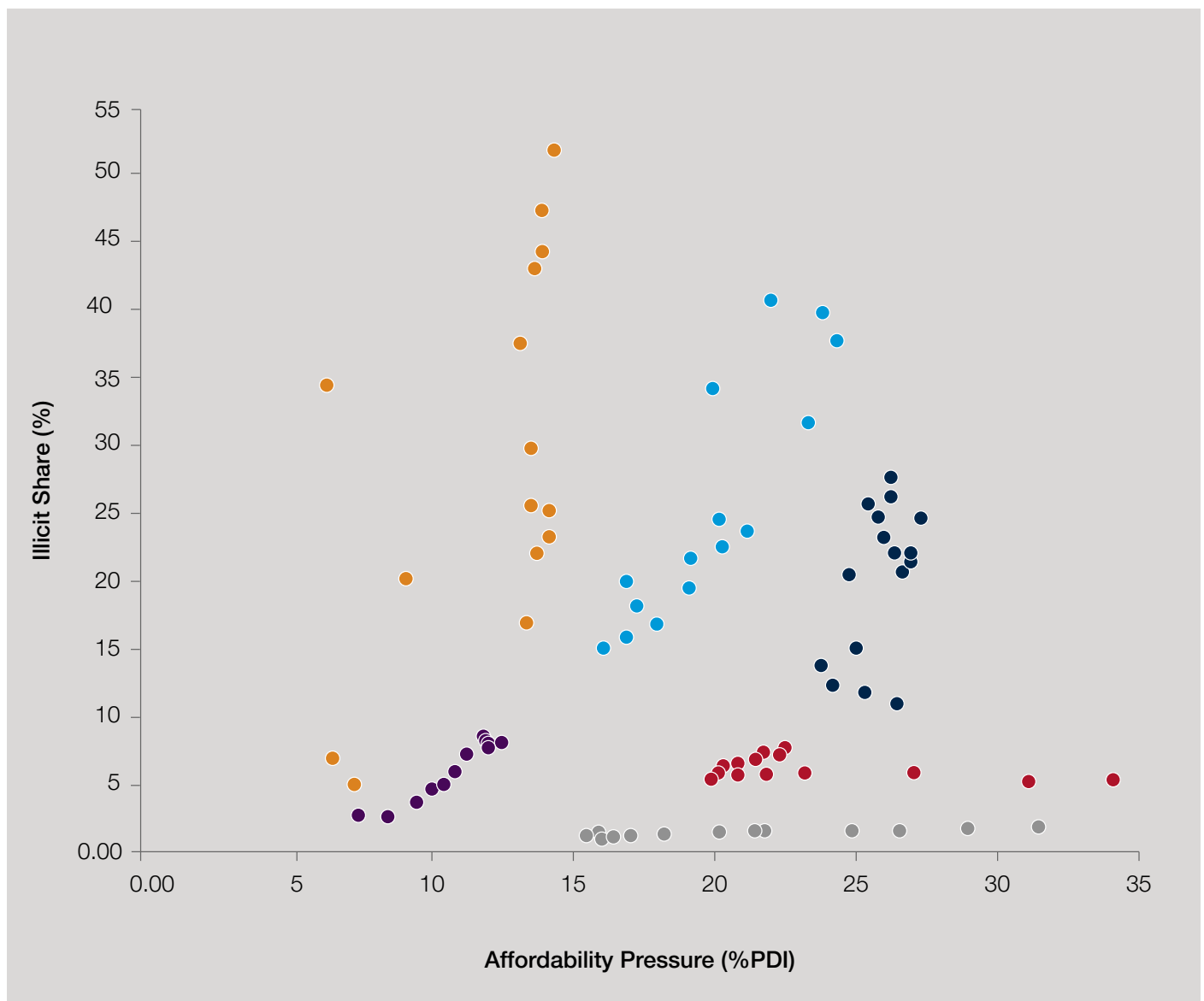
Modelling the impact of affordability

Economic logic and previous academic research indicate that cigarette prices, and the subsequent affordability of legal cigarettes, is a significant driver of consumption of illegal tobacco.¹⁹



Visual inspection of the panel dataset indicates that the relationship between illegal share and affordability varies by country. Each colour corresponds to a specific (anonymised) country's progression over time, demonstrating the range of different responses in terms of illicit share growth as affordability changes over time. Some countries show no apparent relationship, while others display near 1-to-1 correlations (Figure A.1):

Figure A.1: Examples of Varying Impacts of Affordability on Illegal Share



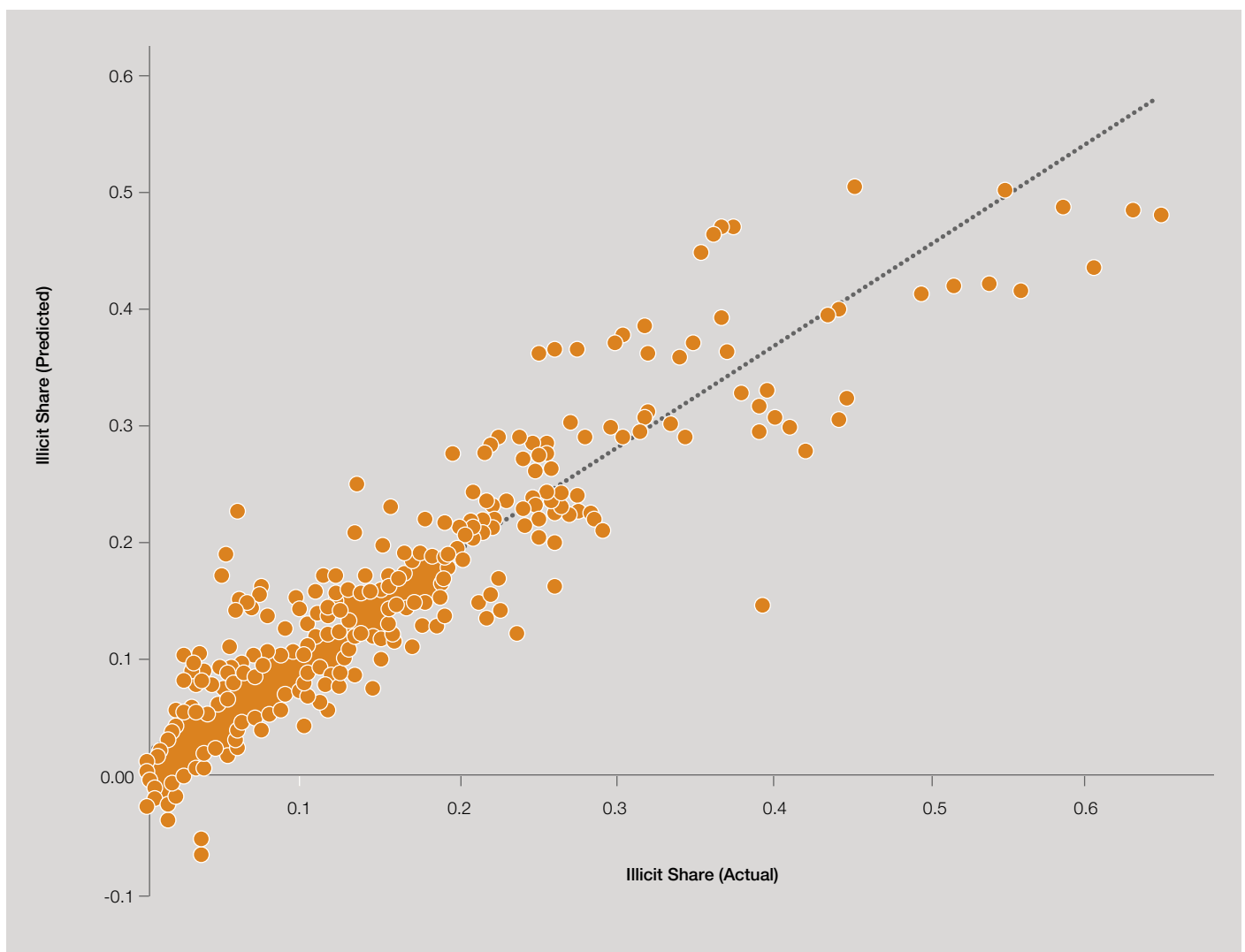
Sources: Euromonitor International, A&M Analysis

The panel data structure, with observations for each country over several years, can be used to test for a causal relationship between affordability and illegal consumption by using fixed effects estimation. This controls for the effect of all differences across countries that are constant over time – such as proximity to other countries – whether such differences are observable or not. The models also include controls for variation through time that is common across all countries in the sample. Our fixed effects approach measures the impact of changes in affordability through time on illegal share within a country. The models test for and quantify the average effect of affordability on illegal share across the countries included in the analysis.

Impact of affordability

Figure A.2 below displays the results of our analysis, using the World Bank’s Worldwide Governance Indicators to track all countries in the sample from 2005 onwards. Figure A.2 provides a graphical illustration of the strength of fit using the fixed effects model.

Figure A.2: Example Variance in the Impact of Affordability on Illicit Share



Source: Euromonitor, A&M Analysis

The estimated coefficient on affordability is statistically significant in both specifications, ranging from 0.6 to 0.7 – indicating that for any additional percentage point of personal disposable income required to purchase 20 cigarettes, the share of illegal tobacco increases by around two thirds of a percentage point. Although the A&M Enforcement index has the expected sign, the coefficient is not statistically significant when using clustered standard errors. This is likely because the index varies little through time, and differences between countries that are constant through time are picked up by the fixed effects in these models. It may also be due to the A&M Enforcement Index being an imperfect proxy for the degree to which established institutions and practices in a country deter and/or limit supply and demand of illegal product.

Several further tests supported the main finding on the effect of affordability on illegal consumption:

- The findings hold when excluding potential outliers, meaning that there is not a single country or a small set of countries unduly influencing the results;²⁰
- Models estimated using simpler pooled Ordinary Least Squares methods consistently found a significant effect from affordability changes;
- Models estimated using logistic regressions on share – arguably better designed to model market share as a dependent variable – found a consistent effect with fixed effects models;
- Models estimated on illegal volume per capita and on log illegal volumes, rather than market share, found a significant affordability effect, confirming substitution from legal to illegal as a result of affordability pressure; and
- A two-stage estimation to first predict the impact of tax burden changes on affordability, and then estimate the impact of those predicted affordability changes on illegal share. This estimation also supports our main finding. This means the potential problem of reverse causality of illegal volume on affordability can be discounted.²¹

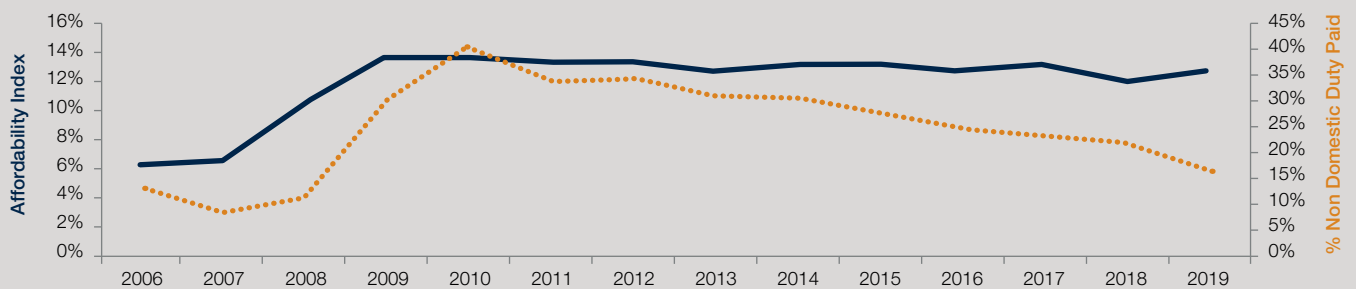
Across all models and specifications, affordability is a highly significant driver of the illegal share and/or level of consumption.



II Appendix II: Affordability and Illegal Trade Country Case Studies



Figure A.3: Latvia

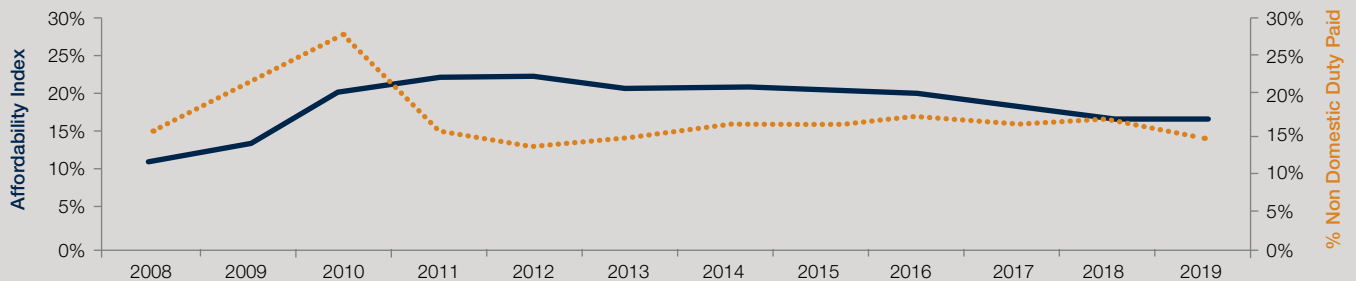


Sources: EIU, KPMG Project Star / Project Sun / Project Stella, EC Excise Duty Tables

A rapid reduction in affordability took place between 2007 and 2010 due to tax-driven price increases: following its accession to the EU in 2004, Latvia had to comply with the EU's excise tax minimum of €64 per thousand cigarettes by 2010. As a result, non-domestic duty paid (NDDP) grew from 13% to 41% of total consumption between 2008 and 2010. Cross-border smuggling of cheap cigarettes from neighbouring Russia and Belarus compounded the problem. Since 2010, affordability has stabilised and NDDP share gradually declined.



Figure A.4: Romania

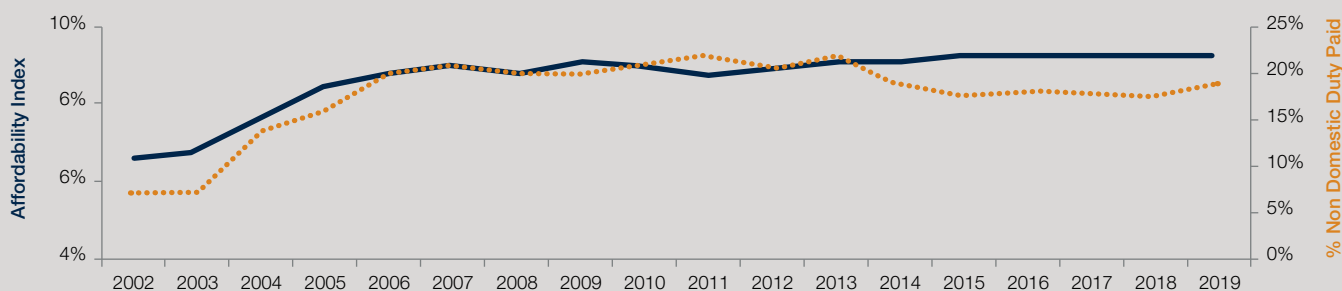


Sources: EIU, Novel Research, Ministry of Finance

Tax-driven price increases rapidly reduced affordability over a two-year period as Romania had to comply with the EU's excise tax minimum of €64 per thousand cigarettes by 2010, and NDDP approached 30% in 2010. Since then, more moderate tax increases and a strong focus on enforcement have prevented any further increases in NDDP, with declines seen in recent years.



Figure A.5: Germany

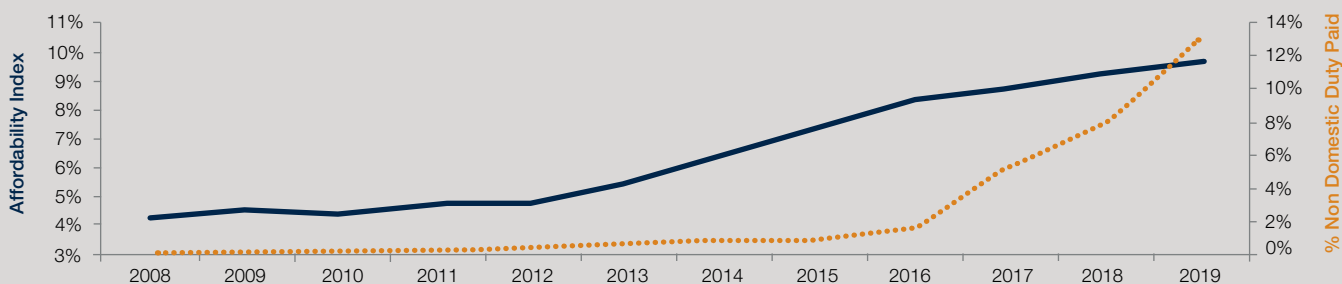


Sources: EIU, DZV/IPSOS, German Statistics office

Germany's inflows are primarily impacted by its neighbours to the east. Affordability was pressured by tax-driven price increases between 2002 and 2005, which contributed to NDDP growing from 7% to 20% of total consumption. When Germany revised its tax policy and adopted more gradual and planned tax increases over five years from 2011, NDDP growth was halted and subsequently stabilised at a slightly lower level.



Figure A.6: Russia

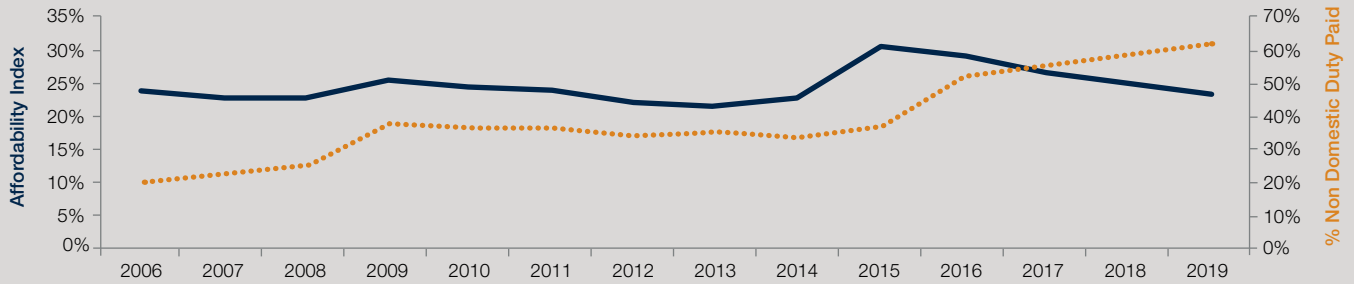


Sources: EIU, market research

A few factors have contributed to NDDP growth in recent years. As well as reduced affordability as a result of increasing excise tax levels, price gaps have widened between neighbouring countries in the Eurasia Economic Union (EAEU) and other sources of NDDP tobacco products. Minimal enforcement of cross-border shipping, particularly with Belarus, has also played a significant role. Taken together, these elements fuelled a jump in illegal trade in Russia from nearly non-existent levels to 5% of consumption in 2017 and, just two years later, to 13%.



Figure A.7: Malaysia

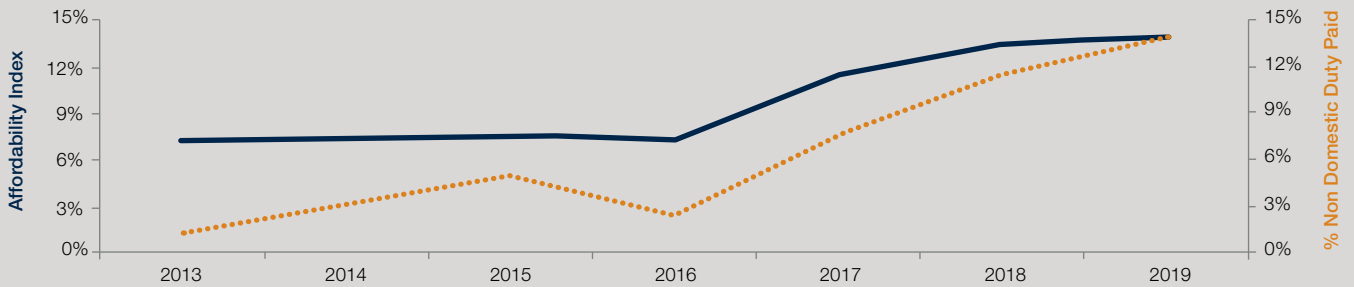


Sources: EIU, Empty Pack Surveys, industry data

Malaysia is one of the most pressured countries in terms of cigarette affordability and has historically had high levels of illegal consumption. A 37% excise tax increase in November 2015 caused NDDP consumption to grow rapidly from an already high level, surpassing 60% of total consumption despite a tax freeze helping ease affordability pressure slightly in recent years.



Figure A.8: Saudi Arabia



Sources: Euromonitor International, EIU, Empty Pack Surveys

Before the introduction of excise duty in mid-2017 and VAT at the beginning of 2018, affordability was broadly stable. The significant additional burden (especially from excise duty) and resulting price increases caused affordability pressure on consumers to effectively double by 2019. As a result, illegal / NDDP trade increased from levels of 5% or below before the tax introductions to reach 14% in 2019.

III Appendix III: Glossary of Terms



- **Affordability Index:** Percentage of personal disposable income per capita per day required to purchase one pack of cigarettes, most commonly referring to the weighted average price (WAP).
- **Contraband:** Genuine products diverted from the legitimate supply chain and sold in a country different than the intended market of retail sale and without domestic duty paid in the country to which the products are diverted.
- **Counterfeit:** Illegal manufacturing where product bears a trademark without the owner's consent.
- **Illegal / illicit Trade:** Commonly defined as “the act of importation, exportation, handling or possession of goods in violation of the law. Usually done to evade duties and taxes.” Illicit trade in tobacco products comes in different forms and permutations.
- **Illicit Whites:** Tobacco products manufactured legitimately in one country for the sole purpose of being smuggled and sold in another country.
- **Non-Domestic Duty Paid (NDDP):** Products on which taxes in the country of consumption have not been paid. NDDP includes both legal cross-border and all illegal trade.
- **Personal Disposable Income (PDI):** The amount of money available to individuals or households for spending after taxes and deductions.
- **Tracking and Tracing:** Systematic monitoring and recreation by competent authorities or any other person acting on their behalf of the route or movement taken by items through the supply chain.
- **Weighted Average Price (WAP):** Total value of cigarettes based on the retail selling price including all taxes, divided by the total quantity of cigarettes sold.

IV Appendix IV: Bibliography

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5. OECD, "Illicit Trade: Converging Criminal Networks," April 2016.
6. Fresh NE, 'Illegal Tobacco – Help Keep It Out and Stop Kids Smoking', January 2020.
7. World Bank, Confronting Illegal Tobacco Trade: A Global Review of Country Experiences, 2019.
8. Excise tax plus value added tax (VAT).
9. More detail on our model and the different tests used to determine our results can be found in the report's appendix.
10. More detail on volume-based modelling can be found in Appendix I.
11. International Labour Organization, 'COVID-19 leads to massive labour income losses worldwide', September 2020.
12. The World Justice Project measures the extent to which regulations are fairly and effectively implemented and enforced by evaluating whether regulations and administrative provisions are enforced effectively and whether they are applied and enforced without improper influence by public officials or private interests. They also consider whether administrative proceedings are conducted in a timely manner, without unreasonable delays, whether due process is respected in administrative proceedings and whether there is no expropriation of private property without adequate compensation.
13. For more detail on our modelling, please refer to Appendix I.
14. For more detail on this relationship, please refer to A&M's Causes and Control of Illegal Tobacco, Edition 2.
15. WHO Framework Convention on Tobacco Control, 'Protocol to Eliminate Illicit Trade in Tobacco Products'. [https://www.who.int/fctc/protocol/en./](https://www.who.int/fctc/protocol/en/)
16. European Union Revision of the Tobacco Products Directive, 2014.
17. JTI Analysis.
18. There were some gaps in data availability for some countries, particularly on data from the World Justice Project which was available only from 2008 and later for some countries. The panel data analysis treats these as missing observations, restricting the analysis to 549 observations. The Worldwide Governance Indicators were used to test robustness of the main findings to full set of 1,065 available country-year observations on the other variables.
19. Priger, J.E. and Kulick, J. (2018), 'Cigarette Taxes and Illicit Trade in Europe', *Econ Inq*, 56: 1706-1723. <https://doi.org/10.1111/ecin.12564>
20. Tested through influential observation analysis.
21. The results from instrumental variables estimation are also consistent with Prieger and Kulick (2018).

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