Visegrad Fund

The project is co-financed by the Governments of Czechia, Hungary, Poland and Slovakia through Visegrad Grants from International Visegrad Fund. The mission of the fund is to advance ideas for sustainable regional cooperation in Central Europe

The V4 and Ukraine Fight with Tax Frauds and Money Laundering

edited by
Mariia Balytska, Hana Bohušová and Piotr Luty

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Foreword

The monograph entitled *The V4 and Ukraine Fight with Tax Fraud and Money Laundering* presents a comprehensive exploration of the mechanisms, challenges, and strategies employed by the Visegrad Group countries (V4 – Poland, Hungary, Slovakia, and the Czech Republic) and Ukraine to combat tax fraud and money laundering. Against the backdrop of increasing global financial interconnectedness, these nations face unique yet interconnected challenges in addressing fiscal risks, safeguarding financial integrity, and ensuring equitable taxation.

The book delves into the transformative potential of blockchain technology as a tool to combat money laundering within the V4 countries and Ukraine. It highlights the need for harmonized AML (anti-money laundering) regulations, international cooperation, and investments in advanced technologies to strengthen oversight. Educational initiatives are emphasized as critical to bridging knowledge gaps among financial institutions and regulators, enabling the effective implementation of blockchain-based AML measures.

The authors focus on the methods used to measure and evaluate tax aggressiveness in corporate taxation. The monograph explores key channels of profit shifting, such as transfer pricing and the exploitation of double taxation treaties, providing a detailed analysis of how these mechanisms are used to evade taxes. It also discusses the importance of addressing these issues in the Ukrainian context and identifies indicators that can be adapted to local conditions to improve tax compliance.

The authors provide an analysis of FATF (Financial Action Task Force) compliance, and examine how the V4 countries and Ukraine align with FATF recommendations. Mutual evaluations reveal the strengths and weaknesses in their AML frameworks. They also highlight areas for improvement, particularly in technical compliance and effectiveness, while acknowledging national efforts to address these challenges.

Tax security, defined as the state's ability to ensure fiscal stability and counteract risks, is the focal point of one of the chapters, which evaluates key indicators, identifying excessive fiscal burdens, inefficiencies in tax administration, and uneven tax policies. The findings underline the need for reforms to enhance tax elasticity, reduce administrative costs, and address the growing tax debt.

The book explores the impact of the *švarcsystém* – a tax-avoidance mechanism – on Czech public finances. It discusses the economic implications of flat-rate expenses for self-employed individuals and proposes reforms to create a more equitable taxation system. Recommendations include adjusting flat-rate expenditure thresholds and combating non-reporting of income through digital tools.

The book also provides an analysis of value-added tax (VAT) carousel fraud, identified as a major challenge for EU countries, including the V4. The authors examine the mechanisms of VAT fraud, its economic impact, and the regulatory tools available to combat it. Emphasis is placed on the European Court of Justice's role in shaping legal responses and the need for enhanced collaboration among EU member states to address this pervasive issue.

The next crucial issue examined in the book concerns the taxation of Ukrainian refugees. The taxation of income earned by Ukrainian refugees presents complex challenges due to differing tax regimes and administrative procedures. The development of centralized digital platforms and simplified tax procedures is proposed to address these issues. Collaborative efforts between Ukraine and EU member states are recommended to ensure fair taxation and compliance while reducing bureaucratic barriers.

The final chapter revisits tax aggressiveness, focusing on international dimensions such as the use of tax havens and the exploitation of double taxation treaties. It evaluates the role of debt, intangible assets, and transfer pricing in profit shifting, offering strategies to mitigate these practices in Ukraine.

The monograph is divided into nine chapters, each dedicated to a specific aspect of the overarching issue. Together, they offer insights into the legal, technological, and economic frameworks that shape the fight against financial crime in this region, emphasizing the importance of regional collaboration and innovation.

Chapter 1

Countering Money Laundering During the Humanitarian Crisis in Ukraine

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1.1. Introduction

Money laundering is one of the key threats to the financial stability of countries, especially in crisis situations such as war and the accompanying humanitarian crisis. Ukraine, dealing with the consequences of Russian aggression, faces the challenge of protecting its financial system from abuse, including money laundering and terrorist financing. The destabilisation of the economy, massive population displacement, increased humanitarian aid and a changed regulatory environment have created an atmosphere conducive to criminal activity.

In this context, international cooperation plays an important role in order to more effectively counter money laundering, and of particular importance is Ukraine's cooperation with the European Union and the Visegrad Group, comprising Poland, the Czech Republic, Slovakia and Hungary. These countries, which are part of the EU single market, have a wealth of experience in implementing anti-money laundering (AML) standards and can play a key role in strengthening Ukraine's regulatory and institutional capacity (Koibichuk et al., 2024).

Ukraine's cooperation with the V4 countries is important not only from the perspective of implementing AML regulations, but also in terms of financial and institutional support. Poland and the Czech Republic have become major centres for refugees from Ukraine, which carries the risk of illegal funds being entangled in the financial systems of these countries. In turn, Slovakia and Hungary, being key trading partners of Ukraine, play a role in securing financial flows (Blikhar et al., 2021). With its close political and economic ties, the Visegrad Group can be an important partner in building a more resilient Ukrainian financial system and harmonising it with European standards.

The Visegrad countries have been involved in projects aimed at strengthening the region's financial security for years, and with the war in Ukraine, their role has become even more important. Support for information exchange, the training of AML specialists and the cooperation of financial services contribute to a more effective monitoring and elimination of illegal transactions. The joint initiatives of the V4 countries can help build a more transparent and resilient financial system for Ukraine, which is crucial for its reconstruction and future integration into the European market (Golonka, 2023).

The humanitarian crisis in Ukraine has not only affected the population, but also the entire financial system of the country. Faced with a growing number of refugees, international humanitarian aid and changing economic conditions, new challenges have arisen in terms of the flow of funds (Blahuta et al., 2023). On the one hand, the number of legitimate transactions related to support for Ukraine has increased, but on the other, this situation has created space for criminal organisations to take advantage of the chaos to launder money and finance illegal ventures.

Changes in the financial structure, weakened oversight and increasing reliance on international aid make it imperative for Ukraine to strengthen its AML mechanisms. An effective AML strategy should include both aligning regulations with international standards, as well as building stronger supervisory institutions and increasing cooperation with foreign partners (Blikhar et al., 2021). Financial transparency and an effective system for detecting illicit transactions are key to maintaining the country's economic stability during and rebuilding after the war.

1.2. The Humanitarian Crisis in Ukraine and Its Impact on Financial Flows

The humanitarian crisis in Ukraine, which began in 2014 with Russia's annexation of Crimea and exacerbated in 2022 by the full-scale Russian invasion of Ukraine, represents one of the most serious challenges in the world today. The situation has caused catastrophic consequences not only in the military, political or social spheres, but has also had a far-reaching impact on the country's economy, including financial flows and the functioning of the financial system in Ukraine (Koibichuk et al., 2024). This crisis, especially in the face of a growing military threat, has forced the Ukrainian state to take extraordinary measures both in terms of crisis management and in responding to the increase in illegal financial activities, including money laundering and tax fraud.

In a crisis situation, such as war, many problems arise with regard to the control of financial flows, as well as exploitation of legal loopholes by individuals or entities with the aim of illegally storing or transferring money. Ukraine, as a war-affected country, became a battleground that required the use of modern anti-money laundering and anti-fraud tools. Money flows, which were relatively transparent in peacetime, began to become more chaotic during the crisis, making them difficult to monitor by state and international financial institutions.

In response to the growing threat of money laundering and tax fraud, which has become particularly prominent in wartime settings, governments in countries such as Ukraine have introduced a number of regulations to minimise the risk of such activities. In Ukraine, as in many other countries, non-governmental organizations (NGOs), including charities, have become one of the key areas where potential money laundering risks have been detected. It is noteworthy that the activities of charitable organisations, especially in times of war, have become one of the key elements of support for civilians affected by hostilities. NGOs play a huge role in providing material, medical and psychological assistance, as well as in organising the evacuation of civilians from conflict areas (Gorodysky, 2001). At the same time, however, the same organisations, which are a channel for the transfer of huge sums of money from abroad, have also become a target for individuals and groups trying to exploit the situation for illegal financial activities, including money laundering and tax evasion.

In the midst of the humanitarian crisis that saw an influx of large donations from all over the world, these organisations were used to intercept illegally obtained funds, which forced the Ukrainian state to implement special regulations for this sector.

During crisis situations such as the one in Ukraine, there are a number of phenomena that favour the development of illegal financial activities. The massive influx of donations and funds from abroad, especially in the form of cash, remittances and material aid, creates ideal conditions for fraudulent individuals to operate (Blahuta et al., 2023). It is also worth noting the main sources of funding for Ukraine's state budget during the war, namely war bonds, loans from international financial institutions (IFIs) and bilateral loans and grants (Fig. 1.1).

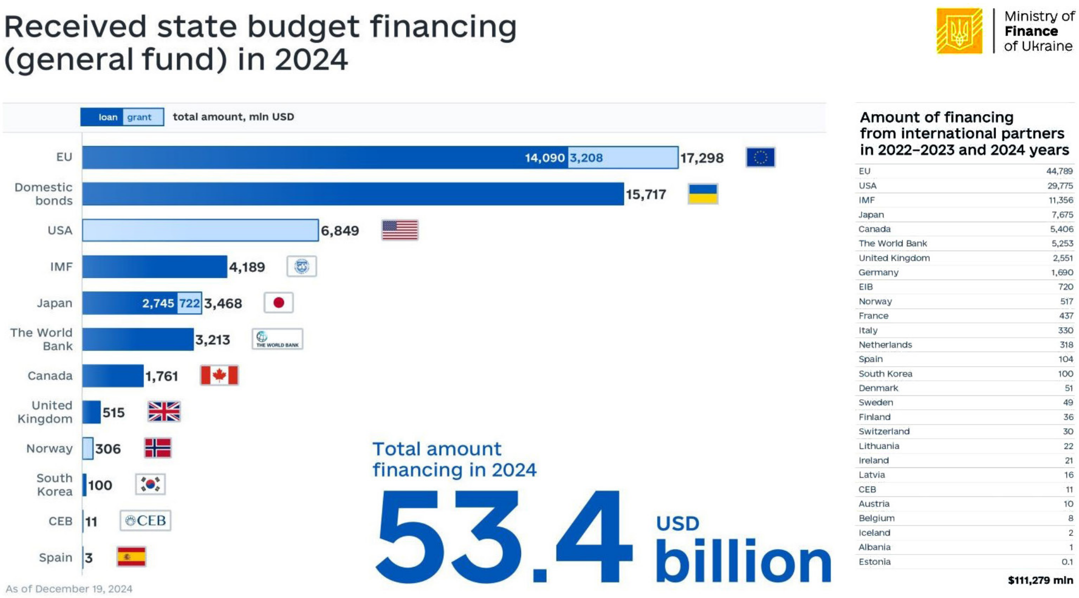

Fig. 1.1. Received state budget financing (general fund) in 2024

Source: (Ministry of Finance of Ukraine, 2024).

In addition, the dispersal of information, the destruction of infrastructure and the difficulty in prosecuting crimes make it difficult to effectively monitor financial flows. Under such conditions, charities and aid organisations become one of the most common places where the source of illicit funds can be hidden.

The humanitarian crisis resulting from warfare also creates a number of challenges in controlling and auditing funds that are channelled into humanitarian aid. Ukraine, facing numerous difficulties, has limited capacity to monitor financial flows, especially in the area of NGOs, which are not always subject to strict controls (Koibichuk et al., 2024). This state of affairs fosters situations where humanitarian funds may be misused.

1.3. Anti-Money Laundering in Maintaining Economic Stability in Times of War and Crisis

When a country faces crises such as war or other humanitarian disasters, the fight against money laundering becomes a key element in ensuring economic stability. During periods of instability, financial institutions may become more vulnerable to criminal activities and supervisory systems may be weakened. In such an environment, where governments, international organisations and private players often struggle to maintain state and societal structures, effective anti-money laundering helps to protect state resources, prevent corruption and finance terrorist activities (Blikhar et al., 2021).

Anti-money laundering (AML) is a set of regulations, procedures and measures aimed at detecting, preventing and eliminating the legalisation of funds from illegal sources. In times of war and financial crisis, AML plays a key role in protecting economic stability by preventing the financing of criminal and terrorist organisations that can use weakened financial systems to conceal illegal transactions. An effective AML policy reduces the risk of corruption, strengthens trust in financial institutions and allows states to control capital flows more effectively, which is particularly important during periods of heightened political and economic instability (Patel et al., 2023).

In response to the increasing risks of money laundering and terrorist financing, Ukraine, like other countries, is seeking to bring its financial policies in line with international standards on anti-money laundering (AML) and countering the financing of terrorism (CFT) (Korystin et al., 2019). Legislation, such as the AML Law, has been tightened, introducing stricter procedures for identifying beneficial owners and obligations for financial institutions and NGOs to report suspicious transactions. Ukraine's cooperation with international organisations, such as the Financial Action Task Force (FATF) and the European Union, underpins efforts to reduce the risk of the Ukrainian financial system being used for criminal purposes.

The role of AML in times of war is particularly important, as funding requirements, humanitarian aid and internal security are vulnerable to manipulation during such a period. Crisis situations, including the humanitarian catastrophe in Ukraine, raise many new challenges in the area of monitoring financial flows. The war situation results not only in the destruction of infrastructure and the destabilisation of administrations, but also in the creation of new gaps in financial systems that can be exploited for money laundering.

During a crisis, anti-money laundering functions to protect against the proliferation of illicit funds in the financial system, which can lead to the illegal financing of warfare, the misuse of humanitarian aid, and the financing of terrorist organisations. AML systems ensure that funds intended to help victims of war end up in the hands of the right people and organisations, minimising the risk of these funds being used for criminal purposes (Honcharenko et al., 2017).

However, from an economic perspective, anti-money laundering policy is fundamental to maintaining financial transparency to ensure financial stability in a crisis situation. For example, illicit financial flows can result in the destabilisation of the national currency, which in turn can exacerbate an economic crisis. AML helps to protect the integrity of the financial market and ensure that the crisis support activities of the state and international organisations are not disrupted by illicit fund flows (Basel Institute on Governance, n.d.).

When criminal organisations seek to exploit a crisis for their own ends, anti-money laundering regulations provide a mechanism to counter the concealment of sources of illicit funds, such as the financing of armed activities and corruption (Transparency International, 2022). An example of this is when terrorist organisations may try to seize humanitarian aid to turn it into funding for their operations, or use financial markets to launder money.

It is also worth noting that a humanitarian crisis can lead to the emergence of new forms of money laundering, such as cryptocurrency transactions, which are more difficult to track. In this case, AML becomes even more complicated because cryptocurrencies offer anonymity and are relatively difficult for traditional financial institutions to control (Alsalami & Zhang, 2019). Additionally, in times of crisis, many players, including humanitarian and state organisations, may not have full control over financial flows, creating room for abuse and therefore in times of war, including that in Ukraine, putting in place additional measures to prevent money laundering and monitor transactions becomes crucial.

In the geopolitical context, the war in Ukraine also demonstrates the role of international economic sanctions, which are one of the tools in the fight against money laundering. In such circumstances, implementing AML regulations in a manner consistent with international standards, including those of the European Union, is essential to avoid circumvention of sanctions by organisations or individuals linked to authoritarian or terrorist regimes. Maintaining effective anti-money laundering mechanisms is intended not only to eliminate illicit financial flows, but also to assist states in responding to the threat of the spread of illicit funds.

In times of war, the fight against money laundering is also a tool to support post-crisis reconstruction. An effective AML allows for greater confidence in the financial system, both domestically and internationally, which is crucial for post-war recovery (Blahuta et al., 2023). Financial transparency, especially during the post-war reconstruction period, helps to attract foreign investment and enables aid funds to be used effectively.

1.4. Social and Economic Developments in Ukraine During the Humanitarian Crisis

1.4.1. The Scale of the Crisis and Its Impact on the Financial System

The war in Ukraine has had a huge impact on the country's economy and financial system. The armed conflict has caused great material losses, the breakdown of infrastructure and a massive influx of refugees, with a direct impact on Ukraine's financial stability. In the situation of war, financial institutions, including banks, were forced to change their operational activities, and many of them had to limit their activities, especially in the area of lending and credit (Korystin et al., 2020).

Due to the hostilities, many banks were destroyed and others reduced their services or suspended them in the areas affected by the military conflict. In addition, as a result of increasing uncertainty in the economy, banks began to tighten their credit policies, making access to finance more difficult for citizens and companies, especially those trying to survive in the changing war environment. Some companies were forced to close their branches or halt operations due to instability, while others moved operations to safer regions or abroad (Petrova, 2023).

At the same time, individuals who found themselves in war zones started to use electronic banks and digital payment systems. The demand for international transfer services also increased, particularly in the context of Ukrainian refugees who transferred their savings to other countries such as Poland, Germany and Canada. Ukrainians who remained in the country often changed their financial behaviour, focusing on cash, and banks had to adapt their operations to the increased demand for withdrawals and money transfers.

Moreover, the changed economic situation led to a weakening of Ukraine's currency, the hryvnia, and an increase in inflation, with serious consequences for the country's citizens, including purchasing power, wages and savings (Koibichuk et al., 2024). The Central Bank of Ukraine has had to intervene in various ways to maintain currency stability, and these actions have often involved the risk of further weakening of the financial system.

In turn, non-governmental organisations, including international humanitarian organisations, began to allocate significant amounts of money to assist refugees, victims of war and internally displaced persons. Such organisations face a huge challenge in how to ensure financial transparency imposed by the need to rapidly distribute funds in countries with weaker financial oversight.

1.4.2. Increased Risk of Money Laundering

When financial institutions are burdened with reorganisation, many are unable to maintain standards for monitoring financial transactions. Additionally, due to the mass movement of people, the increased number of international organisations and administrative instability, the possibility of hiding the sources of illicit funds grows.

Criminal and terrorist organisations can exploit these loopholes to legalise illicit money through aid structures, NGOs or businesses registered in zones with weaker oversight. The crisis is also changing the way to store and transfer money. Many people may start to use more anonymous forms of payment, such as cryptocurrencies, which become a popular tool for money laundering during crisis periods because they allow transactions to take place without a physical trace, making them harder for authorities to track (Hrytsai, 2023).

Humanitarian organisations, faced with overwhelming needs, are beginning to receive funds from a variety of sources, both private and public, as well as international, creating the risk that some of these funds may be intercepted by individuals or groups aiming to fund illegal activities. In a crisis situation, controlling every flow of money becomes a challenge, especially with the massive influx of donations from abroad and the growing number of organisations that are not always properly monitored.

It is also particularly dangerous that the crisis in Ukraine is attracting external investors, including illegal players who may try to take advantage of the situation to launder money by investing in sectors that have been significantly affected by the war, such as the construction and energy sectors. It is not uncommon for them to exploit gaps in the scrutiny of international transactions, especially as Ukrainians face a wide range of internal and external challenges.

The increase in the number of complex international transactions, the use of new financial technologies, the lack of full transparency and the weakening of the control of financial flows at this time favour not only organised crime but also other forms of money laundering. Thus, in the face of war, the state must take additional measures and strengthen anti-money laundering systems, introducing effective tools for prosecuting illicit flows and cooperating with international organisations.

1.5. Anti-Money Laundering Mechanisms in Ukraine. Review of Existing Regulations and Institutions

Anti-money laundering and countering the financing of terrorism in Ukraine is regulated by a number of national laws that have been developed over the years to bring the national legislation in line with international standards in this area, such as the guidelines developed by the financial action task force. In this context, Ukraine has taken numerous steps to create an effective AML regime, but the situation of wartime instability has necessitated further adjustments to these regulations (Financial Action Task Force, 2022).

Ukraine benefits from the experience of EU countries in managing financial crises, especially after the COVID-19 pandemic, which revealed gaps in systems for monitoring financial flows. An example is the implementation of real-time suspicious transaction detection systems, which are standard in many EU countries. Ukraine also benefits from analysis by Europol, which identifies global money laundering networks and provides data to break them down.

1.5.1. Pre-Conflict Legislation

Prior to the start of the military conflict, Ukraine put in place an anti-money laundering regulatory regime to comply with international standards. One of the key pieces of legislation was the 2014 Law on Anti-Money Laundering and Terrorist Financing, which formed the foundation of the anti-money laundering regime in Ukraine. This law defined money laundering, established obligations for financial institutions and other entities, such as law firms and accounting offices, to monitor and report suspicious transactions (Law of Ukraine, No. 25, Article 171, 2020).

The law required all financial institutions in Ukraine to put in place appropriate procedures, such as “Know Your Customer” (KYC), monitoring transactions, and also identifying and reporting suspicious activities to the relevant authorities. Moreover, as part of this law, the Ukrainian Financial Intelligence Unit (UIF) was established, whose role was to analyse suspicious transaction reports, collect data and cooperate with other national and international authorities in the fight against money laundering.

1.5.2. Post-Conflict Legislation

Following the start of the full-scale war in 2022, Ukraine has updated and adapted its AML regulations, taking into account the exceptional crisis situation, the destabilisation of the financial system and the increased risk that the war and its accompanying activities may foster money laundering and illicit financial flows. In response to changing conditions and needs, a number of new regulations have been introduced and existing ones updated to strengthen the system for monitoring financial flows and ensure transparency of operations.

An amendment to the Anti-Money Laundering Act was enacted in 2022, which expanded the obligations of financial institutions and business organisations to detect and report suspicious transactions, especially in view of the increasing number of cross-border and international transactions. The amendment also introduced an obligation to cooperate with international intelligence and law enforcement agencies to better control the financing of illegal war-related activities (Law of Ukraine, 2003).

Additionally, the National Bank of Ukraine (NBU) played a key role in ensuring the stability of the banking system during this difficult period. In response to the exacerbated economic crisis, the NBU implemented a number of regulations to monitor and control financial flows, including through blockchain technology and other digital tools that enabled the more accurate tracking of transactions (Patel et al., 2023). The central bank also worked with international financial institutions to monitor and block illicit financial flows.

Once the war began, international non-governmental organisations that came to Ukraine to provide humanitarian aid posed a particular challenge. Although they acted with the best of intentions, their activities could be exposed to money laundering attempts. In 2023, Ukrainian charities recorded total donations of one billion dollars, including 63% for humanitarian aid and 37% for other purposes, such as education and healthcare. At the same time, the efficiency of the activities was high, as only 6% of the funds went to organisational needs. The Ukrainian government, in order to prevent abuse, has implemented additional regulations that include a detailed audit of funds and verification of aid organisations (The State Financial Monitoring Service of Ukraine, 2023).

1.5.3. Institutions Involved in Anti-Money Laundering

In the context of institutions that have played and continue to play a key role in anti-money laundering in Ukraine, the Ukraine Financial Intelligence Unit should be mentioned as the main body responsible for analysing suspicious financial transactions, cooperating with international institutions and domestic law enforcement agencies, and monitoring money laundering activities. The UIF is responsible for analysing and reporting on all illicit flows, as well as blocking the bank accounts of individuals or companies involved in financial crime (The State Financial Monitoring Service of Ukraine, 2023).

An important institution in the fight against money laundering is also the Ministry of Internal Affairs of Ukraine, which cooperates with intelligence agencies and law enforcement agencies, both domestic and international, to prevent and eliminate cases of money laundering, especially in the context of the military crisis. The ministry has a coordinating role in efforts to eliminate terrorist financing and is also responsible for prosecuting the perpetrators of these crimes.

1.6. Cooperation with International Organisations and Countries: The Role of Cooperation with the EU and V4 Countries in the Implementation of AML Regulations

In view of the growing threats of money laundering, especially in the context of the humanitarian crisis in Ukraine, cooperation with international organisations and countries is an important element in effectively countering this crime. In particular, cooperation with the European

Union and the Visegrad Group (V4) countries is fundamental in the implementation of effective anti-money laundering regulations at national and regional level. This cooperation is based both on the exchange of information and on the coordination of legislative measures aimed at harmonising the rules for combating financial crime and countering its cross-border nature.

1.6.1. Cooperation with the European Union

As a country aspiring to become a member of the European Union, Ukraine is seeking to bring its regulations and anti-money laundering systems into line with EU requirements. This is not only a matter of alignment with European norms and standards, but also part of the process of integration into European economic and political structures. The EU is playing a key role in the process of strengthening Ukraine's anti-money laundering system by providing both financial and technical support.

This cooperation is aimed not only at implementing legislation that will enable the effective identification and prosecution of money laundering activities, but also at harmonising procedures for international cooperation. An important element is the implementation of European Union directives, such as Directive 2015/849 on the prevention of the use of the financial system for money laundering and terrorist financing, which form the basis for building a national legal framework (Golonka, 2023).

Ukraine is aligning its legislation with Directive 2015/849, and uses tools such as "Recognition and monitoring of cross-border financial transactions", which allow controlling financial flows across borders with EU countries (European Commission, 2022).

The European Union, through initiatives such as the European Anti-Fraud Office (OLAF – *Office européen de lutte antifraude*), supports Ukraine in the development and implementation of systems to verify financial flows, as well as to monitor suspicious transactions. Examples of this cooperation include the organisation of joint training courses, workshops, exchange of best practices and cooperation in identifying and freezing financial crime assets. In addition, Ukraine benefits from the experience and analysis developed by EU agencies, such as Europol, which helps to identify new threats related to international criminal networks.

Another area of cooperation is Ukraine's participation in the European Information Exchange System, which enables the rapid and efficient transfer of data between EU Member States. Through this system, in the event of suspected money laundering, Ukraine is able to access information from other countries more quickly, allowing for more effective prosecution of criminals.

1.6.2. Cooperation with the Visegrad Countries

The Visegrad Group, of which Poland, the Czech Republic, Slovakia and Hungary are members, plays an important role in regional cooperation on anti-money laundering. Their cooperation with Ukraine is particularly important in the context of common challenges related to cross-border financial flows that can be used to legalise criminal funds.

The V4 countries, being neighbours of Ukraine, are a key point in the AML chain. An example of cooperation is the joint development and implementation of monitoring systems for financial flows, which allow the identification of suspicious transactions at the border level. In addition, the countries can share intelligence, which significantly increases the effectiveness of money laundering detection and prevention.

The Visegrad countries regularly organise working meetings, seminars and workshops on anti-money laundering. In these meetings, both domestic and international financial crime challenges are discussed. Ukraine, as an Eastern European country, often takes part in such initiatives, having the opportunity to benefit from the experiences and solutions applied in the V4 countries (Golonka, 2023).

Moreover, these countries are working together to synchronise the regulations that are necessary for effective AML. For example, Poland and Slovakia, as members of the European Union, have experience in implementing EU directives on AML, which can be valuable to Ukraine in the process of aligning national regulations with European requirements.

1.7. Conclusions

In the context of the humanitarian crisis caused by the war in Ukraine, anti-money laundering and counter-terrorist financing have become not only a priority for the Ukrainian authorities, but also a challenge for international cooperation. Ukraine, despite the difficulties arising from the instability of the financial system and the need for immediate action, has demonstrated the ability to adapt regulations and implement modern tools to monitor financial flows.

Prior to the conflict, Ukraine had built the foundations of its AML system by aligning domestic regulations with international standards. However, the war highlighted gaps in these regulations, forcing further modernisation. The changes introduced, such as expanded reporting obligations for financial institutions, greater cooperation with international bodies and the implementation of blockchain technology, have significantly increased the effectiveness of the fight against money laundering during this difficult time (Vovchak & Yendorenko, 2023).

International cooperation – both with the European Union and the Visegrad Group countries – plays a key role. Financial, technical and legislative support allows Ukraine not only to effectively counter money laundering, but also to move closer to EU standards, which is important in the European integration process.

Despite these achievements, challenges remain, such as countering the potential abuse of large humanitarian fund flows and increasing the transparency in the activities of international NGOs. It is recommended that the national AML system be further strengthened through training, exchange of experience with foreign partners and the development of technology to support the monitoring and detection of illicit financial flows.

Ukraine is an example of a country that, in the face of exceptional difficulties, has been able to not only maintain but also develop its AML system, demonstrating that international cooperation and the effective implementation of regulations are key in the fight against financial crime.

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Chapter 2

Money Laundering in Regulatory and Legal Aspects – Challenges for European Union Member States

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2.1. Introduction

Money laundering is a crime categorised as an economic crime. It is a global phenomenon and its scale has not been yet thoroughly investigated. In the Polish language there is a colloquial term 'washing dirty money', which is an inaccurate translation of two English phrases – dirty money and money laundering. In view of this, the phrase itself contains a statement about the need to clean 'dirty' money, as 'clean' money does not need to be 'laundered' (Hryniewiecka, 2014, p. 317). In addition to the obvious destabilising effect on the economy, money laundering also negatively affects the stability of financial institutions. The aim of this chapter was to analyse the regulations related to money laundering at EU and national level and to try to identify the challenges faced by the EU and international institutions in order to curb money laundering. In order to achieve this objective, a classic literature analysis was applied, including traditional and online sources and a review of the legislation. A legal-dogmatic method was applied to systematise the law in force (Opałek & Wróblewski, 1991, p. 37), and to analyse the evolution of legal acts on the prevention of money laundering.

2.2. Money Laundering in Terms of National and EU Regulations

The phenomenon of money laundering emerged in connection with the activities of Al Capone – the head of the Chicago mafia. In the 1920s, during the prohibition era in the USA, the mafia, under the guise of legitimate activities, derived large revenues from the production and smuggling of alcoholic beverages. Significant sums of illicit income from tax evasion, horse racing, and alcohol sales were added to the daily commerce, and then deposited in banks to legalise it (Filipkowska, 2009, p. 59).

In legal terms, the term 'money laundering' was used in the USA in 1982 for the purpose of a public lawsuit, and was later permanently incorporated into the legal language. The 1990 Convention of the Race of Europe formally used the term for laundering the proceeds of crime, seizure and confiscation (Gilmore, 1999, p. 26).

Initially, the term 'dirty money' was used to describe income derived from drug trafficking, but nowadays its meaning is much broader and includes any funds derived from an illegal venture, as well as those from activities that are legally permitted but hidden from taxation (Buczkowski, 2001, p. 22).

Money laundering is an organised activity, it is not exclusively domestic in nature and often takes the form of international cooperation. The terms 'money laundering' and 'dirty money' are used interchangeably and have come into common usage, and are applied in national, EU and international legislation.

In Poland, money laundering has been a criminal offence since 1995. The first Polish regulations relating to the fight against money laundering emerged at the beginning of the 1990s as the orders of the President of the National Bank of Poland. The first order of 1 October 1992 regulated the principles of banks' conduct in the event of disclosing circumstances indicating the placement of funds connected with crime and the later one of 1994 regarded counteracting the use of NBP organisational units' activities to perform actions aimed at concealing the origin of funds from crime. Table 2.1 presents the evolution of the term 'dirty money' and related offences in Polish legal regulations.

Table 2.1. Evolution of the term 'dirty money' in Polish legislation

Regulations	The term 'dirty money'
Act of 12.10.1994 on the protection of business transactions	Dirty money concerned only the designated items: ▪ means of payment ▪ securities ▪ foreign exchange The offences concerned the legalisation only of the above-mentioned property obtained by organised crime groups from the title (closed catalogue): ▪ forgery of money and securities ▪ drug trafficking ▪ kidnappings for ransom ▪ arms trade.
Criminal code of 06.06.1997	The catalogue of items has been expanded to include: ▪ property rights ▪ movable or immovable property. The catalogue of offences has also been expanded.
Criminal code of 16.11.2000	The catalogue of items and offences involving money laundering has been expanded.
Act of 5.03.2004 amending the Act on counteracting the introduction of property values from illegal sources into financial circulation and counteracting the financing of terrorism	Property values are defined as: ▪ means of payment ▪ securities or foreign exchange ▪ property rights ▪ movable and immovable property

Source: own elaboration based (Ustawa z dnia 12 października 1994…; Ustawa z dnia 6 czerwca 1997…; Ustawa z dnia 16 listopada 2000…; Ustawa z dnia 5 marca 2004…).

European law has also seen the development and specification of provisions aimed at criminalising and preventing money laundering. The first important directive was the Council Directive 91/308/EEC of 10 June 1991 on the prevention of the use of the financial system for the purpose of money laundering, and the next one, Directive 2005/60/EC of 26 October 2005 on the use of the financial system for the purpose of money laundering and terrorist financing. These directives represented the culmination of efforts within the Union to combat money laundering. The Directive 2005/60/EC was replaced by Directive (EU) 2015/849 on the prevention of the use of the financial system for money laundering and terrorist financing. At that time, ambiguities in certain provisions were eliminated and the consistency of anti-money laundering regulation across EU member states was enhanced (Directive (EU) 2015/849…).

Another Directive, 2018/1673, on combating money laundering through criminal law measures defines as money laundering the following offences:

- the conversion or transfer of property, in the knowledge that it is derived from criminal activity, for the purpose of concealing or disguising the illicit origin of that property or of providing any assistance to a person who engages in such activity,
- concealing or disguising the true nature of property, its source, location, disposition, movement, rights with respect to or ownership of property, with knowledge that the property is derived from criminal activity,
- the acquisition, possession or use of property, knowing, at the time of receipt, that the property is derived from criminal activity,
- aiding, abetting and attempting in relation to these offences (Directive 2018/1673…).

On 30 May 2023, the EU Council adopted a new package of rules (currently in force) to protect citizens and the EU financial system from money laundering. The new package extends anti--money laundering rules to new obligated entities such as most of the cryptocurrency sector, luxury goods traders and football clubs and agents, establishing stricter due diligence requirements, regulating the so-called beneficial ownership and setting a cash transaction limit of EUR 10,000. A new European Anti-Money Laundering and Countering the Financing of Terrorism Authority (AMLA) has been established, with supervisory powers over high-risk obligated entities in the financial sector. In addition to their supervisory powers, the AMLA will be able to impose financial sanctions on selected obligated entities.

The regulatory package contains three main pieces of legislation.

1. European Union Regulation containing provisions directly applicable in all EU countries and does not require implementation. It includes, among other things, regulations on the reporting of suspicious transactions, regulations on the use of financial security measures and the use of anonymous instruments – cryptocurrencies.
2. The new AML (Anti-Money Laundering) Directive.
3. Regulation establishing a new EU anti-money laundering and anti-terrorist financing authority (AMLA).

It is possible to distinguish three basic cycles related to money laundering:

- placement,
- layering,
- integration.

The aim of the placement is to effectively introduce illicit money into legitimate financial transactions, thereby obscuring its illegal origin. Criminals use a variety of techniques for this purpose such as: smurfing, splitting deposits (structuring), exchanging currency, using fictitious accounts, exchanging low-denomination notes for higher-denomination notes (refining), mixing legal and illegal money (blending) – entities with large and difficult to estimate cash flows, such as casinos, restaurants.

Masking – this process often starts when the illicit money is no longer in cash form, but not always. The process of masking involves concealing the source of the assets by carrying out multiple consecutive financial transactions. The purpose of cloaking is to separate the illicit money from its source, to provide anonymity to the owner of the assets and to incorporate the illicit assets into the legitimate economic flow. International transfers, trade in gold, precious stones or jewellery, and purchases of securities are all readily used in the masking process.

The final stage is integration, i.e. the return of laundered funds to the economic system, but with the appearance of being derived from legitimate activities. Funds from illegal sources already have documents issued by banks or financial institutions. Fictitious purchase-sale transactions, import and export transactions using transfer pricing, bank loans, purchases of bankrupt companies serve the purpose of integration.

Legitimate sources of cash that are then used for illegal activities can include:

- using money from legitimate collections run by charities, other third sector organisations and churches,
- the use of legitimate businesses and other economic organisations.

2.3. Money Laundering – Scale of the Problem in the EU and in Poland

The scale of money laundering in Poland is difficult to estimate. According to some authors (Zawłocki & Królikowski, 2011, p. 704), up to PLN 10 billion per year may be subject to this procedure in Poland. The International Monetary Fund estimates that the cost of money laundering is between 2 and 5% of global GDP. In Germany, experts estimate that in their country this costs as much as USD 60-80 billion a year, in the UK as much as GBP 15 billion. The number of reports received in relation to money laundering during the year is: in Switzerland – 1158, Turkey – 6500, in Ukraine – 778 907, while in the UK as much as 240 582 (Hryniewiecka, 2014, p. 8).

According to data from the Ministry of the Interior and the Ministry of Justice, there is a large discrepancy in the number of people suspected of committing an economic crime and those convicted. Thus, in 2012, out of about 44,000 suspects, there were only around 11,000 persons with a final conviction, which represents about 30%, which is still a better ratio than in 2009, when there were only about 10,000 sentenced out of 50,000 accused (Ministerstwo Spraw Wewnętrznych, 2013, pp. 174, 238). Such a discrepancy is indicative of the complexity of these cases, which in many cases are time-barred.

At the same time, data presented by the Polish police show that the number of initiated proceedings in connection with economic crimes is systematically increasing. In 2009, there were 72,735 proceedings and already in 2021 as many as 131,470, i.e. almost double (*Przestępstwa gospodarcze*, n.d.).

In Poland, according to a report by the General Inspector of Financial Information, the main risk areas for money laundering included: fuel trading, trading in scrap metal, alcohol and tobacco, carousel transactions, drug trafficking and gambling and betting cases (Siejczuk, 2012, p. 205).

Naturally, it is difficult to estimate the exact scale of money laundering offences, as statistics presenting economic crimes include not only money laundering, but also corruption, bribery or accounting fraud, which are not always linked to money laundering. By its very nature, this is an illegal activity, outside of official statistics. The leading institution, the Financial Action Task Force, does not publish any data in this regard, or alternatively refers to a 1998 calculation by the International Monetary Fund, which estimated the total cumulative size of money laundering worldwide at 2-5% of global GDP, i.e. between USD 590 billion and USD 1.5 trillion (Siejczuk, 2012, p. 203).

Other studies (Reuter & Truman, 2004, p. 11) attempted to estimate the scale of the problem, using various macroeconomic models, and showed that the amount of money being laundered was steadily increasing. In the countries of the European Community (later the European Union), the level reached 14.1% of GDP (over USD 1 trillion) in 1989 and 18.6% of GDP (USD 1.73 trillion) in 2001. Obviously, the data presented, as the researchers pointed out, may be subject to considerable error.

In terms of countries particularly predisposed to be used for money laundering, organised crime has traditionally been strong in Italy. According to a report (Grzywacz, 2010, p. 13), the mafia profits from, among other things, racketeering – about 60% of companies in large cities pay the so-called protection money and organised crime is present in all areas of the economy, from manufacturing, real estate to tourism and finance. The situation is also difficult in Russia, China (Chinese triads), Japan (Japanese yakuzas) and Colombia (drug cartels).

The negative effects of money laundering can include:

1) decrease in global economic growth – misallocation of resources by organised crime groups, causal relationship between money laundering and economic growth rate (Quirk proved that a 10% increase in the value of laundered money, expressed by the number of registered crimes, causes a decrease in the GDP growth rate by 0.1% (Lewandowski, 2003, p. 617));
2) weakening of the stability of the international economic system;
3) a negative impact on the exchange rate, interest rates, appreciation of the national currency or the prices of real estate and land in a country – can be caused by a sudden influx of capital;
4) unfavourable investment, business climate;
5) lack of trust in the authorities;
6) violation of the principles of the free market economy – illegal practices are harmful for free competition.

The Council and Parliament of the European Union established the EU Anti-Money Laundering and Countering the Financing of Terrorism Authority (AMLA), as already mentioned. This is a central body that supports and coordinates national supervisors to apply EU anti-money laundering rules consistently. The Authority is also meant to directly supervise financial institutions exposed to the greatest risks of money laundering and terrorist financing. The AMLA also coordinates and supports the Financial Intelligence Units (FIUs), by supplying the joint analysis of cross-border cases and providing analytical solutions for information sharing. It is also obliged to complement EU regulations in this area.

In Poland, the anti-money laundering system is made up of such institutions as the General Inspector of Financial Information (among others, it may stop transactions or block accounts, request the transfer of information on transactions, and issue decisions on entry to the list of persons and entities against whom specific restrictive measures are applied), obligated institutions (such as banks, investment firms, companies operating a regulated market, insurance companies, notaries, attorneys, tax advisors, domestic financial institutions, and exchange offices) and cooperating Entities (e.g. government authorities, local government units, the NBP, the FSA). These institutions cooperate and interact with each other.

2.4. Challenges Facing European Union Countries on Money Laundering

The fight against money laundering is a priority for many EU and international institutions. Many regulations have been introduced to curb this phenomenon. Banks and financial institutions have been included in this fight to monitor and report suspicious transactions. At a global level, the United Nations, the Egmont Group and the Financial Action Task Force (FATF), which monitors and evaluates state activities to combat money laundering, have joined these efforts. Unfortunately, criminals are often ahead of those in control, developing their operations using advanced technology.

Money laundering is not only a threat to the economy and stability of individual economies, but also to international security. The funds acquired and used in money laundering operations are very often linked to the financing of terrorism, drug trafficking or human trafficking.

A real problem facing EU institutions is identifying the beneficiary of the real criminal assets. This is difficult thanks to the practice of creating 'front companies' to hide the financial trail.

Cryptocurrencies are a growing problem, often used to launder illicit profits. The anonymous and decentralised form of money transfer and limited regulatory control means that cryptocurrencies can be used for this purpose. Indeed, in Poland, as well as in most EU countries, there is a lack of regulation of virtual currency exchange providers. Cryptocurrencies themselves are digital records that reach the wallet of another user via a computer algorithm (peer-to-peer model), without the intermediation of any central centre (e.g. a bank). The immediacy of the transactions carried out with cryptocurrencies makes a tool in the placement phase, as well as in the masking phase based on the creation of a network of transfers to conceal their original origin. The most common method used for this purpose is cryptocurrency tumbling, which involves accumulating a number of cryptocurrency transactions, splitting them up several times and mixing them together to make it difficult to trace the sequence of transactions carried out using them. Another method is to deposit money in bank accounts through fake representatives and then acquire crypto-assets through fictitious cryptocurrency accounts, using tools that mask the identity of the senders and recipients and their IP addresses (TOR network, Darknet).

On 30 December 2024, the regulation introduced on 9 June 2023 on Market in Crypto-Asset (MiCA) came into effect (Regulation (EU) 2023/1113…). The aim of this regulation is to increase consumer protection against the risks associated with investing in cryptocurrencies. However, increasing the transparency associated with cryptocurrency trading may be difficult, as the next regulation must reconcile the specifics of cryptocurrencies with the protection of investor data and the further development of digital technology.

In order to counter money laundering, special attention should be paid to the following activities.

1. **Use of artificial intelligence**. It can analyse large volumes of financial data in search of suspicious patterns and anomalies, while the development of blockchain technology also increases transparency and the impossibility of changing the information stored in it. Investment should be made in new technologies and tools such as big data, machine learning, blockchain and artificial intelligence in general.
2. Another aspect that needs support is **state regulation** to improve the rules and standards to counter this practice. At EU level, this role is to be fulfilled in part by the AMLA, through the development of regulatory and implementing technical standards and the issuing of guidelines. Moreover, efforts should be united at international level, as only then can criminals be effectively prosecuted. Bilateral and multilateral agreements between countries are needed to exchange information and facilitate the tracking of money flows. Strengthening the legal framework should include stricter requirements for customer identification, reporting of suspicious transactions and inter-industry cooperation. Individual countries should seek to harmonise their laws to standardise their operations and prevent loopholes that can be exploited by criminals.
3. **Education and awareness-raising** is another important point to be pursued by international and national and regional institutions. Society should be aware of the damage that can be caused by money laundering. Educational campaigns, workshops, seminars are essential to raise public awareness to encourage reporting of suspicious activities. Transparency and accountability should also be taught and promoted at a lower level by institutions, which through the implementation of due diligence and internal audits should help to identify risks.
4. **Cross-sectoral cooperation** is needed between the financial sector, the state sector, international institutions and NGOs, which should exchange information and best practices, in effectively countering money laundering.
5. **Clarification of regulations related to payment accounts** maintained by institutions other than banks and loans granted by other entities[1].

Unfortunately, the fight against money laundering is an ongoing process, as the methods used by criminals are constantly evolving. Efforts must continue and adapt to new challenges. Mitchell (2002) indicated in his study that it is easier to legalise mafia funds in more economically developed countries than in poor countries with a small financial market.

2.5. Conclusions

Money laundering is a practice that has been put into use for many years. It generates high costs and has a negative impact on the economy and society, including financing terrorist activities and affecting the stability of financial markets. The methods used are numerous and constantly evolving. The aim of this article was to analyse the regulation of money laundering at EU and national level and to try to identify the challenges faced by EU and international institutions to reduce money laundering. Major regulatory efforts have been made by EU institutions. The successive directives issued have attempted to better define money laundering

[1] A survey conducted in 2021 by the GIFI as part of the verification of the National Assessment of Money Laundering Risk, addressed to Obliged Institutions. 821 entities took part in the survey, mainly exchange offices, banks, notaries and investment funds. When asked which products and services offered on the financial market can be most often used for money laundering, bank accounts and loans granted by entities other than banks were indicated. Virtual currencies and cash currency exchange were also indicated (Ministerstwo Finansów, 2023).

in order to be able to enforce the law more effectively. In addition, banks and financial institutions have been included in the fight against this practice to monitor cash flows.

As money laundering methods continue to evolve, the chapter also identified challenges facing international, EU and national institutions, namely: increasing the emphasis on the use of artificial intelligence in the fight against money laundering, raising awareness and educating the public about the effects of money laundering, and the continuous improvement of regulation and cross-sectoral cooperation. An important aspect is the monitoring of money laundering, as well as the collection and analysis of the data in order to be able to select effective solutions to emerging threats.

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Chapter 3

Blockchain Technology in Anti-Money Laundering: Challenges and Opportunities in the V4 Countries and Ukraine

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3.1 Introduction – Blockchain Technology and AML Challenges

Since its inception with Bitcoin in 2008, blockchain technology has revolutionized data storage and transactions in the digital realm. Its fundamental attributes, including decentralization, transparency, and immutability, position it as a key tool in combating money laundering (AML) (Barbereau & Bodó, 2023). AML regulations require financial institutions to monitor transactions, identify suspicious operations, and report them to relevant authorities. Blockchain supports these efforts by enabling the real-time tracking of financial flows and automating anomaly detection (OECD, 2022).

A notable application of blockchain in AML is the use of smart contracts, which can automatically freeze funds associated with suspicious transactions. Additionally, blockchain data analysis assists law enforcement agencies in identifying criminal network 'nodes' by analysing connections between digital addresses. However, blockchain technology also presents limitations. The anonymity and pseudonymity of many blockchain systems, coupled with the growing popularity of decentralized tools such as non-custodial wallets, hinder user identification and source-of-fund verification (FATF, 2021).

Non-custodial wallets, such as MetaMask and MyEtherWallet, are increasingly favoured by users valuing privacy and autonomy over their assets. Unlike traditional custodial wallets, where private keys are managed by financial institutions, non-custodial wallets enable users to independently manage their funds. While this design promotes privacy protection, it also poses significant challenges for regulators who struggle to enforce AML compliance effectively (Barbereau & Bodó, 2023). The case of Tornado Cash, a decentralized cryptocurrency mixer implicated in laundering billions of dollars, highlights the scale of the problem. Regulatory actions, such as sanctions imposed by the US Treasury Department on Tornado Cash in 2022, highlight the difficulties in regulating decentralized technologies (U.S. Department of Treasury, 2022).

Central and Eastern Europe, encompassing the V4 countries (Poland, the Czech Republic, Hungary, and Slovakia) and Ukraine, offers a compelling context for analysing blockchain applications in AML. These countries vary not only in their levels of technological advancement but also in their regulatory approaches to cryptocurrencies and blockchain technology. Poland and the Czech Republic have implemented comprehensive regulatory frameworks that include AML requirements for cryptocurrency service providers, such as exchanges and custodial wallets. For instance, Polish regulations mandate full compliance with KYC standards and the reporting of suspicious transactions to the General Inspector of Financial Information (FATF, 2021).

Slovakia and Hungary, despite being EU members, face challenges due to financial and technological constraints that hamper the effective implementation of AML regulations. Ukraine, meanwhile, has adopted a more flexible approach, allowing the use of cryptocurrencies for humanitarian support and sanction evasion during wartime. At the same time, Ukraine is introducing measures to enhance the transparency of cryptocurrency transactions, a critical factor in combating corruption (OECD, 2022).

This chapter aimed to analyse the application of blockchain technology in combating money laundering in the V4 countries and Ukraine, addressing their specific regulatory, technological, and operational challenges. It explores how blockchain can support AML systems, identifies the associated risks, and proposes recommendations for regulators and financial institutions.

In the context of a dynamically evolving technological and financial environment, blockchain technology is increasingly regarded as a critical tool in combating money laundering (AML). In Central and Eastern Europe, encompassing the V4 countries (Poland, the Czech Republic, Hungary, Slovakia) and Ukraine, the application of blockchain faces specific challenges arising from diverse legal, technological, and operational conditions. To address the opportunities and limitations of implementing blockchain in AML, it is essential to conduct an analysis at both local and global levels.

The following research questions aim to systematize this analysis and highlight key factors influencing the effectiveness of blockchain applications in combating money laundering.

1. What are the most significant technological advancements and barriers in using blockchain for AML processes in the V4 region and Ukraine?
2. How do differences and similarities in AML regulations across the V4 countries and Ukraine influence the harmonization of blockchain adoption?
3. How can international collaboration, particularly through organizations like FATF (The Financial Action Task Force) and Europol, support the integration of blockchain into AML systems?
4. What trends, investments, and educational initiatives are necessary to enhance the effectiveness of blockchain in AML efforts?

This chapter is structured into four cohesive sections that together provide a comprehensive perspective on the application of blockchain technology in combating money laundering and its significance for the V4 countries and Ukraine. Each section addresses critical technological, regulatory, and international aspects that shape the effectiveness of blockchain implementation in AML activities.

The first section, encompassing the introduction, analyses the fundamental issues related to blockchain's potential in AML, considering the specific context of the V4 region and Ukraine. It outlines the main challenges associated with using blockchain to combat money laundering and defines the research questions that guide the chapter's narrative.

The second section examines the technological applications and limitations of blockchain in AML. It focuses on mechanisms such as real-time financial monitoring, smart contracts, and financial flow analysis, and also discusses technological barriers, including scalability, interoperability, and resource constraints in countries like Slovakia and Ukraine. Examples of successful blockchain implementations from regions like Singapore offer inspiration and practical benchmarks for the V4 countries and Ukraine.

The third section explores the regulatory landscape in the V4 region and Ukraine. It provides a comparative analysis of AML regulations, highlighting similarities and differences influenced by EU directives such as AMLD5 and AMLD6, as well as the FATF 'travel rule'. A comparative table visualizes these differences, accompanied by commentary on regulatory gaps and opportunities for harmonization within the region.

The fourth section underlines the importance of international cooperation in advancing blockchain technology for AML. It discusses the role of global organizations, such as FATF and Europol, in fostering collaboration and regulatory harmonization. The section also highlights the benefits of initiatives like harmonized VASP reporting systems, blockchain pilot projects, and joint training programmes to address cross-border financial crimes effectively.

The final section focuses on development prospects and recommendations. It analyses key technological and regulatory trends, proposing investments in blockchain analytics, targeted reforms, and educational initiatives. The section also addresses emerging risks in Decentralized Finance (DeFi) and emphasizes the need for compliance-oriented innovations to mitigate these challenges. By implementing these measures, the V4 countries and Ukraine can strengthen their AML systems and enhance international collaboration in combating financial crime.

The chapter is based on an analytical-comparative approach and employs various research methods.

1. Literature review – a review of the latest academic publications and international reports on blockchain technology, AML, and international cooperation.
2. Legal regulation analysis – a comparison of AML regulations in the V4 countries and Ukraine with international standards, such as FATF recommendations. This analysis also considers EU directives and regional initiatives.
3. Review of international initiatives – an analysis of examples of international cooperation in blockchain and AML, such as projects led by FATF, Europol, and KYC platforms in Singapore.
4. Comparative methodology – a comparison of the approaches of V4 countries and Ukraine to blockchain technology, focusing on technological, regulatory, and operational differences.
5. Analysis of best practices – an analysis of practical implementations of blockchain technology in AML, including initiatives such as Ukraine's "Virtual Assets Law" and blockchain platforms in Poland.

The proposed research questions, chapter structure, and modified research methodology enable an in-depth analysis of blockchain applications in AML. The emphasis on international cooperation, regulatory harmonization, and technological prospects allows for the inclusion of both local conditions and global trends.

3.2. The Application of Blockchain Technology in AML

Blockchain technology is transforming the approach to combating money laundering (AML) by offering new opportunities for monitoring and analysing financial transactions. Its unique features, such as transparency, decentralization, and immutability of records, make it an ideal tool for tackling criminal activities in the global financial system. Blockchain not only enhances compliance processes but also introduces new mechanisms that are difficult to achieve with traditional technologies.

In recent years, blockchain has found applications in various aspects of AML, including process automation through smart contracts, financial flow analysis, and improving compliance with "Know Your Customer" (KYC) standards. Each of these applications brings significant innovations to AML systems, offering more efficient and automated solutions. This section discusses the primary mechanisms of blockchain in AML, which form the foundation of its growing role in combating financial crimes.

Smart contracts

Smart contracts, computer programmes operating on blockchain networks can automate AML compliance processes. These contracts are designed to execute predefined instructions automatically, such as freezing funds originating from suspicious sources or instantly reporting detected irregularities to financial regulators (OECD, 2022). For example, systems can be implemented to analyse financial flows in real-time and automatically trigger alerts when transactions exceed specified thresholds or are linked to previously flagged high-risk addresses. Such solutions, as seen on platforms like Ethereum, enable immediate responses to suspicious activities, eliminating the need for manual analysis of transaction data (Barbereau & Bodó, 2023). Moreover, smart contracts can support 'compliance tokenization', where financial institutions tokenize assets that are then automatically monitored for AML compliance. For instance, these systems can be programmed to block the transfer of digital assets if they do not adhere to "Know Your Customer" (KYC) standards (Sun et al., 2022; Zetzsche et al., 2020).

Financial flow analysis

One of the most significant applications of blockchain in AML is its ability to conduct comprehensive financial flow analysis. Every transaction on a blockchain is recorded in a public ledger, enabling end-to-end tracking. Advanced data analysis algorithms and machine learning allow blockchain to detect patterns indicative of criminal activities. For instance, money laundering schemes such as 'smurfing', which involves breaking large sums into multiple smaller transactions to evade detection by traditional monitoring systems, can be identified using blockchain's transparent and real-time tracking capabilities (OECD, 2022).

Examples of financial flow analysis applications include utilizing network analysis technologies to map connections between blockchain addresses. Such analyses help identify central nodes within criminal networks, significantly facilitating investigative efforts (Pocher et al., 2023).

Compliance technologies

Blockchain also plays a critical role in implementing compliance principles, such as KYC. Decentralized systems enable secure and transparent storage of identification data while minimizing the risk of privacy breaches (FATF, 2021). An innovative example of compliance technology is blockchain platforms that allow for one-time identity verification, with the results stored securely on the blockchain. This enables users to safely share their data only when necessary, eliminating the need for repeated verification across various financial institutions.

Through these advancements, blockchain technology is reshaping AML practices, providing tools for more efficient compliance processes, and enhancing the ability to track and analyse financial transactions in a secure and transparent manner. Blockchain technology is increasingly being utilized in global anti-money laundering (AML) systems, contributing to enhanced efficiency in monitoring and reporting financial transactions. Its transparency and ability to track fund flows in real-time enable the rapid identification of suspicious activities and support collaboration among financial institutions worldwide. The practical implementations of this technology showcase its potential in combating money laundering and adapting to diverse legal and technological challenges. From advanced monitoring platforms in Singapore and FATF's guidelines to Estonia's innovative user identification systems, blockchain is redefining the approach to AML. The following examples illustrate how this technology supports AML efforts on a global scale:

- Project Ubin in Singapore – Singapore has implemented a blockchain-based platform to monitor financial transactions in real time. This project has significantly improved AML processes by eliminating delays in identifying suspicious transactions and reducing operational costs (Menon, 2023)
- FATF's travel rule initiative – FATF has recommended implementing the 'travel rule', requiring financial institutions to share information about the sender and recipient of cryptocurrency transactions. Adopting this rule enhances international cooperation in AML (Chuah, 2023).
- Estonia's e-residency system – Estonia leverages blockchain technology to store and verify user identity data in its e-Residency program. This approach reduces the risk of financial abuse while ensuring full transparency in operations (Sullivan & Burger, 2017).

Despite its vast potential, the application of blockchain in AML systems encounters significant technological, operational, and regulatory limitations. These challenges can impact the effectiveness of AML efforts and their global coordination. The key issues include:

1. Scalability and network performance. Blockchains like Ethereum and Bitcoin are designed with a focus on security and decentralization, often at the expense of performance. High network activity can lead to congestion, resulting in increased transaction fees and longer confirmation times, making blockchain less efficient for large-scale financial operations. Technological solutions, such as "Layer Two" protocols (e.g. Lightning Network for Bitcoin or Polygon for Ethereum), promise increased scalability. However, implementing these solutions requires significant investment, and interoperability among various systems remains a challenge (Benson et al., 2024; OECD, 2022).
2. Implementation and maintenance costs. Implementing blockchain technology involves high initial costs, including the development of technical infrastructure, staff training, and integration with existing financial systems. Operational costs are particularly high for blockchains utilizing consensus algorithms like proof-of-work (PoW), which require substantial energy resources for transaction validation. In the context of financial institutions, smaller entities often lack the necessary resources to adopt blockchain technology, potentially exacerbating technological inequalities within the financial sector. Alternatives like proof-of-stake (PoS) consensus offer reduced energy costs, but their adoption is still in the developmental stage (Ristic, 2023; Shanaev et al., 2020).

3. User privacy and data protection. One of the fundamental challenges of blockchain technology is balancing transaction transparency with user privacy protection. Public blockchains, such as Bitcoin and Ethereum, allow any user to view transaction histories. Although blockchain addresses are pseudonymous, advanced analytical tools can link transaction data to real--world users, potentially leading to privacy violations (Sun et al., 2022).
4. Anonymity and pseudonymity in blockchain. While blockchains provide an immutable ledger of transactions, user anonymity poses significant challenges for combating money laundering. Non-custodial wallets, which allow users full control over their assets without requiring identity verification, are particularly problematic. These tools are often exploited by criminals to obscure the origins of funds. A notable example is Tornado Cash, a decentralized cryptocurrency mixer that was implicated in laundering billions of dollars. Despite sanctions imposed by the US Department of the Treasury, the anonymity provided by such tools makes effective prevention of misuse difficult (OECD, 2022; Pocher et al., 2023).
5. Regulatory discrepanciPPes and lack of international consistency. The diversity of regulatory approaches across countries complicates the global implementation of blockchain-based AML standards. For instance, while EU member states have adopted AML directives aligned with the "Know Your Customer" principle, their implementation and enforcement vary significantly between countries The lack of regulatory harmonization creates legal loopholes that financial criminals can exploit. Initiatives like FATF's guidelines, including the 'travel rule', aim to standardize cryptocurrency transaction reporting requirements, but their implementation remains in the early stages in many countries (FATF, 2021; OECD, 2022; Vandezande, 2017).
6. Interoperability issues. The vast blockchain ecosystem, encompassing numerous protocols and standards, leads to significant challenges in integrating different systems. Interoperability among blockchains and their integration with traditional financial systems remain technological hurdles that require substantial investments in research and development (OECD, 2022; Utkina, 2023).

Although blockchain represents a promising tool in combating money laundering, its implementation requires overcoming numerous technological, operational, and regulatory challenges. Solutions such as proof-of-stake consensus, privacy-enhancing technologies, and regulatory harmonization initiatives can help address these barriers. However, their effectiveness relies on international collaboration and the commitment of both the public and private sectors. Blockchain technology offers significant benefits for anti-money laundering efforts, yet its success depends on overcoming technological, regulatory, and operational barriers. Practical examples of implementation, such as the e-Residency system in Estonia and the Ubin project in Singapore, demonstrate that blockchain can become a central component of global AML strategies, whilst further investments in technology development, international regulatory harmonization, and the education of users and regulators are essential.

3.3. The Regulatory Landscape in the V4 Countries and Ukraine

The anti-money laundering (AML) and blockchain regulations in the V4 countries and Ukraine reflect the diversity of approaches shaped by their specific economic, political, and technological contexts. For EU member states such as the V4 countries, AMLD5 and the upcoming AMLD6 directives form the foundation for harmonizing their regulations with EU standards, especially in light of the growing role of cryptocurrencies. Ukraine, while not a member of the EU, has introduced its own regulations inspired by international guidelines and is actively aligning its regulatory framework with EU standards as part of its EU candidate status It is particularly evident in Ukraine's 2023 Virtual Assets Law which brings its digital asset regulations closer to European standards.

Blockchain technology, with its transparency, decentralization, and immutability, brings new possibilities to AML systems. However, its full potential can only be realized within effective and well-harmonized regulatory frameworks. The countries in this region face the challenge of aligning their legal systems with the demands of modern technology while ensuring data protection and eliminating legal loopholes. This section examines the key EU directives shaping AML approaches and the diverse regulatory strategies employed by the V4 countries and Ukraine, highlighting both their strengths and areas for improvement.

The EU's anti-money laundering framework has evolved significantly through several key directives. The Fourth AML Directive (AMLD4, Directive (EU) 2015/849…) was adopted on 20 May 2015, establishing the foundational framework for preventing the use of the financial system for money laundering and terrorist financing purposes (OECD, 2022; Tosza, 2024).

AMLD5 (Directive (EU) 2018/843…), adopted on 30 May 2018, amended AMLD4 in response to the rapidly evolving digital asset market and increasing risks of money laundering and terrorism financing. AMLD5 introduced several key changes

1. Mandatory registration of Virtual Asset Service Providers (VASPs). All entities offering cryptocurrency-related services, such as exchanges and custodial wallets, are required to register and comply with "Know Your Customer" (KYC) standards. This enhances market transparency and limits the anonymity of cryptocurrency transactions.
2. Expansion of AML obligations to new entities. The directive extended AML compliance requirements to include cryptocurrency exchanges, custodial wallet providers, and crowdfunding platforms, significantly broadening the scope of regulation to encompass new financial technologies.
3. Enhanced due diligence and reporting requirements. Obligated entities must conduct enhanced customer due diligence and report suspicious transactions to national Financial Intelligence Units (FIUs), particularly for transactions exceeding EUR 15,000. The directive also mandates identifying ultimate beneficial owners in corporate structures.

The Sixth AML Directive (AMLD6, Directive (EU) 2024/1640…) was adopted on 31 May 2024 and published in the Official Journal on 19 June 2024. This directive, which is part of a comprehensive new AML package, introduces significant changes:

1. Harmonization of AML framework. AMLD6 enhances the EU's framework for anti-money laundering and countering terrorist financing by establishing mechanisms for EU Member States to prevent the use of financial systems for illicit purposes. It aims to avoid regulatory divergence between the member states.
2. Enhanced institutional framework. The directive clarifies the role of public authorities in the oversight of self-regulatory bodies and establishes the new Anti-Money Laundering Authority (AMLA), to be based in Frankfurt. AMLA will commence most of its tasks by mid-2025, with direct supervision of selected obligated entities beginning in 2028.
3. Beneficial ownership transparency. The directive emphasizes the importance of identifying and verifying beneficial owners across entities. It provides access to beneficial ownership registers for persons with legitimate interests, such as journalists and civil society organizations.

4. Strengthened supervision and cooperation. AMLD6 enhances the cooperation between Financial Intelligence Units and improves information sharing mechanisms. It establishes a more robust framework for cross-border cooperation and supervision.

These directives represent a progressive evolution of the EU's approach to combating money laundering and terrorist financing. The transition from AMLD4 through AMLD6 shows an increasing focus on technological challenges, institutional cooperation, and transparency requirements. The new framework, particularly with the establishment of AMLA and the enhanced cooperation mechanisms, positions the EU as a leader in developing comprehensive anti-money laundering regulations.

EU Member States are required to transpose AMLD6 into their national legislation, marking another significant step in the EU's efforts to combat financial crime and strengthen the integrity of its financial system.

The directives provide a solid foundation for the V4 countries and Ukraine, highlighting pathways for further AML regulatory development in the context of new financial technologies. The regulatory approaches to blockchain technology and AML in the V4 countries (Poland, the Czech Republic, Hungary, and Slovakia) and Ukraine reflect a diverse range of strategies shaped by their unique economic, political, and technological circumstances.

Poland

Poland has implemented significant changes to its anti-money laundering (AML) framework through the Act of 1 March 2018 on Counteracting Money Laundering and Terrorist Financing (AML Act), which transposed the EU's Fourth and Fifth AML Directives (Ustawa z dnia 1 marca 2018…). This legislation marked a substantial shift from previous regulations, introducing more stringent security measures and expanding obligations for regulated entities.

The AML Act requires obligated institutions to conduct thorough customer due diligence, verify beneficial owners, and implement risk-based approaches to monitoring transactions. A key change was the establishment of the Central Register of Beneficial Owners and enhanced requirements for verifying beneficial ownership information beyond just consulting the register.

However, implementation challenges persist. The Supreme Audit Office's inspection from 2013-2015 revealed deficiencies in supervision by the General Inspector of Financial Information (GIIF) over entities required to monitor transactions exceeding EUR 15,000. With estimated money laundering volumes of PLN 18.2 billion in 2014, only PLN 1.2 million in assets were seized and PLN 11.5 million forfeited – representing just 0.07% of estimated illicit funds.

Recent amendments in 2021 further expanded the scope of obligated institutions to include:

- providers of tax, accounting and customs advisory services,
- real estate agents,
- art dealers and auction houses (for transactions over EUR 10,000),
- virtual asset service providers.

While Poland has made progress in aligning with EU standards, practical implementation faces several challenges:

- limited resources and expertise for proper risk assessment, especially among smaller entities,
- difficulties in ongoing monitoring of business relationships,

- complex verification requirements that strain organizational capacity,
- delayed implementation of EU directives.

The effectiveness of the system will depend on addressing these operational challenges while maintaining a robust oversight of the expanding scope of regulated entities. The establishment of the new EU Anti-Money Laundering Authority (AMLA) in Frankfurt may provide additional support for strengthening Poland's AML framework (Piątkowska & Skelnik, 2022).

Czech Republic

The Czech Republic has implemented European AML directives primarily through Act on anti-money laundering and counter-terrorist financing (AML Act), which has undergone multiple amendments to comply with evolving EU requirements (Zákon č. 253/2008…).

The Financial Analytical Office (FAU), established in 2017 as an independent administrative unit, serves as the key supervisory authority for the AML system. As part of AMLD5 implementation in 2020, the Czech Republic introduced significant changes to its legislation, expanding the scope of obligated entities to include virtual asset service providers (VASPs) and implementing more stringent due diligence requirements. Special attention was paid to cryptocurrency-related activities, introducing mandatory registration requirements for service providers in this sector.

The 2021 amendment implementing AMLD6 requirements strengthened the system of penalties and sanctions for AML violations, introducing higher financial penalties and expanding the list of predicate offenses. The Czech Republic stands out in the region for its effective beneficial ownership registration system and well-developed inter-institutional cooperation in information exchange. The Czech Anti-Money Laundering framework distinguishes itself through several significant features, including the systematic adaptation of national law to EU requirements, establishment of a specialized supervisory body (FAU), a comprehensive system of sanctions and penalties, an effective beneficial ownership registration system, and the enhanced cooperation between national institutions (Financial Analytical Office, 2020).

Hungary

Hungary has strengthened its regulatory framework for cryptocurrencies and anti-money laundering (AML), introducing rigorous requirements for Virtual Asset Service Providers (VASPs), including mandatory registration and comprehensive reporting obligations. In 2022, new legislation imposed significant financial penalties for non-compliance with AML standards, further supported by the deployment of blockchain-based monitoring systems to enhance transaction scrutiny and mitigate financial crime risks (OECD, 2022).

Despite these advancements, criticisms remain. The regulatory environment has been marked by a lack of transparency in licensing procedures for VASPs and inefficiencies stemming from fragmented coordination among the numerous governmental agencies tasked with financial oversight. These issues have been indicated as impediments to the system's overall effectiveness (FATF, 2021; MONEYVAL_4HU, 2022).

Slovakia

Slovakia has developed a regulatory framework consistent with AMLD5 and AMLD6 directives, yet implementation is hindered by technical and staffing constraints. The National Bank of Slovakia (NBS) and other oversight bodies report a pressing need for enhanced investments in blockchain monitoring technologies to combat effectively money laundering and terrorist financing.

However, the regulatory framework faces notable gaps. Similarly to Poland, Slovakia has not established detailed regulations for non-custodial wallets, creating vulnerabilities that can be exploited for financial misuse. Moreover, insufficient awareness and education among cryptocurrency entrepreneurs pose challenges to the comprehensive implementation of AML regulations. Despite efforts in outreaching, the integration of these stakeholders into the compliance framework remains limited (MONEYVAL_3SL, 2023).

Ukraine

Ukraine has made significant strides in aligning its regulatory framework with international anti-money laundering (AML) and counter-terrorist financing (CTF) standards, addressing several deficiencies identified in earlier evaluations. Notable improvements include enhanced sanctions for AML/CFT violations, the introduction of risk-based supervision for virtual asset service providers (VASPs), and the adoption of comprehensive legislative changes through Law No. 361 (Law of Ukraine of December 6, 2019 No 362-IX)

Despite these advancements, challenges persist. The implementation of freezing obligations for terrorism-related assets remains incomplete, particularly concerning natural and legal persons beyond reporting entities. Moreover, while VASPs are now regulated, sector-specific guidelines and enforcement mechanisms are still under development, limiting their effectiveness. Ukraine also faces gaps in supervisory practices, such as the inconsistent application of risk-based approaches for non-financial businesses and professionals (DNFBPs), and limited sanctioning frameworks for management roles within these entities.

Efforts to improve technical compliance have led to upgraded ratings for specific recommendations, such as Recommendation 5 (now largely compliant). However, others, including Recommendations 6, 7, and 28, retain partially compliant statuses due to persistent shortcomings. A continued focus on implementing sector-specific measures and enhancing interagency coordination will be critical for Ukraine to further strengthen its AML/CFT framework (MONEYVAL_5UA, 2020).

Reports conducted by the Council of Europe's Committee of Experts provide comprehensive assessments of countries' compliance with international anti-money laundering and counter--terrorist financing standards, identify gaps, and recommend measures to enhance regulatory effectiveness. The alignment of anti-money laundering (AML) regulations among the V4 countries (Poland, Hungary, Slovakia, Czech Republic) and Ukraine with international standards, such as the FATF guidelines and EU AML directives (AMLD5 and AMLD6), is crucial for ensuring robust defence against money laundering and terrorist financing. Despite substantial progress, these countries face several significant regulatory and operational challenges.

Implementation of the travel rule

The travel rule, which mandates the sharing of sender and receiver information in virtual asset transfers, remains inconsistently adopted. Both Poland and Hungary have introduced customer identification and suspicious transaction reporting mechanisms consistent with FATF principles. Poland has established a VASP registry and lowered the threshold for customer due diligence (CDD) for virtual asset transactions to EUR 1,000. Slovakia and the Czech Republic face slower implementation. Slovakia has not fully addressed regulatory gaps regarding P2P transactions and non-custodial wallets, creating vulnerabilities. The Czech Republic also struggles with enforcing compliance in decentralized and less-regulated virtual asset ecosystems. Despite adopting the "On Virtual Assets" law in 2020, Ukraine has yet to fully implement mechanisms for enforcing the travel rule, impeding cross-border AML collaboration. There is a lack of technical and legislative infrastructure to support compliance.

Persistent regulatory gaps and challenges

The alignment of AML frameworks across the V4 countries (Poland, Hungary, Slovakia, and the Czech Republic) and Ukraine is critical to strengthening their protection against financial crimes. These nations have made notable strides in adopting international standards, such as FATF guidelines and EU AML directives, but significant challenges remain. Key obstacles include the inconsistent implementation of regulations, limited resources, and gaps in monitoring emerging financial technologies such as virtual assets and non-custodial wallets. Addressing these issues is essential for enhancing regional and international cooperation in combating money laundering and terrorist financing.

- Lack of harmonization. Variations in regulatory frameworks among the V4 countries and Ukraine create opportunities for financial misuse. Differences in rules for non-custodial wallets allow criminals to exploit weaker regulatory environments. For example, while Poland has strict measures for VASPs, Slovakia and Ukraine lag in this regard, undermining regional AML consistency.
- Education and awareness deficiencies. Low awareness and understanding of AML/CFT obligations among key stakeholders hinder effective implementation.

Both Hungary and Slovakia report difficulties in engaging cryptocurrency entrepreneurs and financial institutions. Training programmes and outreach efforts are limited, leading to frequent non-compliance with AML regulations. In Ukraine, the integration of educational initiatives into regulatory strategies remains insufficient, further complicating compliance.

Limited technical and human resources

Slovakia and Ukraine face critical shortages in the technology and expertise needed to combat sophisticated financial crimes:

- blockchain monitoring: Slovakia reports insufficient investment in blockchain analytics tools, a critical gap in modern AML systems. Ukraine similarly struggles with deploying advanced technological solutions;
- specialized staff: resource constraints affect supervisory authorities, delaying implementation of FATF recommendations.

Impact of EU directives and national progress

The AML directives have been pivotal in shaping regulatory practices. These directives emphasize KYC measures, entity registration, and transaction reporting obligations, setting global benchmarks for financial transparency. Poland has implemented many aspects of AMLD5, including stricter CDD measures for VASPs and penalties for non-compliance. Hungary has enhanced its monitoring frameworks but still faces challenges in certain sectors. Slovakia and the Czech Republic are less advanced, with ongoing gaps in P2P oversight and implementation of risk-based approaches for non-financial businesses.

Non-custodial wallets and anonymity

Non-custodial wallets pose a significant regulatory challenge across the region. These wallets allow users to manage their private keys independently, creating anonymity risks:

- regulatory inaction: Slovakia, Ukraine, and the Czech Republic lack specific measures to regulate these wallets, enabling criminals to obscure financial flows;
- risk mitigation strategies: the adoption of blockchain analytics and enhanced transaction monitoring remains limited due to technical constraints, particularly in Slovakia and Ukraine.

Broader challenges and recommendations

The findings underscore several critical issues requiring urgent attention:

- Regional cooperation: greater collaboration among V4 countries and Ukraine is essential to close regulatory gaps and harmonize AML practices.
- Technological investment: enhancing blockchain monitoring capabilities should be a priority, alongside the development of cross-border transaction monitoring systems.
- Capacity building: investing in education and training for financial institutions, regulators, and cryptocurrency businesses will promote compliance and awareness of AML obligations.
- Unified standards: adopting a standardized framework for non-custodial wallets and virtual assets would prevent regulatory arbitrage.

While the V4 countries and Ukraine have made considerable progress, fragmented implementation and resource limitations continue to undermine the effectiveness of AML regulations. A coordinated, technology-driven approach, combined with strong education initiatives, is critical for advancing compliance and addressing the risks posed by emerging financial technologies. This would align the region more closely with FATF guidelines, fostering greater transparency and international cooperation.

These directives provide a robust foundation for the V4 region and Ukraine, offering clear directions for the further development of AML regulations in the context of emerging financial technologies.

Table 1 is based on MONEYVAL reports published by the Council of Europe's Committee of Experts on the Evaluation of Anti-Money Laundering Measures and the Financing of Terrorism. These reports assess the compliance of anti-money laundering (AML) and counter-terrorist financing (CFT) frameworks with international standards, such as the FATF recommendations. The table presents the legal foundations, cryptocurrency regulation scope, and key challenges for Poland, Slovakia, Hungary, Czech Republic, and Ukraine.

The table summarizes the key aspects of AML regulations in the V4 countries and Ukraine, highlighting the diverse approaches to blockchain and cryptocurrency technologies:

1. Poland and Hungary – both countries have made significant progress in implementing AMLD5 and AMLD6 directives, positioning themselves as regional leaders in aligning with EU standards. Poland has established a VASP registry but struggles with an incomplete alignment with FATF definitions and limited resources for oversight. Hungary, on the other hand, has enhanced its blockchain monitoring capabilities but faces challenges with transparency in VASP licensing and fragmented enforcement among agencies.

2. Czech Republic – the country adopts a moderate approach to blockchain regulation, allowing for innovation while maintaining oversight. However, gaps in regulations for non-custodial wallets and P2P transactions present vulnerabilities. Additionally, the lack of a unified supervisory framework complicates effective enforcement.
3. Slovakia – the country has aligned its legal framework with EU directives, but its implementation capacity is hindered by technological and staffing limitations. Education and awareness among private-sector stakeholders, particularly in cryptocurrency compliance, remain underdeveloped.
4. Ukraine – despite not being an EU member, Ukraine has modelled its AML framework on EU directives, showcasing regional influence. The law "On Virtual Assets" (Law of Ukraine of February 17, 2022...) was a landmark regulation, but the absence of robust blockchain monitoring tools and incomplete adherence to FATF guidelines limit its efficacy. Ukraine also faces resource constraints, further hindering full implementation.

Table 3.1. Overview of AML frameworks, cryptocurrency regulations, and challenges in the V4 countries and Ukraine

Country	Legal basis for AML	Scope of cryptocurrency regulations	Key challenges
Poland	AML/CFT Act (2021), enhanced through follow-ups (2023).	Virtual Asset Service Provider (VASP) registry established; lacks comprehensive alignment with FATF definitions.	Incomplete alignment with FATF; limited focus on risk assessments for new technologies.
Slovakia	AML Act (2018), further refined in enhanced follow-ups (2022, 2023).	Basic AMLD5 implementation; limited focus on non-custodial wallets.	Technical and staffing limitations; gaps in addressing non-custodial wallets.
Hungary	AML Act (2017), multiple updates including the 2022 follow-up.	Regulations for VASPs established; blockchain monitoring improved but gaps in enforcement remain.	Transparency in VASP licensing; fragmented enforcement across agencies.
Czech Republic	AML/CFT Act (2018), refined through three enhanced follow-ups by 2022.	Moderate cryptocurrency oversight; improvements noted in non-custodial wallet transparency.	Effective coordination between agencies; gaps in blockchain analytics investment.
Ukraine	Law No. 361 (2019), updated in the 2020 follow-up.	Initial VASP requirements introduced; more robust measures pending.	Limited resources for implementation; challenges in harmonizing with FATF standards.

Source: author's own work on the basis of (MONEYVAL_1PL, 2023; MONEYVAL_2CZ, 2022; MONEYVAL_3SL, 2023; MONEYVAL_4HU, 2022; MONEYVAL_5UA, 2020).

This table highlights the varied approaches to AML regulation and enforcement across the region, shaped by each country's legal, technological, and resource capacities. Key challenges, such as the harmonization of regulations, gaps in oversight of innovative technologies like blockchain, and deficiencies in P2P transaction monitoring, emphasise the need for enhanced regional collaboration and investment in advanced analytical tools. This serves as a foundation for examining the effectiveness of these regulations in both regional and global contexts.

3.4. The Importance of International Cooperation in Blockchain Development for AML

Money laundering and terrorist financing are global issues that demand coordinated international actions. In the era of digitalization and the growing popularity of cryptocurrencies, blockchain technology is seen as a tool to enhance AML systems, however the effective implementation of blockchain in AML requires regulatory harmonization, system interoperability, and international collaboration. The V4 countries (Poland, Czech Republic, Hungary, Slovakia) and Ukraine, despite their differing approaches to blockchain, can benefit from coordinated global efforts.

The Financial Action Task Force (FATF) plays a pivotal role in shaping global AML standards, including those related to cryptocurrencies and blockchain. Through its recommendations, such as the "travel rule," FATF requires Virtual Asset Service Providers (VASPs) to collect, store, and share information about the senders and recipients of cryptocurrency transactions (FATF, 2021).

- Travel rule: this rule obligates VASPs to exchange information with each other to identify users, increasing transaction transparency and making it harder to use cryptocurrencies for money laundering, yet implementing this rule faces technical challenges, particularly with transactions conducted via non-custodial wallets (Chuah, 2023).
- Promoting global standards: FATF supports member countries in adapting their legal systems to the challenges posed by cryptocurrencies. Uniform definitions of AML crimes and blockchain-related guidelines are key components of these efforts (Vandezande, 2017).
- EU directives: directives impose obligations on member states, such as registering VASPs, reporting suspicious transactions, and complying with KYC requirements. While countries like Poland and Hungary have aligned their regulations with these directives, differences in their interpretation and implementation persist.
- Role of regional initiatives: initiatives such as the EU's cryptocurrency regulations (MiCA) highlight that regional harmonization can be an effective solution. MiCA establishes legal frameworks for cryptocurrency market participants, serving as a model for other regions.

International collaboration in blockchain-based AML initiatives includes both governmental and international organizational projects:

- Europol: it conducts pilot projects leveraging blockchain to monitor financial flows across EU countries. These platforms enable faster detection of cross-border criminal activities by analysing large datasets in real time (Campbell-Verduyn & Hütten, 2021; Vandezande, 2017).
- Singapore: Singaporean authorities have developed a blockchain-based KYC platform that integrates data between public and private sectors. This system facilitates the rapid identification of suspicious activities and serves as a model for countries, including V4 members (Campbell-Verduyn, 2018).
- G20: G20 summits have repeatedly emphasized the importance of international regulatory frameworks for cryptocurrencies. Collaboration among member states has led to the development of common guidelines for blockchain and AML.

Despite the benefits of international collaboration, implementing blockchain in a cross-border context faces significant challenges:

1. Technology interoperability: the lack of common technical standards complicates the integration of blockchain systems between countries. Solutions developed in one country are often incompatible with systems used in other jurisdictions (Utkina, 2023).

2. Data protection and sovereignty: some countries are concerned that sharing financial data with others could undermine their sovereignty and lead to unintended political consequences (Zetzsche et al., 2020).
3. Implementation costs: developing blockchain systems that comply with international standards requires significant investments, which poses challenges for less affluent nations (Utkina, 2023).

Blockchain technology can play a pivotal role in global AML systems, but its effective implementation requires regulatory harmonization and international cooperation. FATF and regional organizations, such as the EU, should continue to promote global standards, support system interoperability, and encourage countries to invest in modern technologies. Only through coordinated global efforts can the full potential of blockchain in combating money laundering be realized.

3.5. Development Prospects and Recommendations

Blockchain technology holds transformative potential in the fight against money laundering (AML) in the V4 countries (Poland, Czech Republic, Hungary, Slovakia) and Ukraine. Despite advancements in regulatory frameworks, significant challenges remain in aligning technological capabilities, harmonizing legal standards, and fostering effective international cooperation. Drawing on insights from MONEYVAL reports, issued by the Council of Europe's Committee of Experts on the Evaluation of Anti-Money Laundering Measures and the Financing of Terrorism other relevant studies, this section explores key development prospects and offers detailed recommendations to address these challenges.

Technological advancements and investment

The adoption of advanced technological tools is fundamental to modernizing AML frameworks. Blockchain analytics platforms capable of real-time financial flow monitoring enable authorities to detect suspicious transactions more effectively. However, countries such as Slovakia and Ukraine face resource constraints, limiting their access to these tools.

Investment in these technologies should be prioritized, supported by public-private partnerships and funding programmes, such as those offered by the European Union (Vandezande, 2017). Poland has demonstrated progress in implementing blockchain monitoring systems but requires further enhancements to fully leverage their potential. Some examples, e.g. Singapore's integrated financial supervision platforms, can serve as a model for implementing advanced analytics tailored to the unique needs of Central and Eastern Europe. Moreover, targeted training programmes for financial regulators, law enforcement, and compliance officers are essential. By equipping professionals with skills in blockchain analysis and cryptographic methods, countries can strengthen the operational capabilities of their AML frameworks.

Harmonization of international standards

The fragmented approach to AML regulations within the V4 region and Ukraine creates significant vulnerabilities, particularly in cross-border financial oversight. This issue has been highlighted in multiple MONEYVAL reports, which underline the importance of harmonizing regulatory frameworks to close legal loopholes exploited by financial criminals.

Implementing the FATF travel rule across all the countries in the region is a crucial step. This rule mandates that financial institutions share information about cryptocurrency transaction senders and recipients. While Poland, Czech Republic, and Hungary have taken initial steps toward compliance, Slovakia and Ukraine must accelerate their efforts to align with these international standards.

Additionally, Ukraine's virtual assets law (Law of Ukraine of February 17, 2022…) marks significant progress, but further steps are needed to harmonize its regulations with EU directives. Collaborative projects, such as drafting region-specific compliance guidelines or participating in EU-driven initiatives, could streamline the adoption of international AML standards across the region (Karpuntsov & Veresha, 2023).

Strengthening international cooperation

International cooperation is critical in combating the inherently global nature of money laundering. Countries in the region must prioritize collaboration with global organizations such as FATF, Europol, and Interpol. Coordinating joint operations and sharing intelligence can significantly improve the detection and prevention of cross-border financial crimes.

One promising area is the harmonization of VASP (Virtual Asset Service Provider) reporting systems, which would facilitate better information exchange and the oversight of cryptocurrency transactions. Initiatives like Europol's blockchain pilot projects demonstrate the effectiveness of real-time data sharing and could serve as a blueprint for regional cooperation.

Joint training programmes and workshops involving multiple jurisdictions can also enhance the skills of supervisory authorities, fostering a unified approach to tackling financial crime. Regular dialogue between regulatory bodies and private-sector stakeholders is equally important, ensuring that the latest technological and procedural innovations are effectively integrated into AML efforts.

Addressing emerging risks in Decentralized Finance (DeFi)

Decentralized Finance (DeFi) platforms present a double-edged sword in the fight against money laundering. While their transparent and immutable transaction ledgers offer new tools for oversight, their pseudonymity and lack of regulation pose significant challenges.

To mitigate risks, countries should develop targeted regulatory frameworks addressing the unique characteristics of DeFi ecosystems. For example, the enhanced scrutiny of cryptocurrency mixers, which obscure transaction origins, is essential. Such cases as Tornado Cash stress the need for robust international cooperation and innovative legal responses to address these emerging threats. Governments should also explore partnerships with blockchain developers to create DeFi platforms compliant with AML standards. By incorporating built-in compliance mechanisms, such as automated KYC processes and real-time transaction monitoring, DeFi can become a safer environment for legitimate financial activities (Zetzsche et al., 2020).

Education and awareness

Educational initiatives are a cornerstone of effective AML systems. Lack of awareness among financial institutions, VASP operators, and regulators often leads to gaps in compliance, increasing the risk of exploitation (FATF, 2021).

Countries should implement comprehensive education programmes targeting key stakeholders, which could include:

- Training for cryptocurrency service providers: focused on KYC protocols, transaction monitoring, and reporting suspicious activities. Such training ensures compliance with AML obligations and fosters a culture of accountability.
- Workshops for financial institutions: designed to enhance understanding of blockchain technology and its application in financial flow monitoring. These workshops can bridge the knowledge gap between traditional banking practices and emerging digital finance tools.
- Public awareness campaigns: aimed at educating the broader community about the risks of money laundering in the cryptocurrency environment. These campaigns can promote best practices and encourage individuals to support legitimate financial activities.

Moreover, integrating AML education into university curriculums, particularly in law and finance programmes, can build a new generation of professionals equipped to tackle the evolving challenges of financial crime. The integration of blockchain technology into AML systems offers immense opportunities to enhance transparency, efficiency, and cross-border cooperation. However, realizing this potential requires coordinated efforts to address existing challenges. By prioritizing technological investments, harmonizing regulations, fostering international collaboration, and emphasizing education, the V4 countries and Ukraine can establish a robust framework for combating financial crime. These measures will not only strengthen regional AML systems but also position Central and Eastern Europe as a global leader in leveraging blockchain technology for financial integrity. With consistent implementation, this region can set a benchmark for the effective use of innovation in the fight against money laundering.

3.6. Key Findings and Conclusions

The analysis presented in this chapter highlights the transformative potential of blockchain technology in combating money laundering (AML) within the V4 countries (Poland, Czech Republic, Hungary, Slovakia) and Ukraine. By addressing the research questions and the overarching goal of evaluating blockchain's application in AML systems, numerous key findings emerge.

A critical question addressed in this chapter concerns the benefits of international cooperation in implementing blockchain technology for AML. The findings reveal that effective collaboration among countries, supported by organizations like FATF, Europol, and Interpol, significantly enhances cross-border financial crime prevention. Initiatives such as the FATF travel rule and Europol's blockchain pilot projects demonstrate the value of shared intelligence and harmonized regulatory frameworks. These efforts enable consistent oversight, reduce the exploitation of jurisdictional gaps, and improve the ability to track illicit financial flows across borders.

The fragmented nature of AML regulations among the V4 countries and Ukraine creates vulnerabilities that financial criminals can exploit. This chapter highlights the need for harmonized approaches to blockchain regulation. While Poland and Hungary have made significant strides in implementing FATF and EU directives such as AMLD5 and AMLD6, Slovakia and Ukraine lag behind due to technological and regulatory constraints. Harmonizing these frameworks is not just a regional necessity, but also a global imperative to close legal loopholes and ensure consistent compliance mechanisms.

Addressing the question of how regulatory and technological disparities impact the adoption of blockchain in AML, the chapter identified several barriers, in particular:

- Technical infrastructure: Slovakia and Ukraine face resource limitations that hinder the adoption of advanced blockchain analytics platforms. Investments in these technologies are crucial to ensuring that financial flows can be monitored effectively in real-time.
- Non-custodial wallets and DeFi risks: the pseudonymity and lack of regulation in DeFi ecosystems present new challenges for AML compliance. Regulatory frameworks that target cryptocurrency mixers and mandate compliance features in DeFi platforms, such as automated KYC processes, are necessary to mitigate these risks.

A consistent theme throughout the analysis is the importance of educational initiatives to enhance AML compliance. A lack of awareness among cryptocurrency service providers, financial institutions, and regulators continues to hinder the effective implementation of AML standards. This chapter emphasizes the need for:

- training programmes for VASPs focused on KYC and suspicious activity reporting,
- workshops for financial institutions to bridge the gap between traditional finance and blockchain technologies,
- public awareness campaigns to educate users about the risks of money laundering in digital finance.

Integrating AML education into university curricula can also create a future workforce equipped to tackle the evolving complexities of financial crime.

In addressing the technological, regulatory, and operational dimensions of blockchain adoption for AML, the chapter highlighted significant opportunities:

- **Technological advancements**: blockchain enables the real-time monitoring of financial transactions, automated compliance mechanisms through smart contracts, and enhanced transparency in financial systems. The implementation of platforms such as Singapore's Project Ubin provides a model for Central and Eastern Europe.
- **International cooperation**: the region's ability to combat financial crime depends on its capacity to collaborate with global organizations and align with international standards. This includes adopting FATF guidelines and participating in EU-led initiatives such as MiCA to create a cohesive regulatory landscape.

The chapter's primary goal was to analyse the application of blockchain technology in AML within the context of the V4 countries and Ukraine, considering local challenges and global trends. The findings confirm that while blockchain technology offers immense potential for transforming AML systems, its effective implementation requires addressing the following:

- harmonizing AML regulations across the region to close legal loopholes,
- investing in advanced blockchain technologies to enhance oversight capabilities
- strengthening international cooperation to improve cross-border collaboration,
- enhancing education and awareness to foster compliance and reduce misuse.

By focusing on these areas, the V4 countries and Ukraine can build robust AML frameworks that leverage blockchain's unique features while addressing its inherent risks. The insights provided in this analysis serve as a foundation for further research and policy development, contributing to the broader understanding of how blockchain can combat financial crime in diverse regulatory and technological environments.

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Chapter 4

Financial Action Task Force Recommendations and Their Compliance

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4.1. Evolution of the FATF

The Financial Action Task Force was established in 1989 by the G7 to develop viable options and methods to combat money laundering, as a response to the absence of any unified international process. A year after the creation of the FATF, the first report containing 40 voluntary recommendations was released. These recommendations, vague and general at first, were updated to target current issues and the evolution of money laundering techniques. The 1980s was a period when criminal organizations started using money laundering as a way to legitimize their operations when mainly drug-related operations began to use this "legitimization business model". This was the major reason for the international collaboration on the anti-money laundering agenda (Nance, 2018).

Over time the FATF has evolved to address new and emerging threats. A set of new recommendations was issued in 2001 to address terrorist financing, which can be seen as a direct response to the 9/11 terrorist attack in the USA. In this century, the FATF has continued to strengthen its recommendations against criminal exploitation of financial markets and added the undercover financing of weapons of mass destruction as a new threat. In recent years, digital financial technologies, such as cryptocurrencies, have introduced new vulnerabilities to financial systems. In response, the FATF revised its recommendations in 2019 to include guidelines for regulating virtual assets and virtual asset service providers (VASPs), emphasizing the need for transparency and risk-based oversight (FATF, 2024b).

This expanded scope reflected the dynamic nature of financial crimes and the necessity for adaptive responses. By setting internationally recognized standards, the FATF plays a major role in safeguarding the integrity of financial systems globally, and its mission is to strengthen the overall capacity of individual nations to respond to the economic threats mentioned.

Currently, the FATF is the umbrella body for the global network of organizations focused on AML/CTF agenda and other financial issues. This global network comprises the FATF and the nine FATF-Style Regional Bodies (FSRB)[1]. The active participation of the FSRBs in the work of the FATF is crucial to ensure the global implementation of effective measures to combat terrorist operations and the proliferation of their financing, and money laundering. The global network comprises more than 200 governments and 20 observer international organizations (Borlini & Montanaro, 2017).

4.2. FATF Jurisdiction

The FATF provides a comprehensive framework, in the form of its recommendations, for the mitigation of financial crimes. These standards are designed to be adaptable, allowing jurisdictions to integrate them into their unique legal, regulatory, and institutional systems. The core principles of the recommendations emphasize transparency and accountability, vital for maintaining the integrity of financial systems (Manning et al., 2021).

However, the FATF recommendations are not legally binding in themselves, but they are rather a set of soft rules on anti-money laundering (AML) and counter-terrorist financing (CTF). Soft law instruments have generally been considered more suitable for regulating such an agenda. Individual nations are usually wary of undertaking strict obligations and multinational law regulations. Soft-law instruments are characterized by a sufficient degree of freedom and flexibility to allow adaptation to changing regulatory needs. This kind of openness and flexibility to change is particularly required within national laws and regulations. Legal action must keep pace with criminal organizations using money laundering and terrorist financiers, in order to remain effective (Nance, 2018).

There is also some criticism regarding the primary setting of the FATF recommendations and their status. International networks are likely to replicate, or even reinforce, the unequal power distribution between individual nations. General recommendations could benefit certain countries more than others, and this could affect their influence within the international network. Academics argued that the FATF has been a way through which developed economies, including the European Union countries and the USA, declare their preferences for other jurisdictions. Furthermore, the specific characteristics of the FATF make it rather difficult to determine whether it can qualify as a valid international organization on its own (Borlini & Montanaro, 2017).

Another criticism is directed at the lack of jurisdiction or coercive powers of the FATF, as it has no legal personality and cannot issue binding regulations. However, practitioners and academics argue that the FATF has a strong impact as it sets global standards on AML and is the only international body with a clear mandate to bring all countries up to speed with this agenda. Furthermore, the FATF standards have been adopted worldwide with little or no option, which happened because these standards aim to prevent the misuse of virtual assets for money laundering and terrorist financing. With such a strong mission statement, the reason behind compliance cannot be far-fetched, as the trajectory unfolds in line with forceful international diplomacy (Otudor & Bagheri, 2023).

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[1] Members of this global networks are Action Group against Money Laundering in Central Africa (GABAC), Asia/Pacific Group on Money Laundering (APG), Caribbean Financial Action Task Force (CFATF), Committee of Experts on the Evaluation of Anti-Money Laundering Measures (MONEYVAL), Eastern and Southern Africa Anti-Money Laundering Group (ESAAMLG), Eurasian Group (EAG), Financial Action Task Force of Latin America (GAFILAT), Inter Governmental Action Group against Money Laundering in West Africa (GIABA) and Middle East and North Africa Financial Action Task Force (MENAFATF).

Failing to adopt the FATF standards may cause severe consequences for national financial systems as it may limit international monetary cooperation. If a country does not comply with the FATF Recommendations, it can be placed on the 'blacklist'[2]. Countries or jurisdictions on the blacklist are identified to have serious strategic deficiencies to AML/CFT. For all countries identified as high-risk, the FATF calls on all members and urges all jurisdictions to apply enhanced due diligence. Chohan (2019) lists the economic implications for high-risk countries can take the following forms:

- stringent terms or loan conditions from international monetary organizations such as the IMF,
- a drop in foreign direct investment,
- limitation of international commerce,
- close monitoring and bank investigation,
- remittance inflow difficulties,
- constraints of payments and financial instruments for individuals.

Only three countries[3] were blacklisted in 2024, while over twenty were listed as jurisdictions under increased monitoring. Threats of exclusion from major markets raise the cost of non--compliance with the FATF standards, which provides a strong incentive to cooperate to combat threats to the international financial system.

4.3. FATF Recommendations

The FATF Recommendations are sometimes referred to as the FATF Standards, which comprise the Recommendations themselves and their interpretive notes, together with the applicable definitions. Countries around the world have different legal, administrative and operational frameworks and diverse financial systems, so they should adapt the FATF Recommendations to their particular circumstances.

The backbone of the FATF Recommendations is the risk-based approach which focuses on the need of countries to be able to identify and tackle the money laundering and terrorist financing risks they are exposed to. The FATF continuously monitors new and evolving threats to the financial system and regularly updates and refines its Recommendations so that countries have up-to-date tools to pursue any criminal financial activity (Murrar & Barakat, 2021).

The FATF methodology identifies 11 key areas, designated as immediate outcomes, that are imperative to protecting the financial system from any criminal exploits. The FATF methodology is also used to evaluate the country's actions and their compliance with the technical requirements of the FATF Recommendations. Below is the list of all 11 immediate outcomes of the FATF methodology (FATF, 2024c).

1. Money laundering and terrorist financing risks are already identified, assessed and understood for policies to be developed and legal actions are coordinated to combat these risks.
2. International co-operation delivers appropriate information, financial intelligence, and evidence, and facilitates action against criminals and their property.

[2] Official name for the blacklist is "High-Risk Jurisdictions subject to a Call for Action".
[3] Democratic People's Republic of Korea, Iran and Myanmar.

3. Supervisors monitor and regulate financial institutions for compliance with AML/CFT requirements, and financial institutions adequately apply AML/CFT preventive measures, and report suspicious transactions.
4. Supervisors monitor and regulate DNFBPs[4] for compliance with AML/CFT requirements, and DNFBPs adequately apply AML/CFT preventive measures commensurate with the risks, and report suspicious transactions.
5. Legal persons and arrangements are prevented from misuse for money laundering or terrorist financing, and information on their beneficial ownership is available to competent authorities without impediment.
6. Financial intelligence and all other relevant information are appropriately used by competent authorities for money laundering and terrorist financing investigations.
7. Money laundering offences and activities are investigated, and offenders are prosecuted and subject to effective, proportionate, and dissuasive sanctions.
8. Asset recovery processes lead to confiscation and the permanent deprivation of criminal property and property of corresponding value.
9. Terrorist financing offences and activities are investigated and persons who finance terrorism are prosecuted and subject to effective, proportionate, and dissuasive sanctions.
10. Terrorists, terrorist organizations, and terrorist financiers are prevented from raising, moving, and using funds.
11. Persons and entities involved in the proliferation of weapons of mass destruction are prevented from raising, moving, and using funds, consistent with the relevant United Nations Security Council Resolutions.

The FATF methodology assesses the level of effectiveness for each immediate outcome using four ranks. The ratings reflect the extent to which a country's measures are effective, and the ranking is as follows.

1. High level of effectiveness (HE) – the immediate outcome is achieved to a very large extent. Minor improvements are needed.
2. Substantial level of effectiveness (SE) – the immediate outcome is achieved to a large extent. Moderate improvements are needed.
3. Moderate level of effectiveness (ME) – the immediate outcome is achieved to some extent. Major improvements are needed.
4. Low level of effectiveness (LE) – the immediate outcome is not achieved or achieved to a negligible extent. Fundamental improvements are needed.

Within these key areas, 40 FATF Recommendations are established, and contain different obligations, including measures of criminal law, preventive administrative and financial measures to be imposed on financial institutions and other businesses, and measures to ensure transparency on the ownership of legal persons and arrangements. They also include establishing competent authorities with appropriate functions and mechanisms for cooperation while also including arrangements to cooperate with other nations (Omar & Johari, 2015).

Forty comprehensive recommendations are listed in Table 4.1. They are divided into seven categories (A-G).

Considering all these elements, it is evident that the money laundering and terrorist financing countermeasures devised by the FATF constitute a new paradigm of security governance.

[4] Designated nonfinancial businesses and professions – these could mean casinos, real estate agents, lawyers, notaries, accountants and dealers in precious metals and stones.

Table 4.1. List of FATF Recommendations

Number	FATF Recommendation
A – AML/CFT policies and coordination	
1	Assessing risks and applying a risk-based approach
2	National cooperation and coordination
B – money laundering and confiscation	
3	Money laundering offence
4	Confiscation and provisional measures
C – terrorist financing and financing of proliferation	
5	Terrorist financing offence
6	Targeted financial sanctions related to terrorism and terrorist financing
7	Targeted financial sanctions related to proliferation
8	Non-profit organizations
D – preventive measures	
9	Financial institution secrecy laws
10	Customer due diligence
11	Record keeping
12	Politically exposed persons
13	Correspondent banking
14	Money or value transfer services
15	New technologies
16	Wire transfers
17	Reliance on third parties
18	Internal controls and foreign branches and subsidiaries
19	Higher-risk countries
20	Reporting of suspicious transactions
21	Tipping-off and confidentiality
22	DNFBPs: Customer due diligence
23	DNFBPs: Other measures
E – transparency and beneficial ownership	
24	Transparency and beneficial ownership of legal persons
25	Transparency and beneficial ownership of legal arrangements
F – powers and responsibilities of competent authorities	
26	Regulation and supervision of financial institutions
27	Powers of supervisors
28	Regulation and supervision of DNFBPs
29	Financial intelligence units
30	Responsibilities of law enforcement and investigative authorities
31	Powers of law enforcement and investigative authorities
32	Cash couriers
33	Statistics
34	Guidance and feedback
35	Sanctions
G – international cooperation	
36	International instruments
37	Mutual legal assistance
38	Mutual legal assistance: freezing and confiscation
39	Extradition
40	Other forms of international cooperation

Source: (FATF, 2024c) with own modifications.

These are achieved through three principal methods: criminalization, consisting of the emergence of new criminal offenses, the mobilization of the private sector to cooperate with the authorities in the fight against money laundering, and private sector information. Overall, the international AML/CFT regime shaped by the FATF standards is thus characterized by a multidisciplinary approach mainly developed as two tracks: measures aimed at repressing ML and TF and those designed to prevent proceeds of crime from entering into the legitimate financial system (Borlini & Montanaro, 2017).

4.4. Compliance with FATF Recommendations

The FATF compliance refers to the implementation of the specific requirements of the FATF Recommendations, including the specific legal framework and enforceable means, and the existence of powers and procedures of competent authorities. Compliance does not include the specific requirements of the standards that relate principally to effectiveness. These are assessed separately through the effectiveness component of immediate outcomes. Provided the FATF Recommendations are complied with, countries are entitled to implement the FATF Standards in a manner consistent with their national legislative and institutional systems, even though the methods by which compliance is achieved may differ (FATF, 2024c).

The mutual evaluation method is used to assess and report the level of compliance with the FATF recommendations. The FATF mutual evaluations are in-depth country reports analysing the implementation and effectiveness of AML and measures to combat terrorist and proliferation financing. The reports are peer-reviewed, where members from different countries assess another country. During a mutual evaluation, the assessed country must demonstrate that it has an effective system to protect the financial system from criminal abuse (Levi & Gilmore, 2002).

Mutual evaluations have two main components – effectiveness and technical compliance. The country's effectiveness ratings originated from an on-site visit by a team of experts. During this visit the assessment team will require evidence demonstrating that the assessed country's measures are working to deliver the desired results. What is expected from a country differs, depending on the money laundering, terrorist financing and other risks it is currently exposed to.

The assessment of technical compliance is also an important part of a mutual evaluation. The assessed country must provide information on the current laws, regulations, and any other legal instruments it has in place to combat money laundering and the financing of terrorism and proliferation (FATF, 2024c).

Mutual evaluations include an overall assessment of a country's actions to address the risks originating from designated terrorists or terrorist organizations. The mutual evaluation report is without prejudice to the status or justification that led to the designation of an entity as a terrorist or terrorist group or organization.

This chapter contains the latest report of the mutual evaluations for the V4 countries and Ukraine. Table 4.2 shows the assessment of the effectiveness of a country's AML/CFT system based on their intermediate outcomes.

Table 4.2. Effectiveness rating[5]

Country	IO 1	IO 2	IO 3	IO 4	IO 5	IO 6	IO 7	IO 8	IO 9	IO 10	IO 11
Czechia	ME	SE	ME	ME	ME	ME	ME	SE	SE	ME	ME
Hungary	LE	SE	ME	ME	LE	SE	LE	LE	ME	ME	ME
Poland	ME	SE	ME	SE	SE	ME	ME	LE	ME	ME	ME
Slovakia	ME	SE	ME	ME	ME	ME	ME	LE	ME	ME	ME
Ukraine	SE	ME	ME	ME	ME	SE	LE	ME	ME	ME	ME

Source: (FATF, 2024a) with own modifications.

None of the countries had the highest rating (high level of effectiveness) for any immediate outcome, which means there is room for improvement for every outcome, however, based on mutual evaluations, the situation in Hungary requires some fundamental improvements as it achieved the lowest rating in four outcomes out of eleven. Other countries show a critical need for improvement in one immediate outcome except for the Czech Republic, which does not have the lowest rank in any outcome.

One can check the situation in each country in more detail comparing compliance ratings with the FATF recommendations, as seen in Table 4.3. For each Recommendation, the assessor should conclude the extent of a country's compliance with the standard. Four possible levels of compliance exist but in exceptional circumstances, a Recommendation may also be rated as not applicable. These ratings are based only on the criteria specified in the technical compliance assessment and are as follows.

1. Compliant (C) – there are no shortcomings.
2. Largely compliant (LC) – there are only minor shortcomings.
3. Partially compliant (PC) – there are moderate shortcomings.
4. Non-compliant (NC) – there are severe shortcomings.
5. Not applicable (NA) – a requirement does not apply due to a country's structural, institutional, or legal features.

Table 4.3. Compliance ratings of FATF Recommendations[6]

Country	Czechia	Hungary	Poland	Slovakia	Ukraine
Report date	Dec.22	May.24	Dec.23	Mar.24	Sep.20
R1	LC	LC	PC	LC	LC
R2	LC	LC	LC	C	C
R3	LC	LC	LC	LC	LC
R4	C	C	LC	LC	LC
R5	LC	LC	PC	LC	LC
R6	PC	LC	LC	LC	PC
R7	PC	LC	PC	LC	PC
R8	LC	PC	PC	PC	LC
R9	C	C	C	LC	C
R10	LC	LC	LC	PC	LC

5 There are four ranks of effectiveness given by mutual evaluations: high level, substantial level, moderate level, and low level. For more information check the previous FATF methodology.

6 The colour scheme follows methodology in FATF (2024a). Shortcuts explained in the section above the table.

R11	LC	LC	LC	LC	C
R12	LC	LC	LC	PC	LC
R13	C	LC	PC	PC	C
R14	C	LC	LC	LC	LC
R15	PC	LC	PC	PC	PC
R16	LC	LC	LC	LC	C
R17	LC	LC	PC	LC	N/A
R18	LC	LC	PC	PC	LC
R19	LC	LC	PC	PC	C
R20	LC	C	PC	C	C
R21	C	LC	LC	LC	LC
R22	LC	LC	PC	LC	LC
R23	LC	LC	LC	PC	LC
R24	LC	LC	LC	LC	LC
R25	LC	LC	LC	LC	PC
R26	LC	LC	PC	LC	LC
R27	LC	LC	LC	LC	LC
R28	LC	LC	PC	PC	PC
R29	LC	C	C	PC	C
R30	LC	C	LC	C	C
R31	C	LC	LC	LC	C
R32	PC	PC	PC	PC	LC
R33	PC	LC	PC	C	PC
R34	LC	LC	LC	LC	C
R35	LC	LC	PC	PC	LC
R36	LC	LC	LC	LC	LC
R37	LC	LC	LC	C	LC
R38	LC	LC	LC	LC	LC
R39	LC	LC	LC	LC	LC
R40	LC	LC	LC	LC	LC
# of C	6	5	2	5	11
# of LC	29	33	22	23	22
# of PC	5	2	16	12	6
# of NC	0	0	0	0	0

Source: (FATF, 2024a) with own modifications.

None of the countries have the worst rating (non-compliant) for the FATF Recommendations compliance. This is a positive outcome as it shows national efforts to tackle money laundering and terrorist financing, yet there are some differences in the level of compliance among the observed countries. Poland and Slovakia have a high number of partially compliant ratings. This result shows significant room for improvement, especially in preventive measures.

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Chapter 5

Tax Security as a Determining Factor of Fiscal Sustainability

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5.1. Introduction

For the successful functioning of the state budget system and to ensure the economic sustainability and stability of public finances, it is necessary to achieve a high level of tax security. The optimal level of tax security contributes to increase the fiscal effectiveness and tax system efficiency and the predictability of tax relations between the state and taxpayers with the permissible level of tax burden for them.

The purpose of this chapter was to examine the essence of the term 'tax security', identify its threats, risks, interests and protection mechanisms, evaluate both the indicators that affect the tax security, and the ability of society to avoid these threats and its vulnerability in countering identified threats.

To achieve this goal, it was necessary to solve the following tasks: to systematize the existing theories and concepts of tax security, to determine its economic, social and legal nature; to identify the risks and threats of tax security for the state and taxpayers, to determine a list of indicators for assessing the tax security and set their threshold values.

When considering a large number of threats, they are divided in terms of the state (which charges taxes) and taxpayers (who pay taxes); and depending on the main sources of threats into the economic, legal, organizational, institutional and cultural, as well as psychological and criminal spheres. For each source, the authors identified and analyzed the most important factors of threats of tax security of Ukraine.

The survey was based on an analysis of the existing studies of Ukrainian and international scientists on the essence and nature of tax security over the last 15 years. In addition, to determine both the essence and the concept, goals and objectives, methods and principles of the economic nature of the tax security, the main risks, threats, expectations and results of efficient tax security were identified.

The study applied as the main methods comparison, classification and systematization (tax security risks and threats), and also economic analysis (identification of the level of vulnerability of taxes regarding their impact on the security situation).

5.2. The Genesis of Tax Security Theories

The scientific theories are dominated by the understanding of tax security in its economic and legal form, whose aim is to ensure the harmonization of the interests of taxpayers and of the state, with the observance of the principles of mutual responsibility of subjects of tax relations, fiscal sufficiency and optimality of the tax burden, their ability to withstand tax risks and their invulnerability to threats, resilience and security.

Most definitions are united by the statement that, firstly, tax security characterizes the protection of the interests of taxpayers and the state. Secondly, it is the ability of the system to develop and improve, as well as the regularity of proceeding with tax payments. Thirdly, resilience and invulnerability to threats, namely the ability to manage those, and to eliminate, minimize, accept or ignore their negative impact on tax security subjects (Tab. 5.1).

Table 5.1. Interpretation of the category ‘tax security’

Author	Definition
Baranovsky (2017)	an adherence to tax sovereignty, creation of a favourable tax climate by combining fiscal and stimulating functions of the tax system, eliminating tax discrimination and improving the efficiency of tax administration, achieving a high tax rating
Ivanov & Berezhna (2010)	integrated subsystem of economic security, which affects the financial support of all its components: innovation, technological, investment, energy, social, export, import and international integration
Ishchenko (2012); Golikov (2016)	a form of security that must ensure the conditions of interaction between the state, business entities and individuals in order to achieve the principle of mutual responsibility of management
Myskiv et al. (2021)	an integrated subsystem of economic security, which is determined by the presence of an existing tax system, the optimal level of taxation, ensuring sufficient budget filling to perform the state functions, as well as safeguarding the development of the real sector of the economy and social protection of the population
Naumenko (2020)	the security of the system of budget revenue, which plays the most important role in supplying the state treasury
Podik & Goncharov (2017)	the state tax system, which optimizes the tax pressure on business entities, minimizes threats to the interests of business, society and the state, and ensures their protection from the negative effect of globalization processes

Tsymbalyuk (2013)	the condition of the tax sphere, characterized by the protection of the interests of subjects of tax relations, stability and economic independence of the tax system, the ability to identify and prevent potential threats in the field of taxation, and the ability of the tax system to fully implement the functions of taxes in order to maximize the coordination the interests of the state and taxpayers
Vyklyuk & Gresik (2013)	the state tax system, which determines the harmonization of taxation and collection of taxes, the effective management of risks and threats arising in the tax sphere, by taking the necessary measures by executive bodies to meet the interests of the state, society and taxpayers

Source: own work based on the literature survey.

The problem of tax security is complicated by the difficulty of harmonizing the interests of taxpayers, in particular by determining the optimal tax burden for them, and the need to provide the state with sufficient tax revenue. Thus, the tax security of the state is determined by the level of taxation in the country, which ensures the harmonization of the interests of the state and taxpayers by justifying their list, ensuring clarity of collection mechanisms and achieving fairness of taxation (Tsymbalyuk, 2013).

One can define the tax security as the tax system state, which ensures the protection and harmonious development of the tax system, the ability of tax instruments to protect the national interests, and maintain the socioeconomic stability of society, as well as generate sufficient financial resource for the state and local government, and the successful confrontation with existing threats to the tax system. In the other hand, obtaining the optimal level of tax security the tax system ensures the protection of tax interests of the state, business and society from internal and external threats.

The category of tax security was analysed through its economic, social and legal nature (Golikov, 2016). The economic aspect of tax security means the level of the budget's financial resources, which is affected by a number of factors: the level of economic development, growth of GDP, inflation, the tax burden on economic entities. In this case, the theory of security studies the fiscal effectiveness of a tax, the tax groups of the tax system in general as the main characteristic of the tax system.

The legal aspect applies to the control of the tax system and tax mechanisms, correctness of accrual and timeliness of payment of taxes, and the fairness of taxation for taxpayers. The imperfection of tax legislation significantly increases the risks of the inefficient work of the tax administration and control authorities, which creates the risk of late or incomplete tax payments.

The social aspect reflects the level of protection of interests of government, business entities and individuals, through a fair taxation, tax preferences, and tax sharing between the subjects of the financial system. Tax culture has a direct impact on the tax security because its high level strengthens the security status, and when its level is low, the problems of tax evasion are exacerbated, corruption risks and the growth of the shadow economy appear.

As mentioned by Baranovsky (2017), it is important to take into account the constant desire of taxpayers to minimize their tax burden, therefore, ensuring an optimal security situation is aimed at minimizing conflict tax risks, reducing tax crimes and offences.

In the field of determining the state of tax security, it is necessary to identify the threats that cause it, also to determine the list of tax security indicators and their threshold values, to compare the values of indicators with thresholds and to determine the integral indicator (Fig. 5.1).

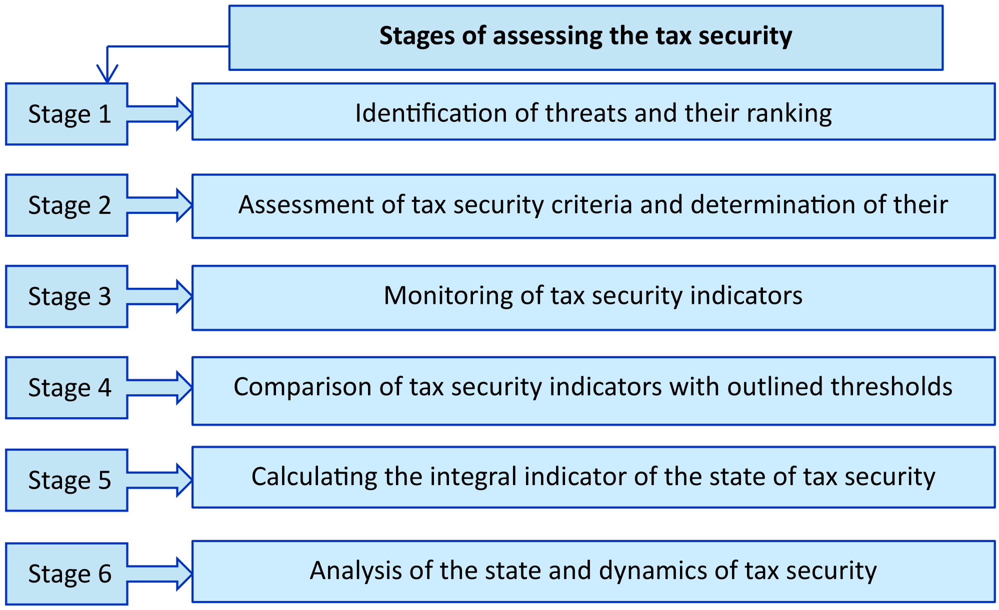

Fig. 5.1. Stages of assessing the tax security of the state

Source: (Myskiv et al., 2021).

Tax security is the guarantor for the budget revenue, stability of financing the budget programmes, and the sustainability of economic development, therefore the tasks for ensuring tax security are: scientific forecasting, detection, prevention, assessment of tax risks, as well as the development of mechanisms for protection (counteraction to threats) of the entire financial system.

5.3. The Essence, Classification and Monitoring Risks and Threats of the Tax Security and Methodological Principles of Its Assessment

In the theory of tax security, it is important to identify sources of potential threats, as well as the available resources to neutralize them. Threats to the tax security are the existing and potentially possible phenomena and factors that pose a significant threat to national tax interests.

Some authors believe that the main tax security threats are: high tax burden, low level of tax culture, tax evasion, end of business activity, shadow economy, significant and increasing amounts of tax debt, corruption of tax authorities, withdrawal of national capital abroad, tax costs increase, decrease in investment activity, and finally, the lack of trust in the government (Podik & Goncharov, 2017). Some studies classify tax security threats by sources of their occurrence, by levels, degree of probability, types of damage and significance. Golikov (2016) described the state of the national economy and public finances, social characteristics of society and institutional environment as the main sources of threats, for each of the above a number of factors were identified, whose degree of influence is the most critical aspect. To avoid duality, the authors determined the parameters for both the state (which charges taxes) and taxpayers (who pay taxes) (see Table 5.2).

Table 5.2. The main risks and threats for tax security

	Risks	Threats
For the state	▪ the inability to obtain the planned tax revenue ▪ the inability to perform their functions ▪ the increase of the budget deficit due to a shortfall in tax payments ▪ the increase of tax offences and abuses	▪ the tax evasion ▪ the inefficient use of collected taxes ▪ the increase in administration costs ▪ the lack of tax culture ▪ the constant changes in legislation
For taxpayers	▪ tax pressure increase ▪ the complexity of the taxation ▪ penalties for late payment of taxes, because of the complexity of the tax system ▪ the suspension of business	▪ excessive supervision of regulatory bodies ▪ unfair amount of tax burden among the various levels of business entities ▪ the growth of the shadow economy ▪ capital flowing abroad

Source: based on (Golikov, 2016).

Myskiv et al. (2021) described tax security threats and risks, highlighting the following for the state: risk of law violating; administrating risk; risks of tax policy implementation, tax avoidance and tax planning; and for taxpayers – risks of increasing the tax burden; tax control; tax minimization and tax evasion risks (Fig. 5.2).

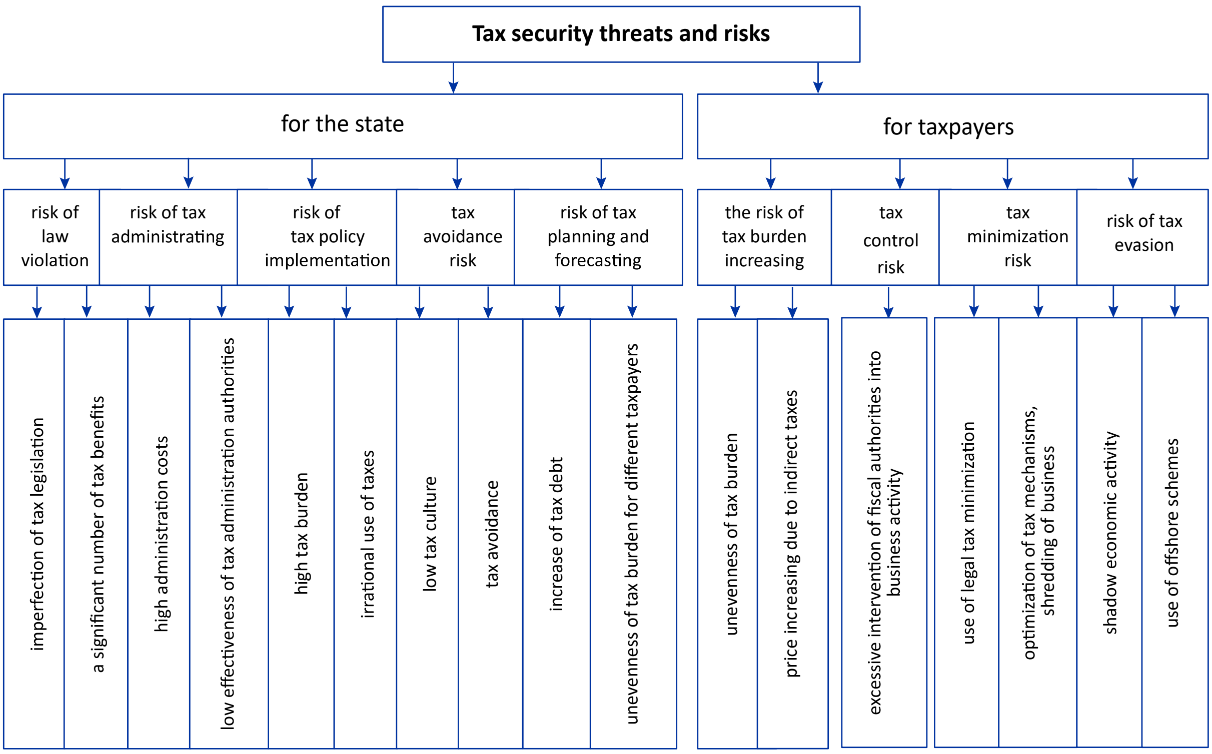

Fig. 5.2. Tax security threats and risks for the state and taxpayers

Source: based on (Myskiv et al., 2021).

Lisovyi (2017) systematized the following groups of threats and risks for tax security: economic; legal; organizational and managerial; institutional and cultural; criminal (Fig. 5.3).

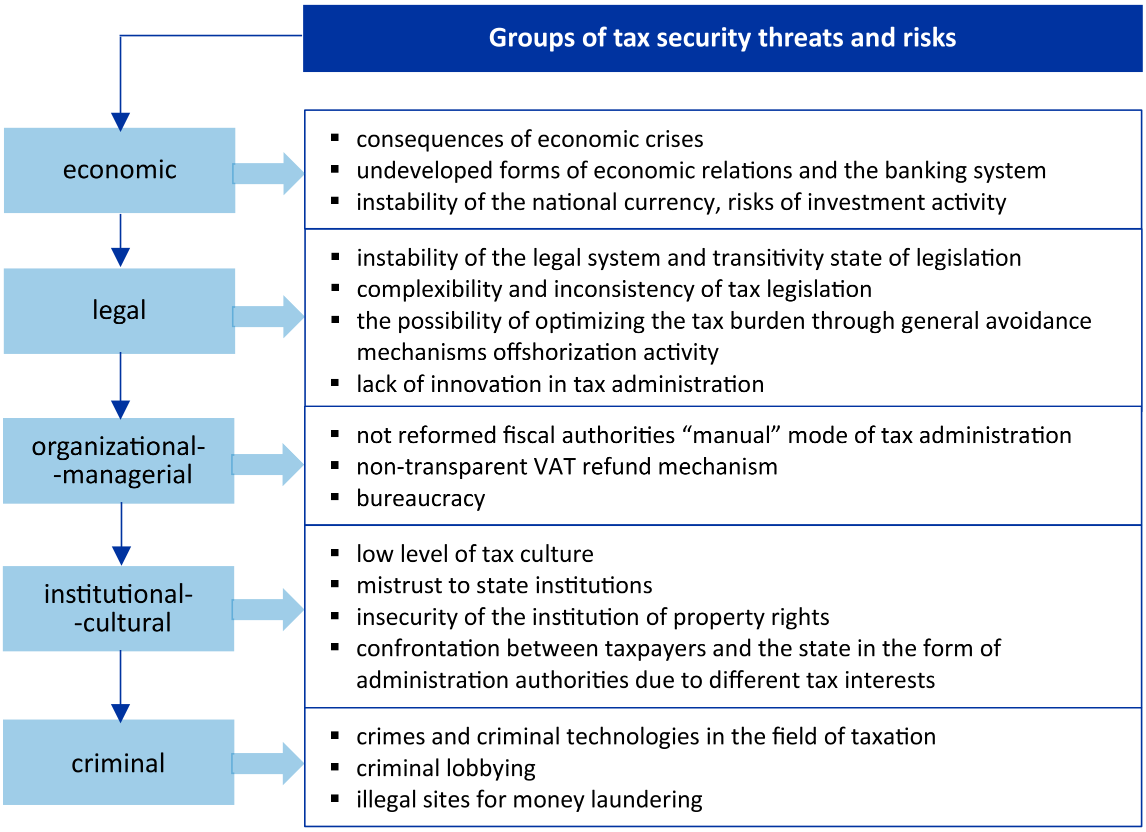

Fig. 5.3. Groups of tax security threats and risks

Source: based on (Lisovyi, 2017).

According to the results of the survey conducted among fiscal service specialists and business representatives from all regions of Ukraine (2020), a total amount of 7090 persons identified a list of threats in the field of fiscal security, the most significant of which include: VAT fraud, 'schemes' for minimizing tax payments, lobbying by government officials of certain groups and companies to promote favourable tax conditions (preferences) for them, shadowing of certain types of business, information attacks to discredit the fiscal system, manifestations of corruption in the fiscal sphere (APPU, 2020).

Other macroeconomic threats are equally destructive in terms of tax security: monopolization of markets and sectors of the economy, decline in production in the country, reduction of the official labour market, labour migration, outflow of labour abroad. Note that the problems for Ukraine have not been resolved yet, such as the activities of 'conversion centres'; racketeering; legalization of 'shadow' income; salary 'in envelopes'; kickbacks in business transactions. The inaccessibility of bank loans and their replacement with alternative resources have become factors in the deterioration of the security situation.

Having identified the list of threats to tax security, the key ones in the process of their analysis are: identification of threats/risks, their evaluation, determination of risk maximum level, vulnerability analysis, capability and resilience. Taking into account the limits of probability and consequences, all risks can be divided into four groups:

1 – the most significant ones that require urgent measures to reduce the risk of their spread, i.e. VAT fraud, 'schemes' for minimizing tax payments, and lobbying certain interests in the fiscal sphere;

2 – significant risks which require control of the top management: shadowing of certain types of business and corruption in the fiscal sphere;
3 – risks which require attention, but not as priority, for example, information attacks to discredit the fiscal system;
4 – risks which require control.

In evaluating risks, it is important not only to compare them with limit/optimal values, but also to analyse and formulate the conclusions about the vulnerability of the system in the spread of certain threats in the fiscal sphere. It is necessary to determine whether the system is able to counteract threats and to reduce the level of risk of spreading a particular threat.

The complexity of assessing the level of tax security lies in determining the optimal number and choosing indicators. These include indicators of the budgetary component of security: fiscal burden, and the level of implementation of planned targets; the cost intensity of administration and effectiveness of tax control, and the level of shadow economy; indicators characterizing the tax burden and the level of tax evasion of individual taxpayers (Chuy et al., 2021). At the same time, tax security indicators can be quantitative and qualitative (Lutsenko, 2015).

In this study, indicators of tax security of the state were divided into the following groups: indicators of fiscal and tax burden, the level of collection, the efficiency of administration, and the effectiveness of tax control (Tab. 5.3). However, for the reliability of the results, it was necessary not only to determine the list of indicators, but also to set their threshold values.

The condition of tax security (or tax danger) is determined by the level of deviation of the calculated indicators from their threshold critical/optimal value. The range of characteristic values of tax security indicators is measured from 0 to 1 and divided into six intervals:

- optimal (100% or 1) – a stable and intensive development of the tax system, optimal tax burden, proper level of tax discipline, compliance with the rule of law;
- satisfactory (80% of optimal or 0.8) – a satisfactory state of tax activity, production, investments, finance system, in which sustainable development is possible;
- unsatisfactory (60% of optimal or 0.6) – an excessive tax pressure, a decrease in the level and quality of life of the population, beyond which there is a danger of uncontrolled conflicts of financial, economic, social, labour and of other nature;
- dangerous (40% of optimal or 0.4) – a dangerous level of development of the tax sphere, a significant decrease in the level of tax discipline, abuse, tax evasion;
- critical (20% of optimal or 0.2) – the danger of irreversible destruction of elements of the tax system, the loss of budget resources;
- absolutely dangerous (0% of optimal) – the lack of financial, economic, tax activity, destruction of production, investment, financing, in which independent tax development is impossible.

For the evaluation of the dynamics of various tax security indicators in the absence of weight values of single indicators, it was proposed to determine the integral indicator according to the formulas of arithmetic mean, geometric mean, distance method, and deviation from the optimal level – using standard deviation. The practical use of the integral indicator of tax security involves focusing not only on the fiscalization of budget revenue and determining the optimal tax burden, but also on achieving a higher level of efficiency of tax administration, effectiveness of tax control and cost-effectiveness of withholding control of tax authorities.

Table 5.3. Indicators for tax security assessment

Indicator	Calculation method	Threshold level	Stimulant/ destimulant
Group 1. Indicators of fiscal and tax burden			
Fiscal burden (including social security payments), % of GDP	$\frac{\text{tax revenue of the budget} + \text{Social security payments}}{\text{GDP}} * 100$	≤30	destimulant
Labour burden, % of GDP	$\frac{\text{personal income tax \& charge} + \text{social security payments}}{\text{GDP}} * 100$	≤13.8	destimulant
Total tax burden, % of GDP	$\frac{\text{tax revenue of the budget}}{\text{GDP}} * 100$	≤25	destimulant
The level of concentration of tax revenue in the Consolidated Budget, %	$\frac{\text{tax revenue of the consolidated budget}}{\text{total revenue of the consolidated budget}} * 100$	≥60	stimulant
The level of concentration of tax revenue in the State Budget, %	$\frac{\text{tax revenue of the state budget}}{\text{total revenue of the state budget}} * 100$	≥60	stimulant
Total coefficient of elasticity of tax revenue	$\frac{\text{growth rate in tax revenue}}{\text{growth rate in GDP}}$	≥1	stimulant
Level of shadow economy, % of GDP	determined in accordance with the Methodological recommendations for calculating the level of the shadow economy, approved by the Ministry of Economy of Ukraine	≤30	destimulant
Group 2. Indicators of the level of tax collection (fulfilment of planned tasks)			
Total level of tax collection	$\frac{\text{actual tax revenue of the consolidated budget}}{\text{planned tax revenue of the consolidated budget}}$	≥1	stimulant
Group 3. Indicators of administrating efficiency (cost intensity)			
Result ratio (index of tax administration expenditures, per 100 UAH of tax revenue)	$\frac{\text{expenses for tax administration}}{\text{tax revenue of the consolidated budget}} * 100$	≥1	destimulant
Expenditures on taxes administrating per permanent population, UAH/person	$\frac{\text{expenses for tax administration}}{\text{number of resident population per year}}$	average for the analyzed period	destimulant
Expenses for taxes administrating per economically active population, UAH/person	$\frac{\text{expenses for tax administration}}{\text{number of active population per year}}$	average for the analyzed period	destimulant
Level of taxpayer's debt, %	$\frac{\text{tax debt}}{\text{tax revenue of the consolidated budget}} * 100$	≤5	destimulant
Level of tax integrity, %	$\frac{\text{tax revenue} - \text{taxes additionally accrued to budgets and social funds}}{\text{tax revenue of the consolidated budget}} * 100$	≥95	stimulant
The efficiency ratio of the fiscal authorities	$\frac{\text{taxes additionally accrued to budgets and social funds}}{\text{expenses for tax administration}} * 100$	≥5	stimulant
Group 4. Indicators of effectiveness of fiscal control			
Coefficient of effectiveness of control measures	$\frac{\text{the number of financial sanctions applied}}{\text{the number of taxpayers with the violations}}$	≥1	stimulant
Result ratio of control measures	$\frac{\text{the number of control measures carried out}}{\text{the number of taxpayers with the violations}}$	≥1	stimulant
Quality factor of control measures	$\frac{\text{the number of satisfied appeals/appeals against decisions}}{\text{the total number of appeals/complaints of notification} - \text{decisions}}$	≥1	stimulant
Efficacy factor of control measures	$\frac{\text{the taxes amount collected as a result of control measures}}{\text{taxes additionally accrued to budgets and social funds}}$	≥1	stimulant
Payback ratio of fiscal authorities	$\frac{\text{the taxes amount additionally collected as a result of control measures}}{\text{expenses for tax administration}}$	≥1	stimulant

Source: summarized by the authors based on the literature survey.

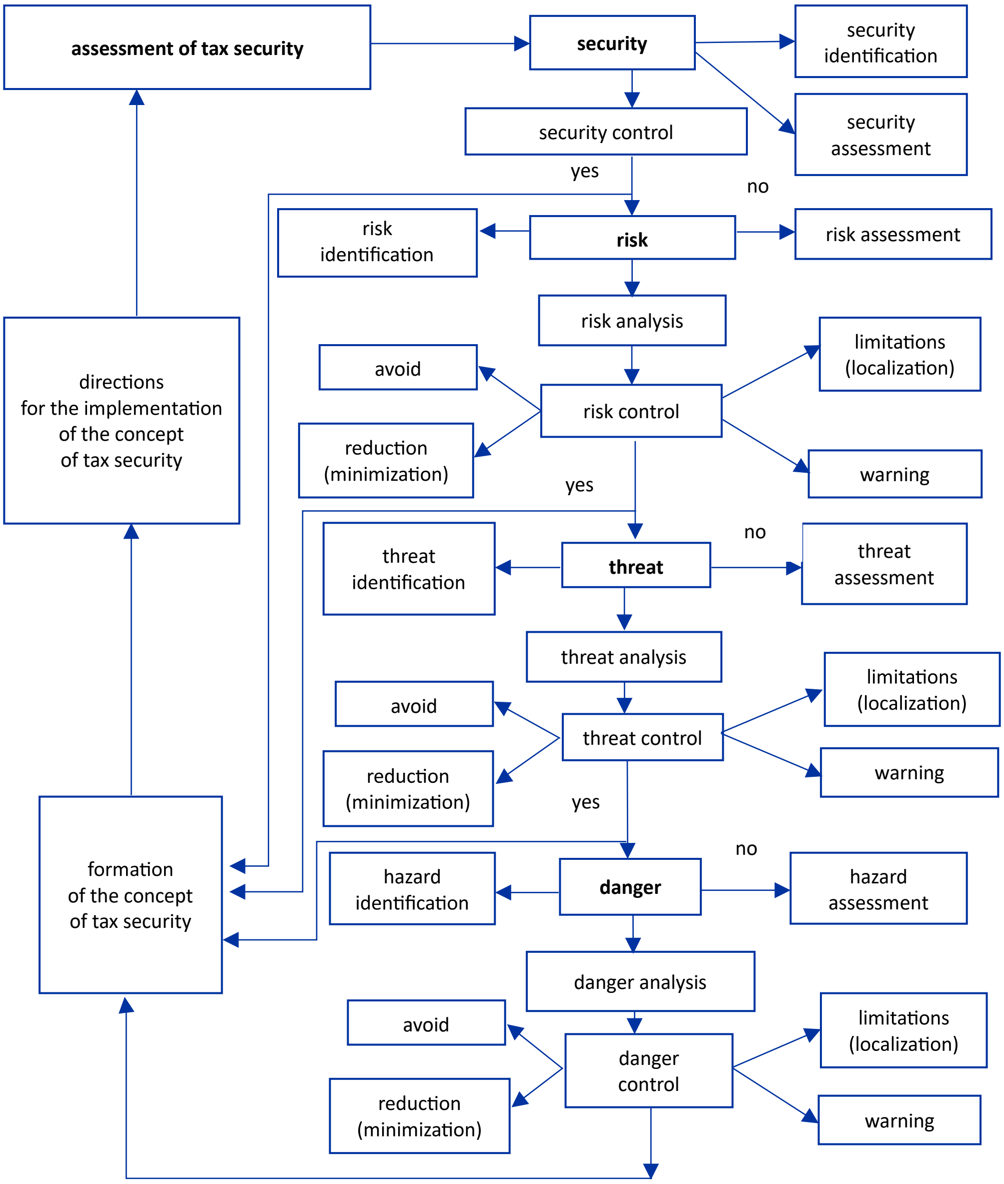

Fig. 5.4. Algorithm of the process of diagnosing tax security

Source: based on (Podik & Goncharov, 2017).

Tax security evaluation includes a certain sequence (algorithm) of its diagnostic process, which allows monitoring, analysing, controlling, auditing the state of tax security and determining vulnerability to negative factors (Fig. 5.4).

5.4. Modelling the Tax Security of Ukraine

To confirm the level of tax security, normalized values of indicators were calculated for each functional component and compared to its optimal values by the stimulant/destimulant criterion and the safety status was determined (Tab. 5.4).

The security status of fiscal and tax burden indicators was at the optimal or satisfactory level. The optimal fiscal burden level was exceeded, the security status deteriorated from 0.915 to 0.880; however, the security situation according to the tax burden indicator reached 0.965.

Table 5.4. Normalized values of tax indicators of Ukraine

Indicators	Years							Security status
	2016	2017	2018	2019	2020	2021	2022	
Fiscal burden (including social security payments) (% of GDP)	0.915	0.888	0.880	0.888	0.906	0.906	0.880	optimal
Total tax burden (% of GDP)	0.916	0.899	0.903	0.929	0.929	0.936	0.965	optimal
The level of concentration of tax revenue in the Consolidated budget (%)	0.722	0.737	0.720	0.723	0.726	0.686	0.976	satisfactory (2016-2021); optimal (2022)
The level of concentration of tax revenue in the State budget (%)	0.733	0.759	0.739	0.749	0.759	0.703	1.130	satisfactory (2016-2021); unsatisfactory (2022)
Total coefficient of elasticity of tax revenue	1.410	1.090	0.980	0.730	1.010	0.960	1.600	optimal (2016-2018, 2020, 2022); satisfactory (2019)
Level of shadow economy (% of GDP)	0.909	0.938	1.034	1.071	1.000	0.938	n/a	optimal
Total level of tax collection	1.026	1.005	0.996	0.962	1.019	1.037	0.843	optimal (2016-2021); satisfactory (2022)
Result ratio (index of expenditures on tax administration, per UAH 100 of tax revenue)	1.041	0.981	0.828	0.913	0.970	0.984	1.046	optimal (2016-2017, 2019-2022); satisfactory (2018)
Expenditures on tax administrating per permanent population (UAH/person)	1.757	1.297	0.914	0.921	0.914	0.722	n/a	optimal (2016-2020); satisfactory (2021)
Expenses for tax administrating per economically active population (UAH/person)	1.749	1.279	0.918	0.939	0.915	0.715	n/a	optimal (2016-2020); satisfactory (2021)
Level of taxpayer's debt (%)	0.467	0.455	0.485	0.427	0.549	0.685	0.463	dangerous (2016-2020, 2022); unsatisfactory (2021)
Level of tax integrity (%)	1.006	1.019	1.016	1.004	1.036	1.006	1.037	optimal
The efficiency ratio of the fiscal authorities	0.900	0.620	0.580	0.840	0.300	0.860	0.300	optimal (2016, 2021); unsatisfactory (2017); satisfactory (2019); dangerous (2020, 2022)
The integral tax security index								**Security status in 2021; trend for the period 2016-2021**
Arithmetic mean method	1.042	0.920	0.846	0.854	0.849	0.857	n/a	satisfactory, decline
Geometric mean method	0.982	0.888	0.827	0.835	0.811	0.847	n/a	optimal, decline
Distance method	1.330	0.878	0.811	0.780	0.926	0.696	n/a	satisfactory, decline
Standard deviation	0.026	0.081	0.169	0.186	0.180	0.219	n/a	growth indicates a decrease in the security status

Source: own study.

Exceeding the optimal values for the indicator, the level of concentration of tax revenue in the state and consolidated budget revenue reflects a satisfactory status of security, but may entail the possible minimization of taxation by taxpayers through various avoidance/evasion schemes. The improvement of these indicators took place due to the reform of local self-government and the redistribution of financial resources in favour of local budgets. The process of 'unshadowing' the economy was positive, which was confirmed by the optimal level of security according to this indicator in 2018-2020, but its increase in 2021 indicated a deterioration of the situation. In 2022, the failure to meet the planned tax targets amounted to 14.7%, which is due to the military operations on the territory of Ukraine.

The security status in terms of elasticity coefficient was at an optimal level, and in 2019 – at a satisfactory level. Due to the level of fulfilment of the planned indicators for tax revenue in the range of 96.2-103.7% in 2016-2021, the security status was optimal and does not entail threats of underfunding of budget expenditures.

According to indicators that reflect the effectiveness of tax administrating and its cost, most remained in the satisfactory and unsatisfactory zones. The optimal state of security was typical for the result ratio of the fiscal authorities in 2016-2017 and 2019-2020, the level expenditures on tax administrating per permanent and economically active population (2016-2017), the level of integrity of taxpayers for the whole analysed period and the efficiency ratio of the fiscal authorities (in 2016, 2021). However, the dangerous level regarded the level of tax debt (from 42.7% to 68.5%), and the efficiency ratio of the fiscal authorities ranged from 30% (2020, 2022) to 58% (2018).

The calculated integral indicators of the tax security level in Ukraine using different methods allowed for the following conclusions:

- the tax security indicator calculated by the arithmetic mean method decreased from 1.042 to 0.857, the security status was optimal;
- the security indicator calculated by the geometric mean method decreased from 0.982 to 0.847, the security status was optimal;
- the security indicator calculated by the distance method decreased from 1.330 to 0.696, and the security status deteriorated from optimal to unsatisfactory;
- an increase in standard deviation from optimal/safe zone from 0.026 to 0.219 indicated a decrease in the level of security.

The authors calculated the total integral indicator of tax security of Ukraine ($I_{integral}$) (Fig. 5.5). It decreased during 2016-2020 from 0.994 to 0.864, but in 2021 compared to 2019 increased to 0.896, due to the higher level of tax collection (k_2) and the administration authorities' efficiency (k_3).

Thus, the integral indicators of tax security of Ukraine, calculated by different methods, showed the same trend for the analysed period: the deterioration of the security situation, whilst its level was on the verge of an 'optimal' value during 2016-2021; in 2021 only the distance method showed the proximity to the 'safe' value classified as the 'unsatisfactory' state.

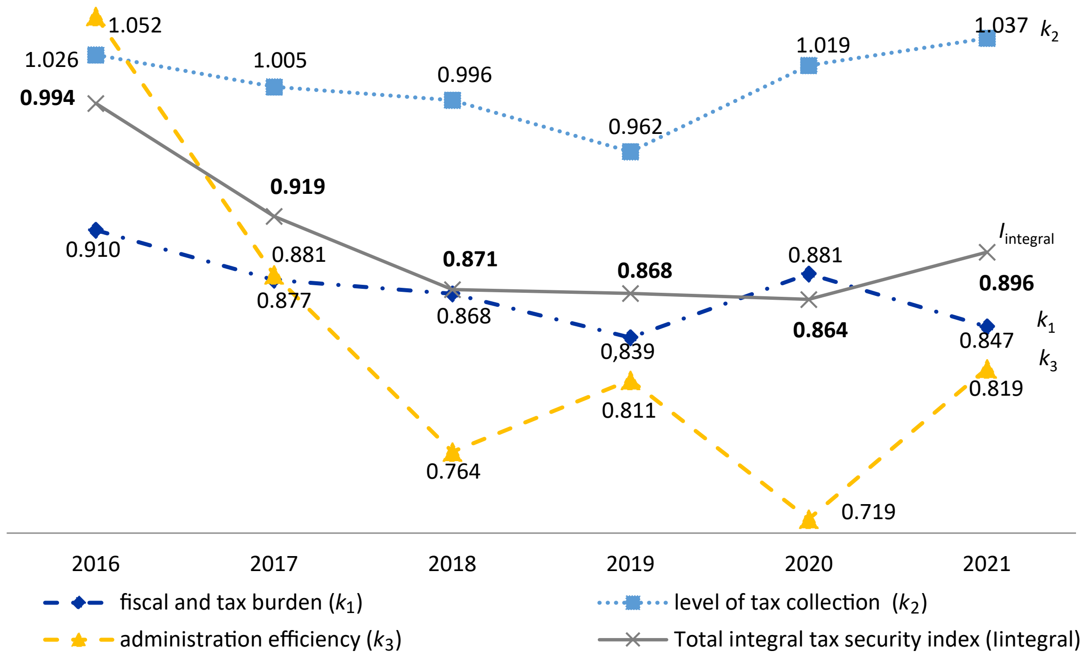

Fig. 5.5. The integral tax security indexes in Ukraine, 2016-2021

Source: own study.

5.5. Conclusions

Tax security is defined as the security status of the fiscal interests of the state, enterprises and citizens, the ability of the tax system to perform its functions in a timely manner, adequately respond to challenges, counteract risks and threats from external and internal spheres. The identified threats to tax security included: uneven tax burden on labour, consumption or property/resources/capital; shadow economy and corruption; significant level of tax debt; low efficiency of tax administration and control measures, high cost of maintaining fiscal authorities; frequent changes in tax legislation; significant amount of tax evasion.

The methodology of assessing tax security, based mainly on determining fiscal burden, level of fulfilment of planned tasks, efficiency of administration and effectiveness of control, was supplemented by assessing the workload of fiscal employees, administration costs, and uniformity of revenue, which made it possible to determine the integral indicator of tax security.

The analysis and evaluation of the tax security indicators in Ukraine showed the excessive fiscal and insufficient incentive orientation of taxes, especially labour taxes; excessive increase in the administration cost and fees compared to the growth of budget revenues and GDP; low effectiveness of control measures of the State Fiscal Service, growth of tax debt and its write-off deemed 'hopeless', shortcomings in the VAT refund system, low level of investigation of tax crimes and uneven tax burden on individuals and enterprises.

Due to the calculated tax security indicators in Ukraine for 2016-2022, the positive dynamics of payment integrity, effectiveness and tax elasticity were identified, whereas the critical situation in terms of administration costs, the level of tax debt and the total tax burden have increased. Hence, according to most indicators of the fiscal burden, the state of tax security was optimal and satisfactory, and according to the level of implementation of the plan – optimal, whist in terms of efficiency of administration and cost intensity – both satisfactory and unsatisfactory. The calculated integral tax security indicator in Ukraine decreased from 99.4% in 2016 to 89.6% in 2021, with negative dynamics.

The analysis and evaluation of tax security indicators in Ukraine showed:

- the excessive fiscal and insufficient incentive orientation of taxes, especially labour taxes;
- the excessive increase in the administration cost and fees compared to the growth of budget revenue and GDP;
- the low effectiveness of control measures of the state fiscal service, growth of tax debt and its write-off deemed hopeless, and shortcomings in the VAT refund system;
- the low level of investigation of tax crimes and uneven tax burden on individuals and enterprises.

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Chapter 6

Personal Income Tax Gap: The Czech Experience

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6.1. Introduction

Estimating the tax gap for personal income tax and social security contributions varies from country to country. Fundamentally, it depends on the average effective tax rate for dependent and independent activities. If there is a significant difference in the taxation rates of dependent and independent activities, then it is advantageous for taxpayers not to be taxed typically as employees but as self-employed persons. In the Czech Republic, this phenomenon is referred to as the so-called *švarcsystém*, i.e. an employee performs dependent activity in certain segments of the economy but is not considered an employee for tax purposes, but a self--employed person. Given that the average tax rate for employees and self-employed persons differs by around 7 or more percentage points, this is an interesting issue from a tax and fiscal point of view. It should be stressed that this legal disparity has an impact on public revenue and on the overall collection of personal income tax and social security contributions. However, the line between dependent and independent activity is very thin, whilst it should be said that there are a number of jobs on the labour market that are offered both in the form of an employment contract and a trade licence. The labour market is therefore clearly supporting this trend, and the reasons are not only fiscal, but also purely regulatory with regard to the Labour Code, yet the fact is that it is a tax saving for both the 'employee' billing as self-employed and the employer, who saves on social security contributions. The aim of the article is to quantify the impact of the *švarcsystém* on the revenue side of the Czech public finances. The data show that the impact is far from negligible and causes damage to the country's public finances.

6.2. Literature Review

The article deals with the issue of tax justice represented in tax theory by the principle of payment justice, or the so-called horizontal justice in taxation. According to this theory, it would be appropriate that two individuals who earn, for example, the same amount of income should pay the same amount of tax on that income. This issue has been more extensively discussed by Kubátová (2003), Široký, (2003), and among international authors, e.g. Jackson and Brown (2003), and Samuelson and Nordhaus (2007), while the foundations of this theory were already laid by Adam Smith in his *An inquiry into the nature and origin of the wealth of nations* in 1776. However, this horizontal equity rarely occurs because tax systems, not only the Czech one, have various sub-parameters in the area of individual income taxation that significantly influence the level of taxation (effective tax rates) to the benefit or disadvantage of individuals. Obviously, it is purely in the hands of legislators how they set the way individuals are taxed, still in line with tax theory, two basic requirements should be balanced: efficiency and fairness, but these two requirements are often at odds with each other. Therefore, an analysis of the effective tax burden before and after the change would be appropriate for all parametric changes in the taxation of individual income. These authors, however, mention the general principle of tax fairness; the Czech-specific situation of the *švarcsystém* is, of course, not addressed so explicitly in the international literature. Among Czech sources, one can mention Finardi and Vančurová (2014) focusing on data on average gross expenditure and income by sector in the EU countries under study. It is a method based on macroeconomic data of the countries in question from the National Accounts. In absolute terms, the PIT gap, including social security contributions, was just under CZK 5 billion. In another paper (Finardi & Procházka, 2016), the authors also work with the National Accounts method and their estimate of the PIT gap including social contributions is CZK 9.5 billion. The last relevant estimate (Finardi & Melicharová, 2021) focuses on the share of self-employed persons without employees in the working-age population, by NACE economic sector, according to which, the PIT gap, including social contributions, amounted to CZK 14.4 billion.

6.3. Data and Methods

This section focuses on the evolution of the number of self-employed persons in the Czech Republic from 2010 to the third quarter of 2024, while the other data are always year-end data. The development of the number of self-employed persons is also influenced by the economic cycle. For the purposes of the analysis, the self-employed applies to their main form activity. They do not therefore have significant income from employment and are also not considered, for example, as students or recipients of a retirement pension as their main source of income is self-employment. Table 6.1 shows that the share of these persons in the total number of self-employed persons fell by only 7 percentage points since 2010, which is not a significant decrease. It is clear from this statistic that 59% of self-employed persons carry out this activity as their main activity, with the remainder being secondary activities. Naturally, the main activities are subject to stricter rules for the collection of social security contributions and are subject to higher minimum assessment bases. There are no minimum tax bases in the personal income tax system, which has an impact on the income tax collection of individuals filing tax returns.

Table 6.1. The number of self-employed persons in the Czech Republic in 2010-2024

Year	Total number of self-employed persons	Main activity of the self-employed	Secondary activities of self-employed persons	Share of self-employed persons (main activity) in the total number of self-employed persons (%)
2010	977,069	640,406	336,663	66
2011	1,001,764	649,990	351,774	65
2012	994,088	627,596	366,492	63
2013	977,228	602,395	374,833	62
2014	972,356	586,112	386,244	60
2015	975,952	578,544	397,408	59
2016	981,355	577,818	403,537	59
2017	991,444	582,226	409,218	59
2018	1,011,355	590,705	420,650	58
2019	1,031,365	598,086	433,279	58
2020	1,051,179	611,383	439,796	58
2021	1,078,096	634,205	443,891	59
2022	1,104,258	649,189	455,069	59
2023	1,127,189	668,737	458,452	59
2024	1,158,440	684,798	473,642	59

Source: (Česká správa sociálního zabezpečení, 2024).

Based on previous estimates (Finardi & Melicharová, 2021) of the number of self-employed persons excluding employees per working-age population by NACE economic sector, it is possible to establish a lower bound for the PIT gap, hence the lower bound is 20% of the total number of self-employed persons engaged in the main activity. A further estimate can be made according to the real labour market offers in different sectors in the Czech Republic. Based on this survey, it can be concluded that the upper estimated limit is about 33%, and the study continues to work with these two values in the estimates of the PIT gap. The real value may of course be higher, but unfortunately not enough data and information were available to make this evaluation.

The estimation focused on the years 2022, 2023 and 2024 with other years not considered due to the non-availability of suitable data, and 2020 and 2021 were also omitted due to the covariance crisis. The following table shows the authors' estimate of the number of self--employed persons in the *švarcsystém* zone, with the higher estimate over 200,000 people.

Table 6.2. Estimate of self-employed persons in the *švarcsystém* zone (20% and 33% of the main activity)

Year	Number of self-employed persons (main activity)	20%	33%
2022	649,189	129,838	214,232
2023	668,737	133,747	220,683
2024	684,798	136,960	225,983

Source: own calculations.

It was then necessary to estimate the average income of the self-employed in the years under review. The basis for the estimation was the average monthly wage determined by the Ministry of Labour and Social Affairs of the Czech Republic for the purposes of social insurance premiums (Všeobecná zdravotní pojišťovna České republiki, n.d.). The coefficient considers the real statistics of consumption expenditure of Czech households according to the position of the head of the household, with a focus on self-employed persons (Czech Statistical Office, 2023). A major problem with these estimates is that one does not know the exact value of the average annual income of self-employed workers in the *švarcsystém* – there are only statistics on average monthly wages for employees, but these are not sufficient. Therefore, expenditure statistics, which partly capture the income situation of the self-employed, appear to be appropriate. This is an expert estimate which will need to be further refined.

Table 6.3 shows the average annual wage according to the Ministry of Labour and Social Affairs for each year and its adjusted value for the authors' calculation by the coefficient 1.24.

Table 6.3. Adjusted annual income of self-employed workers (2022-2024)

Year	Average annual wage (in CZK)	Adjusted annual income of self-employed persons (in CZK)
2022	466,932	579,000
2023	483,888	600,000
2024	527,604	654,000

Source: own calculations.

All the relevant factors for personal income tax and social security contributions were taken into account for the calculation of total tax payments in each year, in particular the minimum assessment bases for social security contributions for self-employed persons from their main activity. For personal income tax, no deductions from the tax base were considered, which is a simplifying assumption, and only the basic allowance per taxpayer was used. A flat-rate expenditure of 60% was used to determine the tax base of the self-employed. Actual expenses were not considered at all.

6.4. Results

The results confirm that there is a significant difference in taxation between employees and the self-employed, due to the design of individual tax levies, in particular personal income tax. Table 6.4 compares the effective tax rate for employees and the self-employed and the absolute value of the total tax levy, as well as how much more employees pay compared to the self-employed on an annual basis.

Table 6.4. Effective tax rate of employees and self-employed workers and the difference in tax payments between employees and self-employed workers (2022-2024)

Year	Effective tax rate (employee) in %	Effective tax rate (self-employed) in %	Difference in tax payments in CZK/year
2022	20.67	12.00	50,195
2023	20.86	12.19	52,014
2024	21.88	13.80	52,889

Source: own calculations.

Table 6.4 describes the microeconomic impact, i.e. the impact on the individual taxpayer's budget. Next the macroeconomic significance and the impact on public budgets were addressed. Therefore, the calculation was based on the number of people operating in the *švarcsystém* zone and the difference in tax payments between employees and self-employed workers. The estimation was made for the lower and upper bounds of the estimate, i.e. 20 and 33% (Tab. 6.5).

Table 6.5. Estimated PIT gap in CZK (2022-2024)

Year	Lower limit 20%	Upper limit 33%
2022	6,517,231,482	10,753,431,946
2023	6,956,701,954	11,478,558,225
2024	7,243,720,108	11,952,138,177
Total 2022-2024	20,717,653,544	34,184,128,348

Source: own calculations.

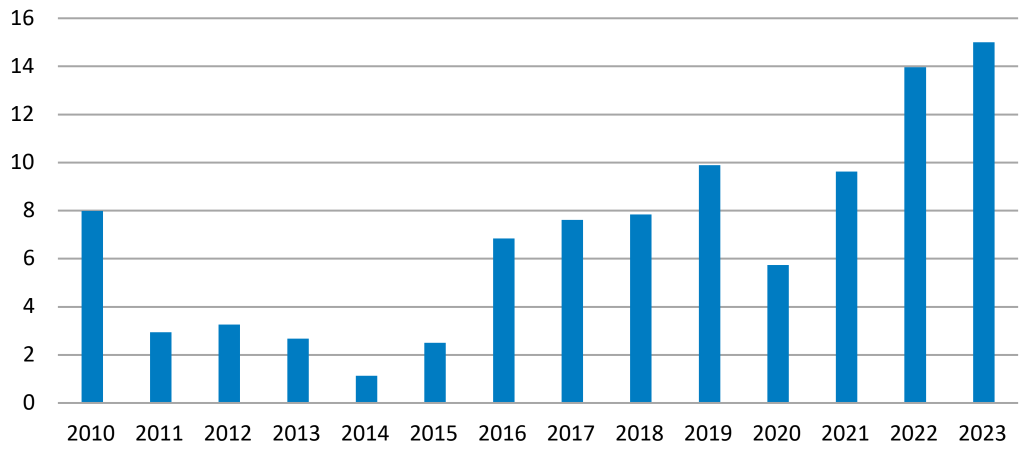

Fig. 6.1. Personal income tax collections from returns from 2010 to 2023 (CZK billion)

Source: (*Vývoj inkasa*..., n.d.).

It is useful to compare the results of the performed estimation with actual personal income tax collections from tax returns, mainly taxpayers who have income from self-employment. Figure 6.1 shows that personal income tax collection was not stable in the Czech Republic (*Vývoj inkasa*..., n.d.), however the low collection was not due to the cyclical development of the economy but to parametric changes in the personal income tax. In particular, the introduction of lump-sum expenses and changes in their rates over the years. Personal income tax collection has been improving since 2021. In 2023, this collection from taxpayers amounted to CZK 15 billion, whereas by comparison, personal income tax on employment income alone amounted to CZK 176.7 billion in 2023. To express this relationship in proportional terms, the share of personal income tax collections from tax returns in employment tax collections in 2023 was 8%, but in 2014, for example, it was only 1%.

6.5. Discussion

Table 6.6 compares previous estimates made using a similar method. If one compares these results with the authors' estimate, they are similar, thus confirming that these results have some predictive power. The estimate of the Ministry of Finance was available only for personal income tax and amounted to CZK 5 billion. Unfortunately, this estimate is no longer officially available as it was part of the draft law on electronic sales registration, however on 1 January 2023 the electronic sales registration was abolished. The aim of this instrument was to counter the concealment of income of the self-employed.

Table 6.6. Comparison of PIT gap estimations

Author	PIT gap including social security contributions (CZK billions)
Finardi and Melicharová (2021)	14.4
Finardi and Procházka (2016)	9.5
Finardi and Vančurová (2014)	4.6

Source: own calculations.

As already mentioned, it is difficult to estimate the importance of the *švarcsystém* in the Czech Republic because it is a legal tax optimization. There is no credible database regarding the persons who are in this tax zone, therefore these are estimates based on the knowledge of the Czech tax system and labour market.

6.6. Conclusions

Given the assessment of the significance of the impact of the *švarcsystém* on Czech public finances, it appears logical to continue to pay attention to this phenomenon. The Czech Republic loses approximately CZK 12 billion annually, which cannot be considered a negligible amount with regard to the total income tax collection of individuals filing tax returns.

The taxation of individuals has undergone a number of significant reforms, one of which was the introduction of flat-rate expenses for self-employed persons. This has also led to an overuse of the *švarcsystém* in the labour market, as these individuals often do not have very high actual expenses. One way to limit the overuse of the *švarcsystém* is therefore to reform the flat-rate expenditure. In addition to reducing the relative rates and the absolute maximum amount of flat-rate expenditure, it is also possible to limit the range of taxpayers who can benefit from flat-rate expenditure (e.g. the value of annual gross income up to a certain limit).

The current system of taxation of income from employment and the *švarcsystém* is unfair and shifts the tax burden primarily to employees, who are also heavily burdened with social security contributions. Given the need to continue to consolidate the Czech public finances, it will therefore be necessary to increase the level of taxation of the self-employed, in particular for personal income tax. The reform of flat-rate expenses, which have a significant impact on the effective taxation rate of the self-employed, should contribute to this.

Another important area is the non-reporting of self-employment income. Electronic sales registration was supposed to help combat this phenomenon – however, as already mentioned, this instrument was abolished as of 2023.

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Chapter 7

The Usual Price Rule as a Tool to Detect a VAT Fraud

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7.1. Introduction

Tax fraud has a long-term negative impact on public budgets and primarily target the abuse of taxes for one's own enrichment. At the meeting of the Economic Committee in the Chamber of Deputies of the Parliament of the Czech Republic (2013), it was even said that some fraudsters consider themselves entrepreneurs in VAT (Value Added Tax). They basically do not care whether they trade in fuel, scrap iron, plastic cards, electronics, fish, or wood (Ministry of Finance of the Czech Republic, 2014).

According to European Commission statistics (2017), Member States lose about EUR 100 billion a year to fraud. This is a huge loss that significantly deepens the public budget deficit, and it is clear that the efforts are made to fight fraud. An example may be the introduction of a reverse charge for risky commodities and services, and in the event of sudden misuse of other subject-matter transactions, a rapid reaction mechanism may be used. Individual states are trying to fight fraud even in domestic adjustments. In addition to the mandatory submission of the recapitulative report, the control report is also used (Semerád & Bartůňková, 2016), which is intended to notify the tax administrator in the event of a suspicious report to initiate inspection activities of the identified entity.

Value-added tax is claimed to be resistant to tax fraud[1], and it is one of the best-harmonized taxes within the European Union. It is also popular because it allows cross-border trade, even

[1] The claimed resistance to tax evasion is based on the fact that the recipient of the taxable supply needs a tax document issued by the seller to claim the deduction. Although there are machinations where end customers (consumers) can agree with the supplier on delivery without a tax document, which does not include value-added tax in the final price, most supplies do indeed include VAT (Semerád et al., 2021).

though it is becoming the riskiest part of the entire chain. Not only in the context of intra-Community supplies, the tax administrator relies on the honesty of taxpayers. If they do not want to pay the tax, the state in which the recipient of the taxable supply operates will lose the entire output value-added tax (Pfeiffer & Semerád, 2013).

The model of these so-called carousel frauds[2] is based on the principle that the entity responsible for self-assessment of tax intentionally fails to meet its tax obligation. In addition, the real organizers hide from the tax administration behind disadvantaged people who either do not understand the consequences of their behaviour at all or do not have enough information about it. The problem is also that business entities abused for tax fraud do not have a long life, usually a few days or weeks, but no longer than a few months (not counting the time during which this empty shell hibernates). Subsequently, they end up as non-contact, and their place is taken by another pre-prepared entity.

Thus, it is clear that the mere reporting of taxable supplies is not sufficient to combat tax fraud as it is usually too late to remove them. Countries thus shift their attention to the recipients of taxable supplies and try to prove to them at least their awareness that their supplier may have been involved in tax fraud. This effort is linked to the judgments of the European Court of Justice (2006a, 2006b) which allow the tax administrator to refuse the right to deduct tax payments from an entity that should and could have known that its supplier was part of a fraud.

However, this proof is very lengthy and complicated because these types of fraud are very well organized and involve several hundred entities cooperating with each other. An example is the Moby Dick case, in which more than 400 companies were involved, in what was supposed to be a fraud of EUR 520 million (Europol, 2024). Legislators must therefore come up with additional conditions that, in the event of a violation, increase the likelihood that it will be possible to deny the right to deduct and claim a liability for unpaid tax.

Since each country can adjust the conditions in accordance with Council Directive 2006/112/EC according to individual needs, the authors focus in this chapter on the conditions that are effective in the Czech Republic, mostly on the Liability for Unpaid Tax in the event that the subject of performance was provided for an unusually low price, also sharing the possibility of avoiding liability.

7.2. Liability for Unpaid Tax in the Czech Republic

Carousel fraud is based on the principle (Fig. 7.1) that the exemption from value-added tax is abused when goods or services are supplied to another Member State. The supplier can claim its inputs but invoices without value-added tax.

The recipient of the taxable supply becomes the Missing Trader, whose obligation is to self--assess the tax (reverse charge mechanism). The subject of performance is supplied by Buffer Trader 1 with local value-added tax. The problem is that the Missing Trader only collects the payment but does not pay the value-added tax to the state within the legal deadline. This is the weakest point in tax administration. The subject of performance is further resold to other entities, e.g. Buffer Trader 2 and a Broker. From there, the subject of supply goes to another Member State, and the carousel of sales continues.

[2] Missing Trader Intra Community Fraud (MTIC).

The basic prerequisite for successful trading in carousel fraud is time. The faster individual trades can be executed, the greater the return on each turnover. To make it harder to monitor transactions, fraudsters use, for example, foreign collection agencies, and the money does not pass through the accounts of fraudulent companies at all. By the time fraud is detected, it may be too late for the tax administrator to intervene.

In order to make deliveries as quickly as possible, fraudsters use a very accommodating pricing policy, selling the subject-matter of performance at a lower price than the price for which honest competitors sell their products, goods, and services. If these price wars last for a long time, it can cause irreversible market distortions. In order for honest entities to survive, they have to adapt and can themselves participate in some carousel frauds (Semerád, 2014). It therefore depends only on the speed of legislators how quickly they can implement tools into domestic case law that will help tax administrators in taking evidence.

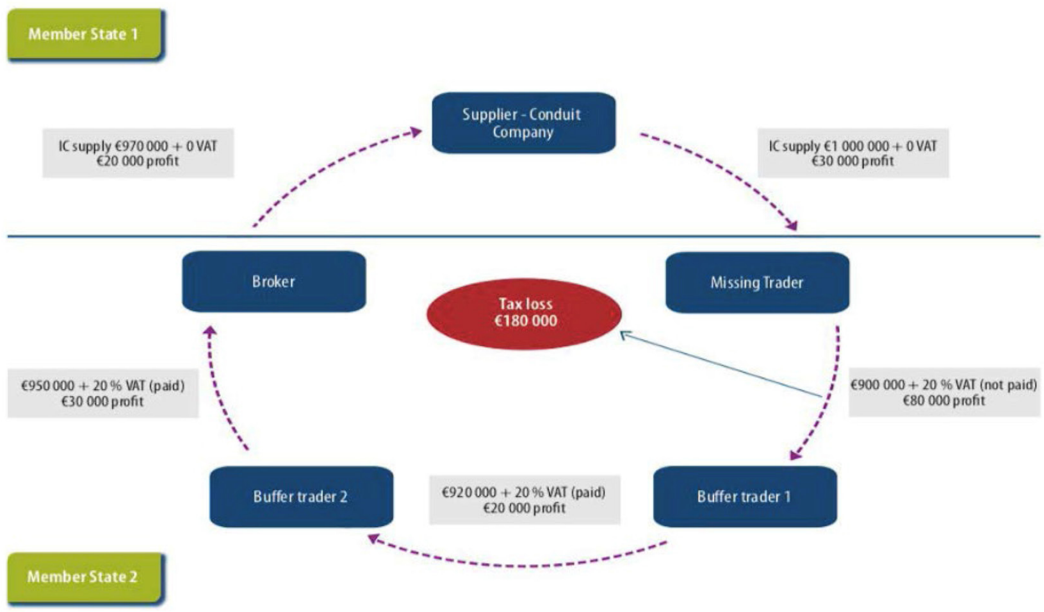

Fig. 7.1. Example of carousel fraud including real amounts

Source: (European Parliament, 2021).

In the Czech Republic, several conditions have been gradually introduced that expose the recipient of taxable supply to a Liability for Unpaid Tax. In addition to the obligatory condition, based on the assumption that the recipient of the supply should have known and could have known, the law gradually introduced (i) the obligation to pay to registered bank accounts, (ii) trading only with registered entities, (iii) the institute of an unreliable payer, and (iv) trading at market unusual prices.

7.2.1. Registered Bank Accounts

In the past, it was the case that the provider of taxable supply could write any bank account on the invoice. The recipient of the taxable supply thus paid invoices not only to the provider's account but also to the accounts of various collection agents in the Czech Republic and abroad.

The reason was to prevent the tax administrator from freezing the accounts of entities that it suspected may be part of a fraudulent group.

Therefore, the tax administrator introduced the obligation for all taxpayers to register their bank accounts with the tax administrator. The tax administrator has thus collected all bank accounts, the list of which is listed for each taxpayer on a publicly accessible website (Fig. 7.2).

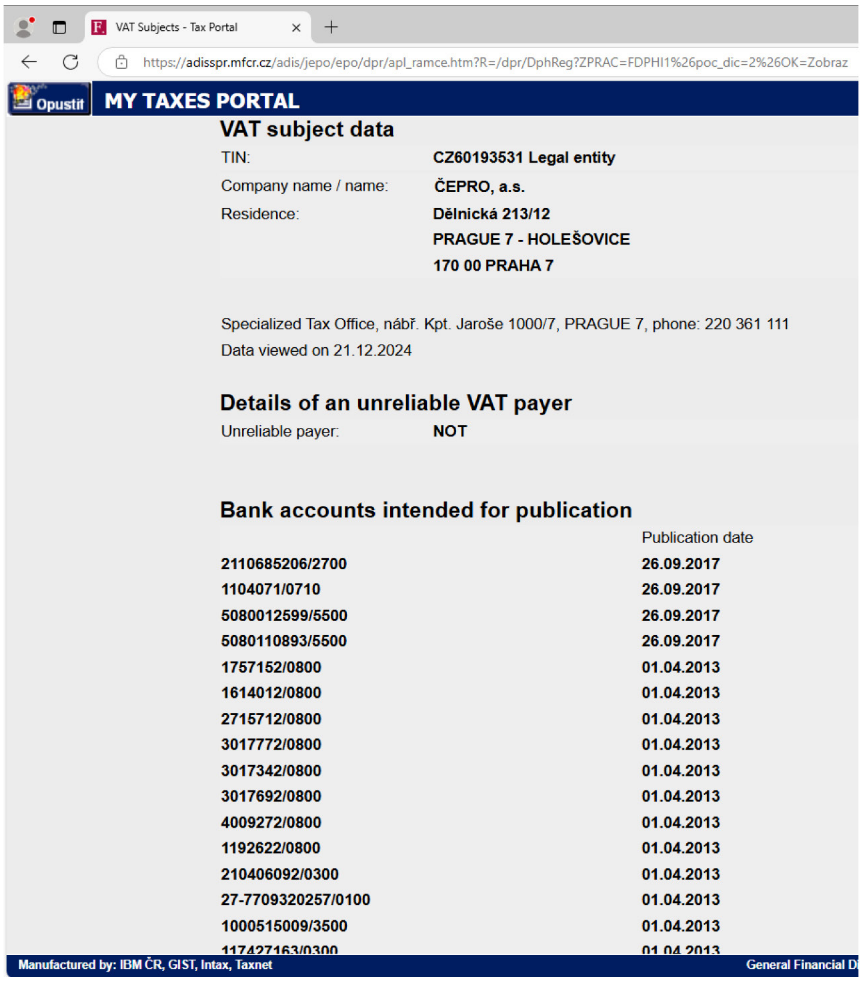

Fig. 7.2. Verification of information on VAT payers

Source: (General Financial Directorate, 2024b).

All customers can verify:

- whether the entity is a payer of value-added tax,
- what is the legal name of the entity,
- where it is based,
- whether it has been identified as an unreliable payer, and
- what are its bank accounts registered with the tax administrator.

This provides several benefits, the main one being that it is possible to automatically check any changes on the part of the taxable supply provider using, e.g. accounting software and to ensure that the payment is made to the correct account (Semerádová & Semerád, 2022).

The logical 'disadvantage' is that if the recipient of the taxable supply pays into an unregistered account, they run the risk of guaranteeing the unpaid tax. In practice, this works in such a way that if the provider of the taxable supply fails to meet its tax obligations, they can be recovered from other entities in the chain.

7.2.2. Trading with Registered Entities

Since the 1990s, fuel has been the subject of huge tax fraud in the Czech Republic. It started with imports of light fuel oils, which were sold as diesel fuel at Czech filling stations. This led to excise tax fraud, as light fuel oils had a lower tax burden than diesel fuel.

After the Czech Republic joined the European Union in May 2004, fraudsters created space for ‘standard’ carousel fraud. Their greatest expansion was around 2010, when fuel fraud was estimated to amount to EUR 160-320 million (David & Semerád, 2014; Office for the Protection of Competition, 2012-2013).

For this reason, a register of fuel distributors was first created, and then a condition was set that distributors must pay a deposit of EUR 800 000 to the bank account[3] of the customs administration (e.g. Semerád, 2014). This circumstance has been implemented into the Value Added Tax Act:

“The recipient of a taxable supply, which consists in the supply of fuel by a fuel distributor under the Fuel Act, is liable for the unpaid tax on this supply, unless at the time of its performance or provision of consideration for the taxable supply the fact that the provider of the taxable supply is registered as a fuel distributor under the Fuel Act is not disclosed in a manner allowing remote access” (Section 109, paragraph 4, of the Value Added Tax Act).

As follows from the statutory provision, the recipient of the taxable supply must purchase only from entities that are registered as fuel distributors.

7.2.3. Unreliable Payer

Trading with unreliable payers is another situation where the recipient of the taxable supply is exposed to a Liability for Unpaid Tax. An unreliable payer is a taxpayer who is listed in a public database of VAT payers (Fig. 7.1) and who has had or has tax arrears towards the tax administrator (Semerádová & Semerád, 2022).

“The recipient of the taxable supply is liable for the unpaid tax on this supply if, at the time of its realization or the provision of payment to him, the fact that the provider of the taxable supply is disclosed in a manner allowing remote access that he is an unreliable payer” (Section 109 (3) of the Value Added Tax Act).

The only way to avoid a guarantee is to use special tax security (Section 109a, par. 1 of the Value Added Tax Act), which allows the taxpayer to pay value-added tax directly to the tax administrator’s account (only the tax base is paid to the provider)[4].

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[3] After the ruling of the Constitutional Court of the Czech Republic (2014), this obligation was reduced to EUR 400 000 for smaller distributors.

[4] “If the recipient of the taxable supply pays tax on such taxable supply on behalf of the provider of the taxable supply without being called upon as a guarantor, this payment will only be used to pay the tax of the provider of the taxable supply on this taxable supply”.

7.2.4. Usual Price for Taxable Supply

However, the main topic of this chapter is the Liability for Unpaid Tax for taxable supplies that are not realized at usual prices[5] (Section 109 (2) (a) of the Act on Value Added Tax):"The recipient of the taxable supply is also liable for the unpaid tax on this supply if the consideration for this supply is clearly different from the usual price without economic justification."

Yet, this provision is very problematic since for registered accounts, unreliable payers, and fuel distributor registration, there is a publicly available database that can be used before the business transaction is carried out. In the case of normal prices, there is no publicly available resource and it is up to the recipient to make a price comparison of multiple sellers according to their possibilities. Even so, the cheapest of them does not have to be a scam – it is just the cheapest. The question is rather how the price was created, and this is not always easy to determine.

Returning to the issue of wholesale sales of fuels[6], it is necessary to know the market habits:

1. Fuel is supplied from tax warehouses.
2. Road freight transport is used for distribution to petrol stations. Tanks have a capacity of more than 30,000 l.
3. There may also be several registered distributors among tax warehouses and petrol stations who resell the goods.
4. If the goods come from the Czech Republic, there is not much room for tax evasion (with the exception of excise duty fraud), as the margins are in the order of a maximum of EUR 0.02 per litre (Semerád, 2014).
5. On the other hand, supplies from other Member States are risky and opens up space for carousel fraud (approx. 0.25 CZK/EUR).
6. Standard items (1) must be included in the calculation of the usual selling price (PS).

$$P_S = (P_P + E + M + C_{TR}) \times VAT_R, \tag{1}$$

where: P_P – acquisition price in the tax warehouse, E – excise duty on mineral oils, M – the fuel distributor's margin, C_{TR} – transport costs, VAT_R – value added tax rate.

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[5] "When determining the price, the usual tax administrator bases its decision on the provisions of Section 2 (1) of Act No. 151/1997 Coll., on Property Valuation and on Amendments to Certain Acts (the Property Valuation Act), as amended. This provision considers the usual price to be the price that would have been achieved in the sale of the same or similar property or in the provision of the same or similar service in the usual course of business in the Czech Republic on the date of the performance. In doing so, it is necessary to take into account the individual circumstances of the case, which may have an impact on the price. However, the amount of the usual price does not reflect the effects of extraordinary market circumstances (e.g. the seller's or buyer's distress, the consequences of natural or other calamities, restrictions on competition in the given sector), the influence of the personal circumstances of the seller and the buyer (e.g. property relations – economic or capital dependence, family or other personal relationships – personal dependence) or the influence of special popularity (i.e. special value attached to property or services resulting from a personal relationship to them, e.g. emotional relationship to the subject of performance). The usual price can be determined by analysing the agreed prices in the market segment of comparable property or service at a given place and time" (General Financial Directorate, 2021).

[6] The fact that fuel fraud is a serious criminal activity in the Czech Republic is evidenced by the statistics of the General Financial Directorate, where the total extent of additional tax administration assessments amounted to CZK 20 billion (2008-2012), of which 27% was fuel (Chamber of Deputies of the Parliament of the Czech Republic, 2013).

Since prices in tax warehouses change on a daily basis, it is necessary to assess whether the price is available on the market (it could have been created without tax fraud) before each order. The problem, however, is that the sale prices are not publicly available, therefore, if the customer does not buy from other entities, they usually do not provide such information. An exception in the Czech Republic is ČEPRO a.s., whose 100% shareholder is the Ministry of Finance of the Czech Republic. However, publicly available price information is only basic and does not take into account individual price offers from other customers.

Let us assume that the taxpayer will use the basic price of ČEPRO a.s. Then he/she should know that there is a possibility of temporary stocking in tax warehouses, which works on the principle of speculating on price growth. If the distributor believes that there will be an increase in prices, they can buy the goods before the price increases, leave them in the tax warehouse, and sell them later. This allows it to generate more profit while offering its customer a lower price, yet this was not created by tax fraud. Tax warehouses charge a fee for this stocking. It is therefore necessary to take into account the cost of this transaction, namely the price of P_P acquisition plus storage fees. Note that, their amount is known only to the provider of taxable supply (seller).

A certain alternative to obtaining information is the General Directorate of Customs, which has information on the purchase and sale prices of distributors. The problem is that even this information is not publicly available, and it can only be obtained on the basis of a request under the Act on Free Access to Information, which the office has 14 days to evaluate. Given such a delay, it can only be guessed what the current usual selling prices are. Even obtaining data from the General Directorate of Customs may not mean successful. As the results of Semerád (2014) showed, they contain errors. Distributors also entered prices without excise tax in the database, which created differences of almost CZK 10 per litre.

7.2.5. Liability for Unpaid Tax – Application by the Tax Administrator

As this is a relatively complex issue, the authors asked the General Financial Directorate (2024) how many times the liability for unpaid tax on fuel was applied. The answer was that the tax administrator could not provide analytical information on how many times the guarantee was applied to fuel due to unusual prices.

The only information subsequently received was the sum of all liabilities for unpaid tax without distinguishing the reasons (Tab. 7.1). A total of 3,656 guarantor notices were issued during the period under review. With regard to the number of transactions between payers, this is an almost negligible amount; the largest number of calls (3,428) were sent between 2016 and 2020.

Table 7.1. Number of calls for liability for unpaid tax in the period 1.1.2011-15.11.2024

Year of publication	Number of challenges	Year of publication	Number of challenges
2011	1	2018	963
2012	1	2019	923
2013	2	2020	305
2014	14	2021	52
2015	46	2022	30
2016	284	2023	61
2017	953	2024	21

Source: (General Financial Directorate, 2024a).

The year 2016 was specific in that two instruments against tax evasion began to be applied. In the case of invoices, it was the control report (Semerád & Bartůňková, 2016) and Electronic Records of Sales (Semerád et al., 2024).

7.2.6. How to Circumvent the Arm's Length Clause

The low number of calls for liability for unpaid tax may also be due to the fact that although sales take place at usual prices, they are associated with other harmless-looking accompanying activities that additionally reduce the price – e.g. the Cash Back and Free Shipping method (Semerád, 2016). Their detection requires very detailed analysis, which is not humanly possible outside of targeted inspections. However, artificial intelligence in combination with ViDA (VAT in the Digital Age), a concept involving the online exchange of information in cross-border transactions within the European Union, could be of help.

The Cash Back method is also known from offers for common consumer. The customer buys the subject-matter, pays for it, and fills in a form, on the basis of which the seller or manufacturer will refund part of the purchase price. In the event of a fraudulent transaction, the payment is likely to be mediated through a third party. This will break the direct ties between the seller and the buyer, making it more difficult for the tax administrator's analytical unit to supervise and match the transaction.

The Free Shipping method is based on the principle that goods are delivered at a seemingly usual price but already include shipping, which will no longer be invoiced. Transport costs for fuel are based on the kilometric zones between the tax warehouse and the petrol station. Distributors with their own fleet of tankers can incur these costs at the expense of their margin, and if external carriers are used, the transport will not be re-invoiced to the customer. This supply may again be difficult for the tax administrator's analytical unit to trace.

7.3. Conclusions

Tax fraud, especially carousel fraud, significantly distorts the market environment. It also causes huge losses on the revenue side of the state budget, as value-added tax, which should be properly paid to the benefit of the states, ends up with the organizers of the tax fraud. It is estimated that EU countries lose about EUR 100 billion in VAT fraud. The common tax calculation mechanism – in the case of intra-Community supplies under the reverse charge regime – may not be sufficiently robust.

A turning point in this area was brought the judgments of the European Court of Justice, which made it possible to refuse the right to deduct supplies for which the recipient should and could have known that they were affected by tax fraud. Gradually, it also came to the point that the tax administrator could require a Liability for Unpaid Tax in the case of such supplies if the provider of the taxable supply did not meet its tax obligation.

In the Czech Republic, the performance for which guarantees can be applied has been clarified. This includes (i) the provision of a payment to a bank account of the beneficiary other than the one registered with the administrator, (ii) the payment recipients who are identified as unreliable payers, (iii) trading with entities other than those authorized (e.g. fuel distributors), and (iv) trading at prices other than usual.

In this chapter, the authors focused mainly on the problem of identifying the usual price for fuel. It is practically impossible to set such a price, as there is no real-time price information (with the exception of ČEPRO a.s.). It is also problematic to identify unusual prices when fraudsters use, for example, the Cash Back or Free Shipping method. In this way, it is possible to additionally reduce the prices of goods that otherwise appear to be normal prices through inconspicuous transactions.

Perhaps for this reason, the tax administrator does not apply the liability for unpaid tax more often. Between 2011 and 2024, there were a total of 3,656 guarantor calls, which is almost negligible in the total number of transactions carried out by Czech VAT payers. However, it is still a tool that has great potential and can be used in other (not only) Member States of the European Union.

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Chapter 8

Refugees' Personal Income Taxation under Russian Federation Military Aggression Against Ukraine

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8.1. Introduction

The Russian invasion of Ukraine on February 24, 2022, triggered a significant outflow of the working-age population abroad. According to the World Bank (2024), approximately 5.7 million Ukrainians left the country in 2022. In response to this crisis, many countries launched assistance programmes for vulnerable Ukrainian groups which, under Ukrainian legislation, are exempt from taxation (Verkhovna Rada of Ukraine, 2022). However, some of the refugees secured formal employment abroad, bringing to the forefront critical issues such as determining the appropriate jurisdiction for tax payment, defining tax residency, and avoiding double taxation. There are more than 70 international bilateral treaties for the avoidance of double taxation in force between Ukraine and other countries (Ministry of Finance of Ukraine, 2024), nevertheless the primary challenge lies not in the absence of such agreements, but in the lack of public awareness regarding personal income tax obligations and compliance.

This study explored the critical issues related to tax residency, including its definition and determination, the applicable personal income tax (PIT) rates in countries hosting the largest numbers of Ukrainian refugees, and the effectiveness of communication strategies employed by tax authorities to ensure compliance. Furthermore, it incorporated a detailed case analysis of the avoidance double taxation applied to Ukrainian refugees residing in the Czech Republic.

8.2. Taxpayer Obligations and Rights: Tax Residence, Double Taxation, and Income Tax Rates in Ukraine and the EU

Being a citizen of any country grants individuals a range of opportunities and rights. However, it also imposes certain responsibilities, among which are tax obligations. As Benjamin Franklin, one of the founding fathers of the United States, famously remarked in a letter (Franklin, 1907): "in this world nothing can be said to be certain, except death and taxes".

This principle applies equally to citizens residing within their home country and those working abroad, underlining the universal nature of tax responsibilities regardless of location.

In peacetime the main sources of income for citizens working abroad are employment and property, both of which are subject to taxation under the applicable tax rules, however in times of war, additional sources of income, such as social benefits, often come to the forefront. With the outbreak of the war many Ukrainians were displaced, seeking refuge in various countries and receiving social assistance. This displacement has raised critical legal and practical issues, particularly with regard to which types of income are subject to taxation.

In response, during the first year of the conflict, the Ukrainian legislature clarified the taxation of displaced persons abroad. Two key points were emphasized.

First, social assistance provided to displaced persons is exempt from taxation. This norm was added to the Tax Code of Ukraine (Verkhovna Rada of Ukraine, 2024):

> The total monthly (annual) taxable income of a taxpayer for the 2022 and 2023 tax (reporting) years, as well as for subsequent tax (reporting) years until December 31 of the year in which the martial law introduced [...] is terminated or cancelled, does not include income:
>
> - in the form of funds or gratuitously provided goods (services) (hereinafter referred to as assistance) that are provided at the expense of budgetary funds of foreign states and their state funds to such taxpayers and their first-degree relatives as individuals affected by the armed aggression of the Russian Federation against Ukraine and who have exercised their right to temporary protection in accordance with the legislation of such a foreign state.
> - all forms of the specified assistance, including when received as an additional benefit, as well as from foreign companies and organizations that, according to the legislation of the relevant foreign jurisdiction, engage in charitable activities.
>
> If a taxpayer has received income as specified in this point, their obligation to submit a declaration of property status and income (tax declaration) is considered fulfilled, and the tax declaration is not required to be submitted. However, if the taxpayer is obliged to submit a declaration of property status and income (tax declaration) in accordance with other provisions of the Tax Code of Ukraine, the income specified in this point must be included alongside other income in the declaration.

Second, all other forms of income remain taxable, depending on the individual's tax residence status (Verkhovna Rada of Ukraine, 2024).

These provisions underline the importance of understanding tax residency rules and their implications for refugees. In general, tax residency refers to a country where an individual is obligated to pay taxes, yet it is different from citizenship, while migration or other factors take place. According to the most common practices, the simplest way to determine tax residency is, if a person stayed and conducted business activities in a certain country during half a year continuously (183 days).

For example, in Poland a tax resident is a person who has been staying in the country for more than 183 days or whose centre of economic or personal interest is in the territory of Poland. In Vietnam, a tax resident is a person who stays in the country for more than 183 days, who holds a temporary or permanent residence card, or who rents property in the country for more than 183 days per year (Rutkowska-Tomaszewska et al., 2023). On the other hand, in the UK an individual is considered a tax resident not only according to the 183 days rule, but also if at least one period of 91 consecutive days when owning the UK home, or more than 75% of the total number of days in the 365 day period when an individual does more than 3 hours of work in the UK (Global Financial Planning Institute, 2022).

This is a general rule of thumb, but some countries can apply different or additional norms. In Ukraine, a tax resident is a domiciled person in the country. In addition, if a taxpayer has a residence in a foreign country, then as long as their permanent residence is in Ukraine, or it is in Ukraine where they have close personal or economic ties, they are treated as a tax resident of Ukraine. Moreover, there is an additional norm in the Tax Code of Ukraine (Verkhovna Rada of Ukraine, 2024) that states: "If it is impossible to determine the residency status of an individual using the previous provisions of this subparagraph, the individual is considered a resident if they are a citizen of Ukraine."

In practice, situations arise where multiple countries may recognize the person as their tax resident, for example, many Ukrainians have obtained temporary protection abroad. Certain countries automatically classify such individuals as tax residents from the day temporary protection is granted or after 183 days of residence in that country (DTKT, 2023). However, Ukraine does not have a procedure for renouncing residency status, meaning these individuals remain tax residents of both Ukraine and the other country simultaneously. Even if individuals had lost all ties with Ukraine and all taxes are paid in the country where they have become a tax resident, residential status for Ukrainian Tax authorities will be still active, while Ukraine does not have an official procedure for losing or cancelling tax residency status. Thus, even if a person renounces Ukrainian citizenship or moves to another country for permanent residence, they will not lose their tax residency status in Ukraine officially. Individuals can still request Ukraine's tax authorities to recognize them as a non-resident proving that their tax residency in another country overrides their Ukrainian residency. In such cases, the situation is resolved under the Double Taxation Avoidance Agreement (DTAA) between Ukraine and the country where the individual resides, if such an agreement exists.

However, the status of temporary protection does not directly affect tax residency status, whilst tax authorities in some countries may make exceptions for Ukrainians (DTKT, 2023). Those who arrived on work visas may face stricter treatment than refugees. In disputed cases, where an individual has spent approximately equal time in both countries, the 'centre of vital interests' criterion under the convention rules (i.e. the place with the closest social and property ties) can help Ukrainians abroad avoid being classified as tax residents of another country and continue paying taxes in Ukraine – the key is to prove this to the tax authorities. For this reason an individual can obtain a certificate of Ukrainian tax residency online via the Taxpayer's Cabinet.

Due to the Russian Federation military aggression against Ukraine, almost 4.8 million Ukrainians became refugees in European countries. Although they settled in various countries, the majority are concentrated in ten of them, with numbers ranging from 100 000 to over 1 million (Tab. 8.1).

Table 8.1. Estimated number of refugees from Ukraine in European countries by July 2024

Country	Ukrainian refugees
Germany	1 178 610
Poland	957 505
Czech Republic	353 510
United Kingdom	244 560
Spain	202 690
Italy	170 925
Moldova	123 295
Slovak Republic	122 925
Netherlands	114 380
Ireland	108 540
EU Total	4 793 800

Source: compiled by the authors based on (Statista, 2024).

Table 8.2. Income tax rates in selected EU countries

Country	Income range	PIT rates	DTAA	Additional tax burden
Germany (EUR)	single: 11 604 married: 23 208	0	+	< 18%
	single: 11 604 to 66 760 married: 23 208 to 133 520	14-42		–
	single: 66 760 to 277 825 married: 133 520 to 555 650	42		> 18%
	single: 277 825 and above married: 555 650 and above	45		> 18%
Poland (PLN)	to 120 000	12% of the base less the amount decreasing tax (PLN 3 600)*	+	< 18%
	over 120 000	PLN 10 800 + 32% excess over PLN 120 000		> 18%
Czech Republic (CZK)	less than 36 times the average monthly salary	15	+	< 18%
	above 36 times the average monthly salary	23		> 18%
Spain (EUR)	the first 6000	19	+	> 18%
	6 000 to 50 000	21		> 18%
	50 000 to 200 000	23		> 18%
	200 000 to 300 000	27		> 18%
	over 300 000	28		> 18%
Italy (EUR)	28 000 and below	23	+	> 18%
	28 001 to 50 000	35		> 18%
	above 50 000	43		> 18%
Slovak Republic (EUR)	to 41 445,46	19	+	> 18%
	above 41 445,46	25		> 18%

Netherlands (EUR)	0 to 38 098	9.32	+	< 18%
	38 098 to 75 518	36.97		> 18%
	over 75,518	49.5		> 18%
Ireland (EUR)	42 000 and below (single and widowed person: no dependent children)	20	+	> 18%
	51 000 and below (married couple: one income)			
	84 000 and below (married couple: two incomes)			
	above 42 000 (single and widowed person: no dependent children)	40		> 18%
	above 51 000 (married couple: one income)			
	above 84 000 (married couple: two incomes)			

Grey refers to a certain income tax rates that are less than 18% of the income tax rate, thus obligating individuals to pay an excess part to Ukrainian tax authority

Source: compiled by the authors based on (Ministry of Finance of Ukraine, 2024; PwC, 2024).

Some Ukrainian refugees found work in the new place of residence and are receiving not only social assistance, but also a salary or wages, which are still, as described above, a subject of Ukrainian taxation. According to DTAA signed by Ukraine, there should be a recalculation of the tax burden in line with the already paid taxes. Thus, if an individual paid more than Ukrainian PIT rate – no additional payments should be made, whilst if this was less – the difference should be paid to Ukrainian tax authority.

In Table 8.2 tax rates from selected EU countries with highest number of Ukrainian refugees are presented to highlight the additional tax obligations.

8.3. Case Study: Avoiding Double Taxation for Ukrainian Refugees in the Czech Republic

A specific example of the application of double taxation avoidance measures was analysed through the case of a Ukrainian refugee residing in the Czech Republic, where the income of tax residents is subject to a progressive taxation system. Gross annual income, calculated as 36 times the average monthly salary, is taxed at a rate of 15%. Income exceeding this threshold is taxed at a higher rate of 23% (PwC, 2024). To ensure compliance with double taxation avoidance regulations, several key factors must be considered. If a refugee's income is subject to a 23% tax rate in the Czech Republic, which exceeds the 18% personal income tax rate in Ukraine, no additional personal income tax liability arises in Ukraine. However, the obligation to pay the military tax of 1.5% on the total personal income remains mandatory. Conversely, if the refugee's income is taxed at the lower 15% rate in the Czech Republic, the taxpayer is required to remit the difference in personal income tax to Ukraine while also fulfilling the obligation to pay the 1.5% military tax.

This section examines the second scenario, which necessitates the additional payment of personal income tax and the military tax. While the calculation may appear straightforward, the practical implementation involves significant complexities. The primary difficulty includes the requirement to provide documented evidence of income earned in the Czech Republic.

Second, given that tax obligations in Ukraine must be fulfilled in the national currency, income earned in Czech korunas must be accurately converted into Ukrainian hryvnas.

Regarding documentary confirmation, the following documents are required in accordance with the Tax Code of Ukraine (Verkhovna Rada of Ukraine, 2024):

> To obtain the right to credit taxes and fees paid outside Ukraine, the taxpayer is required to obtain a certificate from the authorized state body of the country where such income (profit) is earned. This certificate must specify the amount of tax and fee paid, as well as the tax base and/or taxable object. The certificate is subject to legalization in the respective country and by the relevant foreign diplomatic mission of Ukraine unless otherwise provided by Ukraine's current international treaties.

At this stage, significant obstacles to the optimal execution of tax obligations begin to emerge. The first challenge is obtaining the required certificate. Since the individual is not a tax resident of the Czech Republic, they cannot automatically obtain such a certificate. In practice, to acquire it, the individual must independently submit a tax declaration to the relevant tax authority and request a copy of the document.

The second challenge is the legalization process. Given the large number of Ukrainian refugees and the limited resources of Ukrainian consulates, this is a complex task. Additionally, it is likely to involve additional expenses, for example, the cost of a notarial translation alone starts at 30 euro and the legalization process is likely to incur further costs.

At this stage, legislative amendments should be considered to streamline the process of recognizing foreign income. This could include the possibility of using income statements provided by employers abroad, which confirm both income received and taxes paid. There is a further rationale for this recommendation: such statements typically include a breakdown of income by month. This detail is critical because the Tax Code of Ukraine explicitly states (Verkhovna Rada of Ukraine, 2024):

> When calculating (receiving) income in the form of foreign currency assets or other assets (the value of which is expressed in foreign currency or international settlement units), such income is converted into hryvnias at the exchange rate of the National Bank of Ukraine in effect at the time of calculation (receipt) of such income.

This critical importance is further emphasized by the significant depreciation of the Ukrainian hryvnia between 2022 and 2024 (see Fig. 8.1).

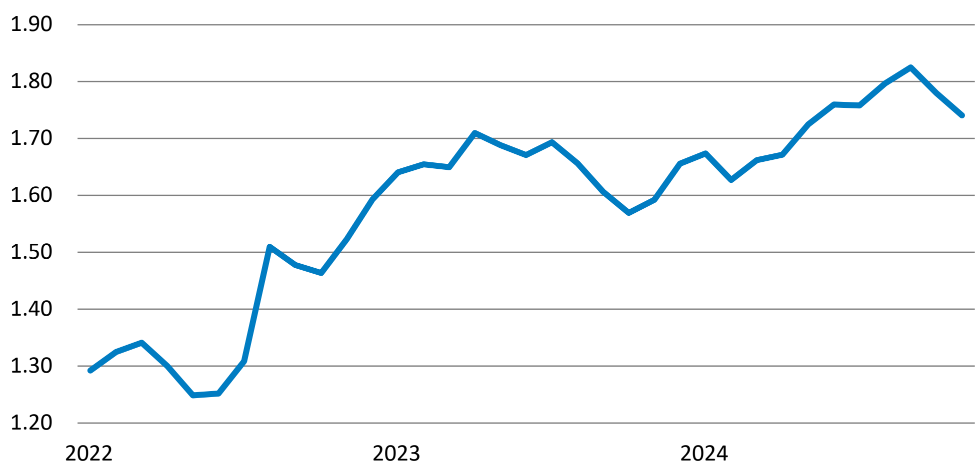

Fig. 8.1. Foreign exchange rate of UAH/CZK, January 2022 – November 2024

Source: (National Bank of Ukraine, 2024).

If the calculation of taxes owed is based solely on annual income totals, this could result in the unfair treatment of taxpayers. The monthly breakdown provided by income statements ensures a more accurate conversion of foreign income into Ukrainian hryvnas at the applicable exchange rates for each period, thereby mitigating potential disparities and ensuring equity in the taxation process. At the same time, another important issue relates to the exchange rate, which is tied to the date the income is received. This date may fall in the middle or at the end of the month, potentially creating discrepancies. It would be advisable in such cases to use the average exchange rate for the relevant period, which is also provided by the National Bank of Ukraine.

Table 8.3 presents a detailed example of tax calculation and payment by a Ukrainian tax resident on income earned in the Czech Republic. Analysing this case reveals several important considerations.

First, the process is highly time-consuming, involving multiple stages such as interactions with the tax authority in the host country, document translation, consulate legalization, and submission to the tax authority in Ukraine, and on average this process takes approximately one month. Moreover, it entails additional expenses, particularly for the translation of documents, which adds to the overall complexity and cost of compliance.

Second, despite the availability of the Taxpayer's Cabinet, completing a tax declaration remains a complex process for individuals unfamiliar with tax regulations. This process requires significant improvements, in particular introducing a simplified interface with straightforward questions for taxpayers. For example, the system could ask which types of income were earned (with a dropdown menu), the amount of income, and the country where the income was received. Based on these responses, the tax reporting could be automatically generated. The goal is to ensure that any taxpayer, regardless of their level of financial literacy, can fulfil their tax obligations through simple steps. A validation group representing diverse demographics – age, income levels, and education – should be established to ensure the system's usability across different population groups.

Currently, only well-informed taxpayers can file their tax reports accurately and avoid penalties. Under wartime conditions, the focus should shift from penalizing taxpayers to clarifying and simplifying tax obligations. Given the high level of digitalization in Ukraine, these challenges could be addressed in a relatively short time frame.

This approach is crucial for broadening the tax base. In many cases, people fail to pay taxes not out of unwillingness but due to a lack of knowledge or an inability to complete the necessary documentation. Addressing these barriers is essential to fostering compliance and ensuring fair tax administration.

Third, the issue of fairness arises, particularly concerning taxpayers with low incomes. These individuals, who often have the least financial resilience, are required to pay additional taxes in Ukraine. This is especially problematic considering their status as refugees, many of whom have no homes to return to due to the occupation of Ukrainian territories.

Furthermore, the cost of living in host countries must be taken into account, including expenses for housing, food, etc. Refugees' incomes are further reduced by social contributions, such as mandatory health insurance payments. These factors exacerbate the financial strain on low-income taxpayers, highlighting the need for a more equitable approach to taxation under these extraordinary circumstances. Addressing these disparities is essential to ensuring that tax policies do not disproportionately burden the most vulnerable, particularly those who have been displaced by war. That is why the authors propose reconsidering this taxation rule, and further demonstrate that it may be reasonable to retain only the military tax for refugees.

Table 8.3. PIT calculation example for income earned by Ukrainian refugees in the Czech Republic to avoid double taxation, 2022

Indicators		Raw mark	Calculation	2022									
				April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Salary in the Czech Republic	in CZK	A	–	10000	10000	10000	10000	10000	10000	10000	10000	10000	90000
	Official foreign exchange rate of UAH/CZK	B	–	1.2512	1.2747	1.244	1.5033	1.4912	1.4405	1.4884	1.5588	1.6101	–
	in UAH	C	A × B	12512	12747	12440	15033	14912	14405	14884	15588	16101	128622
PIT according to Czech Law	15%	D	A × 15%	1500	1500	1500	1500	1500	1500	1500	1500	1500	13500
	in UAH	E	D × B	1876.80	1912.05	1866.00	2254.95	2236.80	2160.75	2232.60	2338.20	2415.15	19293.30
PIT according to Ukrainian Law	18%	F	C × 18%	2252.16	2294.46	2239.20	2705.94	2684.16	2592.90	2679.12	2805.84	2898.18	23151.96
Military tax	1,50%	G	C × 1.50%	187.68	191.21	186.60	225.50	223.68	216.08	223.26	233.82	241.52	1929.33
Gap in PIT to be paid in Ukraine	in UAH	I	F – E	375.36	382.41	373.20	450.99	447.36	432.15	446.52	467.64	483.03	3858.66
Total taxes to be paid in Ukraine	in UAH	–	I + G	563.04	573.62	559.80	676.49	671.04	648.23	669.78	701.46	724.55	5787.99

Source: own elaboration.

Fourth, the increase in the military tax to 5% for individuals could significantly enhance the state budget during wartime. However, this measure would only be effective if accompanied by proper communication from the tax authorities with Ukrainian refugees and the implementation of previous recommendations to simplify the submission of necessary documents. Clear and accessible communication is essential to ensure compliance and prevent resistance to the proposed changes.

Fifth, taxation policies are critical to the country's strategy for encouraging the return of refugees. Overly complex tax procedures, unjustified increases in tax rates, or the reintroduction of progressive taxation – which has previously proven ineffective – could discourage refugees from maintaining their tax residency in Ukraine. This could result in a shift of tax residency to other countries, leading to a loss of taxpayers for Ukraine. Therefore, any adjustments to the taxation system must carefully balance the need for revenue generation with the goal of fostering economic reintegration and retaining the taxpayer base.

8.4. Conclusions

The taxation of income earned by Ukrainian refugees is a complex issue, arising from differences in the taxation regimes, calculation methodologies, and administrative procedures across jurisdictions. These disparities create significant challenges in filing tax declarations, legalizing income, and ensuring compliance with both Ukrainian and international tax laws.

Digitalisation is critical to streamline tax procedures. A centralized platform for processing foreign income should be developed and integrated with international tax systems, facilitating seamless data exchange and reducing administrative burdens.

Special simplified tax procedures should be introduced for Ukrainian refugees to address bureaucratic barriers and minimize the time and costs. For instance, tax calculations could focus solely on the military tax, utilizing average exchange rates and simplified income declarations provided by employers. This would ensure fair and efficient taxation without overburdening displaced individuals.

Ukraine should enhance its collaboration with EU member states to establish efficient information-sharing mechanisms regarding the tax status of refugees. Such cooperation would help prevent cases of double taxation, promote compliance, and support the alignment of tax policies with international standards.

Targeted information campaigns and access to legal assistance are essential to help refugees understand their tax obligations and navigate complex procedures. Educational materials, hotlines, and dedicated online resources should be made available to address common questions and concerns.

Most Ukrainian refugees fail to pay taxes not out of intent but due to the complexity of the process. Simplifying procedures and improving communication between taxpayers and authorities will encourage compliance and foster trust in the tax system.

By implementing these measures, Ukraine can better address the challenges faced by refugees in meeting their tax obligations, while also ensuring equitable and efficient tax administration in the context of international migration and conflict.

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Chapter 9

Measuring Aggressive Tax Planning in the V4 Countries and Recommendations for Ukraine

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9.1. Introduction

According to Lanis and Richardson (2012), tax aggressiveness is an act taken to reduce taxable income through tax planning activities, whereas for Suyanto and Supramono (2012) it is an act of artificially created taxable income (tax base) that is created through tax planning activities. They argued that companies tend to use aggressive tax planning when they are assessed a large tax burden. On the other hand, Lanis and Richardson (2012) consider tax aggressiveness to be socially irresponsible, emphasizing that companies deliberately avoid paying taxes and reducing revenues to the government budget that would be used for community prosperity. Ratmono and Sagala (2015) also supported the authors' assertion and stated that society's actions in minimising tax payments are not in line with real community views and expectations, due to the fact that taxes paid by firms have important implications for the public in terms of financing public goods. In terms of stakeholder theory, tax aggressiveness is an act that benefits only the firm itself and is of no interest to other stakeholders such as the government or society.

The use of double tax treaties (DTTs) in relations with international tax planning and tax havens is mostly associated with two main areas in scientific analyses. In the past, these treaties were mainly associated with the benefits and promotion of foreign direct investment (FDI) and the elimination of economic double taxation. Since from the onset of the last financial crisis, international corporate income tax optimisation (CIT) has also increasingly received attention, particularly in relation to the shifting of profits to jurisdictions with a low or without CIT tax burden. The methods and techniques of taxable profit shifting (profit-shifting methods and techniques) vary, but the methods used and their substance are the same for all sources and authors, regardless of the classification. With regard to this, the European Commission's analyses refer to studies by Ramboll Management Consulting and Corit Advisory (2015) and ZEW (2016), which divide aggressive tax channels into three groups:

1) interest costs (use of debt, e.g. interests and loans),
2) royalties or use of intellectual property,
3) transfer pricing.

Strategic transfer pricing in its essence covers all methods and techniques of transferring taxable profit as it requires compliance with the arm's length principle. Thus, scientific studies are most often devoted to transfer pricing, followed by the use of debt, and the least attention is paid to intellectual property, currently considered to be one of the biggest challenges along with the digital economy.

9.2. Routine Aggressive Tax Planning Arrangements

The application of the selected method or technique of taxable profit shifting (or a combination thereof) depends on a number of assumptions, and among the common basic assumptions for their use is the establishment a foreign corporate (ownership, most often holding) structure. This setup can be at the various ownership levels in the form of either direct or indirect capital linkages.

A direct capital link or the fulfilment of the conditions relating to the possibility of applying the relevant double taxation treaties or the relevant European directives (the Merger Directive, the Interest and Royalties Directive, and the Parent-Subsidiary Directive) is an essential prerequisite for the use of methods and techniques of shifting taxable profits, especially for passive income. The passive income most commonly used in the international tax optimisation process are dividends, interest and royalties. Weyzig (2012) pointed out that many multinationals disperse foreign direct investments (FDI) through conduit (or pass--through) entities with dense and tax-friendly networks of double tax treaties in order to avoid paying withholding taxes in host countries. The use of dense networks of double tax treaties for the purpose of tax optimisation is referred to as tax treaty shopping.

Companies choose jurisdictions and types of companies at different ownership levels not only according to the availability of relevant European directives and double taxation treaties, but also to take into account the business sector, geographical market orientation, cost intensity or the chosen main activity of the parent and subsidiaries within the international holding structure (financing company, company holding licenses or business interests, etc.).

The following figures show the frequently used international holding structures with two ownership levels. In the case of tax optimisation in the home jurisdiction, this is an increase in tax deductible expenses that will reduce the tax base or increase the tax loss. Importantly, the subsequent transfer of profits to another entity (in another jurisdiction – pass-through entity) must be made without withholding tax (or with a low withholding tax). The above-mentioned double tax treaties or selected European directives are used for this exemption. From a pass--through entity, taxable profits are often moved on to a jurisdiction with low or no taxation (a so-called tax haven), most often through an offshore company, but using a trust or foundation. Figure 9.1 illustrates this technique of shifting taxable profits by using debt financing.

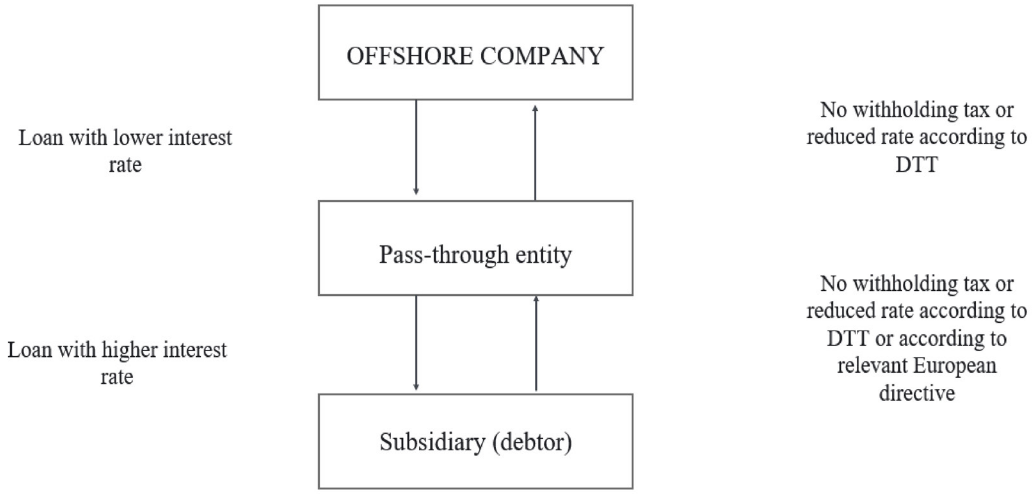

Fig. 9.1. General holding structure model (use of debt)

Source: (Vallaste, 2017).

As already mentioned, the setup of the holding structure depends on several parameters, the key assumption (requirement) includes the possibility of eliminating withholding tax. Thus, it is necessary to consider what legal form of entity and what jurisdiction will be used at each ownership level. Figure 9.2 shows a frequently used holding structure involving an Estonian company as a pass-through entity, and an offshore company based in Belize is used on the top tier (existence of a double tax treaty in force between Estonia and Belize).

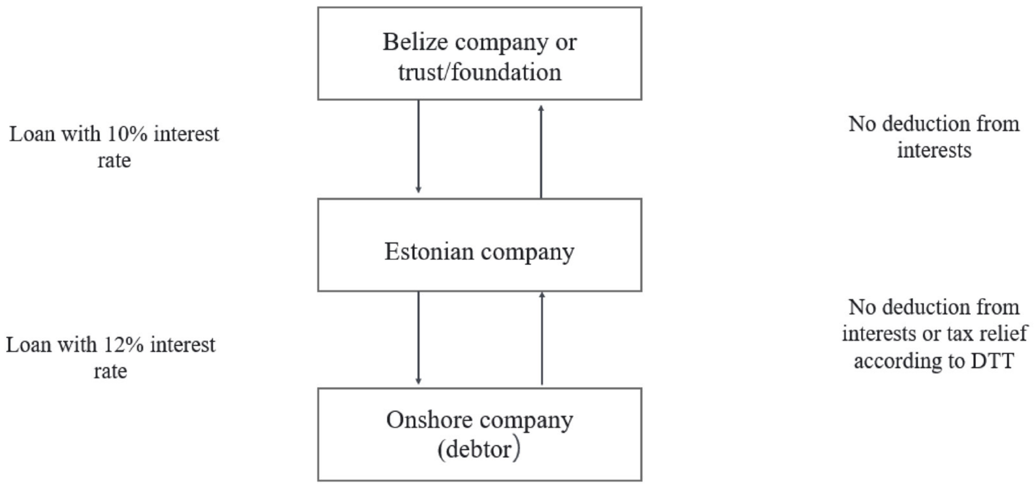

Fig. 9.2. An example of a holding structure (use of debt)

Source: (Vallaste, 2017).

It is important to note that international corporate holding structures are also often used to ensure the anonymity of the ultimate beneficial owner (UBO), as some (mostly offshore jurisdictions) still do not provide publicly available information on the owners of the companies.

9.3. Indicators for Measuring Aggressive Tax Planning

When measuring aggressive tax planning, several authors (Dewi & Cynthia, 2018; Martinez & Ferreira, 2019) often constructed their own models using many tax as well as non-tax indicators. Most of them, however, took the effective tax rate (ETR) or book-tax difference (BDT) as the basis of their models. These basic indicators were then supplemented by other indicators using value added, return on assets (ROA), as well as business size, liquidity, financial leverage and so on. For this reason, some of these indicators should be presented here, and their use and limits characterized as well. Special attention was also paid to debt financing as one of the most important channels of taxable profit shifting (evidence for conditions in the Czech and Slovakia was provided by, among others, Janský and Kokeš (2015, 2016) and Ištok and Kanderová (2019a, 2019b).

9.3.1. General Indicators for Aggressive Tax Planning

Effective tax rate (ETR)

The effective tax rate is a measure that shows the degree of tax aggressiveness through dividing tax expenditures recorded in the financial statements by pre-tax accounting income or cash receipts (Hanlon & Heitzman, 2010). The resulting effective tax rate (hereafter ETR) can be grouped into average ETRs and marginal ETRs. According to Gupta and Newberry (1997), average ETR, which is mostly used by scholars as well as policymakers in tax debates as well as in reforms, is better used for measuring "the distribution of the tax burden across firms or industries, while marginal ETRs are better suited for analysing incentives for new investment".

The scientific literature recognises four basic specific types of ETR: accounting, current, cash and long-term ones. The main difference between these measures is how their ratio is determined.

Accounting ETR

This is based on the ratio of tax expense divided by pre-tax profit (Hanlon & Heitzman, 2010). The accounting ETR is usually compared to the statutory tax rate to determine the extent of tax aggressiveness, i.e. the larger the difference, the more tax-planning (tax aggressive) the company (it behaves more tax aggressively), and thus this difference reflects the difference between book and taxable income (Lee et al., 2015). The numerator is usually reported in the income statement and reflects both current and deferred taxes, which is one of the limitations of accounting ETR. The current tax is the tax expense derived by applying the current tax rate to income (profit) for the year, while deferred tax is that portion of the tax expense that arises because of temporary differences. A temporary difference is the one between the carrying amount of an asset or liability and the tax base of the same asset or liability, which may result in a deferred tax liability. The tax expense in the income statement is usually a combination of tax payable and deferred tax. Therefore, on a numerator basis, the accounting ETR does not show a firm's attempts to engage in tax deferral strategies, usually at management's discretion and policy choice, because deferred tax is included and increases (decreases) current tax expense offset by a corresponding decrease (increase) in deferred tax expense. Similarly, non--tax planning strategies, such as changes in valuation allowances, can affect accounting ETR (Gebhart, 2017).

Current ETR

The indicator is expressed as the tax expense payable for the year divided by the pre-tax result from the financial statements. The basic difference between current and accounting ETR is in the numerator. According to Salihu et al. (2013), Oyeleke et al. (2016) and Gebhart (2017), this provides a rationale for the superiority of current ETR over accounting ETR in the case of showing tax planning strategies. However, Dunbar et al. (2010) noted that the current ETR indicator may understate the extent of a firm's tax aggressiveness if contingencies associated with uncertain tax benefits are embedded in taxable income. In general this means that if taxable income (the denominator) includes benefits that the firm is not certain will be accepted by the tax authorities under a tax audit, the resulting ETR will be lower due to the larger denominator versus a situation where these benefits are not included.

Cash ETR

The accrual concept in accounting allows revenue (expense) to be recognised when it is earned (incurred) rather than when it is received (paid). This creates a problem in both accounting and current ETR because the impact of accruals, such as changes in valuation allowances, affects the numerator and does not measure the actual tax paid per unit of income earned (Lee et al., 2015). This uploads cash ETR and brings it to the forefront as it is derived by dividing the tax paid (found in the cash flow statement) by the accounting income before tax, however it also has shortcomings as pointed out by Salihu et al. (2013). They noted here the mismatch that is created between numerator and denominator, while the numerator is 'cured' of the temporal distinction, the denominator is not, which creates considerable ambiguity. The authors also observed the problem of time consistency ambiguity in cash ETR, as it is possible that the tax paid in cash may relate to different years, since the cash basis deals with the recognition of cash movements in accounting when it is received or used, regardless of the period of origination (Hanlon & Heitzman, 2010). The use of operating cash flows instead of pre-tax accounting income has been proposed to address this problem (Hanlon & Heitzman, 2010; Salihu et al., 2013). Despite several limitations, the authors argued that this indicator is suitable for indicating the degree of tax planning or tax aggressiveness.

Long-term ETR

This indicator was proposed by Dyreng et al. (2008). While all of the above ETR-based measures are calculated annually, long-term ETR is not. As the name implies, this ETR is calculated over a longer period (usually 3 to 10 years) and can be either a long-term accounting ETR or a long-term cash ETR (although the latter is mentioned very little in the literature). The difference between the long-term and the short-term period is that the long--term period is able to cope with the issue of volatility. According to Zeng (2010), long-term ETR is measured as the cumulative tax expenditure over a period of years divided by the pre-tax accounting profit for the same number of years. Its importance, as pointed out by Hanlon and Heitzman (2010), is justified by its ability to cope with annual volatility in ETR. Table 9.1 provides an overview of selected ETR indicators along with information on their calculation.

Table 9.1. Overview of ETR-based indicators

Number	Indicator	Calculation	Relevant studies
1	Accounting ETR	Total tax expenditure/book revenue before tax	Badertscher et al. (2013); Belz et al. (2016); Dunbar et al. (2010); Dyreng et al. (2010); McGuire et al. (2012)
2	Current ETR	Current tax expenditure/pre-tax accounting income	Chen et al. (2016); Dunbar et al. (2010); Gupta & Newberry (1997); Oyeleke et al. (2016)
3	Cash ETR	Cash tax paid/pre-tax accounting income	Badertscher et al. (2013); Dyreng et al. (2010); Dunbar et al. (2010); Gallemore & Labro (2015); McGuire et al. (2012)
4	Long-term ETR	Amount of tax paid in cash for *n* years/book income before tax for *n* years	Dyreng et al. (2008); Dunbar et al. (2010); Salihu et al. (2015); Taylor & Richardson (2012)

Source: based on (Aronmwan & Okafor, 2019).

Book-Tax Difference (BTD)

Another group of indicators used in the literature are book-tax difference based indicators. Firms typically report two measures of income (book income and taxable income – differences arising from discrepancies between accounting and tax systems or records) to different authorities, generated through different rules and principles, which are basically are the fundamental factors of their inconsistency (Comprix et al., 2011).

BTD-based indicators seek to show tax planning activities by comparing the tax paid based on accounting revenues with the tax paid based on taxable income. However, due to the confidential nature of a firm's tax return, taxable income is generated by calculating tax expenditures that are recorded in the financial statements through the statutory tax rate (Lee et al., 2015), and is therefore an estimate of the actual value. Hanlon and Heitzman (2010) define an accounting tax difference as a reporting difference related to the same transaction, but for different purposes (accounting and tax). This is a discrepancy between what is disclosed in the transaction in the books and what is reported to the tax authorities for tax purposes. The discrepancy between the two, according to Salihu et al. (2013), may be due to a number of factors, which can be either tax planning factors or earnings management factors (Gebhart, 2017) that show individual BTD. Some of these are listed further.

Total BTD

Total BTD is the least preferred indicator based on the distorting effects of revenue management and tax planning strategies, since it shows elements of revenue and tax management. However, it is not a depreciation measure, as Dridi and Boubaker (2015) pointed out that tax management cannot be separated from revenue management, as managers may manipulate accounting rather than taxable income to avoid the costs that may be incurred in doing so. To overcome the shortcomings in the use of total BTD, other variants of this indicator, such as temporary BTD or BTD showing the tax effect, were constructed.

Temporary BTD

The temporal difference, which is the basis for this indicator that affects it, is derived by dividing the deferred tax expense by the statutory tax rate (Hanlon & Heitzman, 2010). Comprix et al. (2010) observed that temporary BTD exists when there is a temporal difference in revenue recognition (expenses, respectively) for accounting and tax purposes. Although they believe that this difference could be a direct result of differences in accounting and tax rules, they assumed that temporary BTD may also be affected by management´s powers in the accrual process, and hence their relation to earnings management as well. Lee et al. (2015) agreed with Comprix et al. (2010) and argued that deferral strategies, although they may be aimed at tax avoidance, depend to a large extent on manager discretion in revenue management or tax planning.

BTD with tax-effect

While all of the BTD indicators above take the income effect of BTD into consideration, Tang and Firth (2011) developed an option that indicates the tax effect. Based on their observation, they suggested that derivation of taxable income requires calculating tax expenditures through the statutory rate, which results in estimation problems, and these can be solved if the BTD tax effect is used. Accordingly, the tax effect of BTD is achieved by deducting the tax expense payable from the sum of accounting income and statutory tax. Alternatively, it can be derived from "the sum of multiplying the statutory tax rate by permanent differences and multiplying the statutory tax rate by temporary differences" (Tang & Firth, 2011). In addition to solving the estimation problem associated with calculation, the BTD tax effect is useful for examining firms that are subject to different tax rates (Salihu et al., 2013) and firms that engage in taxable income shifting strategies (Tang & Firth, 2011).

Table 9.2. Overview of BTD-based indicators

Number	Indicator	Calculation	Relevant studies
1	Total BTD	Pre-tax profit minus taxable income (Taxable income is the tax expenditure payable divided by the statutory tax rate)	Dunbar et al. (2010); Kim and Im (2017); McGuire et al. (2012); Taylor and Richardson (2012)
2	Temporary BTD	Deferred tax expense divided by the statutory tax rate	Hanlon and Heitzman (2010); Lee et al. (2015)
3.	BTD with tax-effect	Accounting income multiplied by the statutory tax rate adjusted for current tax expenditures	Tang and Firth (2011)

Source: compiled based on (Aronmwan & Okafor, 2019).

This clearly shows that BTD with a tax effect solves the estimation problem associated with calculation, so it appears to be an appropriate indicator rather than other BTD variants. Table 9.2 provides an overview of the selected BTD indicators together with information on their calculation.

Use of the value-added tax

This is an indicator that takes total tax burden and value-added into consideration while calculating tax planning in a broader context. This approach has been used to measure tax aggressiveness in the countries such as Brazil. Some authors (Martinez, 2017; Motta & Martinez, 2015) stated that it is also important to consider value added tax (VAT) in the analysis, as one can perceive a relationship between tax burden and wealth. The indicator using value-added reporting is based on VAR (value-added reporting) data, which can capture tax aggressiveness in a broader way, in contrast to ETR, which is only measured through the company's profits.

Return on assets (ROA)

Return on assets (ROA) is one of the key indicators for measuring aggressive tax planning and is very often used as a complementary indicator to ETR. Potin et al. (2016) identified a relationship between tax planning and ROA. Their research suggest that aggressive tax planning is associated with low ROA values and it is true that the more tax aggressive companies are, the lower ROA values they exhibit. Khouri et al. (2019) analysed the tax aggressiveness of Slovak companies between 2014 and 2016 with a link to jurisdictions with preferential tax regimes (the so-called tax havens), and in addition to ETR and ROA, the research also used return on equity (ROE), return on sales (ROS) and taxes paid to total assets.

Size of enterprise

This is determined by the size of the assets owned by the company. According to Ardyansah and Zulaikha (2014), the larger the amount of assets owned, the higher the productivity and profit generated by the company, but including the tax burden borne by the company. According to Anita (2015), the size of the company reflects the greater oversight by the tax authorities and this greater oversight makes companies more careful in corporate tax planning, hence the size of the company has an impact on the level of tax aggressiveness. Previous studies suggested that large differences in tax aggressiveness also arise across industries, which is often directly related to the use of different methods and techniques of shifting taxable profits. The functions performed or the position of companies, typologies of business models, etc. (e.g. different types of distributors and manufacturers) also have a significant impact.

Liquidity

According to Tiaras and Wijay (2015), liquidity is the ability of a firm to meet the short-term obligations of the firm. One of the short-term obligations of a company is the payment of taxes. Suyanto and Supramon (2012) stated that companies with high levels of liquidity show that they have good cash flows and are financially sound, therefore should not have a problem paying all their obligations/liabilities, including taxes. In line with this approach, it should be the case that higher levels of liquidity entail lower tax aggressiveness.

Various modifications of these indicators are used to identify and measure aggressive tax planning. In another section of this paper attention is further devoted to debt financing abuses.

9.3.2. General Indicators for Debt Financing

According to Ištok and Kanderová (2019a, 2019b), Slovak companies with links to tax havens report median value of interest expenses per assets ratio higher by 41% (an increase of 75% after the transfer of the registered office). From the debtor's point of view, debt financing primarily refers to tax deductibility of interest costs that reduce the tax base or increase the tax loss. The tax deductibility of interest expense is limited by a number of tests. The debt per assets or per revenues ratio can be used to identify whether debt financing is being misused for tax optimisation.

First and foremost, a rigorous assessment of the transaction is important, i.e. whether the purported loan is really loan or contribution to equity (related to debt capacity). Income tax acts outline the substance (substance over form) and benefit test (an assessment of whether the transaction is relevant to the taxpayer's needs – the transaction has an economic rationale). The associated enterprises[1] must follow the arm's length principle (the prices negotiated and invoiced between associated enterprises must be similar to those negotiated between independent parties under the same or similar terms and conditions). Another important test of the tax deductibility are the thin-capitalization rules, which set the maximum limit of interest expenses (e.g. 30% of tax EBITDA).

Given that most transactions are between related parties, attention is paid to debt capacity analysis and important lending ratios. Key indicators in the area of debt capacity analysis include in particular the leverage ratio, interest cover ratio and debt service cover ratio. Leverage ratio puts in the ratio debt and EBITDA. Interest cover ratio is calculated as EBITDA divided by interest expenses. Debt service cover ratio is a modification of interest cover ratio where in the denominator principal, a repayment is added to interest expenses. Other relevant indicators include debt to equity ratio, debt to enterprise value and loan to value (LTV) or loan to costs (LTC) (Androrfer et al., 2023).

9.4. Measures Tackling Aggressive Tax Planning

With regard to identifying channels of taxable profit shifting and measuring the aggressiveness of tax planning, it should be taken into account that individual optimisation schemes change over time, primarily in response to measures taken either at the level of individual states (e.g. the already mentioned tests or limits of tax deductibility of expenses as outlined by an income tax act) or groups of states (e.g. at OECD level). Among the major projects in this area is clearly the Base Erosion and Profit Shifting (BEPS) project, which was initiated and officially introduced by the OECD and the G20 in 2015 to combat aggressive tax optimisation with a focus on shifting profits to tax havens. The project introduced 15 action points, hence 2015 is considered a significant milestone in the field of international tax planning.

In the fight against aggressive tax planning, the availability of information and data is paramount. Some of the information and data entering into risk analyses is available mainly from company accounts and public sources (registers). Often key information from tax returns is not publicly available due to tax secrecy, but the information available under the Tax Information Exchange Agreements (TIEAs) tool is gradually starting to play a key role (in terms of risk analysis and subsequent tax audits). Ištok and Taušová (2021) confirmed that the automatic exchange of tax and banking information has a significant impact on the setup of international holding (ownership structures) used by Slovak companies. Table 9.3 contains an overview of individual DAC directives and their characteristics.

[1] Participation in management, control or capital (at least 25% in share capital).

Table 9.3. Overview of DAC directives

Legal framework	Exchange content	Data/information (categories)
Directive DAC 1 2011/16/EU	Income and expenditure	Royalties, pensions, life insurance, real estate, and dependent activities
Directive DAC 2 CRS + FATCA 2014/107/EU	Financial accounts	Residence, account holder, account balances and turnovers
Directive DAC 3 2015/2376/EU	Transfer pricing opinions	Transfer pricing opinions, advance pricing agreements and methods
Directive DAC 4 (CbCR) 2016/881/EU	Multinational enterprise groups	Group members by country, main activities, revenues, profits
Directive DAC 6 2018/822/EU	Cross-border tax planning arrangements	Value of cross-border arrangement, involved parties, measure description
Directive DAC 7 2021/514/EU	Income in digital area	Information about sellers provided by digital platforms: rental of immoveable property, provision of personal services, sale of goods and rental of any mode of transport
Directive DAC 8 2023/2226/EU	Crypto-assets and e-money, taxation of wealthy individuals	Information about crypto-assets, the exchange of cross-border binding opinions regarding wealthy natural persons, as well as provisions on the automatic exchange of information on non-management dividends and similar income

Source: (Financial Administration of the Slovak Republic, 2020) and own addition.

In relation to double taxation treaties, it is important to note that the use of provisions (benefits) is not automatic and basic requirements must be met, in particular the tax residency of the company. Some double taxation treaties (e.g. USA) contain separate anti-abuse clauses: LOB – Limitations on benefits. The abuse of double tax treaties is also addressed in Article 6 (Prevention of tax treaty abuse) of the BEPS programme.

9.5. Recommendations for Ukraine

Recognising the possibilities and current schemes/trends of taxable profit shifting from the taxpayers' perspective is important in identifying and quantifying taxable profit shifting. For this reason, attention was paid to the Ukrainian network of signed and valid double taxation treaties and possible alternatives (combinations) of using different jurisdictions at the first and second ownership levels were evaluated. Primarily, the choice of the first ownership level was inspired by previous research in the Czech and Slovak Republics (Ištok & Kanderová, 2019a; Janský & Kokeš, 2015, 2016). Given that Ukraine is not a member of the European Union, it is necessary to use the currently valid double taxation treaties to eliminate withholding taxes. Figures 9.3 and 9.4 present alternatives for the use of international holding structures for debt financing and license fees (intellectual property).

In addition to withholding tax rates, it is also necessary to analyse the agreed method of eliminating double taxation in the relevant treaties (the method of credit or exemption). The United Kingdom is among the jurisdictions with the densest network of double taxation treaties. In September 2024 it had more than 150 signed and in force (HM Revenue & Customs, 2024). Table 9.5 presents the taxation of selected passive income according to the relevant double tax treaties.

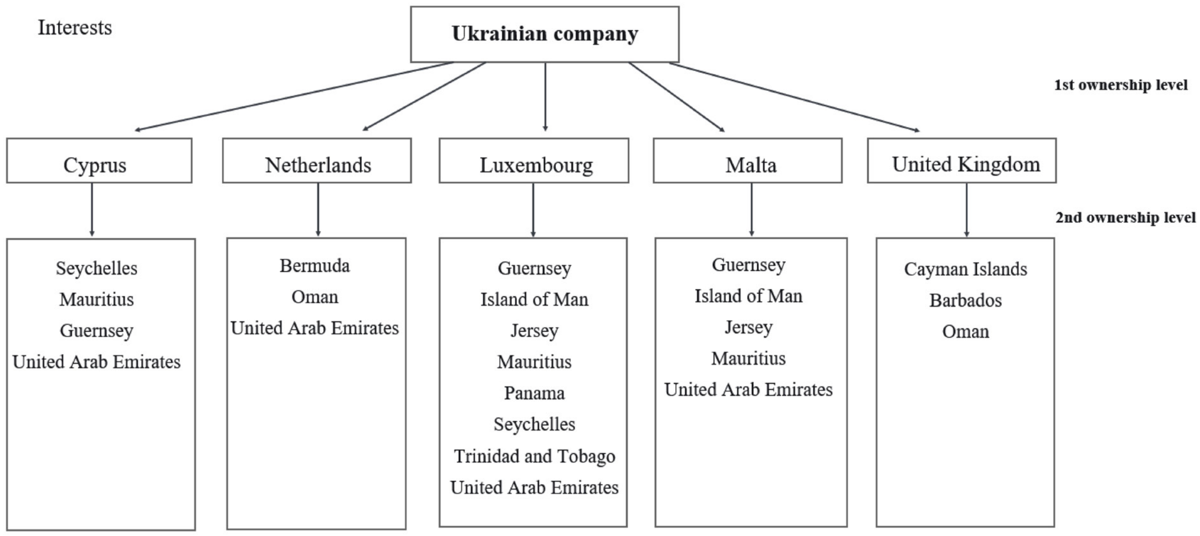

Fig. 9.3. Possibilities for transferring interest from a Ukrainian company

Source: compiled based on (Ministry of Finance of Ukraine, 2024).

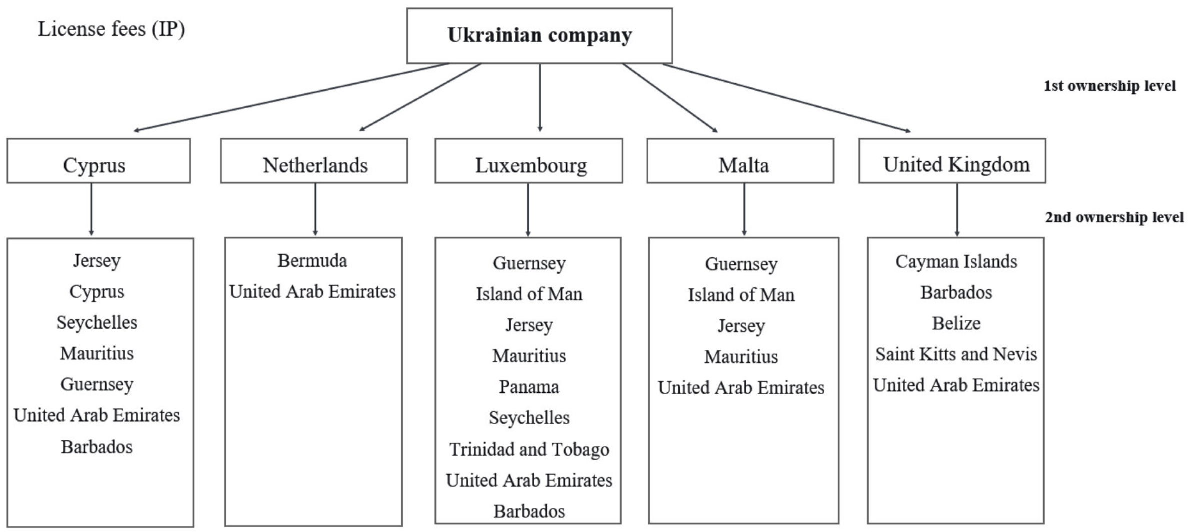

Fig. 9.4. Possibilities for transferring royalties from a Ukrainian company

Source: compiled based on (Ministry of Finance of Ukraine, 2024).

Table 9.5. Tax rates agreed in double tax treaties between Great Britain and selected offshore jurisdictions

Offshore jurisdiction	Date of validity	Withholding tax (%)		
		Dividends	Interests	License fees
Belize	1.08.2011	15	20	0
British Virgin Islands	12.04.2010	0	20	20
Cayman Islands	20.12.2010	–	–	–
Gibraltar	15.10.2019	0	0/20	0/20
Guernsey	7.01.2019	0	0/20	0/20
Isle of Man	19.12.2018	0	0/20	0/20
Jersey	19.12.2018	0	0/20	0/20
Mauritius	13.07.2018	10/15	20	15

Panama	12.12.2013	0/15	0/	5
Saint Kitts and Nevis	28.01.1948	0	20	0
Barbados	1.01.2013	0	0	0
Fiji	27.08.1976	0	10	0/15
Oman	9.11.1998	0/15	0	8
Trinidad and Tobago	22.12.1983	10	5	0/10
United Arab Emirates	25.12.2016	0/15	0/20	0

Source: based on (HM Revenue & Customs, 2024).

This chapter focuses on the tax optimization of passive income. When identifying aggressive tax planning, it is also necessary to focus on active income, especially income flowing through a permanent establishment (OECD, 2019, Art. 5).

9.6. Conclusions

The article provides only an overview and brief description of the indicators and approaches most commonly used to identify and measure tax aggressiveness in the area of direct corporate taxation. When measuring, analysing, and evaluating tax aggressiveness, the differences between jurisdictions must be taken into account. These differences arise in the area of accounting, but mainly in the setting of domestic tax laws (income tax laws) and 'activities' in the area of international taxation. These activities are reflected, for example, in the density of networks of double taxation treaties or the involvement and access to automatic exchange of tax and banking information. In addition to identifying aggressive tax behaviour itself, it is probably even more important to identify the channels used to transfer taxable profit (often to the aforementioned tax havens). Depending on the methods and techniques used, selected indicators are then used. The three basic channels of transfer of taxable profit according to professional and scientific literature include the use of debt, intangible assets and transfer pricing. Transfer pricing itself is referred to as the basic/superior channel of transfer of profit, because the principle of market distance between related parties in controlled transactions must be observed equally for goods and services (including loans/interest, royalties, etc.). The Financial Administration of the Slovak Republic has previously published selected indicators that serve to identify risky tax entities. These indicators, in addition to those mentioned in this article, also include transactions with related parties in jurisdictions with preferential tax regimes, corporate restructurings, transfers of intangible assets, selected types of payments, adverse financial results (e.g. with respect to the industry), such as long-term losses or excessive debt. International holding companies are often used to shift taxable profits, which can benefit from relevant European directives or double taxation treaties. Measuring the aggressive use of debt in international tax planning is one of the most researched areas to date, and several studies include several modifications of indicators that can also be used in Ukrainian conditions. This chapter also includes combinations of jurisdictions that can be used to shift taxable profits from Ukraine to tax havens, primarily by using the currently valid network of double taxation treaties.

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Afterword

The monograph offers an in-depth exploration of key financial integrity challenges and the opportunities presented by emerging technologies and policy innovations. It outlines the critical role of blockchain in anti-money laundering (AML), the indicators of tax aggressiveness, the effectiveness of compliance with FATF standards, and the urgent need to reform tax security systems in Ukraine. Additionally, it discusses VAT fraud prevention, refugee taxation challenges, and the global fight against international tax aggressiveness. The monograph highlights the importance of future research and international collaboration to address these multifaceted issues effectively.

Blockchain technology has transformative potential for combating financial crimes such as money laundering. Its ability to ensure transparency and traceability can significantly enhance AML efforts, however its widespread adoption faces barriers, including a lack of harmonized regulations, limited international cooperation, and insufficient investment in advanced analytics. Unlocking blockchain's potential requires a unified approach across jurisdictions and increased focus on its practical applications, particularly in real-time transaction monitoring and automated compliance processes.

Addressing corporate tax evasion necessitates identifying and measuring tax aggressiveness. Profit-shifting mechanisms, such as transfer pricing and the misuse of debt, require targeted policies and rigorous enforcement. Comparative studies across jurisdictions could provide valuable insights into the effectiveness of existing measures. Such analyses can help policymakers refine strategies to curb aggressive tax practices and promote fiscal equity.

Despite efforts to align with the Financial Action Task Force (FATF) standards, significant gaps remain in the implementation and effectiveness of AML measures. Technical compliance alone is insufficient; innovative approaches are needed to enhance enforcement and accountability. Peer-reviewed evaluations and collaborative efforts among nations could play a pivotal role in fostering a culture of continuous improvement in AML initiatives.

Ukraine's tax security landscape reveals critical inefficiencies that undermine fiscal stability and economic growth. Systemic reforms are urgently needed to address these challenges. Future research should focus on assessing the long-term impacts of proposed reforms on economic resilience, equity, and growth. Such studies would provide policymakers with actionable insights to design sustainable tax systems.

VAT carousel fraud remains a persistent issue, causing significant revenue losses. Strengthened preventive measures and enhanced international collaboration are crucial to curbing this form of tax evasion. The integration of AI-driven analytics and blockchain technology is promising in terms of detecting and preventing fraud. Exploring the potential of these technologies could lead to more robust and cost-effective solutions.

Ukrainian refugees face unique challenges in fulfilling their tax obligations, highlighting the need for innovative solutions to simplify taxation for displaced individuals. Research into best practices for digitalizing tax systems and creating refugee-friendly tax policies could guide global efforts to address similar crises. Ensuring equitable treatment and accessibility in tax systems is essential for fostering financial inclusion and stability.

The exploitation of international tax laws and treaties for profit-shifting purposes underlines the need for a unified global response. Multilateral agreements and coordinated policy measures are critical in curbing aggressive tax practices. Future research should focus on the effectiveness of these agreements and explore strategies to promote fiscal equity across nations.

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