Visegrad Fund

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Knowledge and Digitalisation
Against Corruption and Fraud

edited by
Piotr Luty, Nataliia Versal, Pavel Semerád

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Reviewer
Marek Masztalerz

Copyediting
Elżbieta Macauley, Tim Macauley, Agnieszka Flasińska

Proofreading
Marcin Orszulak

Typesetting
Małgorzata Myszkowska

Cover design
Beata Dębska

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Foreword

It is with great pleasure that we present the first of three monographs describing the research results on combating corruption and fraud. Combating corruption begins with awareness of the problem. Sharing the knowledge of the Visegrad Group countries and Ukraine in counteracting corrupt behaviour has a significant cognitive and educational aspect. Additionally, the inclusion of technological tools allows for reducing the negative consequences of such behaviour.

In the first chapter, the study focuses on trends in corruption indices in Ukraine and the Czech Republic and assesses policy responses to corruption. The results indicate positive trends in both nations. Over the last decade (2012-2022), the Corruption Perception Index (CPI) improved from 26 to 33 in Ukraine and 49 to 56 in the Czech Republic. However, Ukraine's CPI score remains considerably lower, with the gap unchanged at 23 points compared to the Czech Republic, suggesting that the Czech Republic is generally more effective in fighting corruption. Nonetheless, according to the Corruption Forecast, Ukraine has made substantial progress in reducing corruption opportunities, mainly through implementing digital platforms like Diia and Prozorro, which have digitised a vast array of public services and enhanced budget transparency. In conclusion, both countries demonstrate notable improvements through institutional and legislative changes aimed at tightening measures against corruption.

The chapter describes digital transformation in combating welfare fraud, however, the author's experience with digital surveillance has not been so far encouraging. The most advanced countries in this regard, the Netherlands and Austria, have suffered spectacular failures in recent years. The author presents the cases of these countries, providing the basis for a discussion of the main problems with the use of modern technology in the fight against irregularities.

The third chapter covers an important issue related to compliance with the principles of transparency in the public procurement process. The authors analysed the state of legal regulations in European countries, emphasising recommendations for Ukraine.

The fourth chapter deals with fighting the shadow economy by introducing new forms of employment. Global labour market changes, globalisation, and consequences of the pandemic created space for the evolution of forms of employment. New employment approaches are becoming a widespread phenomenon. Thus, the primary purpose of this investigation was to highlight the main non-standard forms of employment and to create recommendations for fighting the shadow economy in Ukraine, which needs to fulfil a set of tasks. First, the pros and cons of each non-standard employment form were generalised. Some can be considered applicable for all forms, but some were form-specific. Next, recommendations on how to fight the shadow economy in Ukraine were suggested. The advantages and disadvantages can be both general and form-specific. For Ukraine, the best solution for now, will be stimulating the creation of sole proprietors and, if applicable, transforming them into gig specialists (only for the IT sphere and Diia residents).

The fifth chapter examines the development of payment systems in Eastern Europe over the last decade and the opportunity for further improvement through adopting new digital payment technologies, including potentially introducing central bank digital currency. It compares the experience of six Eastern European countries that have joined the European Union (including

all countries of the V4 Group) with three post-soviet countries (including Ukraine) that remain outside the European Union. It documents the development of non-cash payments, and identifies barriers to developing non-cash payments in Eastern Europe, seeking to explain the differences between these countries. Finally, it assesses the influence of fintech startups, cryptocurrencies and blockchain technologies on the recent and future development of non--cash payments in Eastern Europe, where the opportunities for the development of e-money are limited. The insignificant development of e-money and the fact that there is no growth in the volume of payments with the help of e-money is associated with the comprehensive development and deep penetration of card payment systems, mobile banks, and fintech startups based on payment cards in all areas.

The sixth chapter deals with electronic evidence of sales in the Czech Republic. Combating tax fraud is a long-standing and essential objective of the financial administration. If this were not the case, and the authority abandoned meeting this requirement, it could destabilise and irreversibly damage the entire entrepreneurial environment. Furthermore, the electronic records of the sales system could have been used to re-distribute shared taxes more fairly, allowing residents to request a proper tax receipt, as it would automatically mean that a portion of the entrepreneur's final tax would be re-distributed to their municipality as per ratio. This bonding within communities could help motivate proper sales reporting. Instead, the electronic records of the sales system became a political issue that helped the current government win the elections, even though digital information exchange between entrepreneurs and government is a natural part of business life in most EU countries. What the Czech government did was an unfortunate step against this trend.

The last, seventh chapter analyses the instruments implemented in Poland to minimise the VAT gap. The hypothesis proposed in this chapter concerns the synergy effects of actions in the legislative issue and the actual approach of the national tax authorities initiating tax validation procedures. The chapter uses materials published by the Polish Ministry of Finance, Polish Supreme Audit Office (NIK), International Monetary Fund and European Commission together with CASE, as well as data obtained as a result of a request on 16 December 2023 to the Minister of Finance under the provisions of the Access to Public Information Act.

Chapter 1

Fight Against Corruption in the Czech Republic and Ukraine

Veronika Solilova

Associate Professor, Prague University of Economics and Business
ORCID: 0000-0002-9122-539X

Nataliia Versal

Associate Professor, Taras Shevchenko National University of Kyiv
ORCID: 0000-0002-8801-6351

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1.1. Introduction

Ukraine and the Czech Republic share a particular common past: the Ukrainian Soviet Socialist Republic and the Czechoslovak Socialist Republic, respectively. Ukraine gained independence in 1991, while Czechoslovakia did so in 1990, splitting into the Czech Republic and Slovakia in 1993. This shared 'socialist' past has significantly influenced Ukraine and the Czech Republic. However, unlike Ukraine, the Czech Republic has successfully overcome this legacy.

While the Czech Republic became increasingly economically developed, established a rule-of--law state free from oligarchic dominance, and achieved the status of a developed economy, Ukraine remained a developing country plagued by powerful oligarchic clans and weak legislative, judicial, and executive bodies. According to World Bank data, in terms of GDP *per capita* PPP, for Ukraine this value in 1993 was 5784.657 USD, reaching 12675.44 USD in 2022, whilst for the Czech Republic it was 12124.34 USD and 49194.96 USD, respectively. Over 30 years, Ukraine reached the economic level the Czech Republic had at the start of its independence. Ukraine's limited economic growth is partly attributed to corruption (International Monetary Fund, 2017), which has infiltrated almost all spheres of society.

As a result, Ukraine embarked on a challenging journey to combat corruption. Since 2017, there have been four waves of surveys on corruption perception among individuals and businesses. The latest wave (2022) indicated a slight positive trend. As perceived by the respondents, the corruption prevalence index was 4.49 points (out of a maximum of 5) in 2017 and 4.25 in 2022; for businesses, it was 4.52 and 3.98, respectively. Delving deeper, experience of corruption was reported in areas such as law enforcement activities (32.7% in 2022 versus

50.1% in 2021), services related to electricity, gas, water supply, and sewage (28.7% and 28.8%), higher education institutions (25.7% and 38.4%), public and municipal healthcare (24.8% and 39.4%), relations in construction and use of land (23.9% and 45.3%), education services (kindergartens) (15.5% and 33.3%), and primary and secondary education services (13.0% and 33.5%). From these data, two things are evident: corruption remains high, but there is progress in the fight against it (InfoSapiens, 2022).

As regards the Czech Republic, based on the latest research (Bašna et al., 2023), the general perception of corruption was around 11% and has a positive trend (improved during the last decade). A similar result was presented by the Global Corruption Barometer (Kukutschka, 2021), however the perception of the corruption in individual sectors was different, and was mainly affected by the corruption scandals. For example, in the health sector the corruption prevalence index is 10% based on the Global Corruption Barometer (hereinafter GCB) and 6% based on the Eurobarometer (European Commission, 2023), although the perception of corruption in this sector was, according to Bašna et al. (2023), more widespread than a decade ago, when respondents very often met with the offer of the trip to luxury hotels in exotic destinations. Another area was sports sector, considered very corrupt (Transparency International, 2016). However, the current research highlights the fact that the perception of corruption was lower in the Czech Republic, even though there were more forms of corruption than in the last decade. For example, bribing coaches by parents, influencing match results, and the abuse of subsidies are more widespread, and according to the respondents, range between 6 and 8% (Bašna et al., 2023). In education, according to the Eurobarometer, the corruption index was 15% (European Commission, 2023), 6% based on the GCB (Kukutschka, 2021), and according to Bašna et al. (2023), this sector was considered not to be so corrupt and the corruption was generally less widespread. However, corruption was rife in public procurement and building/planning procedures sectors. Based on the CEEC Research (2009) and Lidovky.cz (2017), more than 40% of the respondents were asked to give bribes as a condition for receiving the tender (public procurement) in the Czech Republic. Moreover, based on the Eurobarometer data, this kind of corruption is now more widespread, and its index is at the 21% level. According to Bašna et al. (2023), more than 10% of the respondents considered such corruption as generally widespread and common, and more than 50% thought that the conditions of the tender procurement were set with the particular applicant/bidder in mind. According to Transparency International (2023), the Czech Republic was ranked for the purpose of corruption as 41st out of 180 countries, with a score of 57 points out of 100 (i.e., 16th in the European Union); the worst position was noted for Italy, Slovenia, Slovakia, Poland, Croatia, and other Balkan countries. Thus, similarly, as in the case of Ukraine, corruption is still significant in the Czech Republic.

Therefore, this study aimed to explore the specific features of corruption in Ukraine and the Czech Republic, as well as the anti-corruption measures being implemented to combat it.

1.2. Corruption: Meaning, Types, Measures

Before delving into the specifics of combating corruption, it is essential to understand what exactly is meant by it. Here, one immediately encounters a problem: corruption has many faces, and importantly, it has not always been viewed as evil in the past. Even today, it is not always seen as such, and can be tolerated by society. In certain cultures what might be deemed corrupt practices, such as the necessity of giving gifts, are considered normal due to cultural nuances. One book on corruption begins with this premise:

> the darker aspect of political trade, that is, the realm of corruption, whose history is as long and twisted as that of mankind's attempt to live by the rule of law. Variously tolerated or fought, depending on time and place, the very definition of corruption has shifted frequently, as practitioners of corruption have encountered the ideas, laws, and customs of different peoples (Brioschi, 2017, p. 1).

Perhaps one of the shortest definitions of corruption is found in Dante's *Commedia Divina*: "Describing the city of Lucca, Dante provides the single most succinct definition of a bribe: Lucca is where No becomes Yes for money" (Noonan, 1987, p. 746). Such a scenario is possible in any sphere. This can be applied to any association of people, whether at state level or within corporations. This is why the OECD, in its document (*Corruption: A Glossary of International Standards in Criminal Law*), does not provide a definition of corruption but rather "establishes the offences for a range of corrupt behavior" (OECD, 2008, p. 19). However, for the purposes of "anti-corruption strategies, action plans, and corruption prevention measures," it is proposed to consider corruption as "abuse of public or private office for personal gain" (OECD, 2008, p. 19). According to the European Commission (2023), corruption is the abuse of power for private gain, which can take many forms, such as bribes, influence peddling, and abuse of office, but it can also be hidden behind nepotism, conflicts of interest, 'revolving doors' between the public and private sectors. Given the study's objective – comparing anti-corruption measures in Ukraine and the Czech Republic, and considering the significant differences between these countries, it is within this context that the authors examined corruption.

Corruption is manifested in numerous forms, and it is challenging to compile an exhaustive list of all of them. This analysis relied on the typology proposed by Andersen, which includes bribery, embezzlement, nepotism, extortion, 'kickbacks', money laundering, fraud, and conflicts of interest (Andersen, 2023). Table 1.1 provides case studies of corruption in Ukraine and the Czech Republic, encompassing one or multiple types of corruption.

Thus, corruption is a multifaceted phenomenon, complicating the evaluation of its level. This is why various methodologies exist to measure corruption.

Table 1.1. Case studies of corruption in Ukraine and the Czech Republic

Type of corruption	Ukraine	The Czech Republic
Bribery	A deputy of the Kyiv City Council, who also headed the city improvement commission, was involved in organizing a corrupt scheme designed to obtain illicit benefits from entrepreneurs seeking permission to place seasonal mobile kiosks. Specifically, negotiations covered seven locations in different districts of Kyiv in 2021, with an agreement to illicitly obtain a total of UAH 1.39 million (approximately USD 50 thousand), payable in two separate instalments. The investigation into this case was officially completed on 17 June 2022.	NCOZ officers charged 7 individuals and 2 legal entities with the offences of arranging advantage in commissioning public contract, public contest and public auction, machinations in the commission of public contract and public contest and fraud. The case concerned the manipulation of tenders for the provision of the substitute bus transportation in the course of scheduled rail closures announced by the Czech Railways.
Kickbacks		On 14 June 2022, NCOZ police officers conducted an action day in the STOKA II case. From at least January 2014 to March 2019, the accused persons influenced small-scale contracts on repairs and maintenance of the real estate premises of one state institution located in the South Moravian Region and the Vysočina Region and one legal entity with a seat in Brno. A certain percentage of the prices of the contracts was meant for bribes. NCOZ police officers came to the conclusion that dozens of contracts were influenced in this way.

Embezzlement	In October 2014, VAB Bank, identified as 'troubled', asked for a stabilisation loan from the National Bank of Ukraine, using real estate as collateral. The National Bank of Ukraine approved a two-year stabilisation loan of UAH 1.2 billion (approximately USD 92 million) to VAB Bank. Subsequent investigations revealed that the provided valuation reports contained misleading information, wherein the value of the real estate was exaggerated almost 25 times. VAB Bank, however, failed to repay this loan at the end of the stipulated period.	On 16 and 17 May 2022 NCOZ carried out a police operation related to the manipulation of tenders awarded by the Radioactive Waste Repository Authority as the contracting authority. At present, 6 individuals and 3 legal entities are being prosecuted for the offence of arranging advantage in commission of public contract, public contest and public auction. The individuals are reasonably suspected of organised crime comprising the manipulation of two tenders of this particular contracting authority between 2021 and 2022. On 8 June 2022 NCOZ officers filed a motion for indictment to the State Prosecutor of the High Public Prosecutor's Office in Prague against 21 natural persons and 1 legal entity for the offence of influencing football matches results in the Czech Football League and Fortuna: National League and further for unauthorised withdrawal of funds from Pilsen's Regional Football Association.
Conflicts of interest	In the autumn of 2016, the head of the National Police Department, leveraging his official position, initiated a deal to purchase equipment and specialist uniforms from an acquaintance who was a private entrepreneur. The specifications of these items were set in such a way as to avoid competition. As a result, the National Police paid UAH 3 million, out of which the private entrepreneur transferred UAH 980 thousand (approximately USD 38 thousand) as payment for legal services to a company, the beneficiary of which was that head of the department.	The 2013 Czech political corruption scandal involved an anti-corruption raid, launched by the organised crime unit. It resulted in the arrest of the prime minister's Chief of Staff, Jana Nagyová, and seven others. Jana Nečasová (Nagyová) was being investigated on suspicion of corruption. In exchange for luxury gifts, she was supposed to give the donors access to Prime Minister Nečas or provide them with other benefits. Due to lack of evidence, she was only charged with tax evasion. Another part of the case concerns the misuse of the Military Intelligence Service to monitor the former wife of Prime Minister Nečas in 2012.
Money laundering	The State Investment Company, managed by Derzhinvestproekt, received funding in 2012-2014 for the implementation of national projects "Quality Water" and "Olympic Hope-2022". Later investigations revealed that over UAH 250 million (approximately USD 31 million) had been transferred to the accounts of foreign companies based in Cyprus. It was discovered that the brother of the former head of "Derzhinvestproekt" used this money to acquire shares in Ukrainian companies that, between 2013 and 2015, purchased over 700 land plots (approximately 1000 hectares) from Ukrainian citizens.	NCOZ officers finalised their investigation of a case of tax evasion and money laundering totalling approximately CZK 700 million. Within the OCTAVIAN case, 11 persons were prosecuted. The defendants committed the crimes from September 2009 until April 2012 by submitting excessive VAT deductions within the companies they controlled. NCOZ officers managed to seize assets corresponding to the full amount of losses suffered by the Czech Republic as a replacement. The case was pursued by the Tax Cobra team in close cooperation with Czech FIU (FAÚ).
Fraud		In the Panama Papers case, many Czech citizens were involved, particularly regarding foreign investments in the Czech real-estate sector for the purpose of obscuring the real ultimate beneficiaries of wealth (for further detail see Holcova, 2016). The motion to indict 66 persons of ČKD Praha DIZ for VAT evasion dated 7 Jan2022: NCOZ officers filed an indictment motion against 32 persons for the offence of tax evasion committed for the benefit of an organised criminal group or participation in the form of aiding this crime. The suspects are believed to have included fake invoices related to fictitious taxable transactions into the ČKD Praha DIZ accounts, or have intended to do so. The VAT loss caused by their concerted action to the state budget totalled approximately CZK 438 million.

Source: (Dufková & Kotouček-Mikolášková, 2018; Holcova, 2016; NABU, 2021, 2022, 2023; NCOZ, 2022).

Firstly, the study considered the **Corruption Perception Index** (CPI) proposed by Transparency International. This index is represented by the CPI Score (from zero to a maximum of 100 points: the higher the rate, the better the situation) and the CPI Rank, where a higher rank correlates with a greater level of corruption. The CPI Score is calculated as the average value of data from 12 different sources, reflecting experts' perception of the level of corruption in the public sector (Transparency International, 2023).

The CPI trends for Ukraine and the Czech Republic over the past decade, as illustrated in Figure 1.1, reveal a significantly higher corruption level in Ukraine compared to the Czech Republic. Despite the observed improvements in both countries, their disparity remains substantial (on average 25 points in CPI Score). This is the case even with Ukraine's considerable efforts to combat corruption.

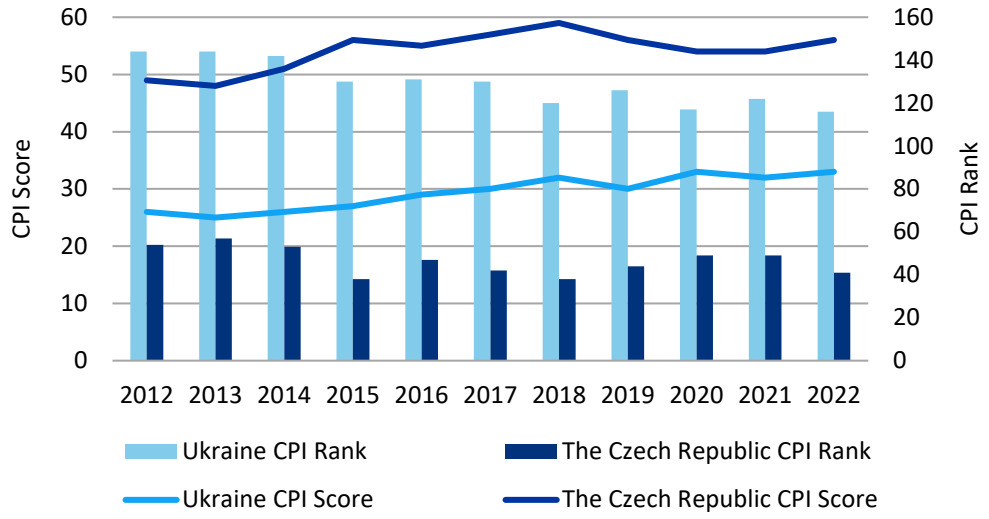

Fig. 1.1. CPI Score and Rank of Ukraine and the Czech Republic in 2012-2022

Source: (Transparency International, 2023).

The second one is the **Index of Control of Corruption** proposed by the World Bank, and it

> captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately –2.5 to 2.5 (World Bank, 2023).

The lower the index, the higher the corruption. According to Figure 1.2, an upward trend of this index was observed in both countries, which is positive, however the average rate of change in Ukraine is higher than in the Czech Republic. The authors emphasise once again that the efforts made by Ukraine in the fight against corruption are extraordinary, nevertheless, the pervasive nature of corruption and its level there hinders rapid progress in overcoming this issue.

One limitation of the previously mentioned indices is their reliance on expert subjective evaluations. To address this, a novel methodology for index construction has been developed by Mungiu-Pippidi & Dadašov (2016) at the European Research Center for Anti-Corruption and State-Building. This new approach incorporates the evaluation of causes of corruption, thereby enabling forecasts of its future levels, hence the third methodology considers the evaluation of

two indices. The first is the **Index of Public Integrity** with a maximum score of 10, comprising two components: *Opportunities for Corruption* and *Constraints on Corruption*. The second is the **Transparency Index**, which has a maximum score of 20. A more in-depth analysis of corruption allows to identify areas where each country is making significant progress in combating it.

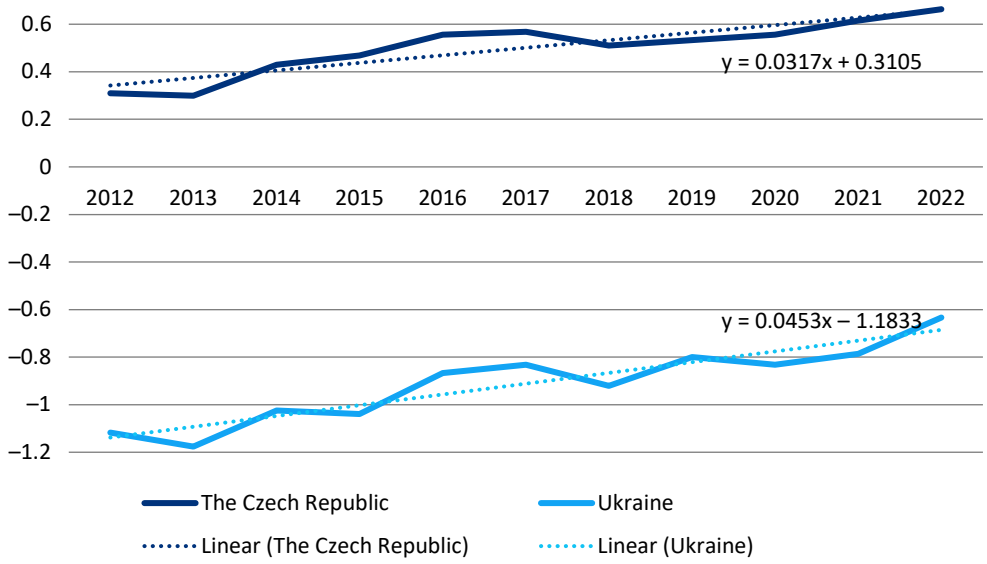

Fig. 1.2. Index of control of corruption of Ukraine and the Czech Republic in 2012-2022

Source: own elaboration based on (World Bank, 2023).

For instance, Ukraine has shown a notable positive trend in the dynamics of Online Services and E-Citizenship, advancing by +3.51 points, in contrast to the Czech Republic's improvement in Online Services (+1.14) and E-Citizenship (+0.96) (Table 1.2). However, Ukraine significantly lags behind in crucial areas like Judicial Independence, despite efforts to reform this sector. Overall, consistent with previous indices, the Czech Republic demonstrates better outcomes in the fight against corruption.

Table 1.2. Ukraine's and the Czech Republic's corruption forecast

Indicators	Max	2013		2023		Change	
		Ukraine	The Czech Republic	Ukraine	The Czech Republic	Ukraine	The Czech Republic
Opportunities for corruption							
Budget Transparency	10	7.42	8.08	8.4	8.6	0.98	0.52
Online Services	10	4.82	5.88	8.33	7.02	3.51	1.14
Constraints on corruption							
Judicial Independence	10	3.27	5.02	4.08	6.59	0.81	1.57
Press Freedom	10	6.69	9.08	6.51	8.52	–0.18	–0.56
E–Citizenship	10	4.82	5.56	8.33	6.52	3.51	0.96
Index of Public Integrity	10	–	–	6.37	8.14	–	–
Transparency Index	20	–	–	14.0	15.5	–	–

Source: (Corruptionrisk.org, 2023).

1.3. Policy Response

1.3.1. Ukraine

Legislation and anti-corruption bodies

The fight against corruption in Ukraine is accompanied by the adoption of relevant legal acts, notably: the Law of Ukraine on Prevention of Corruption dated 2014, the Law of Ukraine on National Anti-Corruption Policy of Ukraine for 2021-2025 dated 2022, and the 2023 Cabinet of Ministers of Ukraine resolution on the approval of the National Anti-Corruption Programme for 2023-2025.

The law on Prevention of Corruption established the National Agency on Corruption Prevention (NACP), which is "a central executive body with a special status responsible for the development of anti-corruption policy and prevention of corruption" (NACP, 2023). It develops Anti--Corruption Strategy and State Programme, and administers: the Unified State Register of Declarations of Persons Authorized to Perform the Functions of the State or Local Government; the Unified State Register of Persons that Committed Corruption or Corruption-Related Offences; the Unified State Register of Financial Reports of Political Parties.

One more important institution is the National Anti-Corruption Bureau of Ukraine (NABU), with the main task "to combat corruption and other criminal offences committed by top officials, which pose a threat to the national security of Ukraine, as well as to take other anticorruption measures under the Law" with the slogan "Eradicate and Prevent!" (NABU, 2023).

Also created were the High Anti-Corruption Court (HACC) and Asset Recovery and Management Agency (ARMA), each of which has its own area of responsibility.

Despite the creation of specialised anti-corruption institutions, all levels of Ukrainian government are engaged in anti-corruption efforts. Table 1.3 illustrates how the public and business sectors perceive the effectiveness of these efforts. Noted that businesses tend to be more informed about the activities of these anti-corruption bodies than the general population.

Table 1.3. Assessment by the individuals and business of the effectiveness of anti-corruption efforts by government agencies 2021-2022

Institution	Individuals		Business	
	2021	2022	2021	2022
President of Ukraine / Office of the President of Ukraine	1.92	2.9	2.28	2.98
Security Service of Ukraine (SSU)	1.91	2.58	2.44	2.82
Local authorities	1.8	2.39	2.34	2.45
National Police of Ukraine	1.8	2.37	2.45	2.67
State Financial Monitoring Service of Ukraine	1.87	2.36	2.51	2.7
Regional authorities	1.79	2.35	2.3	2.39
Asset Recovery and Management Agency (ARMA)	**1.8**	**2.34**	**2.2**	**2.62**
National Anti-Corruption Bureau of Ukraine (NABU)	**1.82**	**2.32**	**2.38**	**2.82**
State Bureau of Investigation (SBI)	1.79	2.29	2.32	2.78

Specialised Anti-Corruption Prosecutor's Office (SAPO)	1.85	2.25	2.38	2.79
National Agency on Corruption Prevention (NAPC)	**1.77**	**2.23**	**2.27**	**2.66**
High Anti-Corruption Court (HACC)	**1.89**	**2.19**	**2.32**	**2.64**
Prosecutorial authorities (other than the Specialised Anti-Corruption Prosecutor's Office)	1.85	2.16	2.22	2.41
Courts (other than the High Anti-Corruption Court)	1.69	2.12	2.23	2.36
Cabinet of Ministers of Ukraine, ministries, and other central executive authorities	1.74	2.1	2.15	2.51
Parliament of Ukraine	1.67	2.09	2.02	2.34

Average score on a 5-point scale, where 1 means that anti-corruption efforts are completely ineffective, and 5 means that they are highly effective.

Source: (InfoSapiens, 2022).

The fight against corruption

Combating corruption is a complex task. Unfortunately, the enactment of good and proper laws, the imposition of stricter penalties for corrupt actions, and the establishment of anti--corruption bodies do not always adequately respond to this challenge. Much depends on society's readiness to change its attitude towards corruption. Moving forward, the authors demonstrated several examples from different sectors where the fight against corruption can be considered successful.

The sectors where corruption is possible can be generalised as education, healthcare, and administrative services. Currently, significant progress is evident in all these sectors.

Numerous reforms have been implemented in education to prevent corruption, such as the centralised preparation of examination tasks for both Bachelor's and Master's degree admissions and eliminating corruption at the level of higher educational institutions. There are special electronic queues for kindergarten admissions, etc. In 2022, a survey of Ukrainians indicated experiences of corruption in higher education institutions at 11.9%, elementary and secondary education at 21.4%, and kindergartens at 8.3% (InfoSapiens, 2022).

In healthcare, electronic sick leaves have been introduced, and basic services provided to the population are clearly listed in each medical facility, including available medications and free services. However, this sector remains corrupt, with 51% of Ukrainians having direct corruption experience in 2022 (InfoSapiens, 2022).

At the level of state authorities, corruption has significantly decreased due to the implementation of Diia – a "state in a smartphone" initiative. Many documents, previously requiring significant time to obtain, are now accessible with one click. However, issues remain in areas involving direct contact with public officials. For example, in the activities of administrative service centres, 20.4% of Ukrainians experienced corruption in 2021, which increased to 22.8% in 2022 (InfoSapiens, 2022).

Thus, it is clear that progress is being made and remains stable where direct contact between interested parties is removed, because consumers of services can also be initiators of petty corruption, creating a vicious circle.

In the business sector, the fight against corruption continues. In 2022, corruption experiences were reported as follows: 11.3% in customs, 8.5% in construction and land use, 9.0% in services related to power, gas, water supply, and sewer systems, 8.0% in the judicial system (including enforcement of court decisions), 9.4% in monitoring and oversight of business activities, 14.0% in the activities of law enforcement authorities, and 23.2% in the activities of tax authorities (InfoSapiens, 2022).

At the same time, one of the most significant achievements in Ukraine is the implementation of the Prozorro system in the sphere of public procurement. Prior to 2016, the public procurement sector in Ukraine was plagued by non-transparency and systemic corruption. Information pertaining to tender processes was disseminated exclusively through the *Bulletin of State Procurements*, a publication with limited circulation. The submission of procurement proposals was confined to paper format, resulting in their occasional loss. Through a collaborative effort involving the civil organization Transparency International Ukraine, private electronic platforms, the IT company Quintagroup, and the Ministry of Economy, the electronic platform Prozorro, recognised for its transparency, was developed. Currently, this system is state-owned and subject to oversight by the Cabinet of Ministers (Khutor et al., 2024; Prozorro, 2024).

From 1 April 2016, the Prozorro system became mandatory for central government entities and monopolies, expanding its reach to encompass other public procurement entities from 1 August 2016 onwards. As a result, any individual in Ukraine can now track procurements and assess the adequacy of prices, as well as identify the participants in tenders. Thanks to this system, numerous instances of corrupt activities have been exposed and addressed (Prozorro, 2024).

Currently, Prozorro and the NACP have intensified their collaboration, including integrating their electronic procurement system with the Unified State Register of Persons who have committed corrupt or corruption-related offenses (Prozorro, 2024).

1.3.2. The Czech Republic

Legislation and anti-corruption bodies

Based on international comparisons in recent years, it has emerged that the Czech Republic has been stagnating in its fight against corruption and, accordingly, in the evaluation metrics. For this reason, the current government is striving to implement a number of corrective measures. One of the significant documents is **the Government Concept for Combating Corruption for the period 2023 to 2026** (hereinafter the Government Concept), which was approved by Resolution No. 228 of the Government of the Czech Republic on 5 April 2023, that identifies priority areas for combating corruption (Figure 1.3).

Another equally significant document is the **Action Plan to Combat Corruption** (for the years 2023 and 2024), which is regularly compiled for specific periods and was approved by Government Resolution No. 508 on 12 July 2023. The aim of the Action Plan was to specify the tasks of individual legislative and non-legislative measures for the priority areas of the government's anti-corruption policy, and to determine the responsible authority for their implementation. Emphasis is placed particularly on the effective implementation of anti-corruption standards rather than their quantity.

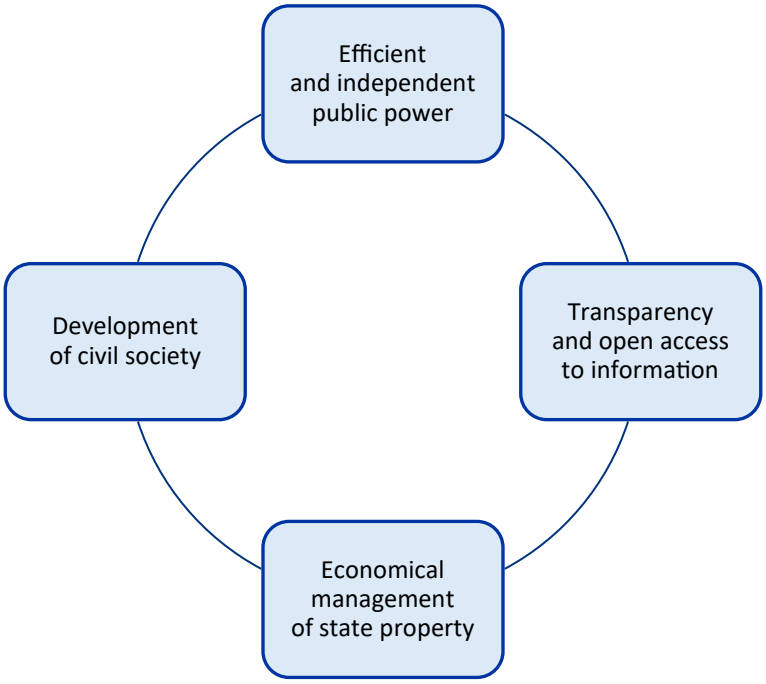

Fig. 1.3. Priority areas for combating corruption in the Czech Republic

Source: compiled based on the Government Concept for Combating Corruption for the period 2023 to 2026.

The measures of the Action Plan will complement other significant strategic documents, such as the Strategic Framework Czech Republic 2030, the Concept of Client-oriented Public Administration 2030, and the Digital Czech Republic strategy, as well as reforms, including component 4.3 Anti-Corruption reforms of the National Recovery Plan of the Czech Republic, which is funded by the EU.

As already mentioned, the Czech Republic has been engaged in the fight against corruption for over a decade. A significant milestone was the establishment of the **Open Government Partnership** (OGP), a voluntary initiative of the United States administration aimed at promoting openness, transparency, combating corruption, and increasing civic engagement. Since its founding in 2011, OGP has grown to include 75 countries and 104 local jurisdictions. The Czech Republic joined this international initiative by Government resolution No. 691 on September 14, 2011, with the aim of transforming state institutions to be more open, efficient, and accountable. The country is also part of international assessments in the fight against corruption. Currently, anyone encountering any form of corruption can report such situations.[1]

Furthermore, among other measures, in 2014, Government resolution No. 629 approved the **Government Council for the Coordination and Evaluation of the Fight against Corruption**, which replaced the former Government Committee for the Coordination of the Fight against Corruption established in 2012. Currently, it includes a total of 20 members from among ministers, the National Centre against Organised Crime (NCOZ), heads of the Association of Regions and the Union of Towns and Municipalities, as well as non-governmental organisations, the academic community, and professional chambers.[2]

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1 The website for the announcement of the corruption is: https://nahlasitkorupci.transparency.cz/#/

2 The list of members is available at: https://korupce.cz/wp-content/uploads/2023/09/Seznam-clenu-Rady-vlady-pro-koordinaci-boje-s-korupci_zari_2023.pdf

A significant achievement of the Government Committee was the introduction of the mandatory assessment of corruption risks, i.e. **Corruption Impact Assessment** (CIA), alongside the existing **Regulatory Impact Assessment** (RIA) within the government's legislative rules. The core of the methodology is a straightforward evaluation of corruption risks associated with proposed legislation, allowing for the consideration of criteria for reducing corrupt opportunities when drafting legal proposals. Since the inception of the Government Committee and the respective Action Plans, the goal has been to more rigorously monitor the implementation of RIA and CIA within the legislative process. The successor Government Council recommended continuing to use this methodology for RIA and CIA in the preparation of legislative proposals.

In addition to the aforementioned methodologies, the Czech Republic has implemented the **Framework Resort Internal Anti-Corruption Programme** (RRIPP), which sets out the framework for these internal programs (RIPP), thus standardising the structural and content-related form of RIPP. Furthermore, a RIPP report is regularly prepared every two years, for which methodological guidelines – recommendations for RIPP evaluation are also created.

The Czech Republic has also established the **Interdepartmental Coordination Group for Anti--Corruption** based on the Government's Anti-Corruption Strategy, currently overseen by the Ministry of Justice – **Anti-Corruption Department**. The aim of this working group is to define key priorities of government anti-corruption policy, actively identify areas of public administration performance that are most at risk of corruption, propose measures to eliminate these risks, and monitor and evaluate anti-corruption measures, including monitoring the legislative process in this area.

The Anti-Corruption Department, under the Ministry of Justice, is currently a strategic division that gathers all news, legislative and non-legislative measures related to the fight against corruption, anti-corruption documents, departmental/interdepartmental groups, and other collaborations on its website.[3] The Anti-Corruption Department is part of the Conflict of Interest and Anti-Corruption Division within the Section for Coordinating Legislation and Corruption Prevention at the Ministry of Justice. Its main agenda involves coordinating various departments (resorts) in the fight against corruption, including providing methodological support and ensuring compliance with commitments in this area arising from international conventions, memberships, and other international organizations.

The directions of the anti-corruption agenda, which is a summary of legislative and non--legislative measures and procedures applied in the fight against corruption, are as follows:

- Establishment of an independent, efficient, professional, integrated, and corruption--resistant public administration.
- Independence of the public prosecutor's office from political influences.
- Transparency and efficiency of decision-making and legislative processes.
- Streamlining the system of free access to information.
- Expansion and rigorous application of Regulatory Impact Assessments (RIA) and Corruption Impact Assessments (CIA) in legislation.
- More effective prevention of conflicts of interest.
- Clear rules for financing political parties, as well as electoral campaigns.
- Creation of binding standards for the nomination of state representatives to corporations and state-owned enterprises.

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[3] https://korupce.cz

- Adoption of preventive measures to limit corruption risks in the management of public funds.
- Strengthening of managerial and control mechanisms in public administration.
- Protection of corruption whistleblowers.
- Implementation of the Framework Resort Internal Anti-Corruption Programme (RRIPP) and Resort Internal Anti-Corruption Programmes (RIPP).

Table 1.4 lists the most significant legislative and non-legislative regulations in the fight against corruption that have been proposed or are currently under consideration.

Table 1.4. Anti-corruption regulations in the Czech Republic

Legislative and non-legislative anticorruption regulations	Responsible authority
Update of the Framework Resort Internal Anti-Corruption Programme	Ministry of Justice
Amendment to Act No. 283/1993 Coll., on Public Prosecution	Ministry of Justice
Amendment to Act No. 7/2002 Coll., on Proceedings Concerning Judges, State Prosecutors, and Judicial Executors, as amended, and other related laws	Ministry of Justice
Implementation of the project "Intensifying the Fight Against Corruption by Increasing Awareness in the Public Sector with a Focus on Judges, Authorities Involved in Criminal Proceedings, and Public Administration" – Professional and Ethical Codes of Judges and State Prosecutors	Ministry of Justice
Proposal of the Law on Lobbying and Related Amendment Act	Ministry of Justice
Processing an analysis aimed at identifying potential issues with Act No. 159/2006 Coll., on Conflict of Interest, as amended	Working Commission of the Chairman of the Government Council for Coordination of the Fight against Corruption on Conflict of Interest / Ministry of Justice
Creation of the Action Plan of the Czech Republic for the Open Government Partnership for the years 2025 to 2026.	Ministry of Justice
Implementation of the commitment of the Sixth Action Plan: Transparency of state-provided subsidies.	Ministry of Finance / Ministry for Regional Development
Implementation of the commitment of the Sixth Action Plan: Strengthening the quality of data in the register of beneficial owners – analysis and proposal of measures.	Ministry of Justice
Proposal of the law amending Act No. 134/2016 Coll., on Public Procurement, as amended.	Ministry for Regional Development
Implementation of the commitment of the Sixth Action Plan: Involving the public in monitoring public procurement.	Ministry for Regional Development / Ministry of Labour and Social Affairs
Implementation of the commitment of the Sixth Action Plan: Increasing transparency and methodological support for the procurement of small-scale public contracts.	Ministry for Regional Development
Continuation of methodological support for Act No. 253/2008 Coll., on certain measures against the legalisation of proceeds from crime and terrorist financing, as amended, its development, updating, and expansion of methodological support including issues related to politically exposed persons.	Financial Analytical Office / Ministry of Finance The substantive intent of the law on the management and control of public finances Ministry of Finance

Implementation of measures from the Strategy for Combating Fraud and Corruption within EU Funds incorporated into the Single National Framework.	Ministry for Regional Development
Completion of the legislative process of proposals of laws transposing Directive 2019/1937 of the European Parliament and of the Council on the protection of persons reporting breaches of Union law.	Ministry of Justice
Implementation of the commitment of the Sixth Action Plan: Improving the position of whistleblowers, including increasing awareness of reporting wrongdoing.	Ministry of Justice
Continue supporting anti-corruption activities of non-governmental non--profit organizations through the grant program for the Prevention of Corrupt Practices.	Ministry of Justice
Proposal for the implementation of recommendations from the project: The Corruption in Selected Sectors in the Czech Republic and possibilities for its reduction.	Ministry of Justice

Source: (Ministry of Justice, 2023).

Another significant legislative measure is the completion of the legislative process and subsequent implementation of the Whistleblower Protection Act (Whistleblowing Regulation[4]), adoption of lobbying regulation[5], or adoption of an amendment to the Public Prosecution Act, stemming from the regular evaluation report of GRECO (Group of States against Corruption, the Council of Europe). From the latest fifth round[6] of GRECO evaluations, it also emerged that the Czech Republic should take measures regarding the integrity of individuals in top executive positions (i.e. introduction of a code of conduct, including integrity tests for advisors, ministers, and deputy ministers before appointment) including expanding the regulation of conflicts of interest after termination of employment. In the case of conflicts of interest, GRECO recommends strengthening the obligation to report a given conflict *ad hoc*. The Ministry of Justice is conducting the necessary analysis to identify changes to the Conflicts of Interest Law to propose necessary amendments. The Ministry of Justice also, upon GRECO's recommendation, allows for the publication of asset declarations of public officials upon request. In response to GRECO's recommendations, the Czech Republic will inform GRECO about the measures taken by 31 December 2024.

The fight against corruption

The Anti-Corruption Department, under the Ministry of Justice, also oversees a range of programmes and projects. One of these activities was the project "Intensifying the Fight Against Corruption by Increasing Awareness in the Public Sector with a Focus on Judges,

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4 The comprehensive legal regulation of whistleblowing came into effect on August 2023, through Act No. 171/2023 Coll., on the protection of whistleblowers, including the accompanying amending Act No. 172/2023 Coll., transposing into Czech law Directive 2019/1937 of the European Parliament and of the Council of the European Union of 23rd October 2019 on the protection of persons who report breaches of EU law. Available at: https://eur-lex.europa.eu/legal-content/CS/TXT/PDF/?uri=CELEX:32019L1937&from=CS

5 Proposal of the Law on Lobbying and Related Amendment Act was submitted to the Government of the Czech Republic by the Ministry of Justice on 9th May 2023. Currently, they are being discussed in the Chamber of Deputies. The effectiveness is expected by 1st July 2025. Its introduction is advocated by non-governmental organizations, the OECD, and the Council of Europe. According to the proposal, a lobbyist for the most serious type of offenses may be fined up to 1 million CZK or be subject to a ban on activities.

6 Information about the activities of the GRECO group and their assessment reports is available on the website: www.coe.int/greco. Report for Czechia is available at: https://rm.coe.int/grecoeval5rep-2022-7-final-eng-evaluation-report-czech-republic-public/1680aeb6aa

Authorities Active in Criminal Proceedings, and Public Administration" supported by the EEA Funds 2014-2021. The project lasted for almost three years (ending in October 2023) and was performed by the Ministry of Justice in partnership with the Supreme Public Prosecutor's Office and the Judicial Academy. As part of the project, brochures on Whistleblower Protection, Conflict of Interest among Public Officials, and Ethical Codes for Judges and Prosecutors were produced. Comparative studies addressing these issues were also conducted.

Another significant project supported by the Ministry of Justice as the implementing guarantor and by the Grant agency – Technology Agency of the Czech Republic (TAČR) is the project "Corruption in Selected Sectors in the Czech Republic and Options for Its Reduction" carried out by the Sociological Institute of the Czech Academy of Sciences for three years (concluded on 31 December 2023). The project presented tools for replicable, effective, and valid measurement of direct and indirect experiences with corruption in different sectors. The project's results were reflected in two strategic documents: the Government Concept for the years 2023 to 2026 and the Action Plan for 2023 and 2024. Based on the project, perceptions of corruption and its actual occurrence among the respondents in various sectors were measured (Bašná et al., 2023).

1.4. Conclusions

This study has comprehensively explored the corruption in Ukraine and the Czech Republic, providing a comparative insight into how each country has addressed this pervasive issue through various legislative and anti-corruption strategies.

Despite significant efforts and reforms in Ukraine, corruption continues to impede economic and social development. Introducing systems like Prozorro for public procurement transparency shows promise in reducing corruption levels, but the overall effectiveness remains constrained by persistent systemic issues. The legislative frameworks and anti-corruption bodies such as the NACP and NABU underscore a robust commitment to combating corruption. However, the public perception and business experiences suggest that these measures must be more deeply embedded in the societal and political fabric to effect substantial change.

Conversely, with a stronger institutional framework and higher economic development, the Czech Republic has demonstrated more substantial progress in its anti-corruption efforts. Adopting the Government Concept for Combating Corruption and subsequent action plans illustrates a proactive approach to refining the governance landscape. However, the study identifies that despite these advancements, the country still faces challenges in fully eradicating corruption, particularly in sectors prone to corruption scandals. The ongoing efforts need to focus on enhancing transparency, reducing opportunities for corruption, and fostering a culture of integrity within all levels of government and society.

The continuous improvement in the corruption perception indexes over the years for both countries indicates a positive trend, but it also highlights the need for sustained and intensified efforts.

Moving forward, Ukraine and the Czech Republic must continue to innovate and adapt their anti-corruption strategies based on national needs and evolving global standards. Strengthening the legal and institutional frameworks, ensuring the independence of judicial systems, and promoting a societal shift towards transparency and accountability will be crucial in making significant headway against corruption.

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Chapter 2

The Use of Digital Technology in the Fight Against Welfare Fraud: Comparative Analysis of Selected National Experiences

Łukasz Jurek

Assistant Professor, Wroclaw University of Economics and Business
ORCID: 0000-0002-0078-471X

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2.1. Introduction

The term ‘welfare state’ is ambiguous. It was coined in England during the Second World War in contrast to another term that was common at that time, ‘warfare state’. The replacement of ‘warfare’ by ‘welfare’ was intended to be a symbolic shift from an economy focused on pro-arms production, which provided citizens with military security, to pro-social production supposed to provide citizens with social security.

The welfare state was developed for both equity and efficiency reasons. Thus, according to Barr (2020), it can be thought of as (1) a set of institutions that provide poverty relief, redistribute income and wealth, and seek to reduce social exclusion (the ‘Robin Hood’ function), and (2) a set of institutions that provide insurance and a mechanism for redistribution over the life cycle (the ‘piggy bank’ function).

The design of the welfare state varies from country to country (Esping-Andersen, 1990). Despite some differences, the overall size (tasks, funds, administrators) of the welfare state is systematically increasing in Western countries (Quadagno, 1987), due to the growth of traditional issues caused by demographic change and shifts in industrial relations. There is also the emergence of new risks related to, for example, epidemiological issues. All this increases the pressure on public authorities to extend a safety net for citizens.

The development of the welfare state has enabled to overcome crucial social problems, however it also raised a number of concerns about operating costs and administrative efficiency. Excessive bureaucracy hampers social policy programmes, especially at the stage of benefit distribution. The multiplicity of procedures and ineffective control make the welfare system open to various types of abuse and fraud. Public funds that were to serve good causes

are being extorted by unauthorised persons. This problem, although for a long time overlooked and/or neglected, is now becoming a major challenge for theorists and policy-makers. The use of modern technology seems to be the only reasonable solution in this situation. Mass data collection, automation, and artificial intelligence can essentially increase efficiency in detecting and combating welfare fraud. It is crucial therefore, as stated by Henman (2022, p. 536), "to bring the 'digital' into 'social policy'".

So far, only a few countries have digitised their welfare infrastructure. Societies where local governments have developed AI-driven technologies to eliminate non-compliance have been involved in a massive experiment. Their experience has shown that while technology reduces old problems such as low operational efficiency and high bureaucratic costs, it also creates a new set of problems and concerns, with the emerging critical issues of data protection, privacy and e-exclusion. In retrospect, the overall outcome is mixed and to some extent controversial. For this reason, the general narratives in the literature range from the techno--optimistic to the techno-pessimistic (Fugletveit & Sørhaug, 2023).

This chapter describes the experiences of two countries (the Netherlands and Australia) in using digital technologies to detect and combat welfare fraud, and also attempts to assess the strengths and weaknesses of such a digital transformation. It is both analytical and descriptive, and based on analysis of literature and official documents.

2.2. Digital Welfare State: Theoretical Approach

The world is changing fast, and the technological revolution we are witnessing today touches all areas of society. Every aspect of human existence is more or less affected by modernity, with technologies penetrating every aspect of life. However, the pace of this diffusion varies in different areas. Public administration has traditionally been very conservative and resistant to change, hence innovations do not affect it as quickly as, for example, the corporate world. Sometimes it is necessary to stimulate this development, in order to encourage the adaptation of new tools based on technology.

In general, digital transformation may be described as the transition from 'analogue' to 'digital'. This shift has also affected the welfare state. In order to emphasise the scale and quality of change, various load-bearing labels are used in the literature, such as: digital social policy, social policy 4.0, and digital welfare state (Szatur-Jaworska, 2023).

In 2014, on the initiative of the OECD Council, member countries adopted Recommendation of the Council on Digital Government Strategies (OECD, 2014). The document called on governments to develop and implement digital strategies in order to achieve digital transformation. Technologies were to be a strategic driver to create an open, participatory, and trustworthy public sector, to improve social inclusiveness and government accountability, and to bring together government and non-government actors and develop innovative approaches to contribute to national development and long-term sustainable growth.

Digital transformation in the public sector responds to the need to modernise public services. This change seems inevitable in the face of new and growing expectations of the welfare state and the necessity of state administration to deal with increasingly complex issues. As such, it has become a political imperative to improve the efficiency, effectiveness and governance of public services by designing and implementing innovative technological solutions (OECD, 2016).

At normative level, a major contribution to the digital transformation of the welfare state has been made by the United Nations. The notable report on extreme poverty and human rights (Alston, 2019) highlighted the strategic importance of the digital transformation of the welfare state as a transformation of the relation between the state and citizens, from analogue to digital, to improve governance through efficiency, integrity, and transparency. The document established the term 'digital welfare state', in which "systems of social protection and assistance are increasingly driven by digital data and technologies that are used to automate, predict, identify, survey, detect, target and punish" (Alston, 2019, p. 4). Moreover, it was stressed that

> new forms of governance are emerging which rely significantly on the processing of vast quantities of digital data from all available sources, use predictive analytics to foresee risk, automate decision-making and remove discretion from human decision makers […]. In such a world, citizens become ever more visible to their Governments, but not the other way around. (Alston, 2019, p. 4)

The concept of the digital welfare state has been subject to much development and modification since then. In their extensive study on datafication in the context of welfare state, Dencik and Kaun (2020, p. 2) explored a "shift toward a new regime in public services and welfare provision intricately linked to digital infrastructures that results in new forms of control and support". The importance of this technical-driven transformation of the welfare state was also emphasised by van Gerven (2022):

> The welfare state and its management of social risks is clearly affected by the technological transformations of the late twentieth and early twenty-first centuries. It creates a need to reorganize and recalibrate welfare state structures and systems to extend social risk protection towards a diverse set of risks, including existing (e.g. changing family structures and labour market participation patterns) and 'new' digitally driven risks (e.g. labour market insecurities induced by platform work and automation). (p. 254)

According to Henman (2022), the justifications for the digitalisation of the welfare state can be divided into two groups: 'traditional' and 'new'. The 'traditional' justifications have been behind the transformation from the beginning and have not changed over time. These are: efficiency, cost reduction, staff savings, consistency of decisions and reduction of errors. The 'new' justifications, on the other hand, have emerged more recently. These are: policy responsiveness and agility, customer service and service innovation, personalisation, overpayment and fraud detection, improved governance and enhanced accountability and democracy.

Technology offers a wide range of solutions to improve the structure and functioning of the welfare state. The above-mentioned United Nations report (Alston, 2019) identified six areas as being particularly open to the use of modern technology.

1. Identity verification: a verifiable identity is essential for claiming benefits, establishing entitlements, receiving benefits and appealing against benefit denials. Modern identification systems contain both demographic and biometric information on all residents, including an iris scan, photograph and fingerprints.

2. Eligibility assessment: IT systems support decision-making processes and increase the efficiency of analysing large databases. They relieve caseworkers of clerical tasks, and make decisions independent of subjective opinion, ensuring transparency and objectivity. They also allow for continuous monitoring of the situation of beneficiaries in terms of compliance with entitlements.

3. Welfare benefit calculation and payments: using spreadsheets and algorithms to automate the calculation of benefits, and paying them out using digitised financial services such as bank transfers and electronic payment cards.
4. Fraud prevention and detection: informatic systems allowing to match data from different sources in order to expose deception and irregularities on the part of welfare applicants.
5. Risk scoring and need classification: algorithm-based techniques to determine whether intervention is required and, if so, at what level.
6. Communication between welfare authorities and beneficiaries: traditional forms of communication (face-to-face, telephone, letter) are being replaced by online applications and interactions (e.g. chatbots).

Generally, these areas of digitalisation can be divided into two basic domains: rule-based systems and predictive systems. A rule-based system helps to verify eligibility for benefits and, if applicable, to calculate the amount of benefits. Predictive systems, on the other hand, are risk-profiling tools that sort welfare claimants into different levels of intervention. The risk assessment is based on indicators that are identified by research and/or mandated by policy. On this basis a statistical model is formed that gives a probabilistic score for each individual. As noted by Well et al. (2023, p. 45), "companies, professionals and sometimes academics develop these assessment tools in relation to a historic comparative population and past experiences of service provision, often using stakeholder consultation, trials, validity and usability testing and factor analysis".

Today, the issue of the digitalisation of the welfare state is becoming a priority for both social policy theorists and practitioners. Many research and implementation projects in this area are being undertaken in many countries. Such initiatives are now also taking place at transnational level. One example is AUTO-WELF, the first project to provide an analysis of automated welfare provision across different European welfare regimes, which examines the implementation of automated decision-making (ADM) in the welfare sector across Europe.[1]

2.3. Welfare Fraud and Welfare Surveillance

Welfare fraud is a complex and multidimensional issue (Jurek, 2024). This term is often used as synonymous with 'welfare abuse' or 'welfare crime', although these are not entirely clear-cut. Their common feature is non-compliance with the welfare rules, resulting in incorrect payments, i.e. payments made for the wrong reason or for the wrong amount. However, not every incorrect payment is a case of welfare fraud. Firstly, the non-compliance may involve both an over- and understatement of the welfare benefit. Second, the overconsumption may be the result of unintentional error or intentional behaviour. Third, intentional overconsumption may be irrational but legal (*moral hazard*) or illegal (fraud). Fourthly, fraud can be of different 'degrees of seriousness', it can be a minor offence (the so-called crimes of everyday life) or a serious crime committed on a large scale by organised criminal groups.

The issue of welfare non-compliance has become an important issue in European Union policy. This is linked to a number of irregularities that have arisen with the increasing coordination of national social security systems. In response to these problems, it was decided (Decision No H5 of 18 March 2010…) to call on the Member States to take appropriate remedial action in

[1] Project website: https://blogg.sh.se/digitalwelfare

this area. EU documents distinguish two types of irregularities: fraud and error (Jorens et al., 2019). A fraud is defined as any act or omission contrary to national legislation, either in order to obtain benefits from the social security system or to evade the obligation to pay public contributions to maintain this system. An error, on the other hand, is considered to be an unintentional mistake or oversight on the part of officials or citizens.

European countries are developing their own definitions of welfare abuse as well as methods for the prevention, detection and deterrence. These measures are particularly advanced in Sweden, where in 2021 the country's government adopted a special ordinance that regulates initiatives to ensure proper payments from the welfare system (Sveriges Riksdag, 2021). The coordination of these activities has been entrusted to the National Institution for Financial Management (ESV). According to its guidelines (Modin & Lindblom, 2021), a payment from the social security system is incorrect if it is made even though the conditions for receiving the benefit have not been met. The benefit may be too high, too low, or completely undue based on the applicable regulations. Incorrect payments range from unintentional errors to large--scale, systematic and organised welfare crime. To illustrate this diversity, the welfare compliance pyramid was used (Fig. 1), which contains four types of incorrect payments that differ greatly in terms of motive, severity, and structure.

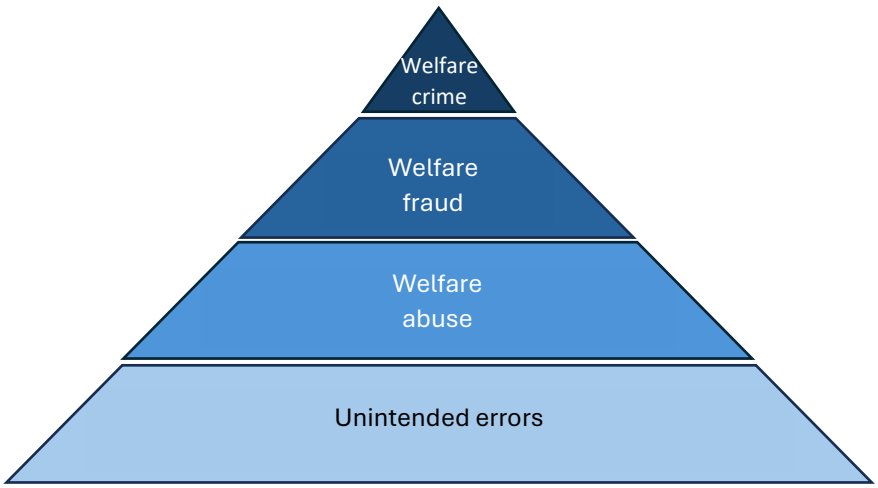

Fig. 2.1. Welfare compliance pyramid

Source: (Modin & Lindblom, 2021, p. 11).

Unintended errors are the result of mistakes that are unconscious and unintentional. Welfare abuse is the conscious provision of misinformation in order to misuse welfare entitlements. Welfare fraud is the practice of extortion and deception (e.g. bribery, forgery, cheating and lying) to obtain undue benefits, whereas welfare crime is an organised activity carried out on a large scale against welfare institutions.

Similar legislation exists in the Netherlands (Eerste Kamer, 2012). The Dutch legislation distinguishes between 'improper use of benefits' and 'benefit fraud'. Improper use is defined as "using the entitlements in a way that is allowed by law but not in the spirit of the law". Fraud, on the other hand, is defined as "the use in a manner not permitted by law".

Kukuła (2016) defined welfare fraud as

> actions of natural persons aimed at persuading a social institution to dispose of its property in a certain way and obtain material benefits not due to them, which fulfil the characteristics of a crime, consisting in deliberately misleading or exploiting the error of an institution dealing with the distribution of budget funds, aimed exclusively at providing assistance or material support to people, both those who have a source of income and those who are temporarily or permanently deprived of it. (p. 28)

It is, therefore, a manifestation of conscious and deliberate pathologies committed by private individuals in the use of welfare benefits.

By its very nature, welfare abuse is difficult to detect. The main reason is the blurred line between justified and unjustified benefit use. As described by McKeever (2012, p. 472), this boundary lies between need and greed. Usually, it is very difficult to assess whether the use of benefits is really necessary because of a difficult life situation or whether it is rather a matter of cheating. In the case of welfare fraud, however, the situation is clear, as it is a clear violation of the law.

The extent of welfare fraud is difficult to measure. It is obviously inappropriate to draw conclusions from the results of inspections carried out by control bodies, because of the potentially very large underestimation bias. This type of data does not show the actual number of frauds committed, but only the number of cases detected. The relation between these two figures, i.e. the number of frauds committed and the number of frauds detected, is unknown and depends on many factors, the most important of which is the frequency and quality of controls.

The basic problem is that the general structure of the social system was not designed for monitoring. Administrators generally see the essence of their job as providing benefits, not exercising control. The effectiveness of their work is measured by the number of payments made, not by the number of wrongly withheld payments. In some cases, the rules leave administrators a lot of room for subjective judgement, which makes it difficult to identify incorrect payments. In addition, controls tend to be carried out in those areas that are easy to perform and "produce results" (Korsell et al., 2008).

It can be assumed that the extent of welfare fraud varies from country to country. This is partly due to institutional and legal differences (control measures and severity of sanctions), but above all to socio-cultural conditions. This concerns the level of so-called 'benefit morality', i.e. the individual reluctance to exploit the welfare state through fraud (Halla et al., 2010; Heinemann, 2008).

The genesis and development of the fight against welfare fraud, although taking place in different countries and at different times, are to some extent similar. The general trajectory of events is largely convergent, forming an evolutionary process consisting of four main stages.

The first stage may be called 'welfare euphoria'. This is a period of dynamic development of the welfare state that goes hand in hand with rapid economic growth. Implementation of welfare programmes is based on trust and high moral standards in society. The control system is practically non-existent.

The second stage may be called a 'grace'. This period usually coincides with an economic crisis and fiscal restrictions. The problem of welfare abuse is then noticed. The policy-makers implement a pioneer control system. First inspections show that the problem of abuse concerns the most vulnerable. The dominant rhetoric is that fraud is forced by a difficult life situation and is an act

of higher necessity in order to satisfy basic existential needs. Control measures have a negative social reception, being identified with criticism of the welfare state and the punishment of poverty. In addition, the low cost-effectiveness of control activities is emphasised, i.e. the potential gains from the detection of abuse are usually lower than the costs of the administrative measures taken. Moreover, the effectiveness of the control system is limited by poor institutional coordination and lack of access to information.

The third stage may be called 'consternation'. This is when reports appear from public institutions and/or the media about various cases of benefit abuse. These are often examples of arrogant and perfidious exploitation of the welfare system. The issue is publicised in the mass media and becomes a popular political and journalistic topic. Attention is drawn to organised criminal activity against the system. Fraud is equated with theft, and priority is given to preventing and combating this problem. Politicians make honest attempts to estimate the extent of abuse and its costs (social and financial). The infrastructure for monitoring and combating social security fraud is being put in place: staff are being recruited and given powers, special monitoring and control institutions are being set up, legislation is being adapted, and sanctions are being made more severe. However, many of these are 'shotgun' measures, as they are taken blindly and intuitively, without a proper understanding of the nature of the problem.

The fourth (last) stage can be described as the 'surveillance welfare state'. In this case, monitoring and control activities are established as a natural public task. A systematic and organised diagnosis of the problem is carried out (a reliable diagnosis using scientific methods and techniques). Supervision and control activities are digitised, automated and computerised. Modern technologies increase the cost-effectiveness of control activities. The integration and coordination of activities within different institutions takes place in order to effectively combat fraud.

2.4. Digital Welfare Surveillance in Selected Countries

The idea of digital surveillance is based on the logic of risk in detecting non-compliances. The point is that in welfare systems (especially social assistance) it is necessary to monitor the situation of beneficiaries on an ongoing basis. At the very beginning, when people apply for a benefit, their identity, social situation and 'means' (income, assets) need to be verified. Then, after the benefit has been granted, continuous monitoring must be maintained in order to detect changes that may affect the eligibility status of beneficiaries. Naturally, there is no justification for checking everyone who uses welfare benefits as it would require a huge administrative effort. Besides, a significant proportion of beneficiaries do not commit fraud. Controlling them would be a simple waste, and instead it is advisable to select the cases that require special attention. To achieve this goal, policy makers are developing tools that calculate the risk of fraud. Such measures are based on complex statistical models that make it possible to identify (flag) those with an above-average risk and refer them for inspection. The computer programmes employ large databases containing information on various aspects of life. This data is analysed using algorithms and (to some extent) machine learning (artificial intelligence). On this basis, surveillance targets people with certain characteristics that are predicted to become involved in incorrect payments (Henman & Marston, 2008).

So far, several countries have implemented such risk-based system to detect welfare fraud, with others already working at an advanced stage on such solutions. One of these countries is Slovenia, where the SURVEILWEL project is being implemented with EU funding, which

> will employ qualitative, multi-sited ethnographic fieldwork to scrutinise the realm of digital welfare surveillance within Slovenian institutions […]. The project explores how digital welfare surveillance tools impact welfare eligibility assessments and the investigation of suspected fraudulent activities. Moreover, its objective encompasses the development of efficient interventions for social and material welfare. (Horizon Europe, 2033)

Similar activities are also taking place in Sweden. In 2024, the country's government set up a special commission to study the possibilities of increasing digitalisation in the area of social security, primarily to prevent fraud, but also to ensure a more personalised service and streamline the processing of benefit claims (Sveriges Riksdag, 2024).

To date, the Netherlands had the broadest experience in using digital technology to combat welfare fraud. Since the 2000s, data from a variety of sources have been used to identify potential abuses. One example was the ADM system, which used information from households on registered water consumption to compare it with the number of declared residents. In the following years, fraud investigation became a major application of 'public sector data analytics' (Zajko, 2023). As a result, three algorithmic fraud risk detection systems were successively implemented, first 'Waterproof' (2004-2007), then 'Black Box' (2008-2014) and most recently 'SyRI' (since 2015).

SyRI (for 'System Risk Indication') was described by Van Bekkum and Zuiderveen Borgesius (2021, p. 325) as 'a socio-technical infrastructure'. It was designed to identify potential welfare fraud by generating risk notifications and sending alerts to administrative bodies. Individuals are shortlisted and flagged as those 'at high risk of fraudulent behaviour' by identifying discrepancies in their personal data. The system cross-referenced almost all the information the government has on its citizens, relating to: employment, penalties and convictions, taxes, assets, denial of benefits, residence, identity, integration, compliance with the law, education, pension, reintegration, debts, welfare benefits, permits and exemptions, and health insurance (Wieringa, 2023).

SyRI operates on the basis of the 'black box method'. The system downloads some information about welfare beneficiaries and then analysis it using a certain algorithm. However, neither the sort of data used, nor the risk assessment model remained unknown for a general public (Van Bekkum & Borgesius, 2021).

From the outset, SyRI has been the subject of much controversy. In particular, it has been accused of a lack of transparency in the flow of information used. Claimants were not informed what kind of data, even sensitive data, was being used. The system of risk reporting was also unknown. Decisions were made automatically on the basis of a blind verification mechanism (using pseudonymised data). However, claimants were not warned that they had been flagged as a fraud risk and were not told why they had been flagged. There was also criticism that SyRI was only being used in selected communities, known as 'problem neighbourhoods', i.e. those with high rates of poverty, crime and unemployment. It was perceived by the general public as an element of victimisation and discrimination that should not be sanctioned by the law. Based on these arguments, in 2018 several civil rights organisations filed a lawsuit against the Dutch state to stop the use of SyRI. In 2020, the court ruled that neither the legislation on SyRI nor its use met the requirements of Article 8 of the European Convention on Human Rights. A fair balance had not been struck between the public interest in detecting fraud on the one hand and the human right to privacy on the other. As a result, SyRI was found to be unlawful (Rachovitsa & Johann, 2022).

Another country with a relatively rich experience of digital surveillance is Australia, where welfare governance has been transformed into a paternalistic concept of welfare for several decades; the 2007 reform introduced a pioneering income management system called BasicCard. It allows welfare recipients to buy only 'essential' items (food, fuel, clothing, rent payments, etc.), and avoid purchasing prohibited products (alcohol, tobacco, pornography, etc.) (Dee, 2013). Moreover, the Australian government has a 'zero tolerance' policy towards welfare non-compliance. Preventive measures were targeted in particular at 'welfare overpayments'. The point is that in Australia, as in many other countries, eligibility for welfare support is linked to financial situation. An increase in income may reduce eligibility for benefit. However, information about earnings does not flow to the welfare agency in real time and it is the responsibility of the individual to report any changes in this regard. If they fail to do so (for whatever reason), they may receive more support than they are entitled to and become debtors.

To eliminate this problem, in July 2016 the Department of Human Services (currently known as Services Australia) implemented an Online Compliance Intervention (OCI) programme, commonly known as Robodebt (welfare debt recovery system). It was intended to verify eligibility to welfare benefits without an excessive human-resources burden. The system drew data from two different sources: social welfare data on benefit payments (from Centrelink), and tax data on earnings reports (from the Australian Taxation Office). Information on earnings was matched with information on received welfare benefits. The system automatically detected discrepancies between the two. On this basis, an algorithm identified 'suspected' welfare recipients and issued them with debt notices (Rinta-Kahila et al., 2022).

Robodebt has been criticised for inaccurate assessments, illegality, shifting the burden of proof of debt onto welfare recipients, poor support and communication, and coercive debt collection (Braithwaite, 2020). Thus, in 2017, within a year of its implementation, it came under scrutiny by public bodies, while at the same time, activists from non-governmental organisations began to raise awareness of the system's shortcomings. The entrenched problems with the scheme continued until a legal challenge led the government to suspend the system in 2019 (Rinta-Kahila et al., 2024).

2.5. Conclusions

The digital transformation of the welfare state is a dynamic process taking place in various areas of infrastructure, management, contact with citizens, service delivery, and control and monitoring. However, the experience gained so far in implementing digital surveillance does not inspire optimism. The examples of the Netherlands and Australia, where the process is most advanced, revealed a number of critical problems. This is not to say that the projects have not worked at all and should be entirely abandoned. At this stage, the problems must be treated as challenges. In order to overcome these problems and advance the digitalisation process, the systems need to be adapted to the surrounding conditions (legislation, infrastructure, social attitudes) and, conversely, the surrounding conditions (legislation, infrastructure, social attitudes) also need to be changed and (to some extent) adapted to the system.

The first crucial problem is transparency. Digital surveillance is accused of lacking clear information about the construction of the algorithm, i.e. the method of data analysis. The system operates as a 'black box'. The general public does not know what data is collected, how it is analysed and what factors are crucial for identifying non-compliance.

This problem should be addressed as a question of dominant values in the public sphere – what is more important, transparency or effectiveness? Clear criteria for decision-making appear to be at the heart of government accountability and administrative justice, however the clarity of assessment rules raises concerns about feedback reactions on behalf of those subject to control. The situation can be compared to the fight against traffic offences. Effective surveillance requires a conspiratorial approach so that drivers do not know when or where they will be checked, otherwise they will temporarily change their behaviour and drive according to the rules for a while, only to commit offences at a later stage. One can be sure that the same is true for welfare fraud. Making the control criteria known to the public triggers a behavioural reaction, i.e. adjustment to these criteria. Potential offenders may mimic certain features just to cheat the algorithm and reduce the risk of being 'flagged' as a fraudster.

Freedom of information is at odds with the effectiveness of the surveillance system. It is therefore necessary to reach a consensus on how and to what extent control is to be carried out. Auditing should ensure clear principles of risk calculation on the one hand and efficiency of control on the other.

The second crucial problem is operational performance. To date, the predictive validity of risk assessment tools has been very low. Failure to detect welfare fraud has led to various negative consequences, such as human tragedies (deprivation, aggression, divorce), as well as a decline in public trust in the institutions of the state. However, it should be clearly stated that the fault for these errors is allegedly not with the system but with the human who developed it. The algorithms were merely 'decision trees' that estimated the risk based on the data provided and the criteria adopted. A satirical scene from the Polish comedy *Miś* [Bear] comes to mind here, where one of the characters (a collection agent) comments on the use of a computer: "it will always make a mistake when adding, sir. Not a month goes by without it making an error". This is, of course, a humorous approach to the subject of digitalisation. In reality, the problem is not the technology *per se*, but the 'input', i.e. the quality of the statistical model and the assumptions on which the algorithm is based. The human factor still plays a dominant role here.

Risk assessment tools are already used in various areas of the welfare state. Abuse detection is no exception. Algorithms and artificial intelligence will play an increasingly important role, whether we are in favour of it or not, therefore an appropriate attitude should be adopted. The failures made so far should not be seen as a 'warning' about the use of digital technology in government, but as an important lesson to be learnt. Systems, by definition, require continuous progress by eliminating errors and adapting to changing external realities. Initial failures cannot invalidate the whole solution, but rather highlight the need for modification and improvement.

According to Zajko (2023), digital transformation only replaces human bureaucrats by autonomous machinery. Digital technologies are designed to replicate the decisions made by people in the analogue world. They automate the decision-making process based on parameters and constraints set by humans. Wrong decisions are therefore the result of wrong assumptions. In addition, the role of the algorithm is to calculate an individual's risk score based on an assessment of a dataset of people claiming benefits, in order to identify those who are most likely to be fraudsters. The problem is that this is a very complex issue. The propensity to commit welfare fraud is conditioned by personal and contextual factors. Many of these are not obvious and are still poorly recognised. For this reason, it is extremely difficult to create an algorithm that effectively predicts human behaviour.

Therefore, at the current stage of development, digital technology should only be treated as a tool to support the decision-making process. Algorithmic governance should take a hybrid form, with humans making the final decision on cases that have been algorithmically flagged for scrutiny.

The third crucial problem is the issue of personal data protection. To be effective, digital surveillance systems need to access various databases, including sensitive ones, without the knowledge or consent of welfare recipients. It is claimed that such scrutiny violates the right to privacy. However, as noted by Henman and Martson (2008), such arguments are based on ideas of personhood and social governance inherited from the early days of western modernity. They presented three assumptions for data-based surveillance. Firstly, concerns about privacy are predicated on a liberal ideal of personal property and personhood – an independent, rational, self-updating human being. Yet in a world of growing interdependence and collective destiny, the right to be left alone is outdated. Secondly, the notion of privacy is based on a dichotomy of public and private responsibility, which is problematic from the perspective of a welfare state where the boundary between the two is unclear. Thirdly, the image of surveillance is changing, from an omnipresent panopticon-style vision to the tracking of a person's data ('dataveillance').

Following the rhetoric of today's researchers and practitioners, one gets the impression that too much attention is being paid to the problems and limitations of digital transformation and not enough to its potential benefits. Technology not only facilitates existing activities, it opens up new possibilities. The digitalisation of the welfare state allows for more individualised and differentiated decisions, thus opening up a wider path for conditionality in social policy (Szatur-Jaworska, 2023). This process rests (at least in principle) on three fundamental values: efficiency, integrity and transparency (Alston, 2019).

It may seem that digitalisation is an inevitable path. Welfare states must undergo this transformation, otherwise they will not exist. The question, then, is why does the development of digital surveillance meet with such resistance in society? It is associated with 'disciplining', 'punishing' or 'criminalising' (Fenger & Simonse, 2024), however welfare surveillance is in fact nothing new as controls have been carried out for a long time. Henman and Martson (2008) argued that digitalisation re-configures the nature of surveillance. It concentrates the power and capacity of authorities to assert norms, monitor behaviour and enforce compliance. It means that the form of the relation between the citizen and the welfare state is changing, but not its content.

There are many other serious concerns about digital transformation, such as high costs, underdeveloped infrastructure and e-exclusion. From a historical perspective, however, these problems are only technical details. First of all, digital transformation should not be seen as a cost but as an investment that will bring tangible benefits in the future. As for e-exclusion, this is a general problem that needs to be solved, not just in the welfare sector. In addition, techno-pessimists often stress the problem of the 'dehumanisation' of social policy. Such an argument of 'digital rigidity' concerns the lack of empathy between the state and the citizen (Ranchordás, 2022). Paradoxically, this feature is seen by techno-optimists as the main advantage of digital surveillance. Computer algorithms and big data are culturally constructed as accurate, objective and true, and there is no room for subjective discretion. Simple compliance with the law, and no exceptions to the rules. If someone does not meet the eligibility criteria, the computer always says "No" (Henman, 2022).

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Chapter 3

Exchange of Experience in the Use of Digital Procurement Tools to Prevent Corruption in the Public and Business Sectors in Ukraine and V4

Oleksiy Poburko

Associate Professor of the Department of Finance, Lviv Polytechnic National University
ORCID: 0000-0002-9140-4099

Nataliya Synyutka

Associate Professor of the Department of Finance, Lviv Polytechnic National University
ORCID: 0000-0002-4294-2149

Pavlo Horyslavets

Associate Professor of the Department of Finance, Lviv Polytechnic National University
ORCID: 0000-0002-1882-2104

Andriana Mazur

Associate Professor of the Department of Finance, Lviv Polytechnic National University
ORCID: 0000-0002-5985-5674

Oksana Kurylo

Associate Professor of the Department of Finance, Lviv Polytechnic National University
ORCID: 0000-0003-0366-0648

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3.1. Introduction

The problem of corruption is, without exaggeration, relevant for all countries of the world. Some economists even compare it to an additional tax for businesses and citizens. This article discusses the problems of corruption risks in public procurement in Ukraine, the measures taken by Ukraine to adapt its legislation to the EU legislation, and a comparison of key public procurement indicators in Ukraine and the Visegrad countries.

Corruption as a phenomenon exists in the vast majority of countries around the world. As the founder of reforms, not only economic, in Georgia and Ukraine, Kakha Bendukidze, claimed, corruption does not arise on equal grounds. It requires the coincidence of three factors: lack of control over officials, moral justification of corruption, craving for quick and easy money.

Ukrainian representatives of the international non-governmental organisation, Transparency International, added another factor – the total concealment of information (Khmara, 2014).

According to the World Bank, public procurement accounts for an average of 13 to 20% of GDP. Global procurement spending is estimated at almost USD 9.5 trillion, and according to the United Nations Office on Drugs and Crime, between 10 and 25% of the total value of a government contract can be lost to corruption. Governments have a strong incentive to maximise every penny of their budgets, which should be spent transparently and efficiently (World Bank, n.d.).

Digitalisation, opening of registers, and simplification of access are among the key aspects of public procurement reform in Ukraine and other European countries.

Thanks to the obligation to publish procurement plans in the public domain, hundreds of tenders that contained both signs of corruption and mismanagement have been cancelled in Ukraine, which has prevented billions of hryvnias from being wasted and most of them stolen before the procurement announcement.

The National Agency for Corruption Prevention of Ukraine identified the following corruption risks in public procurement, under martial law (NACP, n.d.):

1) conducting an open tender with only one tender offer;
2) possibility to submit tender offers at a price higher than the expected value;
3) increase in the purchase price as a material term of the contract;
4) abuse of procurement through an electronic catalogue;
5) corrupt practices through direct contracts;
6) inconsistency of decisions of the appeal body (lack of established/generalised practice);
7) impossibility to appeal against decisions, actions or omissions of procuring entities during procurement procedures, including simplified ones;
8) problems with enforcement of decisions of the appeal body and courts;
9) restrictions on the rights of participants in the course of consideration of complaints by the Antimonopoly Committee of Ukraine;
10) other (non-price) criteria for evaluating proposals;
11) the use of 'artificial obstacles' in procurement to favour a particular participant.

In the authors' opinion, similar risks are inherent in procurement in other countries, including the European Union and the Visegrad Four. This is confirmed by data from the statistical offices of the respective countries.

For example, in Slovakia, the e-procurement system has been in place since 2015, and in 2021, 32.3% of public procurement procedures were completed through the modernised electronic public procurement system, resulting in contracts that accounted for 46.9% of the monetary value of procurement (UVO, 2022).

The digitalisation of public administration, and not only in the area of public procurement, is a priority area of development in most countries. The transition to the use of services and data in electronic format can significantly simplify time-consuming processes and services, reduce administrative costs of the authorities, eliminate corruption and increase the competitiveness

of procedures in order to save money. The digitalisation of public administration includes the area of electronic public procurement, which actually opens up procurement data of individual business entities to the public and significantly simplifies tender processes for bidders through the use of automated calculations and the electronic submission of the necessary documentation.

In the process of reforming its public procurement legislation, the government of Ukraine has been paying attention to the standards set by EU directives in order to meet the requirements of the Association Agreement with the EU and increase the efficiency of the public sector.

It is important to note that Ukrainian and EU public procurement legislation have a common ultimate goal – to ensure the economic efficiency of public procurement and transparent tenders.

According to the OECD Public Governance Briefing Papers *Public Procurement Performance: A Framework for Measuring Efficiency, Compliance and Strategic Objectives* (OECD, 2023), public procurement accounts for 13% of GDP in OECD countries. The pressure on public spending, as well as the need for greater accountability, better monitoring of public policies and more effective risk management, make it increasingly important to measure public procurement performance. However, many countries have not yet established a formal performance management system with key performance indicators.

Moreover, the relevant EU legislation is designed to regulate much more complex relations than Ukrainian legislation currently regulates, primarily due to the deeper standardisation of procurement procedures in the EU. In this regard, the authors clarified the priority areas of development of legal support for the functioning of the national public procurement management system. In particular, they substantiated the expediency, taking into account the provisions of Directive 2014/24/EU, of changing the concept of 'customer' in the current legislation of Ukraine on public procurement, introducing new rules for filling in tender documents and tender procedures and announcements, updating the procedures for competitive dialogue and negotiations with several participants, expanding the practice of maintaining electronic catalogues, and regulating the rules of sub-threshold procurement. The authors also argued for the expediency of enshrining a new principle of proportionality of procurement for budgetary funds at the legislative level, regarding Article 36 of Directive 2014/25/EU.

3.2. Exchange of Experience in the Use of Digital Procurement Tools

The study then compared some procurement indicators of Ukraine and the Visegrad countries obtained from open sources, for example taking in consideration the figures for 2021, given that in 2022, Russia's attack on Ukraine dramatically changed both the volume and nature and transparency of public procurement. The number and volume of procurements of goods and services for national defence has increased dramatically in Ukraine, and due to the circumstances, the vast majority of them are classified.

In 2021, the share of public procurement in Ukraine's GDP was 17%. The official website of the Polish Central Statistical Office stated that in 2021, the value of public procurement contracts concluded with the application of the provisions of the Public Procurement Act was PLN 184.6

billion in 2021 (PLN 183.5 billion in 2020), approximately 7.04% of gross domestic product (GDP) in 2021.

In Hungary, the share of public procurement was 16.4%, in Slovakia – 12.4%, and in the Czech Republic – 14.1% (European Court of Auditors, 2023). Hence, this concerns large amounts of money that belong to fellow citizens, who, in turn, have the right to understand how they are used.

A report by the EU Court of Auditors (European Court of Auditors, 2023) stated that in 2021, 'no call for tenders' accounted for about 15.8% of all procurement procedures in the EU single market reported by Member States on Tenders Electronic Daily. The Chamber's analysis also showed that the share of direct contracts varied across EU member states. In 2021, the average rate of direct contracts ranged from 3.1% (Greece) to 42.3% (Cyprus), indicating significant differences in public procurement practices among EU Member States. Some of them reduced the use of direct contracts during the reporting period (e.g. Germany), while others remained stable (e.g. Ireland), or significantly increased the use of direct contracts (e.g. Cyprus). An absence rate of more than 10% is considered a red flag, and in 2021 most Member States (23 out of 27) fell into this category, including three Visegrad countries – Hungary, Poland and the Czech Republic. In case of Ukraine, this figure was higher.

It should be noted that the problem of public procurement has been studied in economic science for a long time.

From the historical point of view, the discourse on the functioning of the public procurement institution in the global economy began in the works of well-known international economists, such as Keynes, Buchanan, Stigler, Owen, Petty, Pigou, and others, yet their studies did not take into account the innovative impact of digital technologies on public finance.

Public expenditures are positioned in the works of Heller as an objective component of the fiscal space (Kravets et al., 2021), and the need for their implementation follows from the postulates of the theory of public welfare.

Fischer postulated the interdependence of public expenditure with the development of society. In his opinion, public spending in certain areas, such as telecommunications and road infrastructure, contributes to economic growth and accelerate social development (Fisher, 1997).

Besley & Persson emphasised that budgetary resources spent on public projects means expenditure on public goods and corruption rent-seeking, which are already included in the price of public goods by interested individuals or groups. Scholars stressed the value of digitalisation for interventions in procurement processes in order to reduce corruption and increase the efficient flow of budget expenditure to end users (Besley & Persson, 2013).

Joined initiative of OECD and EU (SIGMA – Support for Improvement in Governance and Management) has focused research on facilitating access to public procurement markets for small and microbusinesses (SMEs) in the European Union through the approval and implementation of the relevant EU Directives in 2014. In SIGMA view, electronic procurement systems are a crucial tool for engaging SMEs in public consumption. EU legislation removes the barriers that often hinder SMEs and requires that tools and devices are also used for electronic communication. Their technical specifications must be non-discriminatory and easily accessible (Sigma, 2016).

The work of German scientists Eßig & Glas explored the impact of dividing public contracts into smaller batches as a tool for attracting small businesses to public procurement. The main message of the study was that increased competition has a positive impact on the success of SMEs in public procurement, and that the involvement of SMEs increases the innovation and flexibility of the proposed solutions (Eßig & Glas, 2015).

Some scholars studied the methodology of successful bidding, for example, Plećić et al. (2018) proposed a multi-criteria methodology for selecting the optimal solution from the submitted bids within the tender.

Kolosok, Panchenko and Iordanov analysed the state of achievement of long-term goals set during the reform of the ProZorro procurement system in Ukraine. They studied the level of corruption, transparency and accessibility, as well as reliability, efficiency and elasticity of the public procurement system after the introduction of the ProZorro system, and identified systemic problems in the procurement process and outlined areas for improvement in Ukraine. In particular, the decentralised procurement system in Ukraine causes differences in the filtering and delivery of announcements to tenderers registered on different trading platforms. Legislative inconsistency in customer support and the variety of trading platform requirements may lead to unequal opportunities for business participants, which worsens competition in the procurement market. According to the authors, the number of non-competitive tenders has increased since the introduction of ProZorro. This situation may be caused mainly not by defects or problems of ProZorro, but by improper performance of the function of controlling bodies (Kolosok et al., 2017).

Ukrainian researchers pay considerable attention to the problems of organising and managing the public procurement system through the prism of European experience. Miniailo and Kostenko (2016) systemised the relevant public procurement procedures. The above publications analysed in detail the EU directives, in particular, on public procurement of goods, public procurement of works, and public procurement of services. Ukrainian experts emphasised that at one time, these documents created the necessary legal basis for the development of effective systems of procurement activities for budgetary funds, but now their provisions are already outdated to some extent, and some provisions are unclear and rather contradictory. As a result, there is still no coherent vision of the prospects for implementing and harmonising Ukrainian legislation with EU directives on public procurement management. This significantly complicates the process of reforming this management system in our country. In view of this, the purpose of the article is to analyse the provisions of EU legislation on public procurement management and to clarify the priorities for the development of legal support for their implementation in Ukraine.

There is diversity of public procurement procedures in certain EU countries.

The level of development of electronic public procurement in EU countries is determined by the use of electronic data processing methods at different stages of the bidding process, these include:

- e-Sourcing – collecting information about potential suppliers and contacting them;
- e-Notifications – publication of notifications and information about the start of trading in electronic format;
- e-Tendering – divided into e-Access (providing all necessary information on tender documents and standards with the possibility of feedback) and e-Submission (submitting a proposal in electronic format);

- e-Evaluation – evaluation of tenders for compliance with the criteria set by the government;
- e-Contract – the conclusion of a contract between tenderers;
- e-Order – placing an order in electronic format;
- e-Invoicing – issuance of an invoice (waybill) in electronic format in accordance with the standards of the Directives;
- e-Payment – payment by the customer for goods, works and services received (Prałat, 2019).

The introduction of full digitalisation of the public procurement cycle in the EU was planned by 2018: electronic publication of procurement notices was to become mandatory by 2016; electronic submission of proposals through the central procurement authority by 2017; submission of electronic proposals by 2018 and mandatory e-invoicing by 2019 (Tkachenko, 2016).

Table 3.1 shows the level of digitalisation (modernisation) of the public procurement process in some EU countries in 2019.

Table 3.1. Modernisation of the public procurement process in selected EU countries in 2019

EU country	The state of digitalisation of the e-procurement process					
	E-Alerts	E-Access	E-Submission	E-Assessment & E-Contract	E-Order	E-Invoicing
Austria	+	+	+	+	+	+
Belgium	+	+	+	+	+	+
Greece	–	–	–	–	–	–
Italy	+	+	+	+	+	+
Germany	+	+	+	+	+	–
Poland	+	+	+	–	+	–
Slovakia	+	+	+	+	–	–
Hungary	+	+	+	+	+	–
Finland	+	+	–	–	+	–
France	+	+	+	+	+	–
The Czech Republic	+	+	–	–	–	–
Sweden	+	+	+	+	+	+

Source: (Tkachenko, 2016).

Therefore, the level of digitalisation of the procurement process in each EU country is different. For example, in Austria and Belgium in 2019, the entire procurement process was conducted electronically; in some G7 member states (Italy, Germany and France), e-tendering was almost fully modernised, except for the e-invoicing stage in Germany and France. In Greece, as of 2019, there was no digitalisation of public procurement as such, which may be partly explained by its economic situation, whilst in the Visegrad countries (Poland, Slovakia, the Czech Republic and Hungary), the digitalisation process is unevenly developed.

The organisation of electronic public procurement in EU countries also differs. For example, in the Czech Republic a bidder must be registered either in the state-owned Tender Portal (NEN) or in one of the private platforms FEN (which offers additional services for a fee). In Hungary

there is a single platform, EKR, which is managed by the Office of the Prime Minister of Hungary. Up to now, Slovakia used ISEVO (Modernised Information System for Electronic Procurement), while other paid resources exist (Karlin, 2021). Differences are also manifested in the models of payment for services by e-platforms: in Portugal, the service fee is charged from tenderers, while in other countries it is the tenderers who pay for registration in the platform and further participation in the tender (Tkachenko, 2016).

Each EU country can independently determine the lower limit of procurement at the national level. For example, the Czech Republic and Poland have only one threshold, while Hungary has several above-threshold levels for national procurement (Karlin, 2021).

In most EU member states, centralised procurement organisations operate, which reduce the costs of bidding for procurement participants and save time on the entire procurement process. In Hungary, procurement through them is mandatory for central-level public institutions, while in Poland there is no such organisation at the state level (Karlin, 2021).

One of the particular characteristics of Slovakia in the field of public procurement is that it is one of the first countries to develop legislation for the introduction of 'green procurement', i.e. clear criteria for the availability of environmental certificates and the use of environmentally friendly production processes have been established (Karlin, 2021).

In order to determine the specifics of public procurement legislation at national level, it is worth considering the state of public procurement in Poland due to economic and political similarities with Ukraine. The legislative regulation of public procurement in Poland was reformed by the adoption of the Public Procurement Act of 11 September 2019, which came into force on 1 January 2021. The purpose of this reform was to increase the role of strategic procurement (generally related to the already mentioned environmental, social and innovation goals), the attractiveness of the public procurement market for the private sector and the creation of effective communication between sectors of the economy (Kania, 2023).

In Poland, several government agencies are responsible for controlling public procurement. The Polish Supreme Chamber of Control usually conducts post-contract procurement control. A separate central executive body is the Public Procurement Agency, which conducts both scheduled and unscheduled document inspections of tenders and analyses the procurement bulletin data. If a contracting authority disagrees with the Agency's conclusions, the Appeals Chamber makes the final decision. Public procurement is also monitored by the Office for the Protection of Competition and Consumer Rights in terms of collusion (Kania, 2023).

According to the Criminal Code of the Republic of Poland, the submission of false documents or false statements in order to obtain a public procurement order is punishable by imprisonment for a term of 3 months to 5 years. There is also a penalty for collusion with other bidders (Ustawa z dnia 6 czerwca 1997…).

In 2020, around 94% of contracts in Slovakia were awarded on the basis of the lowest price alone. This is significantly higher than the EU average of 64% and limits competition based on quality. It also reduces the possibility of using public procurement strategically to support other policies, such as green, social and innovation. In addition, the professional services sector remains highly regulated.

To sum up, the supranational standards set out in the EU Public Procurement Directives define the key requirements that each Member State must comply with when applying above--threshold procurement, while below-threshold procurement is carried out in accordance with

the laws of a particular country using its own mechanisms and models of organising the tender process, provided that they are harmonised with the Directives.

3.3. Conclusions

The chapter confirms the thesis that corruption is a major problem in most countries of the world, as evidenced by the statistics of international organisations. Taking into account the volume of public procurement and its share in GDP, the state, its citizens and institutions should comprehensively monitor the efficiency of spending taxpayers' money. In fact, electronic public procurement is an important element of protecting the interests of taxpayers and transparency of public procurement. The chapter shows that Ukraine and the Visegrad countries have many similarities in their approaches to public procurement, although each country is at different stages of implementing digital public procurement systems.

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Chapter 4

New Forms of Non-Standard Employment and Fighting Shadow Economy

Antonina Sholoiko

Taras Shevchenko National University of Kyiv
ORCID: 0000-0003-1239-4281

Vasyl Erastov

Taras Shevchenko National University of Kyiv
ORCID: 0000-0001-5230-0273

Quote as: Sholoiko, A., & Erastov, V. (2024). New Forms of Non-Standard Employment and Fighting Against Shadow Economy. In P. Luty, N. Versal, & P. Semerád (Eds.), *Knowledge and Digitalisation Against Corruption and Fraud* (pp. 45-56). Publishing House of Wroclaw University of Economics and Business.

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4.1. Introduction

The global economy is undergoing a massive transformation, and with it, the traditional boundaries of employment are being redrawn. New forms of work interactions are emerging, and many businesses are shifting to alternative work arrangements, such as working from home, temporary employment, part-time or on-call work, digital labour platforms, multi-party employment, disguised employment, etc. These changes are mainly caused by labour globalisation, shifting to digitalised communities, and technological changes worldwide.

Standard forms of employment are facing significant competition, especially in some specific industries suffering from the downsides of traditional employment models. Full-time employment, as the basic traditional form, has a lot of drawbacks when it comes to creatively, technologically, or intellectually rich spheres of human activities. Employee potential cannot be effectively utilised by setting additional work time and workplace boundaries. Moreover, it should be mentioned that intellectual capital is mostly transferred, and getting a specific mindset and expertise in a traditional way can be costly, in terms of relocation, and difficult, in terms of legislative aspects, or simply impossible, in terms of conditions or other factors.

Shifting to non-standard forms of employment can be beneficial for both employers and employees, while some formal boundaries are neglected. Ease of getting necessary specialists, higher salary rate, bigger employment pool, and significant improvement in results are considered as the main benefits of non-standard forms of employment over those traditional, while ignoring their considerable downsides such as hidden work relations, taxation optimisation, and avoidance, lack of social responsibilities, etc.

To prevent taxation violations by utilising new forms of non-standard employment, different approaches can be used. The Ukrainian labour market provides many examples of how to shift hidden employment relations towards other forms, less destructive and opaque for taxation. Some measures can be used as a rule of thumb, while some need to be 'tweaked' before implementation. A thorough study of the current Ukrainian situation and the overall idea of non-standard forms of employment can provide significant insights for both controlling entities and employers worldwide.

The research aim was to consider main non-standard forms of employment and create recommendations for fighting the shadow economy in Ukraine.

This purpose was achieved due to the realisation of the following: generalising pros and cons of the main non-standard forms of employment, and creating recommendations for fighting the shadow economy in Ukraine.

4.2. Forms of Non-Standard Employment

Many forms of non-standard employment can be now considered new because of the strong influence of the digitalisation processes. Thus, the first form is working from home. Due to the Internet and the impact of Covid-19 pandemic, many types of jobs were transformed and nowadays most of them are available to work from home remotely, which is especially convenient for women, allowing to combine work with housekeeping.

The International Labour Organization (ILO) explains that working from home is

> long associated with labour-intensive, repetitive work in the industrial sector ("industrial homework"), it also encompasses higher-skilled workers on digital labor platforms, as well as remote workers (teleworkers) in service industries. […] The ILO estimates that while not all occupations can be done at home, many could – approximately one in six at global level, and just over one in four in advanced countries. (ILO, 2020)

Working from home offers significant advantages, including time savings by eliminating commutes, reduced transport expenses, and the flexibility to adapt work schedules to personal needs. However, the time saved often gets redirected to additional work or household chores, limiting personal benefits. It also encourages a sedentary lifestyle, increases health risks, and can weaken communication skills and team-building abilities due to reduced in-person interaction. Balancing these pros and cons is crucial for maximizing the benefits of remote work (ILO, 2020).

One of the positive sides is time saving. According to the study by Aksoy et al. (2023):

> the average daily time saved when working from home was 72 minutes – in this sample. Work from home saved about 2 hours per week per worker in 2021 and 2022. Workers allocated 40% of their time saved to their jobs and about 11% to caregiving activities. People living with children allocate more of their saved time to caregiving.

As for Ukrainians, negative consequences of remote work include: a decrease in productivity, difficulties due to everyday factors, overtime; among the advantages are: a less-busy schedule, time saving and the ability to work from anywhere (Kochmar-Tymoshenko, 2021).

One can conclude that working from home is characterised by a high level of informality, and as a result tax avoidance can take place. Thus, to fight the shadow economy in Ukraine, it is

possible to work from home officially and pay taxes if employers have a distance or hybrid model of working. However, for independent professionals it is necessary to stimulate them to register as a sole proprietor (SP) (Table 4.1).

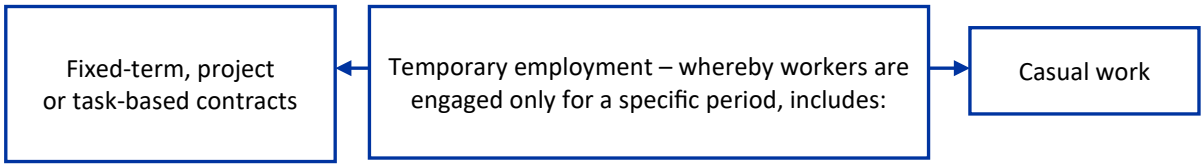
Table 4.1. Sole proprietor: groups of single taxpayers

Type of SP	Hired workers	Annual income	Cooperation with legal entities	Rate of the single tax	Single social contribution (SSC)	Reports
I	–	less than UAH 1 185 700 per year	–	10% of the subsistence minimum = UAH 302.80 per month	22% of the minimum wage	monthly declaration
II	or less than 10 workers	less than UAH 5 921 400 per year	+	20% of the minimum wage = UAH 1420 per month	22% of the minimum wage	monthly declaration
III	or unlimited	less than UAH 8 285 700 per year	+	3% or 5% of income	22% of the minimum wage	quarterly declaration
IV	unlimited	–	+	from 0.09% to 1.8% of the normative assessment of the land		annually

Source: compiled by the authors based on (DtKt, 2023; Kosht, 2023).

Table 4.1 shows that different types of sole proprietors are based on different sizes of individual business with the appropriate rate of the single tax. Moreover, it is also possible to participate in social insurance and obtain a basic level of social protection in cases if social risk occurs.

The next form of non-standard employment is temporary employment, divided into fixed--term, project- or task-based contracts and casual work (Figure 4.1).



Fixed-term contracts (FTCs) have always existed in labour markets and serve specific purposes. They provide flexibility to enterprises to respond to changes in demand, such as due to seasonal fluctuations, to replace temporarily absent workers, or to evaluate newly hired employees before offering them an open-ended contract. Yet, beyond these traditional reasons, some enterprises have come to rely heavily on FTCs, hiring workers recurrently on these contracts for permanent tasks of the company.

It is also essential to provide equal conditions of work to workers in temporary employment as compared to workers in standard employment.

Fixed-term contracts (FTCs) have always existed in labour markets and serve specific purposes. They provide flexibility to enterprises to respond to changes in demand, such as due to seasonal fluctuations, to replace temporarily absent workers, or to evaluate newly hired employees before offering them an open-ended contract. Yet, beyond these traditional reasons, some enterprises have come to rely heavily on FTCs, hiring workers recurrently on these contracts for permanent tasks of the company.

Fig. 4.1. The concept of temporary employment

Source: compiled by the authors based on (ILO, 2016a).

Temporary employment offers flexibility, allowing individuals to combine it with a full-time job and gain additional income. However, it comes with the risk of temporary unemployment and uncertainty. Workers in temporary roles may face unequal conditions compared to standard employment, such as limited opportunities for skill development and lower social protection. Balancing these factors is crucial when considering temporary work arrangements (ILO, 2016a).

In Ukraine, temporary employment is often considered by workers not as positive choice, but as forced necessity. According to sociological studies, 8% of Ukrainians rate their chances of finding a job in the region where they live as "good", almost 15% – as "not bad". Such indicators show that Ukrainians are ready to leave their homes in search of earnings. However, they do this not only by going abroad, but also by migrating within the country. Often, labour migration in Ukraine has a temporary and seasonal nature (Legalaid, 2020) (see Table 4.2).

Table 4.2. The difference between seasonal and temporary work in Ukraine

Seasonal work	Temporary work
Jobs, which, due to natural and climatic conditions, can be performed only during a certain period (season), but not more than six months (for instance: agriculture). After the end of the seasonal work, the employees who were employed are dismissed on the basis of the termination of the employment contract – the end of the term. In this case, the last day of seasonal work is considered the day of dismissal. If the employee continues to work after the end of the seasonal work or the duration of such work exceeds six months, the employment contract with this employee is considered to be concluded for an indefinite period.	Such jobs can be accepted by an employee for a period of up to two months, and to replace temporarily absent employees, for whom their place of employment is kept, for up to four months. The list of temporary jobs has not been established, but the employee must be warned in writing form that he will work temporarily. The employer must confirm the circumstances that make it impossible to conclude an employment contract with the employee for an indefinite period. The employment contract of temporary employees is considered to be extended for an indefinite period if the employment relationship continues after its termination and none of the parties wants to terminate it.

Source: compiled by the authors based on (Legalaid, 2020).

Thus, seasonal and temporary works are also characterised by high level of informality. If these forms of employment are based on fixed-term contracts, then everything is legal, and taxes are paid, whereas in the opposite case it is necessary to:

- increase labour literacy as for the rights of workers (within school curriculum as "Entrepreneurship and financial literacy"; 8-9 years of study);
- encourage workers to become sole proprietors, and provide services on a contractual basis.

These recommendations have positive and negative sides, and are the same for such forms of non-standard employment as part-time and on-call work. The ILO Part-Time Work Convention, 1994 (No. 175) defines the term 'part-time worker' as an employed person whose normal hours of work are fewer than those of comparable full-time workers. For comparative statistical purposes, however, part-time work is usually considered as working fewer than 35 hours, or 30 hours, per week (ILO, 2016b).

There was an interesting research on Ukrainian freelancers conducted to find out the main challenges they faced at work during the war. For 47.51% participants of the study, freelancing is the main form of work, while for 52.49% it is a part-time job. Hence, a little more than half of specialists engage in freelancing for interesting projects or the opportunity to increase

income (Sokolenko, 2023). However, as in the previous case, it is necessary to encourage freelancers not to avoid paying taxes.

Proceeding to digital labour platforms, they are one more type of non-standard employment forms and can be also considered as an emerging and quite common trend. A digital labour platform can be described as any party ('platform') providing a service via digital channels meeting the following requirements:

- services or goods are provided to customers on a payment basis on behalf of or by providers;
- no contracts of employment established between providers and customers;
- involved in payment processing or transfer for services or goods;
- distinct contractual relations between the platform and the providers, or users in general.

These factors are the main ones to identify any party that has some likelihood of being a digital labour platform, but they are not exhaustive. To distinguish them from other digital intermediaries, an additional set of requirements can be used. A digital labour platform should meet at least one of the following requirements:

- provision of the services or production of the goods is directed;
- prices, calculations and the payment method are set or regulated;
- relations are built through direct interaction between parties;
- both strictly necessary and optional KPI can be evaluated to meet the request;
- services or goods are provided under its own brand (Kruse et al., 2023; Silberman, 2023).

Handling employment arrangements utilising this form of non-standard employment can be described with a set of pros and cons, that can be applied to both sides of the labour relations between employers and employees. Some of the listed pros and cons can have either a direct or indirect impacts on these parties, but in general – everything that is reducing costs for employers can be converted into higher benefits rates for employees.

The first positive side of utilising digital labour platforms is increased flexibility. As already mentioned, it can be considered as a benefit for both parties, while flexible working hours and no defined work location provide a lot of opportunities to hire specialists from any location, looking for the necessary mindset and expertise. Both employer and employee are achieving their results by having less formal boundaries and being able to match their respective needs. Productivity should also be mentioned; by removing unnecessary formal time and place boundaries, employers can get more results from the staff who prefer working during the afternoon or at night.

Both parties can reduce their costs. There is no need to spend money on office and office supplies or transport, and no additional time is spent on the way to the office and back. All these costs are transferred or transformed into a part of additional income for either of the parties even while having additional costs to cover the digital labour platform commission.

Both parties have better opportunities in terms of geographic diversification. More qualified employees can be hired due to access to global talent pools or ignoring administrative borders, while employees do not have to move to another territory. Moreover, territory-specific jobs can be covered more easily while having access to a predefined and refined set of candidates that are most suitable for specific jobs.

The most obvious benefit is increased productivity. As mentioned above, removing formal boundaries can significantly increase productivity. The work environment in the office can be

partially customised to fit the needs of the vast majority of employees, while some requests will not be taken into consideration as they are individual or not cost-effective. This can be easily overcome when the workplace and environment are created by employees and designed specifically for working purposes. Additionally, new digital tools availability can greatly increase productivity, while some of these tools can be highly priced for corporate customers and be almost free for private individuals.

After looking at these pros, one should address the cons of digital labour platforms. The most destructive drawback to be considered is social isolation. Employees are losing personal connections, less team interaction, and almost no communication in person. Working from home can cause loneliness and feelings of disconnection. No personal contact makes employees less open and affects their future social interactions. Such a working routine can lead to a broad number of mental health issues, affecting both productivity and employee costs.

The next issue that should be noted is a reduced work-life balance. For some workers, blurred boundaries are not only an issue itself, but may also lead to longer work hours. This trend is quite dangerous, with less time for rest and maintaining a daily non-working routine becoming one of the most common causes of burnout. It affects productivity which, even covered with longer working hours, provides less value and results for customers.

It should be noted that labour relations that emerged with utilising digital labour platforms often lack supervision; less control leads to decreased productivity and quality of work. As an additional drawback of poor supervision opportunities, security violations can be noted. Defined business processes can be easily bypassed if a worker is unsupervised, unauthorised individuals can get access to strictly private information, and some tools and approaches can violate internal customers' rules. This drawback can be partially ignored in the case of using remote customers' environments, also less unnecessary supervision can be beneficial for some creative or intellectually intense tasks.

While technological changes become a valuable aid for both parties, they can cause additional drawbacks. Unstable network connectivity will lead to the inability to maintain some critical tasks and will affect productivity. Software bugs and glitches can affect productivity and lead to inconsistent or faulty results delivery. Moreover, software issues are dangerous for customers' infrastructure creating insecure communication channels, being vulnerable to some types of attacks and even causing unintentional data losses and breaches. The last issue to be noted in terms of technological challenges is overall digital tools knowledge. Not all employees have experience and can fulfil tasks with some specific digital tool. All these drawbacks significantly affect the experience of both parties, while the digital labour platform itself remains as is and in most cases cannot address any of the emerging questions and issues (OECD, 2023).

The next type of non-standard employment is 'multi-party employment', also known as triangular relations. This form of employment can be described as a sort of contractual arrangement involving multiple parties: a direct task executor, an aggregator economic unit for which the work is performed, and a third party. To distinguish between any other type of labour relationship and multi-party employment, one can consider the following features:

- executors (workers) are not directly employed;
- work is temporary;
- outsourcing or outstaffing involved;
- shared legal responsibility;
- shared liability of parties.

In general this type of employment helps to connect a customer who requires some sort of task to be performed, and an individual who will perform it, but involves an intermediary taking some parts of liability and responsibility. As one can see, this type of employment is mostly limited in time or scope of work. Additionally, the shared nature of most liabilities and responsibilities can be noted. Such an approach will help to improve the controlling function and reduce issues specific to digital labour platforms (Barnat, 2018; Maran & Chieregato, 2022).

Regarding the pros and cons of triangular relations, one can observe that more factors are related to additional employee benefits, official status, and additional liabilities of the parties. The most valuable benefit for both sides is payroll and insurance policy. While the parties are not directly linked with labour relations, the taxation rate will be lower for customers. Having lower costs allows customers to spend more money on both payroll and insurance for another party, the employee. Moreover, employees will not be obligated to pay significant income taxes, while income is classified in different way than salary.

Employer as a customer gains additional opportunities in searching for new talents. Less time is necessary to spend on the onboarding process, while employees will not be a part of the company. Less onboarding time can significantly reduce projects and overall business downtimes – and customers can get highly proficient employees with great expertise in certain fields. High proficiency levels and appropriate expertise can reduce the necessity of training and will provide additional time-saving factors in new employee involvement.

From a customer perspective, sustainability can be also considered as a valuable benefit. All triangular labour relations will be fully legal compliant. No additional legal or paperwork will be necessary to fulfil on the customer's side. Each employee will be treated and controlled correctly, but with no additional load for customer staff. All controlling functions as well as payroll with social benefits are only handled by intermediary units with their responsibilities and liabilities stated in a contractual agreement.

As well as sustainability, scalability is a significant benefit for customers. With multi-party employment utilized there will not be a staff increase, which is beneficial for taxation base calculations and other forms of external controls. Regarding the already mentioned high expertise and less time for the onboarding procedure – fast progress can be achieved easily. What is more, no recruiting process will be carried out by the customer as all recruitment procedures are conducted by an intermediary party, providing ready-to-use and experienced employees.

As with every phenomenon, multi-party employment is not devoid of drawbacks. First, the temporary nature should be noted. There will not be any full-time employees involved via triangular relations. There is no guarantee that workers will have only one project and customer, and that they will have suitable working hours, etc. This can be partially mitigated in terms of agreement between parties, but this will lead to additional expenditures and losing the overall idea of non-standard employment; also, there will not be any long-term workers who can share knowledge and sustain the project if necessary. Additionally, legal issues can arise. NDA (non-disclosure agreement), NCA (non-competition agreement), and NSA (non-solicitation agreement) are possible solutions to cover some legal gaps, but the status of parties during multi-party employment can affect fulfilling these agreements.

The next drawback is the lack of corporate culture. While triangular relations are used to fill gaps in the current staff levels with fewer possible costs and efforts, no newcomers will be motivated to share customers' company vision and culture. There always will be friction

between a customer's employees and external contractors caused by a different status and different attitudes toward the company's values. Additionally, the information valuation process can be affected. External contractors are not highly motivated and involved in customers' processes except for their field of responsibility, leading to ignorance of valuable opportunities for customers, etc.

Utilising triangular employment relations can also lead to misclassification issues from the controlling authorities. In some cases, such labour agreements can become the subject of penalties and court cases, causing additional reputational risks. While covering possible legal issues caused by misclassification, project disruption can occur. Both key project players and the overall project can be affected, banned, or fined.

Technological challenges are also some of the cons for digital labour platforms, but involving mostly software glitches and bugs in line with connectivity issues (Barnat, 2018; Maran & Chieregato, 2022).

The last form of non-standard employment to be discussed is 'Disguised employment/ Dependent self-employment'. Disguised employment ('quiet hiring') can be defined as a type of relationship where a contractor, to all intents and purposes, fulfils the same role as a full--time direct employee, but is either hired as a contractor and paid through their limited company or in any other respective way. This type of labour relations is interesting for both parties, while the company and contractor will get lower tax rates, no additional benefits for a contractor are covered with higher rates, the team itself and the contractors are separated efficiently and affordably. Mutual obligations nonetheless should be noted, even while contractors can be full-time employed elsewhere (Mort, 2020).

As with triangular relations, this type of employment can provide flexible expertise, which is the main benefit for the customer. Contractors possess great expertise, stepping over the learning curve and being able to provide a valuable result from the very beginning. They are easily hired and vice versa, termination is fast and simple for the customer; this leads to another issue, the timely manner of any contractor work affecting sustainability.

Quiet hiring is very cost-effective, while taxation is optimised for both parties, and from a customer's perspective it is even more attractive. No costs are incurred on additional benefits, there are no minimum wage limitations, and no equipment bought for the workplace. Cutting expenditure is a valuable benefit for customers, while freeing some resources to increase the contractor's rates.

In terms of rights and obligations, this type of labour interaction is also interesting on the customer's side. No employment rights are guaranteed, and no additional legal obligations arise, moreover there cannot be any salary discrimination as there is no salary defined. The amount of tasks and payment for them are determined at the beginning of the labour relations and remain unchanged until the work is done.

The most troublesome issue in disguised employment is related to controlling functions. Contractors can be involved in more than one project or can be employed elsewhere. Each contractor can have their independent workflow and no process management at all. This makes managing contractors a 'tricky' task that requires additional knowledge, experience, and resources.

Lack of supervision and relatively high rates can lead to hidden subcontractors emerging. Thus, tasks would be redirected to less proficient and less paid specialists, affecting both quality and

information security. Another drawback of subcontracting is that expertise levels can differ significantly, leading to deadline violations and as already mentioned, quality issues.

The remote nature of quiet hiring can also affect the business itself. When customers and employees are working with no face-to-face interaction, it is challenging to understand if there are any issues on either side. Burnout can occur quite easily, and this process may not be recognised, whilst sustainability cannot be guaranteed. Contractors can go to another customer with higher rates or get promotion on the main employment place having less time and capacity to maintain additional tasks on the customer's side.

As for both previous types of non-standard employment, technological challenges are emerging. Software and connectivity issues can make valuable team members to become non-performing cost or even disrupt the project (Mort, 2020; OECD, 2023).

The Ukrainian experience in fighting non-standard and shadow employment can be described as two different scenarios. One is shifting all possible non-standard employment types to become simple sole proprietors, which can be used for any sphere or field of activity. Another one is the Diia City approach, but for now it can be used only for the IT-sphere. The second approach can be scaled for any other industry, becoming a widespread way of fighting non-standard employment.

Regarding the sole proprietor – it was already noted that there are no limitations in terms of sphere or field of activity. This way of running a business is universal and can be easily scaled from individual entrepreneurship to some form of a bigger entity with many employees. There will not be any salary restrictions, while payments can be linked to certain task implementation or a certain amount of workload. On the other hand, sole proprietor status leads to almost no social guarantees and benefits. Obviously, there are some government social guaranties, especially while there are social security payments for such categories, but they are minimal in comparison with full-time legally employed.

As shown in Figure 4.2, new sole proprietors created during the first quarter of 2024, are involved in many different spheres of activities. This variety enables the market to avoid unfair competition and provide services in the most affordable way for customers.

Even while sole proprietors can be arguably defined as a part of tax optimisation or avoidance schemes, leading to hidden labour relations, this type of economic actor is a valuable tax generator. Having taxes paid, even at a lower rate, is more beneficial than a lot of economic actors in the shadows, not paying any taxes at all. Additionally, small sole proprietors can grow in time, becoming a sizeable entity with additional workplaces and higher tax flows. Figure 4.3 shows the rising trend for taxes paid and sole proprietor numbers observed during the last seven years. The slight decrease in the last two years was caused mainly by the war instigated by Russia and the increased USD exchange rate.

Concerning the second approach, the already mentioned Diia City should be addressed. Diia City is a special legal and taxation structure that offers exceptional benefits for IT companies. It structure was created to build favourable and unique conditions to help to raise and develop Ukrainian IT businesses and reduce the amount of shadow or non-standard employment. While sole proprietors can cover any area, Diia City has a lot of restrictions.

The main restriction of Diia City is the sphere of activity. For now, it covers only the IT sector, but, in general, it can be expanded. Moreover, to use the benefits of Diia City, both employee and employer should meet all requirements, such as minimum wage, social guarantees, NDA,

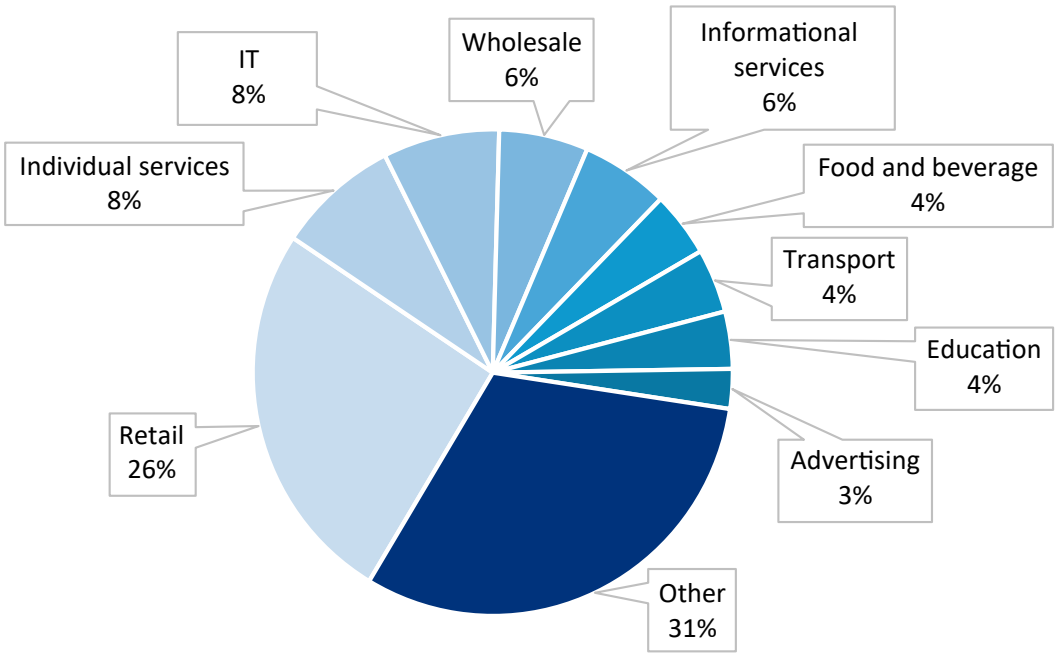


Fig. 4.2. Newly created sole proprietors' activity in Ukraine

Source: compiled by the authors based on (Foponomics – Opendatabot, n.d.).

Fig. 4.3. Tax paid by sole proprietors in Ukraine

Source: compiled by the authors based on (Foponomics – Opendatabot, n.d.).

NCA, and others. The company should be a Diia City resident, which means that income qualification will meet IT sphere requirements while paying employees at least 1200 Euro, and ensuring all social guarantees as for regular employees, also with more than nine employees registered (Diia.City, n.d).

The company can be denied to be registered as a Diia City resident if one or more of the following criteria arise. First of all, it should be Ukrainian, therefore if it is registered under another country's law – it cannot become a Diia City resident. The same applies to non-profit legal entities, even if they meet the basic requirements. There are also restrictions for shareholders, if they are residents of the aggressor's state (Russia and Belarus) – no residential agreement can be settled. Another criterion is the violation of ultimate beneficial owner

information disclosure. The last criterion leading to denial is if 25% of authorised capital or more is owned by the state of Ukraine or its territorial communities.

If the company meets all the requirements and there are no restricting criteria found, there will be a set of benefits for both employee and employer – tax incentives will be applied. These incentives include:

- personal income tax – 5%;
- unified social contribution – 22% of the minimum wage;
- military duty: 1.5%;
- corporate tax: 9% on "withdrawn capital" or 18% on profits;
- 0% on personal income as dividends (paid no more than once every 2 years);
- tax rebate (on personal income tax) for investments in Ukrainian startups (European Business Association, 2024).

4.3. Conclusions

Depending on the sphere of activities, there will be different ways of solving the non-standard employment problems. For Ukraine, the best solution at present will be to encourage creating sole proprietors and, if applicable, transforming them into gig-specialists (only for the IT sphere and Diia residents). In future, this will lead to a 'quiet hiring' issue, but from a taxation perspective, it will be more beneficial than losing all these cash flows.

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Chapter 5

The Transformation of Payment Systems in Eastern Europe: Past Trends and Future Innovation

Bogdan Adamyk

Associate Professor, Cyber Security Innovation Research Centre, Aston University
ORCID: 0000-0001-5136-3854

Anetta Zielińska

Professor, Wroclaw University of Economics and Business
ORCID: 0000-0001-8592-3530

Oksana Adamyk

Associate Professor, Accounting and Finance Group, Loughborough University
ORCID: 0000-0002-2026-4412

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5.1. Introduction

The advancement of payment technologies is crucial for the economic development of any country. Traditional paper currency no longer meets the full spectrum of demands posed by the diverse and complex nature of global business relations and citizen transactions. Consequently, there is an increasing need for alternative payment methods. The evolution of the payment system in Eastern Europe over the past decade warrants particular attention. This is not only due to the rise in online payments, especially during the 2019-2020 period in response to the COVID-19 pandemic, but also because of the region's high levels of labour migration to Western Europe. This migration has spurred the creation and expansion of numerous alternative payment systems, allowing citizens to transfer funds between countries quickly and conveniently, as well as to conduct instant currency exchanges and payments.

The purpose of this research was to study the recent development of payment systems in East-European countries in terms of their structural characteristics and importance for the national economy and to develop recommendations for improvement of the organisation and legal regulation of payment transactions with electronic money and cryptocurrency.

For this research, the authors selected six Eastern European countries (including the V4) and three post-Soviet Eastern European countries. It was appropriate to emphasise that in the last decade in these countries there has been a sharp increase in the development of payment systems. However, the 'leapfrogging' path in each country had its own characteristics. The gaps in existing services create huge opportunities for innovation, especially in low and middle--income countries.

The growth of non-cash payments is a key driver of economic growth in any country. On the one hand, it enhances the level of oversight and control over financial transactions, while on the other hand, it stimulates increased consumer spending. This, in turn, leads to higher consumption levels and contributes to GDP growth. However, current trends in e-commerce, particularly in the context of COVID-19, necessitate a focused examination of the factors influencing the development of payment systems in emerging markets. Such an analysis is essential for shaping effective financial innovation policies that can drive economic recovery and establish sustainable economic growth trajectories.

The rapid digitalisation of the economy has become an objective and irreversible process, raising important debates about changing traditional payment systems managed or regulated by central banks. The use of FinTech innovations and solutions has the potential to transform the conventional concept of cash payment systems, elevating them to a qualitatively new level. Meanwhile, non-bank payment systems, which leverage FinTech innovations, are increasingly becoming the dominant players in the modern payment systems market.

The construction of a new payment system architecture must adhere to principles of operational legality, user safety, transaction guarantees, minimisation of shadow operations, and transparency for regulators and supervisors.

Technological innovations are continuously reshaping payment systems to meet the evolving needs of users. Entities providing payment services, central banks, and international financial institutions are striving to collaborate at various levels – from the technical organisation of money transfers to the harmonisation of legislation and regulation of the payment market. Such efforts are crucial to ensure the reliable and uninterrupted operation of payment systems both within individual countries and at the interstate level.

In this era of rapid change and transformation, driven by the digitalisation of society, the world is becoming more globalised and requires new approaches to its development, particularly in the sphere of payment services. Payment service providers must be modern, competitive, and continuously innovative, offering new systems and convenient services that meet the ever-growing demands of customers.

Over the past decade there has been a significant shift in the needs of payment system customers, driven by increased travel, online shopping, and changes in professions. Labour migration at international level has also risen significantly, leading to the emergence of many new payment systems.

Current trends in e-commerce necessitate the development of new technological solutions, such as electronic payment systems capable of legally handling transactions with electronic money and cryptocurrency.

The authors selected six Eastern European countries that are members of the European Union, along with three post-Soviet Eastern European countries. It is important to note that, over the past decade, these countries have experienced rapid advancements in payment systems, although each country's 'leapfrogging' path had distinct characteristics. The gaps in existing

services present significant opportunities for innovation, particularly in low and middle-income countries. Most Eastern European nations utilise FinTech innovations in developing payment systems, particularly through mobile apps, although in this region, mobile payments are often linked to the banking system.

Given the rapid growth of transactions through non-bank electronic payment systems, it is crucial to identify the obstacles to their development, especially concerning the need for effective supervision of cash settlements and the reduction of shadow payments.

The study also examined the trends in the development of various types of payment systems, analysing the dynamics of growth in payments through both banking and non-bank payment systems. The authors discuss the advantages and disadvantages of non-bank payment systems that utilise e-commerce and blockchain technology, considering both user and regulatory perspectives.

The research employed a comparative case analysis of Eastern European countries, with results compared to three developed Western European countries. The use of non-bank payments is growing significantly in several countries relative to bank payments. This suggest the specific institutional, market and regulatory situation in individual jurisdictions and how they shape adoption of payments innovations. A key aspect of the study was identifying and understanding the correlation between the development of payment systems and changes in the share of cash payments in Eastern Europe.

The authors also investigated the impact of high-tech payment innovations on the functioning and development of payment systems, analysing specific financial technologies and justifying their application in the development of payment systems in Eastern Europe. The objective was to present supporting evidence and analysis that address these critical issues.

The principal findings concerned the main opportunities for innovation in payments and in the closing of gaps in existing services. In Eastern Europe, in contrast to many other middle-income countries elsewhere in the world, the proportion of the population with bank accounts is high. The provision of mobile payments for example has been bank-based, it has not emerged through non-bank e-money solutions. The implication is that developments in domestic payments technologies in Eastern Europe will be bank rather than non-bank based.

This case can be of broad interest, not just to bankers, regulators and payments professionals in Eastern Europe. It highlights the path dependence of payments innovations and provides broader insight into the challenges of payments innovation.

The chapter is structured as follows. Section 5.2 is a brief review of the literature on innovation in payments. Section 5.3 reviews some of the relevant features of the economy and of the organisation of banking and payments in the selected nine countries, drawing some comparisons with three high-income European countries. Section 5.4 analyses payment infrastructure and payment innovations in these countries. Section 5.5 concludes.

5.2. The Opportunities for and Impact of Payments Innovations

This section reviews the literature on payments innovation, distinguishing: 1) the adoption of payment innovations and its dependence on the specificities of the use of banking services and financial technologies by households and corporations; 2) the impact of payment innovations and cashless payments on the economy.

For a long time, payment systems did not attract significant in-depth interest from scientists for research and analysis. This lack of interest was largely due to the fact that, until the end of the 20th century, payments were predominantly made in paper form (European Central Bank [ECB], 2022). Payment processing could take several days, depending on the nature of the transaction – whether international, domestic, or intrabank (Schenk, 2024). Consequently, payment systems were categorised accordingly.

The acceleration of financial technology development, the rise of cryptocurrencies, and the growth of international settlements have spurred increased scholarly interest in the study of payment systems (Kou et al., 2024). Concurrently, the growing virtualisation and digitalisation of payments have led to a narrowing of the concept of the 'payment system' which is a critical term in both the financial market and the banking system. Most scholars now equate payment systems with interbank non-cash payment systems or clearing settlement systems involving non-bank financial and credit intermediaries.

As monetary settlements become increasingly digitalised, the concept of a payment system is often conflated with, or reduced to, a system of electronic or non-cash payments. Consequently, international and national financial market regulators have focused on creating regulations that primarily govern non-cash payments, often neglecting the oversight of cash payments, which still constitute 20-30% of the total payments in many developing countries (James, 2024).

However, since 2012, with the advent of cryptocurrencies and blockchain technology, the concept of the payment system has undergone radical changes (Benson et al., 2024). Modern interpretations which typically describe a system of cashless payments through bank accounts or accounts managed by various clearing companies – where a banking institution is a mandatory infrastructural component – fail to acknowledge that cashless payments in the economy can occur without direct participation from traditional banking institutions.

5.2.1. The Drivers of Payment Innovation

Haddad (2018) investigating the development of financial innovations and cashless payments in developed countries found that these depend on the development of the Internet, the use of mobile phones and computers. Goldfinch (2019) also found that the development of mobile technologies have a significant impact on the future of payments.

Bossone et al. (2020) emphasised the feasibility of ensuring the same competitive conditions for banking and non-bank payment systems. In particular, they proposed that the central banks of the countries provide access to the real-time gross settlement (RTGS) system for non-bank payment operators, which would give retail payment service providers (PSPs) other than commercial banks the same possibilities and benefits, including emerging companies that apply technology to the provision of payment or payment-related services.

Sadlakowski (2017) suggested that the introduction of RTGS technology into the cashless payment system has a positive impact on the development of the Polish economy. However, the main share of non-cash transactions through the instant payment system is interbank payments, which reduces the usefulness of this technology for business customers and households. One of the obstacles to the spread of RTGS technologies to the retail market segment is the need to ensure a high level of cyber defence of payments, as well as the habits of customers who are accustomed to using card accounts for payments on the Internet and at points of sale.

Arango-Arango and Suarez-Ariza (2020) examined the use of cash and non-cash payments in different countries, finding that the development of digital technology and advanced cashless payments do not always reduce the demand for cash.

Hasan et al. (2012), based on market analysis from 27 European countries, concluded that the introduction of electronic payment instruments and non-cash retail payments has a positive impact on overall economic growth, consumption and trade. The greatest effect on economic growth is from the increase in operations on credit and debit payment cards. The growth of the share of non-cash payments contributes to a decrease in the level of the shadow economy, and at the same time increases consumption costs due to an increase in the limit of available funds for the client.

Technological innovations are constantly changing payment systems, meeting the modern needs of users. Sumedrea (2019) studied the development of fintech innovations, including digital payments, in Eastern European countries, assessing the development trends of financial innovations in the financial sector with a low level of development by analysing economic and social drivers. The research allowed to analyse the experience of financial innovation development in the countries of the former socialist countries, which, after gaining independence, have gone a short way in the development of the financial sector. It was the introduction of innovations that allowed to adapt payment systems to the standards of the European Union.

5.2.2. The Economic Impact of Payment Innovation

The growth of the share of financial innovations in Eastern Europe is also an important driver of economic development due to the increase in Internet trade, banking liquidity and business lending.

Merrouche and Nier (2010), in exploring the development of payment systems in Eastern Europe, concluded that the reforms of payment systems in the early 2000s led to a credit boom. The introduction of card payments contributed to a decrease in cash out of banks and led to an increase in demand deposits, and in turn to an increase in liquidity of commercial banks and retail lending.

In this case, the unregulated increase in the number of non-cash payment instruments and the development of a large number of payment systems could be one of the factors of the financial crisis. One can observe such trends in Ukraine, Belarus, the Russian Federation, where uncontrolled growth of lending led to the loss of liquidity by banks during even a slight deterioration in the world financial markets.

Gogoski (2012) made it possible to expand understanding of the role of payment systems in the economy by studying the trends in their impact on the effectiveness of monetary regulation of the economy by the central bank. The study concluded that it is impossible to effectively operate payment systems without the participation of the central bank as a regulator of non-cash payments by establishing risk control.

Aprigliano et al. (2019) suggested that the development of payment systems is important not only for economic growth, but also for effective business and control over the movement of financial flows in the country. The use of data received from the payment system allows enterprises and the central bank to analyse the trends of non-cash payments and make

forecasts for the future. Increasing non-cash payments in this context will allow studying the behaviour of companies and households in the payment market.

Beck et al. (2018) investigated the impact of innovative payment technologies on entrepreneurship and economic development using a quantitative dynamic model of general equilibrium. The authors, by building economic and mathematical models, proved that the introduction of innovative technology 'mobile money' in Kenya had a positive impact on the development of entrepreneurship and the economy, as companies gained access to simplified lending and increased sales, resulting in increasing demand from customers who own mobile apps for 'mobile money'. Despite the fact that the results of the study of Beck et al. (2018) described the positive impact of innovative mobile money technology on the development of emerging markets economies, the authors noted that such was impact is not so great, because despite its introduction, the growth of lending to small and medium-sized businesses will have restrictions on the part of regulators of payment systems and banking. Therefore, the study found that the mobile money innovation, has a positive impact on the development of the economy, but not large enough to increase GDP and final consumption.

Research of the technological component of financial innovations and their impact on the behaviour of consumers of financial and banking services is also quite widespread. Bounie and Camara (2020), based on the analysis of empirical data, suggest that the introduction of contactless payments increases the sale of payment cards by an average of 15.3% per year. This conclusion indicates that financial innovations are the driver of the development of cashless payments and the growth of the retail banking business. Similar research on determining the effects of financial innovations on the development of cashless payments was carried out by Yeh (2020), who investigated the growth of non-cash payments under the influence of the development of mobile payment technologies.

Leibbrandt and de Terán (2021) examined the future possible architecture of payments, and discussed the different payment innovations, showing the opportunities for cryptocurrencies and also the advantages of central bank digital currencies.

Taufiq et al. (2018) explored the issues of introducing blockchain technologies into Indonesia's national payment system, which made it possible to distinguish key conditions for the introduction of blockchain technologies not only in highly developed countries, but in those with a lower level of development. The authors substantiated their version of the payment system based on blockchain technology.

From the analysis of available literature in the field of payment systems development, cashless payments and financial innovations in Eastern European countries, it was possible to distinguish several gaps in research, in particular:

1) most of the research is aimed at studying the experience of highly developed countries in the field of payment systems development and financial innovations, which narrows the range of analysis of problems associated with the peculiarity of the financial sector of some countries with emerging markets;
2) research of payment systems of emerging markets is not comprehensive; in some emerging markets, economic and political features that have an impact on the trends of non-cash payments are not always taken into account and may be of key importance;
3) the analysis of payment infrastructure and institutional support of payment systems, cashless payments, and financial innovations in some emerging markets is limited.

5.3. The Rise of Non-Cash Payments in Eastern Europe

This section examines the increase of non-cash payments in Eastern Europe and the reasons for this growth, utilising data collected before Russia's invasion in Ukraine in 2022, to ensure a consistent and accurate analysis of trends in non-cash payments in Eastern Europe. The Russia-Ukrainian war has introduced significant economic disruptions and shifts in financial behaviour, which would not provide a stable basis for comparison with other EU countries. By focusing on pre-war data, it was possible to examine more effectively the underlying trends and factors driving the increase in non-cash payments, without the confounding effects of the ongoing war.

A characteristic feature of Eastern European countries is the high level of labour migration to Western Europe. This has led to the development of a significant number of alternative payment systems through which citizens can conveniently and quickly transfer funds between countries and make instant currency exchange transactions.

Modern trends in e-commerce require the emergence of new technological solutions in the form of electronic payment systems that can legally serve transactions with electronic money and cryptocurrency. The widespread use of smartphones and mobile apps in the countries of Eastern Europe allows e-commerce to develop much faster.

In conducting this study of the drivers of the development of non-cash payments, the authors chose the following indicators: the country's GDP, GDP *per capita*, proxy measures of the shadow economy, the number of POS terminals, the number of Internet subscribers, the volume of e-commerce and the share of cash in the total monetary supply. The study carried out correlation analysis of these drivers of the development of non-cash payments with the main indicators of non-cash payments: the volume of non-cash payments using bank payment cards, the share of non-cash transactions in payment transactions in the country.

5.3.1. Non-Cash Payments

The results of the analysis provide mixed evidence of the positive impact of the development of non-cash payments on economic growth in Eastern Europe. Thus, analysing the nature of the correlation between the country's GDP and GDP *per capita* with the dynamics of non-cash payments in Ukraine, Belarus, the Russian Federation, Poland, and Romania, the slight connection of these indicators in countries such as Ukraine, Belarus, and the Russian Federation (Tables 5.1 and 5.2) was noted. Shaded cells in the tables highlight the most meaningful relationships and identify which variables are most strongly related. The data of the correlation analysis show that the development of non-cash payments does not affect the economic development of Ukraine, Belarus, and the Russian Federation, and vice versa, economic growth does not contribute to the development of non-cash payments.

Such a conclusion may be wrong, because the analysis does not consider the national peculiarities of economic development during the studied period of 2009-2020. The fact is that unlike Poland and Romania, where there is a rather close relation between economic development and the development of non-cash payments (Table 5.2), in Ukraine and the Russian Federation after the financial and economic crisis, there was another phase of the economic crisis associated with the war in the Donetsk and Luhansk regions of Ukraine, as well as the annexation of Crimea.

Table 5.1. Correlation analysis of drivers for the development of non-cash payments in Eastern Europe (non-EU countries)

Country	Indicators of the development of non-cash payments and economic development	GDP (billions USD)	GDP *per capita* (USD)	Level of shadow economy (%)	Number of POS terminals (payment infrastructure), units	The share of Internet subscribers, in % of the total population	Average salary (USD)	E-commerce, in billions. USD or in % of sales of goods and services	Cash share (M0) in cash (%)
Ukraine	Non-cash transactions with payment cards, billions USD	–0.0850	0.3424	0.1206	0.9547	0.8958	0.2246	0.8907	–0.5938
	Cash withdrawal from payment cards, billions USD	0.8858	0.9525	0.3224	0.9403	0.9194	0.5467	0.7057	–0.4068
	Non-cash transactions with payment cards, millions items	–0.2835	0.1449	0.0361	0.8905	0.8615	0.0054	0.9976	–0.7857
	Cash withdrawal from payment cards, millions items	0.2863	0.6654	0.3680	0.4322	0.3370	0.9640	–0.2183	0.7950
	Share of non-cash transactions in payment transactions, %	–0.2893	0.1576	0.2104	0.9290	0.9377	0.0037	0.9936	–0.7928
Belarus	Non-cash transactions with payment cards, billions USD	–0.1862	–0.1770	–0.4386	0.9062	0.9144	N/A	N/A	0.1785
	Cash withdrawal from payment cards, billions USD	0.6424	0.6412	–0.2779	–0.2761	–0.1491	N/A	N/A	–0.4134
	Non-cash transactions with payment cards, millions items	–0.2655	–0.2567	–0.5712	0.9333	0.9463	N/A	N/A	0.2135
	Cash withdrawal from payment cards, millions items	0.2908	0.2797	–0.1175	–0.8344	–0.8768	N/A	N/A	–0.3020
	Share of non-cash transactions in payment transactions, %	–0.3356	–0.3284	–0.5475	0.9759	0.9708	N/A	N/A	0.1050
Russian Federation	Non-cash transactions with payment cards, billions USD	–0.2339	–0.2759	0.1077	0.9791	0.8041	0.9578	0.9807	–0.7506
	Cash withdrawal from payment cards, billions USD	0.7558	0.7343	–0.3740	0.0197	0.4657	0.1628	–0.1952	–0.3620
	Non-cash transactions with payment cards, millions items	–0.3155	–0.3550	0.1595	0.9859	0.7740	0.9517	0.9782	–0.7139
	Cash withdrawal from payment cards, millions items	0.0771	0.0300	0.3222	0.5051	0.8564	0.6411	0.1937	–0.8781
	Share of non-cash transactions in payment transactions, %	–0.3087	–0.3554	0.2737	0.9889	0.8805	0.9884	0.9459	–0.8513

Source: compiled based on: (ECB, 2024; World Bank, 2023; National Bank of Belarus, 2022; Central Bank of the Russian Federation, 2022; National Bank of Ukraine, 2024).

Analysing the correlation links and their significance between GDP and the volume of non-cash payments of all other, more developed countries of Eastern Europe, it was noted that non-cash payments have a positive effect on economic development, while in the Czech Republic and Slovakia the significance of correlation coefficients is somewhat lower than in other countries (Table 5.2).

Table 5.2. Correlation analysis of drivers for the development of non-cash payments in Eastern Europe (EU countries)

Country	Indicators of the development of non-cash payments and economic development	GDP (billions USD)	GDP *per capita* (USD)	Level of shadow economy (%)	Number of POS terminals (payment infrastructure), units	The share of Internet subscribers, in % of the total population	Average salary (USD)	E-commerce, in billions. USD or in % of sales of goods and services	Cash share (M0) in cash (%)
Poland	Non-cash transactions with payment cards, billions USD	0.7930	0.7288	–0.9518	0.9799	0.9517	0.7653	0.9773	–0.1154
	Cash withdrawal from payment cards, billions USD	0.9651	0.8311	–0.7087	0.6970	0.8937	0.9687	0.7358	0.0539
	Non-cash transactions with payment cards, millions items	0.6790	0.5989	–0.9723	0.9988	0.9039	0.6473	0.9707	–0.1778
	Cash withdrawal from payment cards, millions items	0.4475	0.7790	–0.0143	0.2351	0.5966	0.4066	0.0713	0.2924
	Share of non-cash transactions in payment transactions, %	0.7846	0.7142	–0.9591	0.9573	0.9616	0.7365	0.9898	–0.1018
Romania	Non-cash transactions with payment cards, billions USD	0.8584	0.9044	–0.7971	0.9827	0.9378	0.9648	0.7945	0.8399
	Cash withdrawal from payment cards, billions USD	0.9132	0.9490	–0.8042	0.9646	0.9239	0.9755	0.7855	0.8475
	Non-cash transactions with payment cards, millions items	0.8297	0.8784	–0.7603	0.9788	0.9245	0.9557	0.8073	0.8224
	Cash withdrawal from payment cards, millions items	0.8312	0.8813	–0.8474	0.8942	0.9274	0.8631	0.5544	0.8465
	Share of non-cash transactions in payment transactions, %	0.7018	0.7674	–0.8940	0.9844	0.9906	0.8874	0.8390	0.9054
Bulgaria	Non-cash transactions with payment cards, billions USD	0.8528	0.8992	–0.3435	0.9097	0.8931	0.9263	0.7455	0.3876
	Cash withdrawal from payment cards, billions USD	0.8072	0.8683	–0.5141	0.9321	0.9386	0.9602	0.7860	0.3790
	Non-cash transactions with payment cards, millions items	0.8548	0.9108	–0.8838	0.9929	0.9321	0.9764	0.7804	0.5250
	Cash withdrawal from payment cards, millions items	0.6012	0.6766	–0.2302	0.8117	0.8558	0.8696	0.6405	0.2870
	Share of non-cash transactions in payment transactions, %	0.5704	0.4861	0.7857	–0.0693	–0.0693	0.0593	0.1949	0.1836

Slovakia	Non-cash transactions with payment cards, billions USD	0.5589	0.5032	0.4369	0.9300	0.8225	0.9668	0.2154	N/A
	Cash withdrawal from payment cards, billions USD	0.6706	0.6324	0.5737	0.6467	0.6634	0.7377	0.3997	N/A
	Non-cash transactions with payment cards, millions items	0.4762	0.4175	0.1512	0.9724	0.8158	0.9894	0.1498	N/A
	Cash withdrawal from payment cards, millions items	0.1171	0.0749	–0.3418	0.7051	0.3193	0.6587	0.0919	N/A
	Share of non-cash transactions in payment transactions, %	0.4519	0.3915	0.3918	0.9673	0.8890	0.9852	0.2261	N/A
The Czech Republic	Non-cash transactions with payment cards, billions USD	0.5220	0.4498	–0.6154	0.8938	0.9032	0.9208	0.3938	0.5238
	Cash withdrawal from payment cards, billions USD	0.8165	0.8357	0.3648	–0.0260	–0.0687	0.3479	0.2027	–0.0008
	Non-cash transactions with payment cards, millions items	0.4900	0.4152	–0.6775	0.9630	0.8778	0.9400	0.1286	0.3727
	Cash withdrawal from payment cards, millions items	–0.1876	–0.2612	–0.6456	0.6866	0.8806	0.4707	0.5709	0.6135
	Share of non-cash transactions in payment transactions, %	0.2220	0.1409	–0.6784	0.9154	0.9669	0.8049	0.4171	0.5779
Hungary	Non-cash transactions with payment cards, billions USD	0.8166	0.8213	0.3452	0.4646	0.1502	0.8535	0.5304	N/A
	Cash withdrawal from payment cards, billions USD	0.5660	0.6115	–0.8597	0.6768	0.5160	0.5940	0.6895	N/A
	Non-cash transactions with payment cards, millions items	0.5164	0.5966	–0.5355	0.9761	0.8462	0.8757	0.9191	N/A
	Cash withdrawal from payment cards, millions items	–0.3689	–0.4456	0.6428	–0.8388	–0.8106	–0.6046	–0.7141	N/A
	Share of non-cash transactions in payment transactions, %	0.6847	0.6702	0.5397	0.2393	–0.0624	0.7007	0.3436	N/A

Source: compiled based on: (ECB, 2024; World Bank, 2023).

There is a notably large increase and higher share of non-cash payments in GDP in the former Soviet countries of Eastern Europe (Figure 5.1) when compared with the six Eastern European countries of the EU (Figure 5.2).

In Ukraine, the volume of non-cash payments increased 14 times over the ten years, in Belarus – 8 times, in the Russian Federation – 15 times, in Romania – 4.5 times, and in all other countries 1-2 times (Figures 5.1-5.3). Thus, the potential for the development of non-cash payments in Ukraine, Belarus and the Russian Federation is still very high.

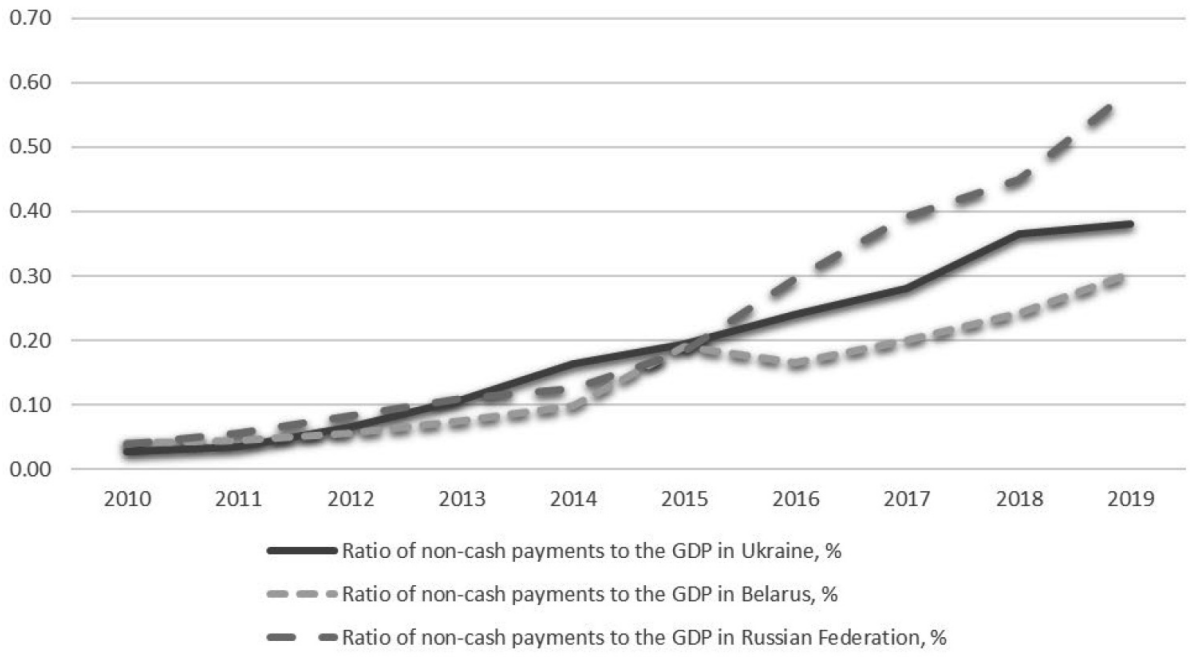

Fig. 5.1. The ratio of non-cash payments to the GDP in selected former Soviet Union countries (%)

Source: compiled based on: (Central Bank of the Russian Federation, 2022; National Bank of Belarus, 2022; National Bank of Ukraine, 2024; World Bank, 2023).

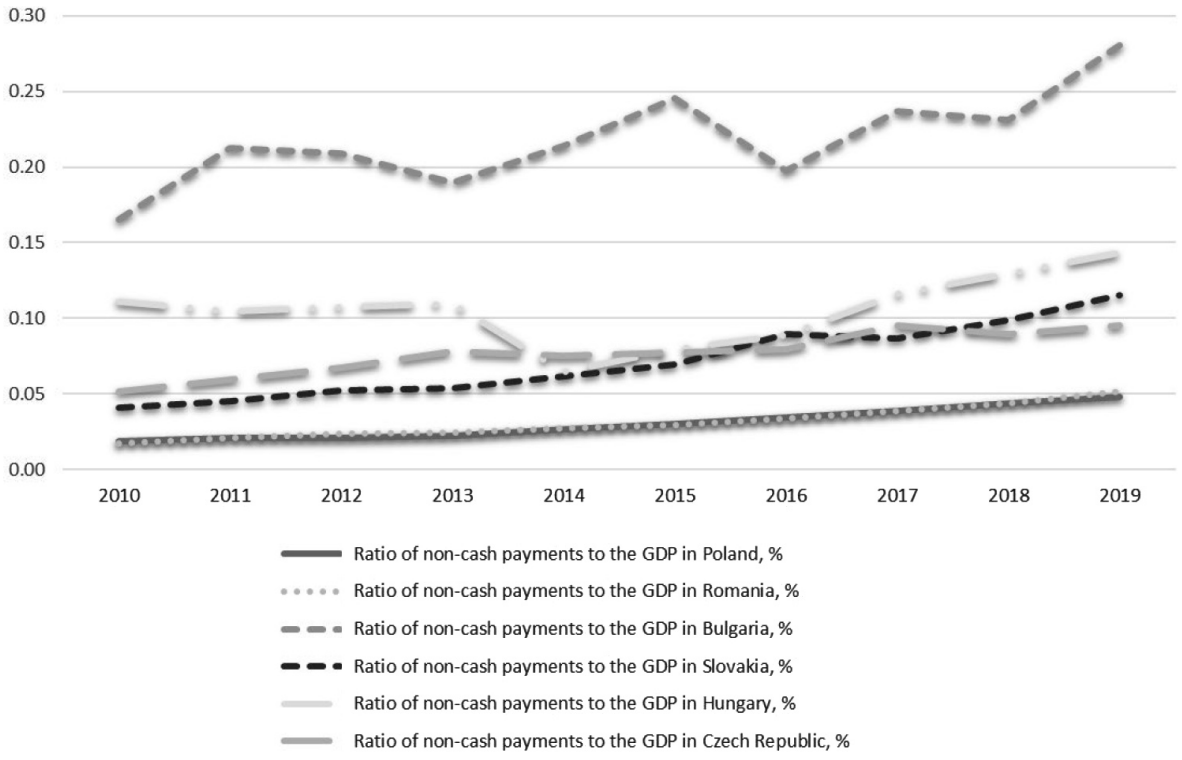

Fig. 5.2. The ratio of non-cash payments to the GDP in selected Eastern EU countries (%)

Source: compiled based on: (ECB, 2024; World Bank, 2023).

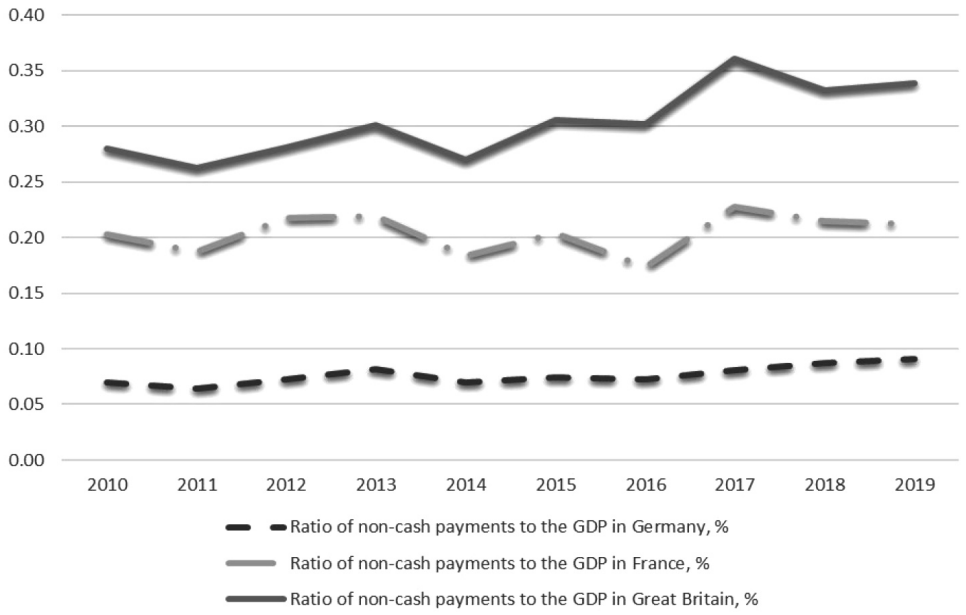

Fig. 5.3. Growth of the ratio of non-cash payments to the GDP of selected high-income EU countries (%)

Source: compiled based on: (ECB, 2024; World Bank, 2023).

5.3.2. Financial Participation

The existence of accounts opened in banking institutions has an important influence on the development of non-cash payments. The share of adult citizens who opened accounts in financial institutions in developed European countries (France, United Kingdom, Germany) over the last 10 years has not changed (Figure 5.4). Their share over the 2010-2019 years was close to 100%. The situation in middle-income countries in Eastern Europe and in the countries of the former Soviet Union is different. These countries significantly increased the share of adults with bank accounts and still have the opportunity to increase this share in the future.

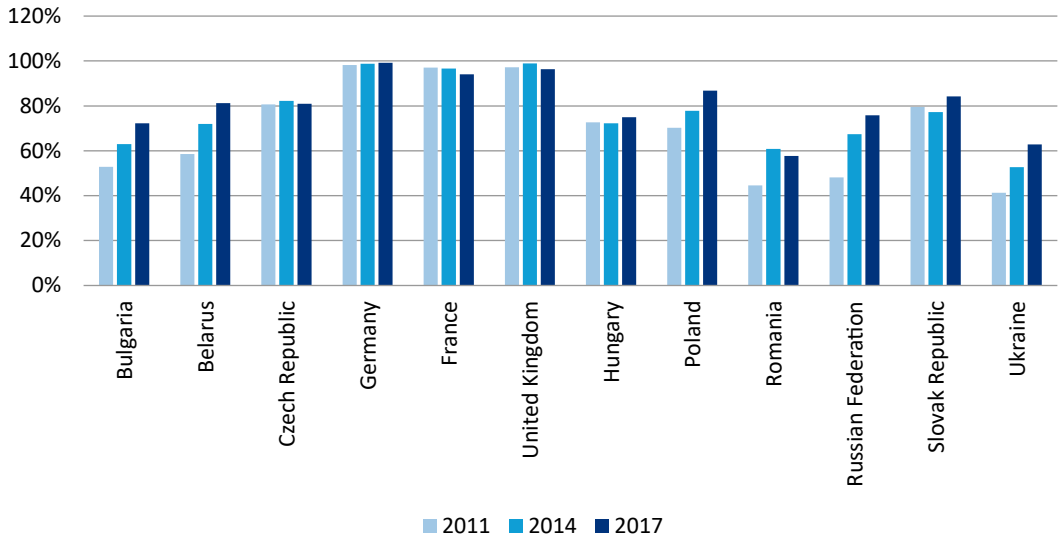

Fig. 5.4. Financial institution account (% age 15+) in selected European countries

Source: compiled based on (World Bank, 2023).

A second important influence is access to the Internet, measured by the share of the population with access to the Internet (Figure 5.5).

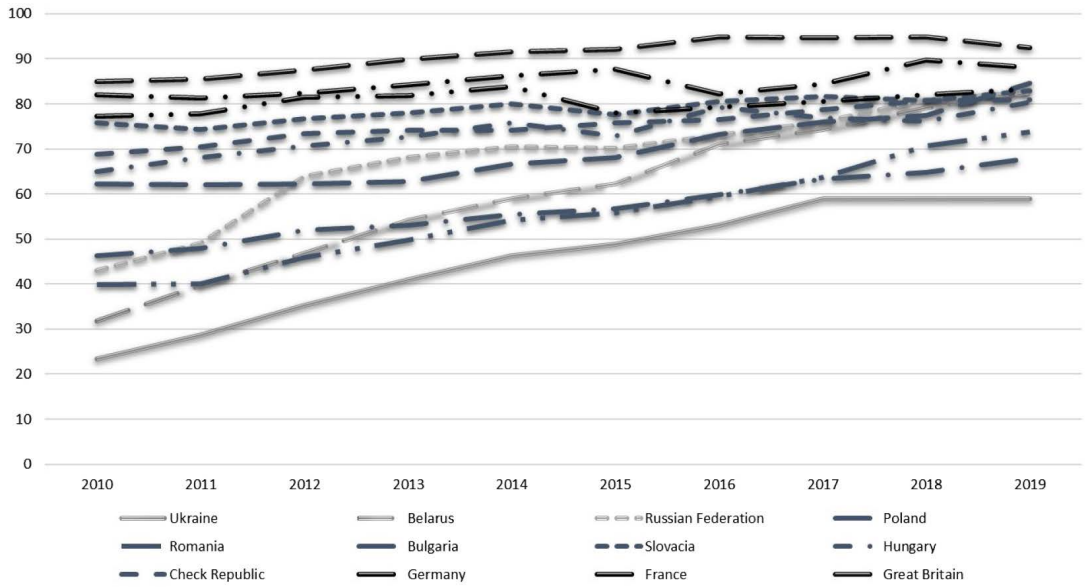

Fig. 5.5. Internet subscribers as a % of the total population in selected European countries

Source: compiled based on: (Central Bank of the Russian Federation, 2022; ECB, 2024;National Bank of Belarus, 2022; National Bank of Ukraine, 2024; World Bank, 2023).

According to Figure 5.5, the growth in the number of Internet subscribers can potentially increase the level of non-cash payments, especially in such high-income countries where the share of Internet subscribers exceeded 80% over the past 10 years. Particular attention can be paid to the growing trends in the share of Internet subscribers in Ukraine. According to the World Bank statistics, during 2017-2019, the number of Internet subscribers did not change and amounted to 58.9%. However, if one considers the data of the State Statistics Service of Ukraine, then the subscribers of the Internet were added to the subscribers of the mobile Internet, which together amounted to 84% of the population. Therefore, the growth trends of Internet subscribers in Ukraine are also accompanied by an increase in non-cash payments.

5.3.3. E-commerce

An important driver of stimulating the development of non-cash payments in Eastern Europe is e-commerce. The growth of it automatically leads to an increase in the volume and number of payments using card accounts of households. At the same time, it should be noted that for e-commerce in Eastern Europe there are differences in statistical indicators. In the EU member states, e-commerce development indicators are based on the principle of determining its share in the commodity turnover of enterprises, and in countries such as Ukraine and the Russian Federation, e-commerce volumes are reflected mostly based on the calculation of experts and analysts, namely, in these countries there are no official statistics on e-commerce. As for Belarus, the existing information on the development of e-commerce is not enough to build a dynamic series for comparison.

Comparing the correlation links between the dynamics of e-commerce development and the volume and number of non-cash payments using card accounts of households in Eastern Europe, it can be concluded that in countries such as Ukraine, the Russian Federation and Poland, there is a direct dependence between these indicators (Figure 5.6).

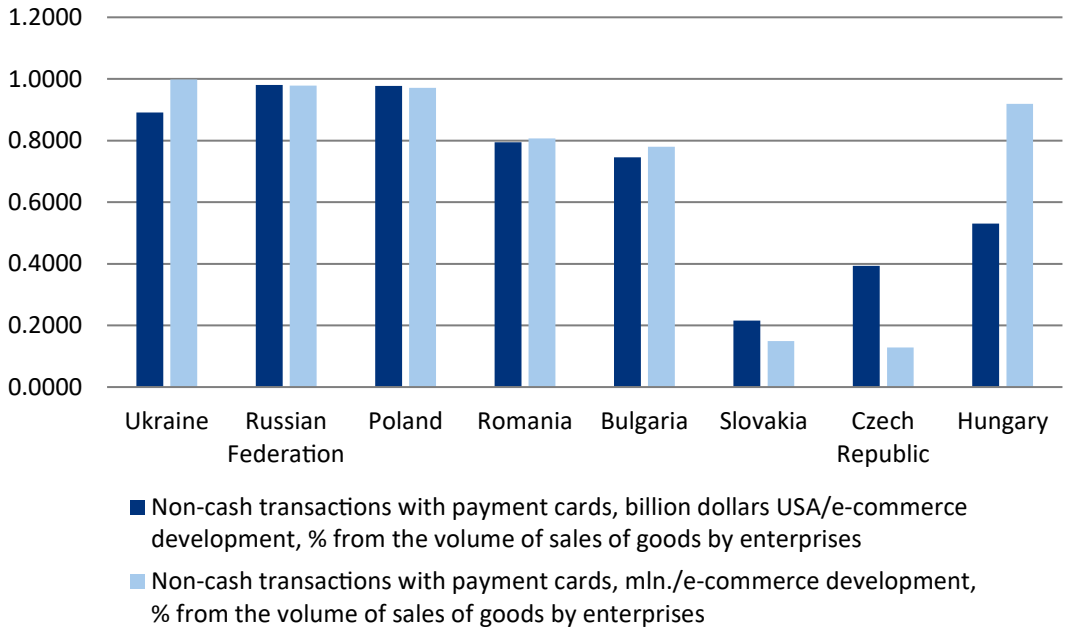

Fig. 5.6. Correlation coefficients between e-commerce development indicators and volume and number of non-cash card transactions in selected Eastern European countries (2008-2019)

Compiled based on: (Central Bank of the Russian Federation, 2022; ECB, 2024;National Bank of Belarus, 2022; National Bank of Ukraine, 2024; the European Central Bank: Payments and Settlement Systems Statistics; The National Bank of Belarus: payment system and digital technology; The Central Bank of the Russian Federation: Key indicators of the National Payment System (NPS) development; The National Bank of Ukraine: non-cash payments).

In less developed countries of Eastern Europe, innovation in the retail market of goods and services is one of the main drivers of the development of cashless payments. It should be noted that the increase in the number of non-cash transactions in Ukraine and Russia is also influenced by the size of the population, the number of which is significantly higher than in other countries of Eastern Europe. Therefore, the expansion of opportunities for shopping on the Internet automatically increases the multiplier effect on the number of non-cash transactions.

Significant correlations between e-commerce and non-cash payments are observed in Romania and Bulgaria, but in the Czech Republic, Slovakia, and Hungary their values are quite low. Such trends, in the authors opinion, are due to higher dynamics of e-commerce development in Poland, Bulgaria and Romania than in the Czech Republic, Slovakia and Hungary, where e-commerce development is at a stable level.

Figure 5.6 shows that non-cash payments are higher in countries with a higher share of e-commerce. The exceptions among the Eastern EU countries are Bulgaria and Hungary, and among the high-income countries – France. However, in the example of the Czech Republic, Germany, and the United Kingdom, one can see that the countries of the Eastern EU have quite strong reserves for the development of both e-commerce and non-cash payments.

5.3.4. POS-terminals

Exploring the role of innovations in the development of cashless payments and traditional payment systems in Eastern Europe, it is worth paying attention to the developed countries of Europe, namely Germany, France, and Great Britain. While maintaining high standards of banking and having significant financial capabilities, these countries actively invest in expanding the payment infrastructure by installing many POS-terminals (Figure 5.7).

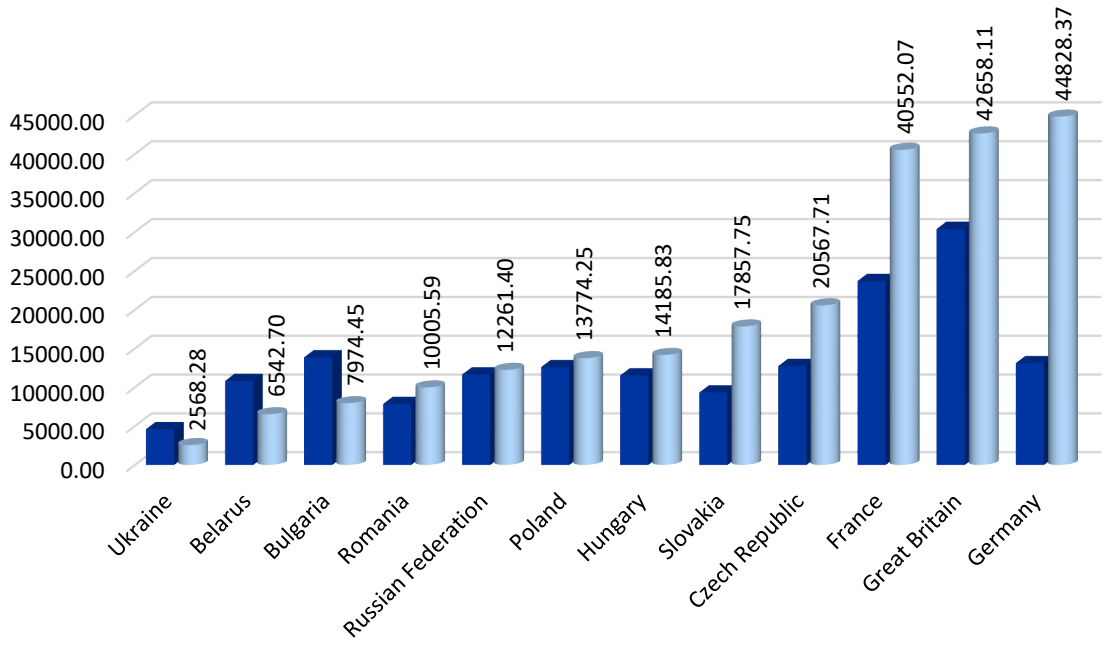

Fig. 5.7. GDP *per capita* and number of POS-terminals per 1 million population in selected European countries (average level for 2010-2019)

Source: compiled based on: (ECB, 2024; World Bank, 2023).

Figure 5.7 shows that the lowest level of payment infrastructure development is seen in Ukraine, Romania, and Slovakia, and the highest – in Bulgaria, France, and the UK. Such dynamics of POS-terminals depend on three main factors: 1) size of the shadow economy; 2) level of tourism development; 3) level of economic development.

The greatest role in the development of non-cash payments is played by the economic development of the country, the level of which is expressed through the GDP indicator *per capita*. The UK outweighs all the studied countries. The number of POS-terminals per 1 million population is also the highest in the UK (Figure 5.7).

According to Figure 5.7, the number of POS-terminals per million of the population corresponds to the level of GDP *per capita* in most of the analysed countries in Europe. However, there are also countries where GDP *per capita* is low, and the number of terminals is high. This indicates that in those countries where the level of GDP *per capita* is lower, innovations are still the main drivers of the development of cashless payments and payment systems.

5.3.5. Shadow Economy

One of the biggest barriers to the development of traditional payment systems is the high level of the shadow economy, which maintains a large amount of cash outside banks. At the same time, it should be noted that the statistics that allow comparing the level of the shadow economy in Eastern Europe are quite limited. The latest World Bank study on the level of the shadow economy in the world contains data only up to 2015, but they suffice to obtain general trends in the average level of the shadow economy in Eastern Europe for 2008-2015 (Figure 5.8).

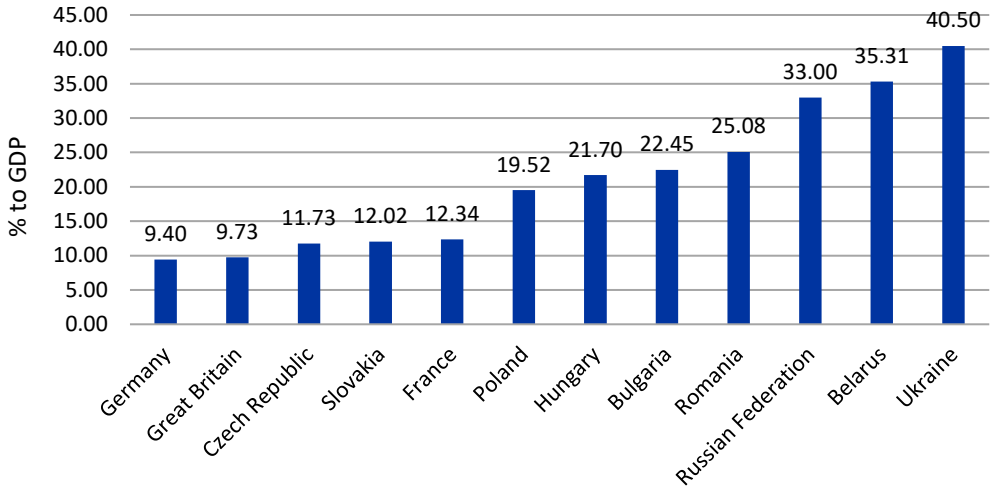

Fig. 5.8. Average level of shadow economy in selected European countries (2008-2015)

Source: (Kelmanson et al., 2019).

Figure 5.8 shows that the level of the shadow economy is the highest in Eastern Europe. The presence of unorganised trade, unregistered entrepreneurship activities, concealment of real income – all this hinders the development of non-cash payments in Ukraine, Belarus, the Russian Federation and Romania.

At the same time, the high level of the shadow economy in these countries is one of the main incentives for the development of retail non-cash payments through payment systems based on blockchain technologies.

5.4. Future Prospects: Bank or Non-Bank?

5.4.1. FinTech Payment Startups

This section analyses the trends in payment technologies in the countries of Eastern Europe, in light of the new FinTech and payment innovations.

The development of FinTech startups of Internet banking, Internet acquiring, payment mobile applications, blockchain technologies, digitalisation of registers, microfinance, lending are other directions of development of non-cash payments in Eastern Europe.

The role of FinTech startups in the popularisation of non-cash payments is quite significant. Their main activity is focused on providing consumers with the highest level of payment

service, not only making payments and taking over the functions of the traditional payment system (Turksen et al., 2024). Therefore, FinTech startups such as ApplePay, GooglePay (mostly in all EU countries), OMG or Curve in the UK, Billon, DotPay/eCard, SkyCash, uPaid in Poland, Portmone.com, iBox.ua, iPay.ua, EasyPay.ua in Ukraine are focused on simplifying the procedure for cashless payments and encouraging customers to make cashless payments by providing cashback for transactions.

However, these platforms are not payment systems, since they are not recognized at the regulatory level as a payment system, and do not have a hierarchical form of construction, their own subsystems, settlement, or service organizations either. At the current level, such Internet platforms are 'Internet payment delivery services', i.e. median banking and non-bank payment systems and their counterparts, even though such Internet services play a rather significant role in terms of convenience and organization of payments in the country.

5.4.2. Mobile Payments

Important innovations in the development of non-cash payments include mobile payments offered by FinTech companies. Mobile payments in Eastern Europe are not separate payment systems, but payment services that allow the user to pay for goods and services in one or two clicks on the Internet. They are important from the point of view of popularisation of non-cash payments, but today there are no prospects for the formation of a separate payment system based on mobile payments, as existing FinTech companies in the field of mobile payments (e.g. Monobank or Sportbank in Ukraine) choose banks as a base for settlements (i.e. transactions are carried out through the use of bank accounts, and FinTech companies are intermediaries and showcases in terms of marketing). The development of fintech companies in the field of mobile payments has great prospects in Eastern Europe but only based on bank accounts and bank payment systems.

5.4.3. Cryptocurrencies, Blockchain and CBDC

The dynamism of FinTech technologies development in the financial sector has not bypassed the payment systems. Blockchain technologies have great prospects, using the open code of cryptocurrencies, properties of decentralisation, the absence of intermediaries, the low cost of transactions and the convenience of transferring payment for goods and services (Javaid et al., 2022). However, to implement these ideas at the national level of Eastern European countries, it is necessary to grant legal status to cryptocurrencies and blockchain settlement technologies, as well as to form clear rules for mining, trading on the exchange and cryptocurrency settlements.

The lack of legal status of cryptocurrencies causes the understanding of cryptocurrency as a money surrogate in the form of an investment instrument, and not a full-fledged financial asset. In this regard, about 80-90% of the use of cryptocurrencies accounts for speculative transactions as an exchange asset, and the rest on payment transactions (Ahsan et al., 2024).

It would be a mistake to argue that cryptocurrencies and blockchain technologies in countries with a high level of the shadow economy are used solely to hide real income from entrepreneurial activity. In fact, non-cash payments using blockchain technologies and using cryptocurrencies should be considered as an opportunity to effectively overcome the shadow economy and corruption.

The introduction of blockchain technologies in the traditional monetary system (which will make transparent all transactions of the central bank and commercial banks, commercial banks among themselves and commercial banks and customers) can be an effective measure in terms of the development of payment systems. The system of decentralised data storage will increase the security of financial transactions (Aquilina et al., 2024). In addition, the introduction of blockchain into the banking operations system will allow banks to save on transactions and costs for keeping cashiers, whole branches because all cash transactions will be carried out automatically (Turksen et al., 2024).

The growing popularity of cryptocurrencies and blockchain technology has prompted central banks in many countries to explore the possibilities of using new technologies not only privately, but also at national level. More than 100 central banks of different countries are actively researching the possibility of introducing the digital currency of the central bank (CBDC) into monetary circulation. The concepts of CBDC are becoming relevant in addition to private FinTech companies in the field of payment systems, cryptocurrencies and blockchain technologies (Claessens et al., 2024).

Quite promising, in the authors' opinion, is the idea of creating a national cryptocurrency, where the central bank will be the main developer of software and cryptographic code. In this context, two concepts prevail in the scientific literature: 1) the central bank is the main developer and the main miner; 2) the central bank is the main developer, provided that financial institutions (both banks and non-banks) carry out mining.

In the first case, the central bank may act as a major miner in the implementation of the idea of creating a national cryptocurrency. At the same time, the central bank provides a nominal value to the national cryptocurrency, reducing the volatility of exchange rate and allowing it to become a full-fledged currency by digitisation of fiat money. However, in this case, the idea of decentralisation of cryptocurrencies, laid down by Satoshi Nakamoto, is violated. A positive aspect is that an opportunity is created to regulate the circulation of cryptocurrencies, since counterparts will be known as a result of fulfilling the conditions for identifying persons. The idea of the absence of intermediaries in the purchase and sale of goods and services will also remain because each counterparty will have its own wallet and will be able to directly carry out transactions (Benson et al., 2024). As a result, the system of decentralised control of operations using blockchain technology will increase the transparency of money circulation in general.

In considering the existing trends in the development of payment systems and card payments in Eastern Europe, it can be noted that the creation of cryptocurrencies of central banks is a promising direction for increasing the volume of non-cash payments. Given the lower level of economic development of countries such as Ukraine, Romania, and Belarus, which affects the dynamics of the introduction of POS-terminals in the cashless payment system, the introduction of blockchain technologies and national cryptocurrencies is a much cheaper way to develop payment infrastructure. Moreover, given the high level of the shadow economy, the use of cryptocurrencies of central banks in Eastern Europe will significantly increase the transparency of non-cash payments, and due to the attractiveness of cryptocurrencies for the population, it will increase the volume of non-cash payments and the refusal of cash transactions.

5.5. Conclusions

The study of the development of payment systems in Eastern Europe allowed to identify the main drivers for the further development of payment systems. A significant influence on the development of non-cash card payments has emerged from the development of payment infrastructure, the development of e-commerce, distribution and access to the Internet, and payment innovations.

The analysis of trends in the development of non-cash payments in countries with weak political institutions (Ukraine, Belarus, Russia), which leads to permanent political and economic crises, indicates that there is little connection between economic trends and trends in the growth of non-cash payments.

Examining the drivers of the development of non-cash payments, the study's analytical findings confirm the important role of increasing the share of Internet users by increasing the volume of non-cash payments and the number of non-cash transactions.

This study also confirmed the important role of innovations in stimulating the development of non-cash payments, but unlike Bounie and Camara (2020), who investigated the impact of mobile payments and contactless technologies on the development of non-cash payments, the authors concluded that in Eastern Europe the main driver of the development of non-cash payments is the payment infrastructure. This refers to an increase in the absolute number of POS terminals and the number of POS terminals per million people. The presence of these terminals at retail enterprises enables all payment cardholders and smartphone users with NFC technology to make payments.

The conducted research on the tendencies in the development of payment systems and cashless payments in Eastern Europe made it possible to emphasise the importance of forming and expanding the payment infrastructure by installing more POS-terminals. At the same time, the authors are aware of the fact that in countries such as Ukraine, Belarus, Bulgaria, and Romania, which belong to the countries with low non-cash payments, most of the payments are concentrated in the shadow sector, and the level of economic development does not allow to save the necessary resources to increase the volume of non-cash payments.

Therefore, given this situation, less developed countries should actively involve the latest blockchain technologies in the development of payment systems. It is necessary to give cryptocurrencies legal status and develop common and understandable rules for non-cash payments through blockchain systems for this. Such measures do not require large-scale financial resources, which, in the authors' opinion, can be part of an effective strategy for the development of payment systems, an increase in the volume of non-cash payments, minimisation of the shadow economy and stimulation of economic growth.

Examining the drivers of the development of non-cash payments of countries with a medium and high levels of development of the payment sphere, it was noted that the higher level of economic development expands the opportunities for increasing the number of POS- terminals, as well as the purchasing power of households. However, there are countries with a higher level of economic development, in which the habits of their citizens hinder the processes of introducing non-cash payments even in the presence of developed payment infrastructure (for example, Germany, where more than 1,800 euros of cash per person are in circulation). FinTech startups are a good opportunity to solve these problems and encourage cashless payments.

The cryptocurrencies of central banks (CBDC) in Eastern Europe, as a digital form of money denominated in the currency of the country to which the central bank belongs, can be promising financial technologies nowadays. The research suggests that digital cryptocurrencies of central banks in Eastern Europe will increase the level of transparency of settlements, reduce the cost of settlements and the cost of servicing the payment system, and reduce the volume of the shadow economy. However, according to the authors, the main role of cryptocurrencies of central banks will be the institutionalisation of blockchain technologies and granting legal status to private cryptocurrencies.

To sum up, the study identified the development of payment infrastructure, e-commerce, Internet access, and payment innovations as key drivers for the growth of non-cash payments in Eastern Europe. It also highlighted the potential of blockchain technologies and CBDCs in promoting transparency, reducing shadow economies, and fostering economic growth, particularly in less developed countries.

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Chapter 6

Electronic Records of Sales in the Czech Republic

Pavel Semerád

Sting University, Brno
ORCID: 0000-0002-0901-6776

Lucie Semerádová

Ambis University, Prague
ORCID: 0000-0002-1193-7275

Marian Dobranschi

Nicolae Bălcescu Land Forces Academy, Sibiu
ORCID: 0000-0002-5642-0341

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6.1. Introduction

Combating tax fraud is a long-standing and important objective of the financial administration. If this were not the case and the authority was resigned to this, it could destabilise and irreversibly damage the entire entrepreneurial environment. There are many ways to at least try to circumvent the legal provisions. For example, the use of non-wealthy persons in the chief executive bodies of corporations, complex interactions in carousel fraud (for the value-added tax), manipulation of the chemical properties of products within excise duty, or the transfer of profits to countries with lower tax rates (Nerudová et al., 2023; Semerád, 2012).

Uncovering complex organisational structures is often a very complicated task and requires rigorous analytical work by the tax authorities, which sometimes can be helped by chance, sometimes it manages to detect fraud in the context of an audit of another entity. Fraudulent entities try to cover their tracks because they are well aware that any non-standard document manipulation can reveal them (mandatory archiving is up to ten years) and that every non-cash payment made leaves a digital trail.

Preference is therefore given to business activities that leave minimal evidence (e.g. preference for payments in cash and through virtual currencies), or merely the pretend reporting of documents that never enter the official accounting system (Immordino & Russo, 2018; Sanchez, 2017).

Cash payments are one of the ways to commit fraud in some transactions, especially in the business-to-consumer variant, which the tax authorities will most likely never know about. Examples include the sector of providers of catering and accommodation services, or other services provided directly to customers. If the parties agree that the whole transaction is going to take place without paperwork, it will be difficult to prove retrospectively that any interaction actually took place between the two entities (Semerád et al., 2022).

Businesses motivate private individuals to enter into these agreements by e.g. paying less money, paying the price without value-added tax ('tax-free purchase'), or providing the service in preference to any customer requiring official documentation. In this way the client gets a cheaper and earlier delivered service, while the entrepreneur evades their tax liability, and this is not only the aforementioned value-added tax, but also income tax, as the revenue will not be included in the official accounting system. On the other hand, the costs incurred to achieve this revenue will be applied to the maximum extent possible to reduce the entrepreneur's tax base. For individuals, the state also loses social and health insurance payments. In the case of rather small tax entities, these mandatory payments can be more significant than income tax for individuals where tax exemptions and various tax benefits can be applied (Semerád et al., 2021).

These are impacts that ordinary consumers can ignore in the face of the tax savings. However, they do not realise that by this immoral behaviour, they are enabling tax fraud and thus shaping a new standard in a specific business segment (Luttmer & Singhal, 2014). If these frauds increase, honest entrepreneurs will not be able to compete on price with those who have built a company strategy on doing business without documentation. This will put honest entrepreneurs under enormous pressure. If they want to survive, they will either have to lower the price, thereby losing their margin, or adapt to market practices, even if that means cheating just like everyone else.

Such a state of affairs is undesirable. This means that the state will lose a significant part of taxes from one whole segment of entrepreneurs. Correcting such a distorted market is then a difficult and costly job, as other actors become accustomed to this state of affairs and even begin to demand it. To change people's minds and to re-educate whole generations of entrepreneurs and consumers, the state must make a huge effort with uncertain results.

One of the ways to achieve a return to the initial legal status is through increased oversight of the recording of sales that are received in cash (Boháč, 2018; Radvan & Kappel, 2015). However, this means that the tax authority must ideally learn about the sales in real time when the payment is received, as in the case of non-payers of VAT it would not learn about any sales until the end of the calendar year. It is almost impossible to verify and check any facts (also when witnesses are missing).

Therefore, financial administrations are trying to put pressure on domestic policymakers to enable them to automatically and instantly monitor revenues in businesses. This tool is referred to as electronic records of sales, facilitating real-time collection of sales information from entrepreneurs directly from their cash registers connected via the Internet to the tax authority's server-based storage sites.

6.2. Electronic Records of Sales

The principle of the electronic records of sales system is based on the fact that the entrepreneurial entity receiving sales in cash must issue a tax document (receipt). Before this document is stored in the cash register, the data about this transaction is sent to the financial administration's server and unique identifiers are sent from the financial administration's portal to confirm the receipt of the transaction and validate it at the same time. Depending on the quality of the Internet connection, this exchange of information takes a few seconds at most.

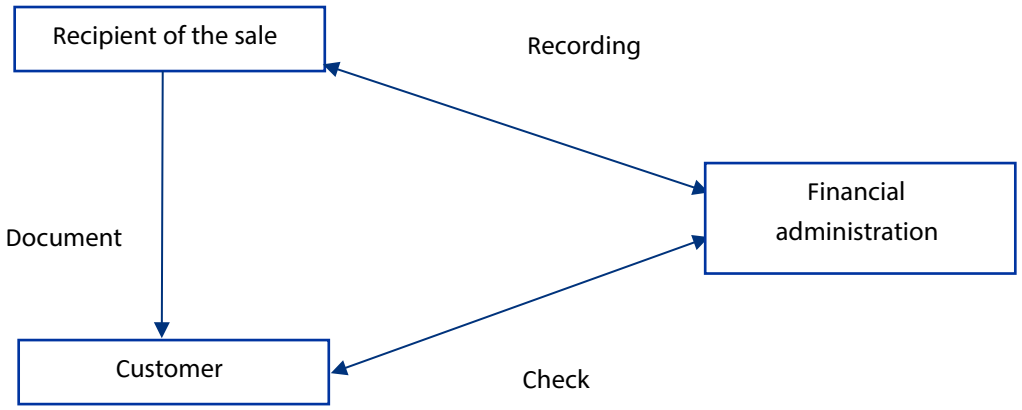

Fig. 6.1. The plan of recording sales electronically online

Source: (Semerád et al., 2023).

At the time when electronic record keeping in the Czech Republic was applicable, these unique identifiers were referred to as BKP (Taxpayer's Security Code) and FIK (Fiscal Identification Code) (*Recording*). These codes could be printed, in no time, on the tax receipt that the entrepreneur handed over physically or online to the customer (*Document*). If it was not possible to connect the entrepreneur's cash register with the portal of the financial administration in real time, the entrepreneur was obliged to send the data to the tax authority within 48 hours.

Thanks to this, the customer was able to verify on the portal of the financial administration whether or not it was a genuine tax document and that the supplier had actually declared this revenue to the tax authority (*Check*). To increase the motivation of citizens when taking tax documents, the Ministry of Finance of the Czech Republic launched a short-term lottery called *Účtenkovka* (Receipt Lottery), in which buyers could win valuable prizes after registering a tax document.

Despite its relatively simple operation, the system of records of sales was a controversial topic not only among entrepreneurs but also among politicians. In 2016, the introduction of the Czech electronic records of sales system represented a revolutionary change in the recording of cash sales. Although it was not a completely new instrument and the Czech proposal was inspired by the already functioning Croatian model (Smetánková & Palán, 2015), the electronic records of the sales system divided the political scene into two hostile groups.

The drafters of the law promised an increase in registered sales and a related increase in collected taxes by up to CZK 18 billion (approximately EUR 720 million[1]) per year (Financial

[1] The approximate exchange rate used throughout the article is 1 EUR = 25 CZK.

Administration of the Czech Republic, 2016a). At the same time, this solution was intended to contribute to the re-squaring of the business environment.

Nevertheless, the opponents of the law argued that it would lead to a disproportionate financial and administrative burden on and elimination of entrepreneurs (Hruška et al., 2019). They also feared that the data obtained by the financial administration could be misused in competition or to bully entrepreneurs (Čermáková & Pfeifferová, 2015; Kopecký, 2019; Median, 2015).

Despite these objections, the government managed to push through the law and entrepreneurs were divided into four groups according to when they were to compulsorily start recording their sales electronically. The first group (starting from 1 December 2016) were businesses providing accommodation, catering and hospitality services. The second group (starting from 1 March 2017 onward) included entrepreneurs in retail and wholesale trade. The remaining two groups were to be involved in Stage 3 (from 1 March 2018) and in Stage 4 (from 1 June 2018). However, this has not happened since the opponents of the law succeeded in getting this obligation repealed through the Constitutional Court of the Czech Republic (2017). As the registration itself was not considered unconstitutional, an amendment to the law was adopted, which moved the start date of Stages 3 and 4 to 1 May 2020 (Act No. 256/2019 Coll.). While the COVID-19 pandemic hit the world at the beginning of 2020, the start was (again) postponed to 1 January 2023 (Žurovec, 2020).

In fact, it was never reintroduced. After the elections in 2021, the political balance of power in the Czech Republic changed (the former opposition parties formed the government) and the newly elected government announced in its programme statement the abolition of electronic sales registration as of 31 December 2022. This marked the end of the era of electronic record sales in the Czech Republic.

From a political point of view, this was an understandable step towards fulfilling pre-election promises. On the other hand, it was noted that some entrepreneurs had been recording their sales voluntarily, even though they did not have to record sales until 31 December 2022. (Ťopek, 2020).

Thus, one can assume that some of them already considered records of sales as a part of their business. This assumption is based on the fact that the point of sale and accounting systems used in the retail industry allow for simple certificate insertion; this did not impose additional obligations on businesses (except for the renewal of the certificate after three years). Hence, if they needed a cash register software for their work, were connected to the Internet and had no reason to conceal their sales, the records of sales did not restrict them in any way.

From this perspective, the abolition could actually be a counterproductive step. Space has opened up for market conditions to return before the introduction of the electronic records of sales system. Paradoxically, this has occurred at a time when the records of the sales system actually became a part of tax administration in 17 other EU Member States (Financial Administration of the Czech Republic, 2016b). For example, Germany introduced this obligation on 1 January 2020 (Bundesministerium der Finanzen, 2021), just a few months before the Czech Republic suspended it.

This prompts a discussion on whether, in addition to re-aligning the business environment, the electronic records of the sales system could be used for other activities, and whether or not the potential of the system may be even greater than the extent perceived and used up to now. The possible advantages could also convince the opponents of the public benefit of this measure. This idea is also discussed in the following sections of this chapter.

6.3. Results of the Electronic Records of Sales System

The main concern of entrepreneurs was that their shared data would be misused by competitors, but no such thing happened, nor has there been any harassment of entrepreneurs by disproportionate or even destructive paperwork.

The opposite is true – one can rather talk about positives and a certain degree of correction of the entrepreneurial environment. The study by Pisková and Semerád (2022) showed, using the example of the accommodation services segment, that the introduction of the electronic records of sales system contributed to increasing:

- the number of registered accommodation facilities;
- the number of admitted guests and the reported average length of stay;
- the average accommodation prices in individual regions;
- the sales recorded, which led to an increase in the number of VAT payers[2].

The increased revenue and the resulting growth in the number of new VAT registrations can be identified as one of the significant benefits of the sales records (Marethová & Snopková, 2018). From this point of view, the electronic sales system appears to be an effective tool for dealing with tax fraud.

However, these positives lasted only until the discontinuation of electronic records of sales in May 2020. This period was, among other things, characterised by the global COVID-2019 pandemic and the associated restrictions on the movement of people and selected business activities; accommodation services were one such area.

Short-term accommodation services were generally unavailable within activities other than business trips and there was a ban on free travel between districts. Nevertheless, there was at least a suspicion (Semerád et al., 2021) that the demand for stays in the mountains led to the evasion of the travel ban and the provision of long-term accommodation services. Entrepreneurs took a rather peculiar approach to this demand. On the one hand, they provided accommodation to tourists and effectively disguised it as long-term stays, after which they destroyed all documentary evidence for stays paid for in cash. On the other hand, they demanded compensation from the state for the closed establishments. Thus, the state not only did not collect the tax on the accommodation provided, but also increased the expenditure intended to help entrepreneurs in the form of compensation.

The tax authorities had a difficult task. By losing day-to-day oversight of cash payments, which still form a significant part of the economy, they suddenly found themselves in a ‘dark age’ (Semerád et al., 2023b). Local investigations were difficult to carry out and the tax authority had almost no information about the tax entities. Thus, proving collusion was mainly possible only by monitoring electricity, gas and water consumption in the selected facilities and comparing them with comparable buildings in the selected location (Semerád et al., 2022) while at this very moment, the state could quite easily point out the benefits of electronic records of sales. Thanks to the long-term tracking of entrepreneur sales, the state had sufficient information on all registering businesses and could easily determine the impact of the pandemic on the business of a particular entity. It was possible to pay compensation in a fully targeted manner and in the exact proportion by which the selected entity’s revenues fell (Semerád et al., 2023a).

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[2] The limit for registration in the Czech Republic was CZK 1 million (approximately EUR 40,000).

Instead, aid was disbursed in an untargeted manner, and the top 20 recipients of aid during COVID-19 included four casinos (Maci & Nohl, 2022).

Paradoxically, the state could prove to entrepreneurs that the proper declaration of sales and payment of taxes made sense and should a non-standard situation arise, the state would be able to take care of the honest (properly registering) ones to the full extent. Conversely, those who cut sales would have punished themselves, as their compensation would have been reduced concerning the sales only admitted.

The targeted re-distribution of aid during non-standard situations during pandemics and war conflicts is not the only area where electronic records of sales can play an important role in motivating taxpayers. Electronic records of sales could also be used for a fairer re-distribution of shared taxes (Semerád et al., 2023). The principle is based on the fact that municipalities are generally not rewarded for generating taxable sales in their territory. If the rules were changed, it can be assumed that this would motivate municipal citizens to require businesses in their territory to properly declare sales (Lähdesmäki & Suutari, 2011; Sheth, 2020). They would know that the sales generated in their territory enter the sales re-distribution mechanism. As stated by Jurčík (2007), a similar approach is applied in Canada, for example.

Both examples – compensation and re-distribution of taxes – show that electronic records of sales offer a large number of opportunities towards the digitalisation of the state. This is an obvious trend that is being used not only by EU countries. The EU itself applies the VAT rule in the digital age. However, even this failed to persuade the current Czech government (2021--2025) to maintain the electronic record-keeping system.

6.4. Consequences of the Abolition of the Electronic Records of the Sales System

Based on the observations, it can be stated that the electronic records of sales system did not bring the expected effect in the form of a longer-term change in the willingness of entrepreneurs to declare their sales properly. Although it cannot be unequivocally stated that there was a return to the behaviour that led to the introduction of electronic records of sales, there are several indications that might suggest this, namely:

- The most obvious indication is that many service sector businesses have reverted to a **cash-only** payment model. This in itself does not necessarily mean a move into the grey zone. It is, however, surprising to say the least that this applies mostly to the fields of the then first and second waves.
- Some businesses have stopped entering sales information into any cash register database. This in itself need not be a problem, as information on stock records can be provided in other ways. More fundamentally, these traders do not issue any tax receipts to customers.
- If a receipt is already issued for e.g. consumption of food and beverages, these receipts are not tax documents. Figure 6.2 is provided as an example; it is something which the customer receives as the sum of main meals consumed (top) and drinks consumed (bottom).

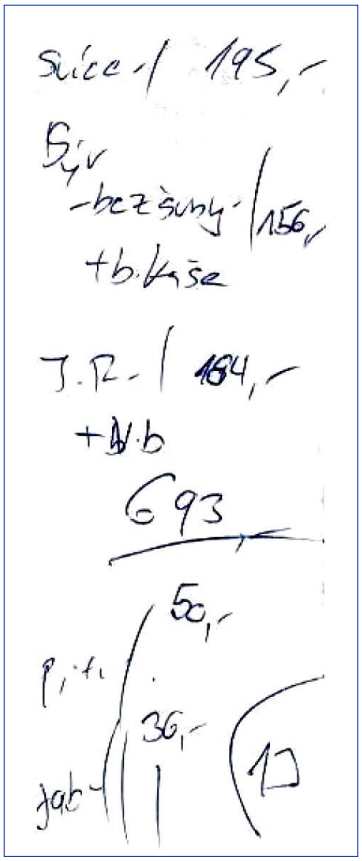

Fig. 6.2. Example of a displayed list of drinks and main meals consumed

Source: authors' observation.

Comparing this list with properly issued documents in other EU Member States, one can see that the Czech example does not meet the requirements of a tax document. It can be argued whether or not such a list is issued with or without the knowledge of the restaurant owner. Some owners were able to benefit from the fact that digital sales and stock recording brought them both savings in the form of reduced theft committed by staff and increased sales because staff had to record all sales while previously, they tried to persuade restaurant guests with menus including phrasing such as *If you do not receive a proper receipt from us, please do not pay. You are our guests*. This message can be interpreted to mean that the restaurant owner does not trust the staff.

How can the situation in the hospitality industry be summarised? The electronic records of the sales system brought the benefit of permanent control over employees during the employer's absence. In addition, if businesses had POS systems that allowed remote access, employers could monitor the restaurant's sales even when they were physically absent. The second benefit is the fact that restaurant employees have seen their officially awarded wages rise since previously employees were officially given the minimum wage and the remaining earnings came from both tips and unrecognized sales (the grey-zone economy). This had a negative impact on the amount of social benefits, e.g. sickness benefits and pensions, which are calculated on the basis of the assessment base (officially recognised wages). This shows that there is a real threat that if some businesses return at least partially to the grey-zone economy, the financial situation of their employees could worsen while they are on social benefits. From the authors' point of view, this is a step backwards.

6.5. Conclusions

The electronic records of the sales system make a modern tool that enables bilateral and secure communication between entrepreneurs and the financial administration. The information that businesses provide to the financial administration in this way helps the government to obtain real-time information on individual business sectors. As seen in the Czech Republic, this instrument has positively influenced behaviour in some sectors and one can say that the entrepreneurial playing field has been levelled. Examples include the positive effect on accommodation services, however the fact that there has been no lasting remedy is evident in the emergence of the grey-zone economy in fictitious long-term leases.

Other steps taken by entrepreneurs after the abolition of the electronic sales records were a return to cash payments and a reluctance to accept card payments, as it is card transactions which leave a digital footprint. In addition, some businesses have stopped issuing proper tax receipts or just use some sort of customer purchase reports (Figure 6.1).

However, the Czech Republic, as the country, is to some extent to blame for this. It has failed to convince entrepreneurs that declaring sales is a natural part of doing business. This lesson could have been taught to entrepreneurs during the COVID-2019 pandemic when untargeted state aid was paid. The country has missed the opportunity to pay out this compensation automatically based on the demonstrable drop in sales of a particular entrepreneur. Everything could have been done simply and proactively by the state.

Furthermore, the electronic records of sales system could have been used to re-distribute shared taxes more fairly, allowing residents to request a proper tax receipt, as it would automatically mean that a portion of the entrepreneur's final tax would be re-distributed to their municipality as per ratio. This bonding within communities could help motivate proper sales reporting.

However, none of this occurred. Instead, the electronic records of sales system became a political issue that helped the current government win the elections. This was even though digital information exchange between entrepreneurs and government is a natural part of business life in most EU countries. What the Czech government did was an unfortunate step against this trend, yet the authors expect that the electronic records of sales system will return in some form, nevertheless it will be very difficult to convince the public that this is the right move that was cancelled prematurely.

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Chapter 7

Fighting the VAT Gap – The Polish Experience

Alicja Brodzka

Assistant Professor, Wroclaw University of Economics and Business
ORCID: 0000-0002-4926-6753

Krzysztof Biernacki

Assistant Professor, Wroclaw University of Economics and Business
ORCID: 0000-0001-7390-7402

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7.1. Introduction

At the end of the 1960s, Value Added Tax operated in less than 10 countries; today, VAT or GST (a tax of similar obligation) is collected in 174 territories worldwide (OECD, 2022, p. 265). Value Added Tax is one of the most significant taxes in many countries, it also plays an important role in the EU Single Market. In 2021 VAT was responsible for 18% of all EU tax and social security revenues in 2021, making it an important source of financing the government budgets. VAT proceeds also contribute directly to the EU budget, as they are partly allocated to the EU's own resources (European Commission, 2023a, p. 4).

Value Added Tax is collected at all stages of the processes of production and distribution of goods and services, accumulation of the tax being prevented by allowing businesses to deduct the tax they incur on their inputs from the tax they collect on their outputs (OECD, 2022, p. 265). Unfortunately, the structure of the EU VAT system, along with the possibility of refunding input tax, makes it sensitive to tax fraud. According to the latest Commission estimates, Member States lost around EUR 61 billion in VAT in 2021, i.e. about 6% of all VAT revenues (European Commission, 2024, p. 17).

Exploring the importance of VAT for a fiscal system requires not only referring to the generated tax revenues but also considering the so-called VAT gap, understood as the difference between actual income and hypothetical potential income (Bitner, 2023, p. 41). Consequently, EU countries are trying to deal with the phenomenon of lost tax revenues and are involved in actions aimed at both increasing the resistance of domestic VAT systems to fraud, and enforcing tax compliance. Measures implemented by the government are carried out in three areas: the VAT collection mechanism, the reporting obligations and the international cooperation of tax offices (Arak et al., 2019, p. 22).

The subject of this study was an analysis of the instruments that have been implemented in Poland to minimise the VAT gap. The authors posed a hypothesis about the synergy effects of actions in the legislative issue and the actual approach of the national tax authorities initiating tax validation procedures. As outlined in the article, a number of legislative changes have been introduced in Poland since 2013 to minimise the VAT gap. However, was such an action sufficient to achieve its objectives? How have the tax authorities used this new regulations in their operations? In attempting to answer these questions, the authors looked at the procedures applied by the tax authorities to a verification tax settlements. Thus, the procedures in force in Poland are presented, as well as the statistics on their number and types.

To achieve the chapter's goals, methods of a normative, legal and quantitative analysis were used. For the purposes of the research, the authors studied the analyses and reports provided by the Polish Ministry of Finance, Polish Supreme Audit Office (NIK), International Monetary Fund and European Commission together with CASE, and the statistical data about quantity of different tax procedures were also used, collected for the period covering 10 years – from 2013 to 2022. The basis for their use was a request made on 16 December 2023 to the Minister of Finance under the provisions of the Access to Public Information Act (Ustawa z dnia 6 września 2001…).

The chapter is organized as follows. Part 7.2 brings closer the issues of VAT compliance gap, its size and consequences. Part 7.3 analyses the evolution of the VAT gap in Poland in 2008-2021. Part 7.4 focuses on measures implemented in Poland in order to increase tax compliance and enhance the effectiveness of VAT collection processes. Part 7.5 studies procedures for verifying tax liabilities and VAT gap. The Conclusions sum up the main results of the research and discuss the findings of the study.

7.2. VAT Gap

In European Union countries, VAT revenues constitute the largest source of income for the state budgets. In 2019 such revenues accounted for around 21% of total tax revenue in the EU-27 (Binder, 2021, p. 36). This number makes the size and stability of Value Added Tax flows essential for a responsible financial policy.

A significant reduction in state revenues is reflected in the so-called VAT gap which is usually calculated as the absolute or percentage difference between the tax revenue that would be collected in the case of full compliance (assuming an unchanged tax base) and the actual amount of VAT proceedings. The maximum estimated VAT amount that can theoretically be gathered from taxpayers is called VAT total tax liability (VTTL)[1]. Such a calculated VAT gap is a measure of overall non-compliance in value added tax (European Commission et al., 2022, p. 4).

VAT compliance gap = VTTL – VAT revenue
(e.g. in absolute terms),

VAT compliance gap (%)= (VTTL – VAT revenue)/VTTL
(e.g. in relation to the benchmark: VTTL).

[1] The VAT compliance gap estimates produced for the European Commission (EC), CASE for EC Taxation and Customs Union Directorate-General's (TAXUD), by the Polish Ministry of Finance (MoF) and by the IMF are generally consistent and bring similar results (European Commission, 2017; Thackray & Ahmed, 2018).

To avoid potential inaccuracies, the VTTL and VAT revenues must be aligned in terms of timing. For this reason, the revenue included in the calculations follows accrual rather than cash accounting. Thus, if ESA 2010 (European System of National and Regional Accounts from 2010) revenue figures are reported without accounting for certain elements such as late payments, they are amended accordingly using data obtained from Member State authorities (European Commission et al., 2023, p. 8).

One should not perceive VAT compliance gap as a straightforward equivalent of VAT fraud (Keen & Smith, 2007, p. 3). Indeed, it reflects tax losses due to the development of the grey zone and VAT refund fraud in intra-community transactions, but it also covers VAT lost due to insolvencies, non-fraudulent bankruptcies, administrative errors, missions and legal tax optimisation[2]. As a consequence, the VAT compliance gap is treated as a direct measure of the revenue administration's performance in collecting the tax due from taxpayers (Thackray & Ahmed, 2018, p. 15).

The consequences of a significant VAT compliance gap are severe for the public sector and the conduct of budgetary policy, both at state and the EU level. From the perspective of the domestic economy the tax gap is a challenge for the sustainability of public finance, both in revenue and expenditure sides (Szczypińska, 2019, p. 69). It also has a negative impact on honest entrepreneurs and their competitiveness (European Commission, 2017, p. 11). Its 'fraud dimension' distorts competition in the business sector and leads to illegal activities in other forms of criminal activity (Andrejovská et al., 2020, p. 8).

7.3. VAT Gap in Poland

In Poland, poor VAT collection has been for years a particularly important issue. The rapidly growing VAT compliance gap threatened the future stability of public revenue, and was a severe problem given the plans for high state expenditure for the coming years.

In the period 2010-2016, the IMF studied the VAT tax gap in Poland, focusing on its sectoral breakdown. The largest contributor to the compliance gap occurred to be the trade and transport sector. Significant gaps were also observed in the professional and other services sectors. These results were expected, as all of the above-mentioned sectors are typically relatively high-risk; (unexpectedly) there also occurred a gap in the utilities sector[3]. Smaller

[2] There is also the aspect of so called "VAT policy gap" and "VAT revenue ratio". The VAT policy gap addresses the relative impact of reduced rates and exemptions on revenue losses and compares it to the theoretical revenue that could be levied in a given VAT system (e.g. the potential revenue that could be collected in a VAT system with a uniform rate and the broadest possible base). As an indicator of the additional VAT revenue that could theoretically (i.e. under the assumption of perfect tax compliance) be generated in case of a uniform VAT rate, the VAT policy gap captures the effects of applying multiple rates and exemptions on the theoretical revenue that could be levied in a given VAT system (see more: European Commission et al., 2022, p. 4). The 'VAT revenue ratio' is an indicator that attempts to measure the gap between the revenues that would arise from a theoretically pure VAT system (a single rate with full compliance and full tax collection) and the revenues actually collected. It is defined as the ratio between the actual VAT revenue collected and the revenue that would theoretically be raised if VAT is applied at the standard rate to all final consumption. The VAT revenue ratio should be considered only as an indicator as some factors may distort the measure (Charlet & Owens, 2010, p. 945). Both the policy gap and VAT revenue ratio fall outside the scope of this research and will not be further discussed.

[3] It seemed likely due to data issues, as the industry is generally low risk, but at the same time it is difficult to quantify in national accounts (Thackray & Ahmed, 2018, pp. 7-9).

VAT gaps were observed in public administration, education, health & social services. Next, compliance gaps were generated in administration services, then the construction sector, accommodation and food services and, eventually, in the IT and communication sector (Thackray & Ahmed, 2018, pp. 7-9).

The case study, conducted by Poniatowski (2016) tried to identify components of VAT compliance in Poland. Research revealed that in 2013 the highest percentage of uncollected VAT was caused by the practices of issuing unauthorised invoices. The overstatement of the VAT return accounted for 31.8% (PLN 13.54 billion) of non-compliance. Carousel frauds (missing trader intra community, MTIC crimes) contributed 10.6% (PLN 4.52 billion) of the total VAT gap. Next, tax losses were also caused by: errors (7.6% of the total gap, i.e. PLN 3.24 billion), smuggling and transactions on goods subject to excise duties (6.3%, i.e. PLN 2.68 billion) and abuses in the sales threshold VAT exemption (2.7%, i.e. PLN 2.68 billion). The remaining 41.0% of the VAT gap, generated by other illegal activities (unregistered economic activity or revenue misreporting done by micro-enterprises) and natural bankruptcies, were impossible to estimate (Poniatowski, 2016, p. 27).

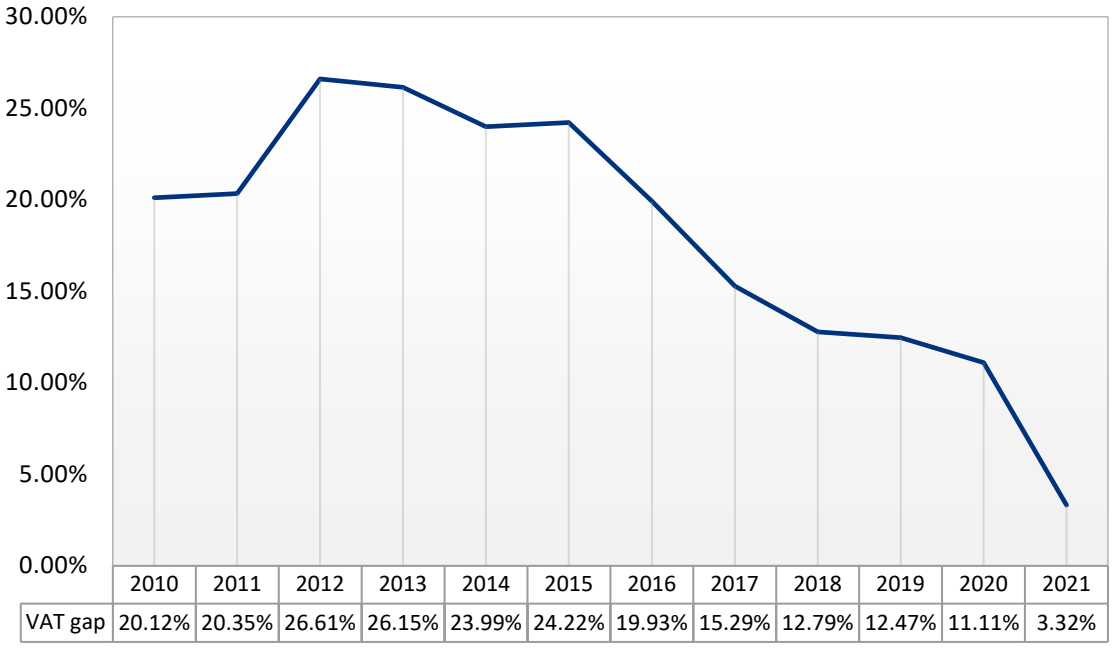
Tratkiewicz (2016), while discussing the results of Poniatowski's research, pointed that the unauthorized invoices category may refer not only to the practice of issuing 'empty' invoices used in the process of reporting fictitious costs, but also to fake invoices accompanying the procedure of carousel crimes (MTIC). This would explain the lower than European share of MTIC crimes in the Polish VAT compliance gap, namely 10.6% versus 20% in the EU (European Commission, 2015, p. 113). Regardless of the actual components of this category, Tratkiewicz drew attention to the generally higher influence of total fraud in Poland (43%) than that revealed by studies in several Member States (36%).

Consequently, among the recommended changes actions for combating the non-compliance in VAT in Poland, the priority was given to countermeasures focused on identifying 'empty' and 'sham' invoices. The suggested actions included the efficient verification of new entities registering as VAT payers together with constant risk analysis (and possibly deregistration in the taxpayer database) of already registered taxpayers. The second direction of recommended measures was to limit the grey zone of excise goods, mainly fuels. Reducing the scale of unregistered turnover in the most sensitive sectors was intended to help stop the growth of the VAT gap (Tratkiewicz, 2016, p. 189). As regards the most sensitive sectors, the major projected compliance campaigns targeted the trade and transport sector. The implemented measures had an influence on the observed gap in this sector over the period from 2013 to 2016 and (as presented in the latter part of the study) have been the main drivers of changes observed in the overall VAT compliance gap (Thackray & Ahmed, 2018, p. 26).

The changes in the VAT compliance gap in Poland for the period 2008-2021 are presented in Figure 7.1.

The financial crisis of 2008-2009 and the economic slowdown were reflected in the widening tax gap in Poland (from 16.69 to 22.82%). The following years witnessed expectations to change the situation, as Poland implemented some legal changes aimed at reducing the obstacles in running a business[4]. The year 2010, however, did not bring visible progress in countering the VAT losses. The very moderate reduction of the VAT gap (20.12%) compared to the earlier

[4] Poland gradually liberalised the provisions of the VAT Act (such as the introduction of quarterly declarations for all VAT taxpayers or the abolition of VAT sanctions). It also modified the rules of the Fiscal Penal Code and other regulations affecting business activities – including restrictions on the frequency and length of tax inspections (Tratkiewicz, 2016, p. 187).



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
VAT gap	20.12%	20.35%	26.61%	26.15%	23.99%	24.22%	19.93%	15.29%	12.79%	12.47%	11.11%	3.32%

Fig. 7.1. VAT compliance gap in Poland (% VTTL), 2008-2021

Source: own work based on (European Commission et al., 2023).

year of the crisis, was very worrying – especially that it occurred despite Poland returning to higher economic growth and improving individual consumption (which is perceived as the most important component of the VAT base). The subsequent years did not show any improvement in the tax compliance – the VAT gap gradually increased until it reached the record level of 26.61% in 2012 (and 26.15% in 2013) (European Commission, 2023b, Table II).

The VAT compliance gap failed to be significantly reduced in 2014-2015, when it was approximately 24%. The audits of the Supreme Audit Office (Naczelna Izba Kontroli – NIK) found the Polish measures applied in 2010-2015 insufficient. NIK pointed at the low effectiveness of the tax apparatus in counteracting VAT compliance gap and stressed that in the given period the VAT gap in Poland was on average, 24%, while the average in the EU was 14% (NIK, 2019, p. 6).

In the years that followed, the Polish authorities introduced a number of intensive operations, aimed at tightening the tax system and making it more resistant to tax fraud[5]. The initiatives resulted in a significant reduction in the VAT compliance gap from 19.93% in 2016, through 12.79 in 2018 to 11.11% in 2020.

In 2021, the VAT compliance gap in Poland amounted to 3.32% of the VTTL; this meant a 7.79 percentage points decrease in relation to 2020. This is a significant number, as the average VAT gap decline in the EU was 4.3% in this period (European Commission et al., 2023, p. 22).

The next part presents closer the measures implemented in Poland in order to increase tax compliance and enhance the effectiveness of the VAT collection system.

[5] Remedial actions aimed at countering the VAT compliance gap were carried out mainly in 2016-2018, although some measures started before 2016. These initiatives are analysed in Section 7.5 of the chapter.

7.4. VAT Compliance Measures Implemented in Poland

After 2013, Poland – recognising that the VAT compliance gap was significantly higher than the EU average, undertook several institutional and compliance measures. A programme for 2015--2018 for tightening the VAT system was developed as part of the Strategy for Responsible Development.

Diagnosing the most critical problems in VAT tax compliance and the effectiveness of tax administration brought a wide proposal of countermeasures. The planned solutions were aimed at improving tax collection, both strengthening the tax enforcement process and enhancing voluntary payment of tax liabilities. Additionally, in order to strengthen the effectiveness of tax administration, a much broader use of IT systems and databases to identify and analyse risk areas was projected. A core 'sealing package' of compliance measures was introduced in December 2016. The authorities believed that the sealing package would significantly increase the effectiveness of the VAT system: their forecasts suggested PLN 389 million of additional VAT revenues in 2017 and PLN 3 billion in 2018 (Thackray & Ahmed, 2018, p. 30).

Understanding the urgent need to modernise the tax administration, Poland decided to consolidate its tax administration, customs services, and fiscal audit services into the single National Revenue Administration (*Krajowa Administracja Skarbowa* – KAS) with new, wider powers and improved tools. Since March 2017, with the Ministry of Finance at the central level, all departments related to these areas are concentrated under the Head of KAS and its deputies.

The following initiatives for reducing VAT compliance gap were aimed at: (1) extending VAT reporting obligations, (2) monitoring, and (3) implementing measures targeting large-scale intra-Community VAT fraud.

In 2016, Poland introduced a national version of the Standard Audit File for Tax (SAF-T, *Jednolity Plik Kontrolny* – JPK). JPK is company data generated by an IT system in a defined electronic format, submitted monthly to the tax office. SAF data is stored on a centralised national database, which can be used for advanced risk analytics. The transaction-level data created by the SAF regime represents a valuable resource for advanced risk analytics. Merged with micro-data from taxpayer register entries and payments and returns, it can be used in such analytics as benchmarking, risk profiling and machine learning. Consequently, the tax officials can verify whether the taxpayer is not committing fiscal crimes and whether he/she fulfils the tax obligations. Initially, the reporting obligation was introduced for large enterprises, but its scope was gradually extended leading to its widespread use by all 1.6 million taxpayers. By October 2020, it had entirely supplanted regular monthly VAT returns (European Commission et al., 2023, p. 34).

As mentioned in the previous parts of the chapter, the second group of VAT compliance measures targeted the trade and transport sector. As a consequence, in addition to gathering transactional data, from 2017 Poland started to monitor movements of goods and third-party data through the Electronic Transport Supervision System (SENT). The SENT system was created to track the transport and turnover of sensitive goods such as alcohol, cigarettes, medicines, environmentally hazardous substances, and fuel. It was next used to monitor all entities related to the turnover of the mentioned goods, i.e. the supplier, the buyer and the carrier.

In 2018 the government initiated a clearing house IT system designed to combat tax fraud by fostering data exchange between tax authorities and banks (STIR). This measure was aimed

directly at organised criminal groups, particularly at purchasing taxpayers that were complicit in missing trader frauds. As a consequence clearing houses and the KAS analyse money transfer data provided by the banks, using algorithms from banking practice and anti-money laundering experience, and identify high-risk transactions. The results of this risk analysis are then reported to the tax administration on a daily basis. STIR enables quick reactions from tax authorities to attempts to make illegal use of the financial system. The system allows the head of the National Tax Administration for temporary account blockage in cases of detected fraud (for 72 hours, with the option of extending it by three months after meeting strictly defined conditions).

July 2018 saw the voluntary introduction of the split payment – specific measures designed to combat carousel frauds (MTIC crimes). Under the system, the payments for goods or services are made to two separate accounts. After receiving the invoice, the buyer transfers an amount equivalent to the net amount to the taxpayer's bank account; the VAT amount is paid to a separate account devoted to tax settlements. The direct purpose of the split payment system was to prevent the issuer of the invoice from freely disposing of the amount equivalent to VAT. Moreover, the risk of the disappearance of such a taxpayer and the unsettled tax amount were to be eliminated (Michalik, 2016, p. 61). The split payment system was initially limited to business-to-business transactions, but since November 2019, the use of the mechanism was made mandatory for invoices surpassing PLN 15,000 (ca. EUR 3,300) for some goods or services.

In 2019 the Polish Ministry of Finance introduced an additional instrument aimed at verifying the business partners: the White List of Taxpayers. The White List is an instrument intended to prevent entrepreneurs from (unconsciously) participating in transactions with disappearing taxpayers, as it allows for checking whether the entity is an active or exempt VAT payer (or why registration was refused or removed from the register as a VAT payer). What is important is that the law obliges taxpayers to verify whether the seller's bank account number is consistent with the White List.

One more mechanism is worth mentioning in this analysis: reverse charge mechanism (RCM), intended to prevent VAT fraud in the field of sensitive goods and services. Reverse charge is a solution that is beneficial only from the point of view of tax authorities. There are no measurable benefits or losses for the entities carrying out the transaction, apart from some formal difficulties related to fulfilling this obligation. A reverse charge applies only to business--to-business transactions. The RCM results in transferring the VAT settlements obligations from the supplier to the purchaser. The vendor does not include the VAT due on the invoice. The customer has to declare and settle VAT coming from the transaction (and still retains the right to deduct VAT on purchases). Consequently, at each stage a business is in a net nil tax situation, and the opportunity to commit MTIC fraud is removed (Andrew & Baer, 2023, p. 22).

Poland first implemented the reverse charge mechanism in April 2011. It initially covered domestic trade of recyclable scrap and greenhouse gas emission rights. The RCM mechanism was then gradually extended to other sensitive products (in 2013, 2015, and 2017). What is interesting for the purposes of this study, after the changes in 2015 when the reverse charged covered (among others) steel & steel products, scrap metal, waste, precious metals, and products of electronics category (portable computers, mobile phones, video game consoles), the VAT compliance gap consistently decreased by 3.6% year-over-year on average (European Commission et al., 2023, p. 35). The year 2017 brought the extension of RCM onto silver, platinum, gold (regardless of fineness), base metals, non-ferrous metals, jewellery made of

precious metal, as well as processors (with the threshold of uniform transaction of PLN 20,000). Additionally, the reverse payment mechanism also covered construction services (Redakcja Portalu Podatkowego, 2024).

At present, this mechanism is primarily relevant for transactions between Poland and other countries[6]. The domestic reverse charge mechanism, discussed above, was replaced by the mandatory split payment mechanism in November 2019[7].

7.5. Procedures of Verification Tax Liabilities and the VAT Gap

The introduction of the above-mentioned methods of verifying the correctness of VAT settlements should be considered together with the methods of ascertaining taxpayers' settlements. In Poland, similarly to many other countries, VAT is based on the self-assessment method (Ebrill et al., 2001). This means that taxpayers themselves calculate the amount of tax to be paid and the tax authority can verify it. If any errors are identified on the part of the taxpayer, the tax authority determines the correct amount of tax to be paid.

The changes to the Polish legislation aimed at minimising the VAT gap focused primarily on the faster transmission of information to the tax authorities and an increase in the amount of information (e.g. JPK files). This increased data resource undoubtedly facilitated the checking of taxpayers, but did not, however, exclude the obligation to take specific actions when mistakes in tax settlements were revealed. Polish regulations (Tax Ordinance Act) indicate that the submitted declaration (JPK file) is binding for the tax authority until it issues a decision specifying a different amount of tax (Ustawa z dnia 29 sierpnia 1997…, art. 21 § 2). This means that the tax authorities must initiate and carry out the procedure set out in the tax law to challenge taxpayers' accounts.

The procedures for verifying taxpayers' settlements in Poland were introduced with the enactment of the Tax Ordinance Act in 1997 and have practically remained unchanged. The national legislation foresees three basic types of verification. The first are the verifying activities which give the tax authorities leeway in starting or conducting them. The collection of evidence regarding taxpayers' accounts in this procedure does not require any formal rigour from the tax authority. The verifying activity is the least formalised procedure in Polish tax system (Mariański, 2010). There are no deadlines for the tax authorities to complete the actions undertaken. The collection of information is in no way documented or communicated to the taxpayer (Łoboda & Strzelec, 2017). Moreover, the taxpayer has no legal instruments to influence the course and conclusion of this procedure. This is one of the important objections formulated regarding how verification activities are regulated (Niezgódka-Medek, 2024).

The other two groups of tax verification procedures are control procedures (tax audit and fiscal audit) and tax proceedings. These two procedures are more formalised than the above

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6 As mentioned earlier in this chapter, VAT is one of the main contributors to the EU Member States' budgets. However, the tax exemption on intra-Community supplies allows fraudsters to make tax-neutral acquisitions from other Member States and resell the products without paying the tax collected to the tax authorities (MTIC fraud). Currently, the reverse charge mechanism applies to the VAT settlements of cross-border services for entrepreneurs from the European Union. (Stiller & Heinemann, 2024, p. 73).

7 In April 2024, the Polish Ministry of Finance introduced a reverse charge for stock exchange transactions involving gas, energy and CO2 emission allowances. The solution is intended to increase the competitiveness of the Polish stock exchange system. Its nature is temporary; the regulations are to be in force until the end of February 2025.

described verifying activities. The law introduces specific documentation obligations on the part of the tax authorities, both during the procedure itself and at its conclusion. Tax audit requires a post-audit protocol, a fiscal audit results with a written outcome. In case of tax proceedings, a decision is required. Each of these procedures is time-limited; their extension is allowed, although it imposes additional obligations on the tax authorities to inform taxpayers of the reasons for the extension and the completion time of a particular procedure. In a tax audit, the taxpayer has a direct influence on the course of the procedure. They may challenge those actions of the tax authority, which, in their opinion, are inconsistent with the tax law. At the same time, a distinction must be made between control procedures (tax and fiscal audit) and tax proceedings. While control procedures aim exclusively at verifying taxpayers' settlements, tax proceedings are of a jurisdictional nature (Masternak, 2009). Tax proceedings always result in issuing a tax decision. Moreover, they can be initiated either after verification activities or control procedures. It is therefore a necessary step that allows the tax authorities to change the settlement and the amount of VAT.

For many years, the tax authorities in Poland have mainly used verification activities to check taxpayers' settlements. Control procedures were used less frequently, as presented in Figure 7.2. The difference is incomparable – while about 2.5 million verifications are carried out annually (right scale), the number of control procedures has been systematically decreasing, amounting to about two thousand per year in 2020-2022 (left scale).

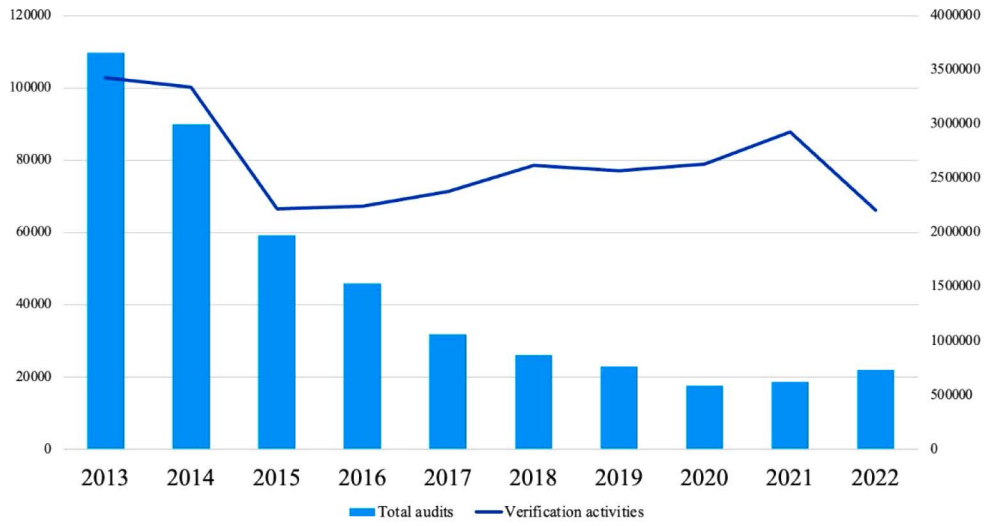

Fig. 7.2. Number of completed verification activities and audits combined in Poland, 2013-2022

Source: own compilation based on Ministry of Finance response to 16 December 2023 request for public information, 2023.

The presented statistical data clearly indicate that the Polish tax authorities prefer simple settlement verification procedures, in which the taxpayer has little influence on the course of actions taken by the tax authorities. This may also be justified by the fact that after a number of verification activities, which revealed mistakes, taxpayers were correcting their settlements on their own. This allowed tax authorities to minimise the number of control procedures.

Analysing the statistics of verifying activities undertaken in the area of VAT, one can see that their number has been increasing since 2015 (Figure 7.3).

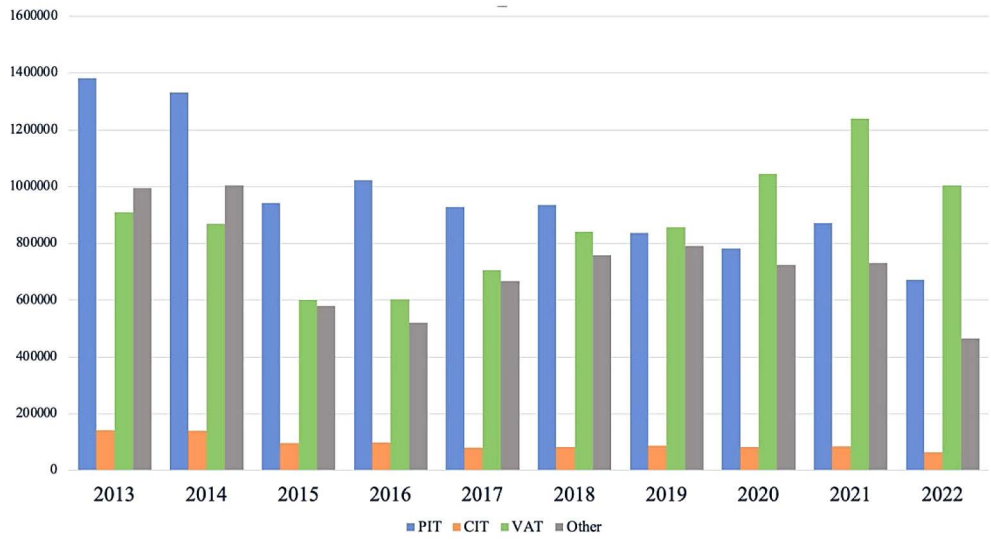

Fig. 7.3. Number of completed verification activities in Poland, 2013-2022, segmented by type of tax

Source: own compilation based on Ministry of Finance response to 16 December 2023 request for public information, 2023.

This has simultaneously resulted in a decrease in their number in the area of other taxes. The increase in verifying activities from 2015 can be easily linked to the introduction of JPK files in 2016, which enabled the tax authorities to verify the correctness of tax settlements more quickly. In the following years, only in the VAT area did the tax authorities have the possibility to check taxpayers practically on an ongoing basis. This reduced the focus on other types of tax liabilities, while it also made it possible to increase VAT revenue by minimising the VAT gap. This relation can also be seen in the statistics related to detected irregularities in the settlement of this tax. Figure 7.4 shows the increase in the detected irregularities after 2015.

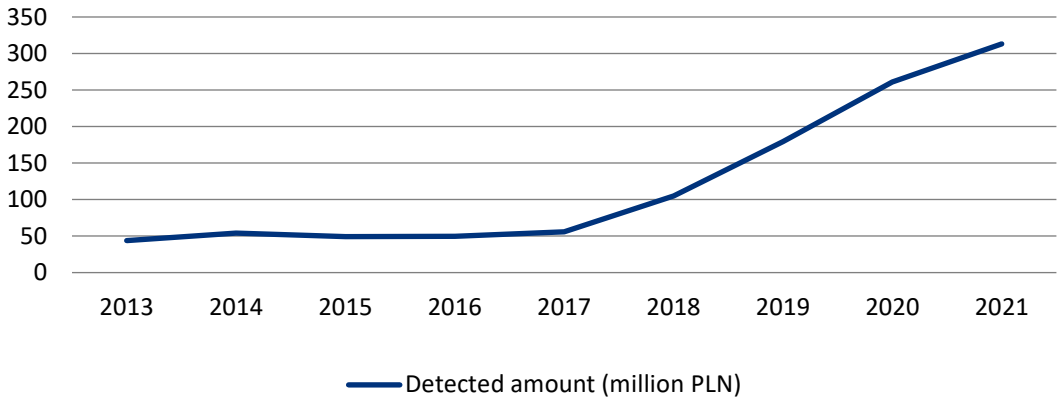

Fig. 7.4. VAT evasion detected in Poland, 2013-2021 by tax

Source: own compilation based on Ministry of Finance response to 16 December 2023 request for public information, 2023.

Both the introduction of JPK files and the increase in the number of auditing activities after 2015 contributed to a noticeable improvement in the settlements' errors in taxpayers. The increase in detected irregularities from 2017 onwards, shown in Figure 7.4, can be interpreted

as the postponement of the effect of the activities undertaken by the tax authorities from 2015 to 2016.

Summarising the presented statistical data, an important observation was that the mere introduction of additional obligations on taxpayers did not automatically result in an increase in VAT budget revenues and thus in a minimisation of the VAT gap. The Polish experience shows that it was necessary to increase tax authorities' activity in widely understood procedures involving the verification of taxpayers' settlements. Only the combination of these two instruments brought the expected results of an increase in the number of detected irregularities and thus minimising the VAT gap. It is also important to note that in most cases, taxpayers are willing to submit corrections to their tax settlements on their own, without the need for tax decisions. This can be interpreted as the existence of non-compliant settlements to date, which are so obvious to taxpayers that a possible dispute with the tax authority would be doomed to failure.

7.6. Conclusions

In recent years, the European Union has experienced a technological revolution in VAT taxation. IT solutions, particularly online reporting and big data analyses seem to answer many problems – both specific to the common European market (such as tax refund frauds by organised criminal groups) and general ones (e.g. issues related to limiting the grey zone). Implementing new technologies may also lead to significant relief for entrepreneurs whose activities have been hampered by the conventional tools used to tighten the tax system.

The literature indicates that investment in IT systems in tax administration translates into higher VAT collection rates. Greater emphasis should therefore be placed on the efficiency of the tax system, i.e. better access to data to enable reliable analysis, the implementation of which may lead to more effective identification of tax crimes or fraud. Countries that invest heavily in tax administration IT systems are also characterised by low VAT gaps, e.g. Sweden, the Netherlands, Denmark, the United Kingdom, Austria and Finland (Szczypińska, 2019, p. 72).

Undoubtedly, legislative changes in Poland related to introducing new forms of electronic data transfer to tax authorities align with the above assumptions. Nevertheless, more detected irregularities and the related increase in VAT revenue would not have occurred without tax authorities' increased involvement in verifying taxpayers' settlements. The presented figures unambiguously indicate that the legislative changes have only led to increased stock of current information on taxpayers' settlements. This, in turn, translates into a growing number of widely understood control procedures, of which checking activities – the most straightforward and least formalised procedure in the Polish tax system – were the most frequently used by tax authorities. Consequently, the proposed hypothesis on the necessity of synergy of legislative changes combined with the activity of tax authorities was falsified.

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Afterword

Fraud and corruption always start in the minds of the people involved. In this context, sharing knowledge and making society aware of corruption's significant threat is essential. The book investigates some problems concerning digitalisation and knowledge enhancement in reducing corruption and fraud.

The book offers a detailed comparative analysis of corruption and various policy issues in Ukraine, the Czech Republic, and other Eastern European countries. Despite ongoing reforms, corruption remains a significant obstacle to development in Ukraine, while the Czech Republic, with a stronger institutional framework, has seen more progress in its anti-corruption efforts. Both countries must continue to adapt their strategies to improve transparency, legal frameworks, and accountability.

Digital surveillance systems, particularly in welfare contexts, have been criticised for lacking transparency, producing poor results in fraud detection, and raising concerns about personal data protection. While the systems rely on algorithms, the failures often stem from human decision-making and development rather than technology.

In public procurement, EU member states, including the Czech Republic, as well as Ukraine, must balance supranational standards with national regulations for tender processes, focusing on ensuring transparency and compliance with EU directives.

For Ukraine's non-standard employment issues, particularly in the IT sector, promoting sole proprietors and transitioning them to gig specialists could enhance the economy. This may raise 'quiet hiring' concerns but offers tax advantages.

The study on payment systems in Eastern Europe identified critical drivers for the growth of cashless payments, including payment infrastructure, e-commerce, and internet access. However, the weak political and economic institutions in countries like Ukraine, Belarus, and Russia limit their ability to increase non-cash transactions, as much of the economy operates in the shadow sector. The potential of blockchain technologies and Central Bank Digital Currencies (CBDCs) was highlighted as a way to reduce corruption and boost economic growth.

In the Czech Republic, the electronic records of sales system were introduced to promote transparency and fair tax distribution but became a political issue, losing its intended purpose. There is hope that it may return, though public trust will be difficult to regain.

Poland's legislative changes regarding electronic data transfer for tax purposes have successfully increased VAT revenue and taxpayer compliance. However, the active involvement of tax authorities, rather than the legislative changes alone, has driven the increase in detected irregularities and revenue growth. This emphasises the need for a synergy between legal reforms and enforcement efforts in tackling tax evasion.

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