

Money Laundering and Its Consequences in a Transitional Economy – The Role of the Business and Financial Sector

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Abstract

Purpose – Money laundering is one of the most widespread phenomena in the financial world which is seriously threatening the integrity of system and representing a significant risk to a country’s economic development, as well as its progress in geopolitical and infrastructural terms. In recent years, Bosnia and Herzegovina (B&H) has frequently appeared in various studies, articles, and media publications as one of the countries where this phenomenon is becoming more and more popular, and now we are witnessing that our country is being referred to as a “paradise” for money laundering. This research will focus on the role of Bosnia and Herzegovina’s financial and business sectors, analyzing their role in the money laundering process and attempting to light up on some of the most common methods related to this phenomenon in Bosnia and Herzegovina.

Methodology/Research Approach – The research will be conducted using both qualitative and quantitative methods. A detailed analysis of secondary sources of information will be carried out, along with the collection of primary data on the given topic. A review of previously published works and relevant literature will also be conducted.

Limitations/Implications – The topic of this research is relatively unexplored and does not receive enough attention in the existing literature/studies, which presents a challenge in gathering needed data. The high unavailability of key information may limit the depth of analysis and accuracy of conclusions. Given the limited data sources, the research has been conducted in accordance with the available information from the approximately last 10 years, which may affect the scope and validity of the findings.

Practical Implications – This research contributes to a better understanding of the money laundering phenomenon, with a particular focus on the role of the business and financial sectors in Bosnia and Herzegovina. The research results can help in developing more effective strategies to combat money laundering, thereby reducing the harmful economic and social consequences that this phenomenon brings. Practical recommendations may include improvements in legal provisions and strengthening oversight and control in the business and financial sectors.

Originality – This research provides an original perspective on money laundering in the context of Bosnia and Herzegovina’s business and financial sectors and encourages further discussions and deeper investigations. Previous studies can mostly be characterized as reviews, whereas this paper brings together all relevant macroeconomic variables and variables of interest in this case, offering a deeper insight into and addressing a previously unexplored area.

Keywords: money laundering, business/financial sector, macroeconomics, suspicious transactions, correlation analysis, banking and construction.

1. Introduction

In the global economy, money laundering represents a serious challenge that goes beyond financial aspects and deeply affects the socio-economic structures of countries. In the context of transitional economies like Bosnia and Herzegovina, this phenomenon becomes even more pronounced due to its significant impact on institutional stability, infrastructure development, and investors trust, which is crucial for our country. Money laundering severely undermines the economic and monetary systems of every country, and Bosnia and Herzegovina is no exception. This work is carried out in multiple phases, and it is the responsibility of all bodies involved in this process to actively work on the prevention and suppression of this crime.

The financial system of Bosnia and Herzegovina faces serious challenges regarding trust and security, and society is confronted daily with scandals related to money laundering and various individuals, groups, and organizations. Understanding the functioning of this illegal process in our country is key to developing appropriate strategies and measures that will allow for the improvement of the economic system and the preservation of social stability. One of the main goals of this research is to create a clear and realistic picture of the current situation in Bosnia and Herzegovina, which is often referred to as one of the biggest “money laundromats” in the region.

Transitional economies like Bosnia and Herzegovina are especially vulnerable due to a lack of transparency, economic instability, weak regulations, and pressure from the international community. The lack of transparency and weak regulatory infrastructure facilitate money laundering activities, while economic instability creates an incentive for illegal activities to generate income.

This phenomenon gained popularity particularly in the past two decades, after Bosnia and Herzegovina recovered from wartime period. Increased exports/imports, foreign investments, a sudden rise in the construction of residential and commercial buildings, fiscal registers, unrealistic property prices, and so on are just some of the methods that have become the most common channels through which illegally acquired money is funneled into legal flows.

2. Money laundering as a concept

Among the many definitions of money laundering, which strive to describe this phenomenon as close as possible, the one that best reflects it is that money laundering is a process that attempts to make money from source A (illegal) appear as though it comes from source B (legal). In practice, the question arises: Who are the “money launderers”? Possible money launderers could be anyone involved in financial operations: bankers, lawyers, accountants, traders, and others who, knowingly or unknowingly, allow their business activities to be used for laundering money. For example, when an accountant falsifies actual accounting records to reduce or avoid paying taxes, or when a banker arranges a series of transactions aimed at avoiding the submission of a financial report (Raković, 2008).

This phenomenon first appeared between 1925 and 1931 in the United States, thanks to Al Capone, a famous American gangster. Although the practice of money laundering is not new, the terminology became popular thanks to Capone, who used money laundering as a method of hiding his illegal money. By purchasing laundromats, Capone was able to “wash” of the money earned from drug trafficking, prostitution, and tax evasion. However, the first forms of financial engineering and manipulating bank accounts appeared in 1934, when Swiss banks allowed anonymity for depositing money. Meyer Lansky continued expanding his money-laundering operations by purchasing his own offshore bank in Switzerland. Lansky used this bank as a tool for laundering money, allowing him to hide and legalize funds obtained from illegal sources.

3. Process

Money laundering is most commonly divided into three stages:

a) **Placement** is the first stage of money laundering, in which illegally obtained money is introduced into the legal financial system. In this phase, it is easiest to detect the appearance and nature of money laundering. It is also the riskiest stage for those laundering the money, as the “dirty” money is still “fresh” and connected to criminal activities, making it easy to uncover, especially when large amounts of money are involved.

The goal is to introduce the money into the system as quickly as possible to begin the process of concealment and legalization in later stages. Given that the financial system is the blood vessel of criminal activities, the actors and institutions involved in money laundering and financing terrorism try to exploit the movement of capital and services offered by the financial sector, which can harm the stability of the entire financial system (Lalić, Nović & Ubiparipović, 2022).

b) Layering

Layering is the second phase of money laundering, where the money that has already been introduced into the financial system is further concealed through a series of complex transactions. The aim of this phase is to “cover the tracks” of the money, making it nearly impossible to trace its original source. This is achieved by transferring the money between different accounts, often in different banks and countries, to complicate monitoring. Sometimes, it is also invested in fictitious companies or accounts that exist only on paper. The more layers of transactions there are, the harder it becomes to trace the money’s origin. From this, it can be concluded that the goal of the second phase is to conceal the link between the money and the criminal activity from which it originates. During these transactions, a false perception is created that the transfer is made for the purpose of paying for goods or services abroad. Therefore, the person engaged in money laundering opens a company abroad, which later becomes a supplier and issues invoices to the company that holds the “dirty” money. However, the delivery of goods or services often does not occur, or if it does, it is in insufficient quantity or quality. In this case, only the transfer of money takes place (Budimir, 2020).

The most popular methods used by so-called money launderers or masterminds of such complex operations include: the establishment of fake companies, sending false import-export invoices, and transferring money to another bank, which is often owned by the money launderer (Iljkić, 2015).

c) Integration

Integration is the third and final stage of money laundering, in which the “cleaned” money becomes part of the legal economy and can be used without suspicion. In this phase, the money is often used for investments in legitimate businesses, such as purchasing real estate, opening companies, investing in stocks, etc. It can also be used for luxury purchases, such as cars, expensive items like jewelry, clothing, luxury trips, and so on. The goal is for the money to look as if it comes from legal sources, making it difficult to associate it with criminal activities. Once the money is integrated into the legal economy, it can be freely used without the risk of detection, at least until a detailed investigation into its source is conducted — something that is not typically carried out in our country, even though many suspicious individuals do not hide their wealth and have no 100% clear and logical origin for it.

4. AML System (in Bosnia and Herzegovina)

The history of the fight against money laundering (AML) goes back several decades and is closely related to global efforts to combat organized crime and terrorism. The development of the AML system began as a response to the failures of the “war with drugs” in the United States and South America during the 1960s and 1970s, when the sudden rise in drug trafficking created the most powerful criminal organizations in history. The first significant step in establishing the AML system occurred in 1989, when the G7 countries adopted the Paris Declaration, which laid the foundation for international cooperation in the fight against money laundering. This declaration highlighted the need for coordinated regulations, information exchange, and support between countries. In the following years, many countries adopted laws that obligated financial institutions to identify, monitor, and report suspicious transactions.

A key turning point in the development of the AML system occurred after the terrorist attack on 11 September 2001, when the United States and other countries realized the importance of stopping financial flows that support terrorist organizations. This led to the adoption of laws like the Patriot Act, which significantly expanded the obligations of financial institutions to prevent money laundering and terrorist financing. This event further strengthened international cooperation and encouraged the development of sophisticated AML systems worldwide (Lishan Ai, 2010).

While developed Western economies, such as the US and EU members, have set high standards and developed complex AML systems, transitional economies like Bosnia and Herzegovina face special challenges in implementing these measures. Political instability, corruption, and immature financial systems in (B&H) represent significant obstacles to the effective implementation of AML regulations. The lack of political stability can slow down the adoption and enforcement of necessary legal frameworks, while corruption undermines efforts to detect and punish money laundering. Although there are laws and regulations at both the state and entity levels that define AML obligations, their implementation often faces obstacles in the form of inconsistent regulations, lack of training and resources, and weaknesses in monitoring and enforcement.

In B&H, the institutions responsible for implementing AML policies include the Central Bank of Bosnia and Herzegovina, the Banking Agency of the Federation of B&H, the Banking Agency of RS, the Ministry of Internal Affairs, and the State Investigation and Protection Agency (SIPA). While some of these institutions have taken concrete steps in combating money laundering, their effectiveness is often limited due to weak capacities, lack of inter-institutional coordination, and low awareness among financial institutions and companies required to report suspicious transactions.

One important step in improving the AML system in B&H was aligning with international standards, including recommendations from the Financial Action Task Force (FATF). Through the adoption of laws like the Law on Preventing Money Laundering and Terrorist Financing, B&H has made progress in identifying and sanctioning illegal financial activities. However, to achieve full compliance with international standards, further strengthening of control and oversight mechanisms is needed, as well as training relevant staff in the financial sector to increase effectiveness in the fight against money laundering.

The special problem in Bosnia and Herzegovina is the lack of a unified database at the state and entity levels, which complicates the work of competent authorities in preventing all forms of crime. The legal framework for the exchange of information between different institutions and authorities is not harmonized, which further complicates intelligence work and information gathering. These weaknesses seriously affect the quality and quantity of intelligence work, which is crucial for strategic and operational purposes in preventing money laundering and financing terrorism. As a result, AML and CFT mechanisms in Bosnia and Herzegovina remain weak and

vulnerable to abuses, posing a significant threat to the economic stability and security of the country.

5. Importance of a database

In the previous part of the paper, where the AML system in Bosnia and Herzegovina was analyzed, the absence of a unified national database was identified. A national-level database is a key component in the fight against money laundering because it enables transparency, control, oversight, and easy access to data. What is of great importance in Bosnia and Herzegovina is also a register of beneficial owners, which is another type of database that would create control over ownership structures. Due to deficiencies and lack of transparency, there have been cases where several hundred companies were registered at one address, which clearly points to fictitious companies used for various financial manipulations.

In developed countries, a centralized database serves as a key tool for monitoring and preventing money laundering, allowing government bodies, regulators, and financial institutions to efficiently track and analyze operations in order to identify suspicious activities. Laws require all companies to register in a centralized database and report their beneficial owners, usually individuals with a 25% or more shareholding. This data is collected by beneficial ownership registries like the ones in the United Kingdom (PSC register) and in EU countries, in line with EU directives on preventing money laundering. These databases often employ automated tools and algorithms to track patterns in data that may indicate suspicious activities/outliers, such as frequent ownership changes, multiple companies registered at the same address, or owners involved in suspicious business activities.

6. Basel AML Index

The Basel AML Index, developed by the Basel Institute on Governance since 2012, ranks countries according to their risk of money laundering and terrorist financing (ML/TF). The ranking is based on 15 indicators collected from sources like FATF, Transparency International, and the World Bank, evaluating factors such as the development of AML/CFT systems, corruption levels, financial transparency, and legal challenges. This index does not measure actual money laundering or terrorist financing activities but rather analyze and rates countries' vulnerability to these risks and their ability to counteract them. It is a crucial tool that helps financial institutions and authorities make informed decisions by providing data on ML/TF risks at the country level. Although the index is not a precise measure of the amount of money laundering, it offers a broader view of risk levels. The index is updated annually to ensure accuracy and relevance, considering indicators like the level of corruption, which is a consequence of limited data availability for measurement.

Bosnia and Herzegovina appeared on the Basel AML Index in 2020 for the last time, with a score of 5.63, indicating a moderately high risk of money laundering and terrorist financing. This score places the country in the group of countries with significant challenges regarding transparency, the effectiveness of laws, and the control of financial flows. After 2020, Bosnia and Herzegovina no longer appeared on the list, which may be due to insufficient availability of updated data. The absence from newer reports makes it difficult to track progress in this area, highlighting the need for greater transparency and cooperation with international organizations to continue assessing and improving the regulatory framework.

7. Research focus

Following the introduction to the research, the explanation of the “money laundering” phenomenon and the AML system, and the analysis of the Basel AML Index for Bosnia and Herzegovina, further research will strictly focus on money laundering and its impact on the transition economy, with a particular focus on the construction sector in the business sphere and the banking sector in the financial sphere. The research question that the paper focuses on is: “What is the correlation between macroeconomic parameters, banking transaction reports, and the expansion of construction in the period 2015-2022?”

8. Literature review

In the paper “Pranje novca” by Jadranka Lalić, Stoja Nović and Suzana Ubiparipović (2022), the authors analyze the complexity of money laundering, which is defined as transferring illegally obtained money into legal financial flows. They emphasize the importance of criminalizing money laundering in the criminal legislation of Republika Srpska, as well as the stages of this process, which include placement, layering, and integration. The authors highlight the challenges posed by organized crime groups, which complicate the prosecution of money launderers. According to the paper, Bosnia and Herzegovina has made significant steps in meeting European anti-money laundering standards, removing it from the high-risk country list. A key measure in this process was the adoption of the Law on Preventing Money Laundering and Terrorist Financing. The authors explained various methods of money laundering, focusing on strategies used by individuals and legal entities. Common methods for individuals include unusual large cash deposits, remittances from abroad, and currency exchange transactions, while legal entities use more complex methods such as offshore zones, fictitious contracts, and front companies. The authors stress the need for continuous cooperation among relevant agencies and more frequent checks on the origin of funds to reduce money laundering risks in Bosnia and Herzegovina.

In “*Combating Money Laundering in Transition Countries: The Inherent Limitations and Practical Issues*” by Jun Tang and Lishan Ai (2010), the paper discusses the background of anti-money laundering (AML) efforts in transition countries, addressing the unique phenomena of “adopt but not implement” and “selective enforcement.” It critiques the defensive reporting practices of financial institutions in these countries. Although many transition countries have taken actions against money laundering in the past decade, AML systems remain inefficient, driven mainly by international pressures and internal political needs.

The *Strategy and Action Plan for Preventing Money Laundering and Terrorist Financing in Bosnia and Herzegovina* (Ministry of Security, B&H) outlines the country’s efforts, emphasizing the need for effective prevention in line with EU integration. It highlights the importance of close cooperation between law enforcement, judicial bodies, and other relevant institutions. Money laundering and terrorist financing are also closely tied to the private sector, requiring public-private collaboration.

The Basel Institute on Governance, an international non-profit organization, promotes anti-corruption and AML efforts. Their Basel AML Index helps assess the risk of money laundering and terrorist financing in different countries, including Bosnia and Herzegovina, based on factors such as political stability, the effectiveness of legal systems, corruption, and existing anti-money laundering measures.

In *The Negative Effects of Money Laundering on Economic Development* by Brent L, money laundering negatively impacts economic growth by undermining financial institutions, reducing productivity, and encouraging crime and corruption, which slows down development. It also distorts international trade and capital flows, harming long-term economic stability. For

developing countries, money laundering through offshore financial centers (OFC) undermines these centers' efficiency and growth. Effective AML policies can strengthen financial sectors and improve governance, essential for sustainable economic growth.

Milena Raković, in her paper "Pranje novca: Kako ga iskoreniti?" (2009), emphasizes that money laundering and terrorist financing are global issues. Countries are developing strategies and regulations to combat money laundering, aiming to prevent criminals from exploiting corrupt or unregulated institutions for illegal profits. Raković suggests measures such as educating stakeholders, improving transaction reporting, and using strong IT support for efficient monitoring and analysis of suspicious transactions. She also emphasizes the importance of Bosnia's anti-money laundering laws, including the requirement for entities to report suspicious transactions exceeding 30,000 KM to the Financial Intelligence Unit (FOU), which is part of the State Investigation and Protection Agency (SIPA).

Nemanja Budimir's paper "Pranje novca" (2020) discusses the global problem of money laundering and its implications at both national and international levels. The paper stresses the need for proactive strategies and laws to prevent criminals from using corrupt institutions. Prevention focuses on detecting perpetrators and protecting the country's economy and international financial flows.

Davor Iljkić, in his work "Pranje novca u domaćem i stranom zakonodavstvu" (2015), analyzes money laundering as a transnational phenomenon and highlights the role of financial intelligence units in its prevention. The paper discusses the stages and methods of money laundering, including the purchase of shares, real estate, and the creation of black funds. It stresses the importance of aligning with EU recommendations and improving legislation to combat money laundering, referencing strategies used by developed countries such as Germany and the US.

The Financial Intelligence Unit (FOU) of the State Investigation and Protection Agency (SIPA) is the main body for financial intelligence activities in Bosnia and Herzegovina, operating in line with international standards for combating money laundering and terrorist financing. The FOU promotes cooperation among relevant authorities within Bosnia and Herzegovina and internationally, utilizing data to investigate suspicious transactions.

The Agency for Statistics of Bosnia and Herzegovina is responsible for collecting, processing, and publishing statistical data at the state level. It provides accurate and timely information necessary for decision-making in various sectors, including the economy. The data used in this research reflects Bosnia's macroeconomic situation, including GDP, CPI, and unemployment rates.

9. Methodology

This research focuses on analyzing the correlation between reported suspicious transactions and relevant parameters of construction expansion and economic indicators in Bosnia and Herzegovina from 2015 to 2022. The study is quantitative in nature and relies on secondary data. The focus is on finding correlations between variables describing the state of the targeted sectors and macroeconomic indicators such as GDP, CPI, and the unemployment rate. This approach aims to understand the impact of money laundering and financial irregularities on the country's economic situation.

Given the limited availability of data, all relevant data from publicly available sources such as the Financial Intelligence Unit of SIPA (FOU) and data from the Agency for Statistics of Bosnia and Herzegovina were used. A major limitation of the study is the unavailability of complete data for all variables in all years, as well as the fact that some private sector data and

transactions may not have been reported. Therefore, all available data were used to form the most relevant and accurate final findings.

The following methods were used for data processing:

- *Descriptive statistics* were used to summarize the basic characteristics of the collected data.
- *Correlation analysis* was applied to examine the mutual relationship between the collected data and macroeconomic variables.
- *Deviation analysis* was used to show deviations in the data, that is, the occurrence of extreme values (outliers) in certain years, which may indicate an increased likelihood of money laundering. These values will be marked in red.
- *Correlation analysis* will show the strength and direction of the relationship between these variables, to better understand the impact of reporting suspicious transactions and cash declarations on the country's economic situation. Pearson's correlation coefficient will be used to represent the relationship between the variables.

Pearson's correlation coefficient measures the strength and direction of the linear relationship between two variables. The coefficient value can range from -1 to 1 , where:

- 1 indicates a perfect positive correlation (as one variable increases, the other also increases),
- 0 means there is no linear relationship between the variables,
- -1 indicates a perfect negative correlation (as one variable increases, the other decreases).

Microsoft Excel was used for data analysis, enabling calculations and visualizations. Excel was chosen due to its accessibility and functionality in working with statistical data.

10. Results

This chapter presents the results of the research, analyzed using Pearson's correlation coefficient. The goal of the analysis was to examine the relationship between selected variables to determine the strength and direction of their connections. The focus was on key economic indicators in order to explore the impact and extent of money laundering in Bosnia and Herzegovina. Pearson's coefficient was used to determine whether there is a statistically significant correlation between these variables and to better understand the relationship between illegal activities and economic indicators in the country. Through this analysis, the results will provide insights into potential causal links and facilitate drawing relevant conclusions about the extent and effects of money laundering on Bosnia and Herzegovina's economy.

The results will be divided into two sections, where section:

A) presents the correlation of the financial sector, i.e., the number of total reports and suspicious transactions and their values with macroeconomic variables;

B) presents the correlation of the real sector, i.e., construction (value of construction works completed, number of buildings completed, gross value added, number of construction companies, and turnover) and macroeconomic variables.

A)

Table 1. Table of relevant transactions and macroeconomic parameters

Year	Number of reported suspicious transactions	Total value of suspicious transactions	BDP (mil.BAM)	CPI	Unemployment	Basel AML Index
2015	95 (I/VI)	9.558.418,23	28.586,000	104.0	551,167	5,64
2016	/	/	29.900,000	/	510,022	5,18
2017	528	64.529.918,78	31.376,000	103.8	501,522	5,91
2018	455	153.162.371,92	33.408,000	100.6	458,355	5,84
2019	737	98.262.436,16	35.229,000	101.2	401,846	5,83
2020	812	68.392.924,59	34.255,000	100.1	413,627	5,63
2021	1,048	129.552.072,31	39.107,000	102.1	415,027	/
2022	1,504	260.606.434,88	45.618,000	116.4	354,700	/

Number of reported suspicious transactions

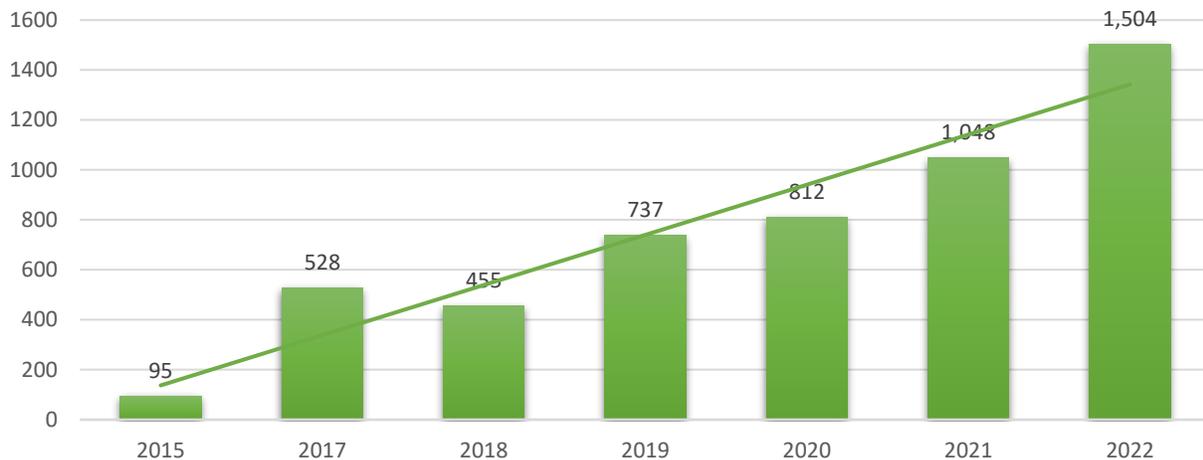


Figure 1. Graphic display (suspicious transactions – SIPA FOO) * data for 2016 is unavailable

a1) Suspicious Transactions/GDP; $r=0.9721$

The correlation between suspicious transactions and GDP reveals a strong positive relationship ($r=0.9721$). This suggests that as GDP increases, the number of reported suspicious transactions also rises. This may be due to increased economic activity, which leads to more financial transactions, thereby increasing the chances of identifying suspicious activities.

a2) Suspicious Transactions/CPI; $r=0.6275$

The correlation between suspicious transactions and the Consumer Price Index (CPI) shows a moderate positive relationship ($r=0.6275$). This indicates that as inflation (CPI) rises, so do the reported suspicious transactions. Higher inflation may create conditions that facilitate or encourage money laundering.

a3) Suspicious Transactions/Unemployment; $r=-0.9134$

The correlation between suspicious transactions and unemployment reveals a strong negative relationship ($r=-0.9134$). As unemployment decreases, there is a significant increase in the number of reported suspicious transactions. This may reflect greater economic activity and a higher volume of financial transactions, which may prompt increased monitoring by regulatory authorities.

a4) Suspicious Transactions/Basel AML Index (2015-2020); $r=0.167$

The correlation between suspicious transactions and the Basel AML Index (2015-2020) indicates a weak positive relationship ($r=0.167$). This suggests a slight connection between countries with higher money laundering risk and more reported suspicious transactions. However, the low correlation indicates that factors such as regulatory improvements and financial system transparency play a significant role in the reporting of suspicious activities.

Table 2. Table of cash transactions and their values (2015 I/VI – 2022)

REPORTS ON CASH TRANSACTIONS		
Year	Number of reports	Total value of reported transactions (BAM)
2015 (I/VI)	184,873	8.252.438.069,91
2016	/	/
2017	478,832	19.192.755.516,65
2018	475,631	19.850.530.935,38
2019	391,888	19.882.869.921,29
2020	332,636	19.216.949.436,24
2021	409,290	24.534.898.265,09
2022	493,007	31.221.156.571,61

Number of applications 2015 - 2022 (cash transactions)



Figure 2. Graphic representation (cash transactions – SIPA FOO) *data for 2016 is unavailable

a5) Total Cash Transaction Reports/GDP; $r=0.565$

This value indicates a moderate positive correlation between the number of cash transaction reports and GDP. As GDP increases, so does the number of reported cash transactions, although the correlation is not strong enough to be considered direct. It suggests that economic growth may drive a higher volume of transactions, including suspicious cash transactions.

a6) Total Cash Transaction Reports/CPI; $r=0.310$

Here, a weak positive correlation is observed between the number of cash transaction reports and the Consumer Price Index (CPI). This implies that changes in inflation (CPI) have a minimal impact on the number of reported cash transactions. Inflation may have some influence on cash transaction activity, but it is not a key factor.

a7) Total Cash Transaction Reports/Unemployment; $r=-0.544$

This coefficient shows a moderate negative correlation between the number of cash transaction reports and unemployment. As unemployment increases, the number of cash transaction reports decreases. This suggests that higher unemployment may result in lower business activity and fewer suspicious cash transactions being reported.

a8) Total Cash Transaction Reports/Basel AML Index (2015-2020); $r=0.861$

A strong positive correlation is observed here, indicating a strong connection between the number of cash transaction reports and the Basel AML Index. This suggests that a higher number of reported cash transactions corresponds with an increased risk of money laundering, as reflected in higher Basel AML Index values. This strong correlation highlights the link between cash transactions and the risk of money laundering.

B)

Table 3. Table of values of completed construction works (2015-2022)

Year	Value of completed construction works in (B&H) (BAM)
2015	1.583.308.000 KM
2016	1.611.463.000 KM
2017	1.557.487.000 KM
2018	1.642.932.000 KM
2019	1.567.602.000 KM
2020	1.735.241.000 KM
2021	1.701.492.000 KM
2022	2.009.639.000 KM



Figure 3. Graphical presentation of the value of completed construction works for the period 2015-2022

b1) Value of Construction Works/GDP; $r=0.868$

This Pearson correlation coefficient of 0.868 indicates a very strong positive correlation between the value of completed construction works and GDP. As GDP increases, the value of construction works rises almost proportionally. This strong correlation suggests that economic activity and investment in construction play a crucial role in money laundering considerations, especially in the real estate sector, where money laundering is a common occurrence. High investments and growth in construction may serve as an indicator of potential financial irregularities.

b2) Value of Construction Works/CPI; $r=0.799$

The correlation coefficient of 0.799 indicates a strong positive correlation between the value of construction works and the Consumer Price Index (CPI). This means there is a strong connection between rising prices in the economy and increased construction activity. The high correlation between construction works and inflation suggests that price fluctuations (inflation) significantly affect this sector. This is important when considering the impact of macroeconomic factors on construction investments, which often play a key role in money laundering, particularly in the real sector.

b3) Value of Construction Works/Unemployment; $r=-0.71$

The Pearson correlation coefficient of -0.71 indicates a strong negative correlation between the value of construction works and the unemployment rate. As the value of construction works increases, the unemployment rate decreases, and vice versa. The strong negative correlation suggests that construction activities not only contribute to economic growth but also to the reduction of social issues like unemployment.

b4) Value of Construction Works/Basel AML Index (2015–2020); $r=-0.214$

The correlation coefficient of -0.21 indicates a weak negative correlation between the value of construction works and the Basel AML Index (Anti-Money Laundering Index). This finding suggests that while there is a small connection, it is not strong enough to conclude that increased activity in the construction sector directly increases or decreases the risk of money

laundering in Bosnia and Herzegovina. It may be useful to consider additional variables that could have a stronger impact on the Basel AML Index.

Table 4. Table of relevant parameters of construction expansion (2015-2022)

Year	Gross value added in thousands BAM (Construction)	Number of construction companies	Turnover (thousands of BAM)
2015	1.124.531	3.168	3.127.285
2016	1.172.668	3.791	3.276.243
2017	1.258.826	4.003	3.506.180
2018	1.366.647	4.049	3.779.132
2019	1.511.667	4.249	4.135.445
2020	1.617.266	4.451	4.348.986
2021	1.687.133	5.067	4.568.526
2022	1.977.307	***	***

GVA (construction) - Turnover (th. BAM)

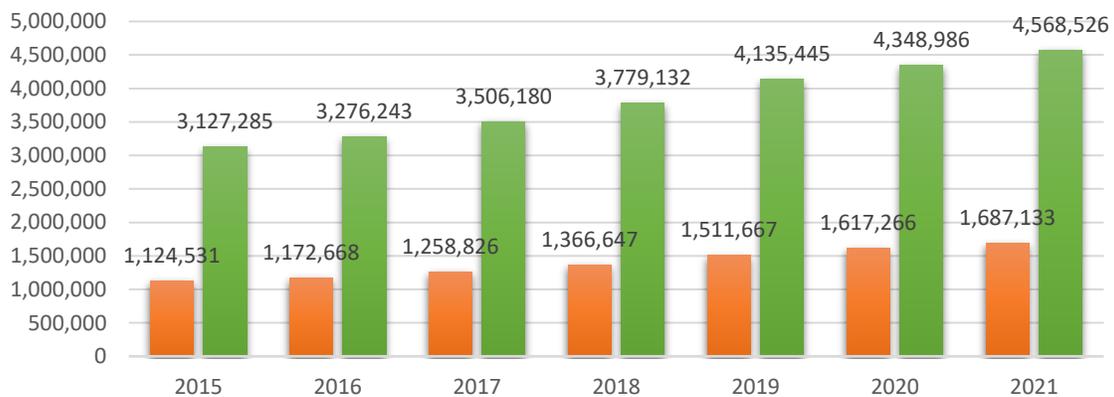


Figure 4. Graphic representation of gross added value (construction) and turnover in thousand. BAM from 2015-2021

Number of construction companies 2015-2021

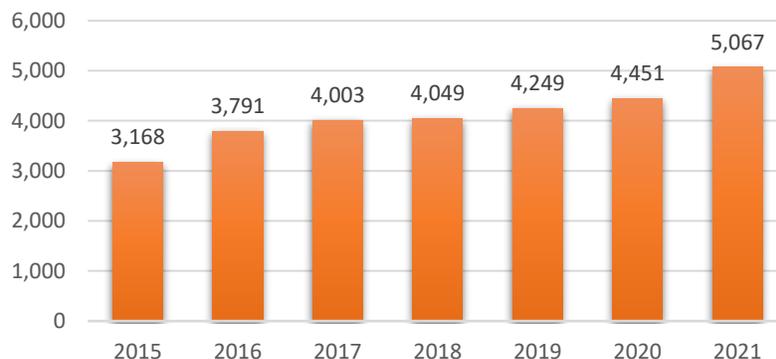


Figure 5. Graphical representation of the expansion of construction companies for the period 2015-2021

b5) Gross Value Added/GDP; $r=0.966$

This correlation coefficient of 0.966 indicates an exceptionally strong linear relationship between gross value added and GDP. As gross value-added increases, GDP also increases in near-perfect alignment. This near-perfect correlation suggests a causal relationship between these two variables, as gross value added is a component of GDP. GDP is calculated as the sum of the gross value added by all sectors, including agriculture, industry, and services, along with net taxes on products. Therefore, growth in gross value added directly contributes to GDP growth.

b6) Gross Value Added/CPI; $r=0.572$

The coefficient indicates a moderate positive correlation between gross value added and the Consumer Price Index (CPI). This suggests that, generally, the growth of gross value added somewhat follows the increase in consumer prices, but the relationship is not very strong. Moderate correlation implies that sectors with higher added value may influence consumer price growth, but this influence is not direct or automatic. Various factors such as external shocks, changes in import prices, or monetary policy may mediate the connection between value creation in the economy and price movements, making the correlation relatively lower compared to other macroeconomic indicators.

b7) Gross Value Added/Unemployment; $r=-0.952$

The coefficient between gross value added (GVA) and the unemployment rate indicates a very strong negative correlation between these two variables. This high negative correlation suggests that as gross value-added increases, the unemployment rate significantly decreases. In practice, sectors that generate more value in the economy contribute to job creation and reduce unemployment. When companies or industries increase their value added, it usually reflects business growth, higher productivity, and increased employment, which directly reduces the number of unemployed. This strong connection can be explained by the fact that sectors with higher added value are key drivers of economic growth, which leads to higher labor demand.

b8) Gross Value Added/Basel AML Index (2015-2020); $r=0.347$

The coefficient between gross value added (GVA) and the Basel AML Index indicates a weak positive correlation between these variables. The Basel AML Index measures the risk of money laundering and terrorist financing. This result suggests that, while there is some connection between the growth of gross value added and an increased risk of money laundering, the relationship is not strong. A weak correlation could mean that sectors with higher added value may attract more attention due to more complex financial flows, which could increase the risk of illegal activities. However, other factors, such as regulatory frameworks, political stability, and the transparency of the financial system, have a much greater impact on the Basel AML Index, explaining the relatively low correlation. Therefore, while there is some connection between GVA and money laundering risk, it is not strong enough to suggest a direct dependence.

11. Discussion

In the correlation analysis between different economic variables and suspicious transactions, we notice the following:

- **Suspicious Transactions and GDP:** A correlation of $r=-0.403$ suggests a weak negative relationship, which may indicate that an increase in GDP could lead to a reduction in suspicious transactions. This connection suggests that a stronger economy results in better mechanisms for monitoring and reporting suspicious activities.

- **Suspicious Transactions and CPI:** A correlation of $r = -0.594$ shows a stronger negative connection, suggesting that high inflation may reduce the number of suspicious transactions. This result could be due to increased pressure on consumers, prompting them to avoid suspicious financial activities.
- **Suspicious Transactions and Unemployment:** With a correlation of $r = -0.032$, we see a very weak negative link. This weak correlation suggests that the unemployment rate is not significantly related to the number of suspicious transactions, implying that suspicious activities do not directly depend on the labor market.
- **Suspicious Transactions and Basel AML Index:** A correlation of $r = 0.167$ indicates a very weak positive relationship. This suggests that while there is some connection between the risk of money laundering and suspicious transactions, it is not significant.
- **Cash Transaction Reports and GDP:** With $r = 0.565$, there is a moderate positive correlation, indicating that GDP growth leads to an increase in the number of cash transaction reports.
- **Cash Transaction Reports and CPI:** A correlation of $r = 0.310$ shows a weaker positive relationship, suggesting that inflation may influence cash transaction reporting, but not in a significant way.
- **Cash Transaction Reports and Unemployment:** A correlation of $r = -0.544$ suggests a negative relationship, meaning that a rise in unemployment may reduce the number of cash transaction reports, possibly due to a decline in economic activity.
- **Cash Transaction Reports and Basel AML Index:** With $r = 0.861$, there is a strong positive correlation, suggesting that a higher risk of money laundering leads to an increase in cash transaction reports.
- **Value of Construction Works and GDP:** A correlation of $r = 0.868$ indicates a strong positive relationship, meaning that GDP growth leads to an increase in the value of completed construction works.
- **Value of Construction Works and CPI:** With $r = 0.799$, there is a significant positive correlation, suggesting that inflation also impacts the growth of construction works' value.
- **Value of Construction Works and Unemployment:** A correlation of $r = -0.71$ suggests that higher unemployment negatively affects the value of construction works, which may be a result of reduced investment in the construction sector.
- **Value of Construction Works and Basel AML Index:** A correlation of $r = -0.214$ indicates a weak negative connection, suggesting that sectors with a higher risk of money laundering may not be as active in construction projects.
- **Gross Value Added and GDP:** With $r = 0.966$, there is a very strong positive correlation, indicating that an increase in gross value added directly influences GDP growth.
- **Gross Value Added and CPI:** A correlation of $r = 0.572$ shows a moderate positive relationship, suggesting that inflation impacts gross value added.
- **Gross Value Added and Unemployment:** With $r = -0.952$, we see a very strong negative relationship, suggesting that higher unemployment reduces gross value added and, consequently, overall economic growth.
- **Gross Value Added and Basel AML Index:** A correlation of $r = 0.347$ indicates a weak positive relationship, meaning that an increase in gross value added

may be somewhat connected with a reduction in the risk of money laundering, but not significantly.

In short, the results of the analysis point to complex relationships between economic variables and suspicious transactions. A stronger GDP, higher gross value added, and lower unemployment are often linked to a reduction in suspicious transactions. However, there are variables that show weaker or unclear correlations, suggesting the need for further research and analysis of the factors influencing money laundering and economic activities.

12. Analysis of outliers

In the previously presented tables that display the values of relevant variables over the past years, certain outliers appear in the following categories: the volume and total value of reported suspicious transactions (2017, 2018, 2021, 2022), cash transactions (2017, 2022), the value of completed construction works (2022), and the number of construction companies and their turnover (2019, 2021).

Between 2019 and 2020, 202 new construction companies were opened, and between 2020 and 2021, 616 new construction companies were established. The value of construction works increased by 308,147,000 BAM between 2021 and 2022. The total value of suspicious transactions increased by 88,632,452.3 BAM between 2017 and 2018, and by 131,054,362 BAM between 2021 and 2022.

It is worth noting that, in view of the values characterized as extreme, during these periods, the budgets of Bosnia and Herzegovina were damaged by tens of millions of BAM (due to the inability to precisely quantify and identify the causes, this remains a scientific theory).

13. Conclusion

This analysis of the correlation between economic variables and suspicious transactions provides a clearer picture of their connections and significance. The results show that there are significant positive and negative correlations between suspicious transactions, GDP, inflation, unemployment, and other relevant variables.

Key findings produced by this research include:

- Lack of a unified national database.
- Weak oversight and the absence of databases, such as a register of beneficial owners.
- High opacity of data, which leads to an unclear picture and could be one of the reasons why Bosnia and Herzegovina has been absent from the Basel AML Institute lists for years, which is certainly a significant oversight.
- Sharp increases in the reporting of suspicious transactions and their total value, which more than doubled in the periods 2017-2018 and 2021-2022.
- Strong positive correlations between:
 - the number of cash transaction reports and the Basel AML Index,
 - the value of completed construction works and GDP,
 - construction works and the Consumer Price Index (CPI),
 - gross added value and GDP.
- Significant increase in the reporting of cash transactions and their total value in the period 2015-2017 and 2021-2022.
- Unusual increase in the total value of construction works in the period 2021-2022, by as much

as 308,147,000 BAM, representing an 18.11% increase. • Expansion in construction, with 818 new construction companies opening between 2019 and 2021.

Considering that money laundering is a complex issue, further research is needed to better understand the mechanisms affecting these relationships. Additionally, the implementation of more effective anti-money laundering measures and strengthening institutions can help reduce suspicious transactions and improve overall economic stability. Technological advancement in sectors responsible for combating this phenomenon is absolutely necessary. Better cooperation at all levels and the creation of a unified database are needed to ensure the transparency and ease of tracking information flow, updates, and the establishment of outliers. These studies can serve as a basis for decision-making and strategies to improve, introduce new legal regulations, and build both economic and technological infrastructure in Bosnia and Herzegovina to combat this phenomenon.

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