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Identifying Money Laundering Process Using Indicators: The Case of Albania

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Abstract

The main purpose of this study is to develop a mathematical model for calculating the probability of money laundering process, by monitoring the behavior of the client using 70 indicators of money laundering. The scientific method used in this study (received from the Modern Criminology) has great investigative power and it is widely applicable. Hopefully the practical application of this study will increase greatly the probability of detection and punishment of the clients who are implicated in the process of money laundering. In particular, this study will be useful for banks, Financial Intelligence Unit (FIU) of Albania, Department of Economic Crime at the Ministry of Domestic Affairs and Albanian State Intelligence Service (SIS). Also, the investigation of money laundering will be a useful tool to detect other crimes, such as drug trafficking, human trafficking, illegal arms trade, etc. The prevention of money laundering is simultaneously a powerful strike against terrorism both on national and international levels.

Keywords

Illicit money, money laundering, indicators of money laundering, the monitoring of the client's behavior, the probability of the detection of money laundering.

“In the criminal world, cash is king”

J.R., a special agent

1- Introduction

In the early 1930s Al Capone, used the very first “dirty money”, by hiding illegal alcohol revenues during the US Prohibition Era. According to attorney Richard Horowitz, money laundering has spread over the decades even when laws against such crimes were inexistent.

Before continuing with the rest of the study, it is necessary to explain a few definitions, such as illicit money and money laundering. Illicit money originates from illegal activities, especially criminal ones (Bank of Albania, 2004). Money laundering is the process of hiding the source of the property and the usage of funds, usually cash, which are profits from illegal activities (Bolton and Hand, 2002). According to the definition, which IMF gave in 2005, money laundering is a process by which criminals attempt to hide the source (or sources) of the illegally gained money. Technically, money laundering is a process by which the assets, obtained from criminal activities are disguised to hide their relation to the crime. The money laundering process allows the criminal groups to benefit from illegal activities, without risking their sources.

There are three stages of money laundering:

Step 1: Infiltration. Profits from illegal (criminal) activities are deposited in a bank or in a corporation. In this step exists a high probability to detect illicit money.

Step 2: Layering. Criminals tend to hide the source of their illicit money through transactions and by multiple transfers and with high intensity. There is a perpetual collaboration of the criminals with leaders and banks.

Step 3: Integration. The infiltration of transferred and transformed capital in the official economy by financial investments and property (direct investments in private companies or real estate). This third step is preferably to be realized by money launderers in states with a high level of corruption, with high level of economic rate and with poor control over money laundering.

Guilty of money laundering is every person, who hides, disguises the true origin, the source, movement or alienation of money, for which he has knowledge that -directly or indirectly- derives from illegal activities, especially criminal. There are several types of indicators to investigate the money laundering process. In this paper we develop a mathematical model to analyze the money laundering process in Albania, using indicators associated with the corresponding probabilities. We emphasize that the set of indicators harmonizes with the Albanian Law, number 9917 (amended in year 2012 by law 66/2012).

The process of money laundering affects 25 social and economic indicators, in short or long term periods. This impact can be either negative or positive. Six indicators are mentioned below: growth of the gross domestic product, financing of terrorism, growth of the criminality rate, imports, exports, liquidity of the financial sector, etc., see Unger (2009).

The rest of the paper is organized as follows:

Section 2 contains the indicators of money laundering and their corresponding probabilities.

In section 3, each indicator will be accompanied with the respective and subjective probability.

Section 4 analyzes the harmonization of the indicators with the law of the Albanian Republic.

Section 5 contains the development of a stochastic model to calculate the probability of the detection of the clients who are suspicious to be implicated in the process of money laundering.

Section 6 encloses the study with conclusions and recommendations.

2- The indicators of money laundering and their corresponding probabilities

The indicators written below are very helpful to the society and to particular institutions that deal with the prevention of money laundering. It is necessary to emphasize that these indicators are related with the United Nation Security Council Resolution (implemented through the European Union regulation). These indicators are classified in eleven groups, as it is explained below.

2.1.1 Reluctance to provide information

- 1) The client hesitates to provide the information requested by the financial institutions such as banks, or requested by other institutions such as attorney, lawyers, taxation offices and police departments.
- 2) The client holds a defensive position towards the questions addressed to him by the official agencies.
- 3) Unwillingness to provide documentation that funds derive from inheritance, gaming, etc. as stated by the client.
- 4) The client will not provide further information until he knows what is disclosed to public authorities.
- 5) Reluctance to provide information about contemplated use of an account and/or prospected activities.

2.1.2 Matters related to identification

- 6) The lender of a large loan from abroad is stated to insist on anonymity or wanting not to be contacted.
- 7) The client's address information is difficult to verify or it does not exist.
- 8) The client changes business' address frequently.
- 9) The client does not respond to mail which come to the stated P. O. Box.
- 10) A large number of persons are registered at the same address as stated from the client.
- 11) The client business' documents appear to be unused.
- 12) The client represents falsified identification or business documents.
- 13) The client does not want his passport verified by the embassy without any good reason for this.
- 14) The client's transactions stop for a short period, whenever the bank requires the documents that prove the origin of the funds.

2.1.3 Indications of acting on behalf of a third party

- 15) Recorded transactions indicate that a third party abroad has used the client's credit card.
- 16) The client appears nervous and uncertain in front of authorities.
- 17) The notary accepts payment from the client for another party without knowing the real reason that justifies this action.

2.1.4 Appearance

- 18) The client's appearance does not correspond to his financial status.
- 19) The client tries to avoid eye contact.
- 20) The client brings cash that are bundled or wrapped up in a way that is unusual for the customer.
- 21) Clothes and body posture will hamper recognition by means of video surveillance.
- 22) It is obvious that the client does not know the transferred amount of money.
- 23) The client looks around all the time and does not watch the counting of money when exchanging currency.
- 24) The client seems more worried about the rapidity of the money transfer rather than its cost.

2.1.5 Knowledge of the customer's situation

- 25) The client is known to have a criminal past or he/she is close to a person who is known to have a criminal past.
- 26) There exists proves of misuse of public funds from the client's family members.
- 27) The client was previously suspected to have committed fraud.
- 28) The client is known as a defaulter but suddenly redeems his overdue debt.
- 29) Sudden change in client's lifestyle, such as expensive cars and costly assets that do not correspond to his income situation.
- 30) The client has different accounts in different branches of the same bank.
- 31) The client uses his personal account as a business account.
- 32) Considerable amount of goods is sold from the client's business even though it seemed to be stock.
- 33) The total financial standing of the business differs noticeably from that of similar businesses.
- 34) Assets are not entered into the accounts.
- 35) Atypically large income from the payment of compensation related to a breach of contracts.
- 36) The business normally trades at a loss.
- 37) The annual reports of the company are not published.
- 38) The client repeatedly changes the accountants of his business.
- 39) Signing rights or powers of attorney are atypical.

2.1.6 Large cash amounts

- 40) Currency purchases with large cash amounts.
- 41) The client pays large cash amounts to his new partners.
- 42) The client is more interested in surrender provisions than in conditions and costs.
- 43) The client prefers to pay in cash amounts above 1 000 000 Albanian Lek.

2.1.7 Atypical payments

- 44) A wage-earner's account suddenly has atypical transactions.
- 45) The client deposits atypical cash amounts compared to his income.
- 46) The client signs indefinite cheques.
- 47) The client uses large cuts of cash, such as EUR 500.
- 48) The client shows no interest in costs or loan interests.
- 49) Exchange of large amounts or frequent exchanges that are not related to the client's business.
- 50) Some goods provided from the business are sold in a suspicious price.
- 51) The client receives relatively large payments for goods and services he has not provided yet.

2.1.8 Atypical movements on accounts

- 52) The client visits his safe-deposit box immediately before he deposits large cash amounts.
- 53) A newly established company receives large amounts from abroad that shortly afterwards are sent on to one or more companies abroad.
- 54) There are several transactions with different banks that are not related to the client's business.
- 55) A predominantly inactive account suddenly has many transactions.

2.1.9 Transfers of money

- 56) The client requires information about the previous balance in his account only after a large amount of money received from abroad.
- 57) The client's income base is from transfers that are not reflected in financial statements.
- 58) The client uses the most complicated way to proceed with the transaction.
- 59) The transactions involve countries covered by UN- and EU-sanctions such as risk territories (e.g. drug producing countries, tax havens, conflict areas, offshore jurisdictions).
- 60) The client uses a payment card from a country which is not his country of residence.
- 61) The client makes payments to other countries that do not have any relation with his business.
- 62) The commerce of the client's business with foreign countries has grown significantly.

2.1.10 Real estate business and mortgage

- 63) Real estate is sold at a considerable loss.
- 64) A major part of the sales price is financed by private mortgage deeds and not through the normal loan market for real estate.

2.1.11 Founding, purchase or administration of legal persons

- 65) The client is a business whose name and purpose do not correspond with its transactions.
- 66) The client represents a business but seems to have no business experience.
- 67) The client owns companies abroad that do not seem to be related to his business.
- 68) The client owns a large number of accounts and businesses.
- 69) The client signs several contracts in which he has to pay large premiums.
- 70) Partners of the client's business invest large amount of money that cannot be justified.

3- The probabilities of the indicators

The calculation of the corresponding indicators' probabilities comes as a result of the evaluation of many specialists of different institutions such as: banks, taxation offices, notaries and advocacy offices. There were also interviewed several directors in private banks (Raiffeisen Bank, Credins Bank, Tirana Bank, Alpha Bank etc.), overall 20 individuals. Moreover, there were interviewed two head departments and one finance professor from University of New York Tirana.

The term "subjective probability" is often problematic to use in real-life applications, as the word "subjective" is considered non-scientific and arbitrary, see North (2010). Instead of "subjective probabilities" it is common to use the term "knowledge-based probability", according to Aven (2010). Below are shown the respective means and standard deviations of probabilities for each indicator.

Table 1. The means and standard deviations of probabilities corresponding to indicators

Number of Indicator	Mean (%)	Standard Deviation (%)
1	45	5
2	75	5
3	60	5
4	50	3
5	41	3.5
6	46	2
7	29	4
8	49	3
9	38	5
10	37	5
11	26	4
12	95	3
13	56	5
14	80	5
15	38	3
16	54	4
17	50	5
18	42	3
19	45	3
20	40	4
21	56	5
22	46	3
23	45	3
24	43	3

Number of Indicator	Mean (%)	Standard Deviation (%)
25	90	4
26	80	5
27	90	5
28	80	4
29	95	4
30	31	5
31	50	4
32	50	5
33	43	5
34	63	2
35	52	3
36	40	6
37	43	4
38	34	4
39	42	3
40	87	6
41	81	6
42	58	4
43	96	4
44	72	2
45	85	4
46	50	2
47	90	4
48	70	6

Number of Indicator	Mean (%)	Standard Deviation (%)
49	87	6
50	51	4
51	55	3
52	43	2
53	72	3
54	50	5
55	49	2
56	37	3
57	58	2
58	48	1
59	74	4
60	40	2
61	54	3
62	41	6
63	51	4
64	56	3
65	65	3
66	59	2
67	73	3
68	57	2
69	55	5
70	85	4

4- The relationship between the indicators and the Albanian law

“Only a thin and delicate layer separates the sophisticated fraud from the truth. It is scientists’ (especially mathematicians’) duty to study this layer and reveal the truth”

A. N. Kolmogorov (1982)

Law number 9917, on the prevention of money laundering and financing of terrorism, considers almost all of the indicators mentioned above. This law includes only the economic part of the problem. It is important to accentuate that all indicators, proposed in this study, harmonize with the law; they do not oppose it. What are the entities subject to this law? Article 3 of law, number 9917 gives a list as below:

- a) banking entities and all subjects that are licensed or supervised by the Bank of Albania, including, but without narrowing in the subjects mentioned in the points “b”, “c” and “d” of this article:
- b) Nonbank financial institutions;
- c) Exchange offices;
- d) Saving and credit companies and their unions;
- e) Postal services that perform payment services;
- f) Stock exchange and any other entity (agent, broker, brokerage house etc.), which carries out activities related to issuing, counseling, mediation, financing and any other service related to securities trading;
- g) Companies involved in life insurance or re-insurance, agents and their intermediaries as well as retirement funds;
- h) The Responsible State Authority for Administration and Sale of Public Property and any other public legal entity, which engages in legal transactions related to the public property alienation and granting of usufruct over it or which carries out recording, transfer or alienation of public property;
- i) Gambling, casinos and hippodromes, of any kind
- j) Attorneys, public notaries and other legal representatives, when they prepare or carry out transactions for their clients in the following activities:
 - i) transfer of immovable properties, administration of money, securities and other assets;
 - ii) administration of bank accounts;
 - iii) administration of capital shares to be used for the foundation, operation or administration of commercial companies;
 - iv) foundation, functioning or administration of legal entities;
 - v) legal agreements, securities or capital shares transactions and the transfer of commercial activities;
- k) Real estate agents, according to the definition determined in the Albanian legislation for this category, when involved in transaction for their clients, that are related to purchasing or selling of immovable property;
- l) The Agency for Legalization, Urbanization and Integration of Informal Areas/ Constructions;
- m) Any other individual or legal entity, except for those mentioned above, engaged in:
 - i) The administration of third parties' assets/ managing the activities related to them;
 - i/1) establishment, registration, administration, functioning of legal organizations or legal persons, who are not mentioned in point “j”;
 - ii) Constructions;
 - iii) The business of precious metals and stones;
 - iv) Financial agreements and guarantees;
 - v) Buying and selling of art master pieces, or buying and selling in auctions of objects valuable 1 000 000 Albanian Lekë or more;
 - vi) Insurance and administration of cash or liquid securities in the name of other persons;
 - vii) Trade of motor vehicles,`
 - viii) Transportation and delivery;
 - ix) Travel agencies.

These entities are obligated by law 9917, amended by law, number 66/2012 on June 07, 2012 to always take measures when suspicious actions can be proved by facts and evidence, as seen in article 9. This section of the law gives to the respective entities the right to always investigate if necessary. They are also obliged to report to the responsible authorities, as seen in Article 12 of this law. These articles are general for all indicators, but there are some specific articles of this law related to some certain groups of indicators.

Articles 4, 5 and 8(d) have clear regulations regarding the first group of indicators; “Reluctance to provide information”. According to these articles the entities mentioned above must have all the information

needed to prove the client's reliability. They also must have clear reports on the source of the funds, as seen in Article 8, point d, in law 9917, p.10.

Article 4/1, section 2, point d, clearly explains the procedure that must be taken when the client insists on staying anonymous and Article 5 specifies all required documents for all costumers. These two articles are closely related to the second group of indicators: "Matters related to identification".

The third group of indicators, "Indications of acting on behalf of a third party", is closely related to article 3. In section k, point i, is written that any natural or legal person that administrates third parties assets or manages activities related to them is subject to law 9917.

Article 4/1 section 1, point h writes that entities must monitor all activities related to business and the client, including the analysis on all transactions, to be updated with the information collected on the client, as seen in p. 7. This article harmonizes well with the fifth group of indicators, "Knowledge of the customer's situation".

The sixth group of indicators is "Large cash amounts". Law 9917, in article 12, section 3 writes that all transactions in physical money, in an amount of 1 000 000 Albanian Lek or higher, must be reported to the responsible authorities.

The seventh group of indicators is "Atypical payments". Article 9, point 1, clarifies that when complex transactions in large monetary values do not have an economic or legal purpose, must be seen as dangerous. This article harmonizes also with the eighth group of indicators.

Article 8, point 5 relates to the ninth group of indicators, "Transfers of money". This article specifies that all subjects must perform enhanced diligence to all transactions of the business with all clients who live or work in states that do not apply or partially apply the respective international standards on the prevention of money laundering and financing of terrorism, as seen in p. 10.

The last two groups of indicators, "Real estate business and mortgage" and "Founding, purchase or administration of legal persons" do not have a specific article of law 9917 concerning them, but of course Chapter 2 and 3, relating to diligence are surely applicable.

As it is already comprehensible that money laundering and financing of terrorism are criminal activities that are penalized by law 9917, therefore articles 26 and 27 specify all administrative sanctions, as seen on pp. 20-21. Also at present, in the Republic of Albania, money laundering is a financial crime and is criminally prosecuted. Law no. 8733, date 01/24/2001, "On additions and changes to law no. 7895, date 01/27/1995, 'Penal Code of the Republic of Albania', in article 72 writes that committing financial actions with purpose, money laundering, which are known to flow from criminal activities, is penalized with imprisonment from five to ten years. The same action when in collaboration or more than one time, is punished with imprisonment from seven to fifteen years, but when it brings significant consequences, it is punished with over than fifteen years.

5- Calculation of the money laundering probabilities.

Consider an arbitrary client, Albanian or foreign, such as, businessman, investor, politician, governmental person, jurist, doctor, banker, trafficker, customs official, taxation office employee, etc. It is supposed that in his (her) behavior is founded present indicator with ordinal number n of money laundering. Under this assumption, A_n denotes the random event that this client to be involved in money laundering affair. The probability of the random event A_n :

$$P(A_n) = p_n, \quad 1 \leq n \leq 70,$$

is estimated in paragraph 3 of this paper, based on the opinions of interviewed specialists, who might be employees of private banks, employees of local taxation offices, notaries, lawyers, professors from the finance department, etc.

While monitoring the client's activity using 70 indicators of money laundering, there has been resulted that there are present m indicators with ordinal numbers: k_1, k_2, \dots, k_m . For the sake of simplicity these m indicators founded present in client's activity will be renumbered $1, 2, \dots, m$. To facilitate the writing of mathematic formulas, we will use the symbols below:

$$\begin{aligned} A_{k_1} &= B_1, \quad P(B_1) = P(A_{k_1}) = p_{k_1} \\ A_{k_2} &= B_1, \quad P(B_1) = P(A_{k_2}) = p_{k_2} \\ &\dots \\ &\dots \\ A_{k_m} &= B_m, \quad P(B_m) = P(A_{k_m}) = p_{k_m} \end{aligned}$$

A denotes the random event that the **observed client** will be involved in money laundering affair. It is obvious that

$$A = B_1 \cup B_2 \cup \dots \cup B_m$$

A' denotes the opposite event of A , in the same way there are defined the random events of B_1, B_2, \dots, B_m . Therefore,

$$P(A) = 1 - P(A')$$

The above formulas (known from Theory of Probability) are proved using De Morgan's Rule or The Duality Principle of S. N. Bernstein and conditional probability rule:

$$\begin{aligned} \bullet \quad A' &= B'_1 \cap B'_2 \cap B'_3 \cap \dots \cap B'_m \\ P(A') &= P(B'_1) P(B'_2|B'_1) P(B'_3|B'_1 \cap B'_2) \dots \\ &\quad P(B'_m|B'_1 \cap B'_2 \cap B'_3 \cap \dots \cap B'_{m-1}) \\ P(B'_2|B'_1) &= \frac{1 - P(B_1 \cup B_2)}{1 - P(B_1)} \\ P(B'_3|B'_1 \cap B'_2) &= \frac{1 - P(B_1 \cup B_2 \cup B_3)}{1 - P(B_1 \cup B_2)} \\ &\dots \\ &\dots \end{aligned}$$

see Kolmogorov (2002).

That is the reason why specialists must take into consideration to estimate the probabilities $P(B_1 \cup B_2), P(B_1 \cup B_2 \cup B_3), \dots, P(B_1 \cup B_2 \cup B_3 \cup \dots \cup B_m)$. This way is $P(A')$ estimated, and then probability $P(A)$ is calculated, estimating the involvement of the client in money laundering affair. If the random events B_1, B_2, \dots, B_m are independent, then the calculations of probabilities will be easier:

$$P(A') = P(B'_1) P(B'_2) \dots P(B'_m)$$

and

$$\begin{aligned} P(B'_1) &= 1 - P(B_1) \quad , \\ P(B'_2) &= 1 - P(B_2) \quad , \\ &\dots \\ &\dots \\ P(B'_m) &= 1 - P(B_m) \quad . \end{aligned}$$

Remark

The set of indicators' probabilities of money laundering is dynamical, because these probabilities may change in time. Therefore, these probabilities must be estimated every three years from specialists.

6- Conclusions and recommendations

“Money laundering is a strong component of international terrorism”

Richard Horowitz, Attorney in USA (2010)

Detection of the clients who launder money, by monitoring their behavior through the 70 indicators, is a scientific method, based on the contemporary success in Criminology (especially, in the Theory of Economic Crime) and The Probability Theory. This scientific method is universal and powerful because it is applicable in different areas of human activity (economy, politics, national institutions, ministries, city halls, banks, etc.) and in different time periods. This study is applicable in the detection of money laundering in the following fields:

1. Drugs' trafficking.
2. Human trafficking.
3. Female trafficking for prostitution.
4. Children trafficking.
5. Kidnapping of humans.
6. Crimes against humans (from terrorists).
7. Art works trafficking.
8. Trafficking of motoric vehicles (cars, motorbikes).
9. Pyramid schemes.
10. Smuggling.
11. Smuggling from customs officers.
12. Counterfeit money.
13. Counterfeit bonds (checks, bills, credit cards, etc.).
14. Cyber-attacks.
15. Illegal trade of arms and ammunition.
16. Abduction of money by threatening.
17. Mispricing.
18. Abusive transfer of the prices.
19. Falsified transactions.
20. Corruption.

The indicators of money laundering process are not inert hypothesis (or assumptions), but are based on actual facts. The 70 indicators of money laundering have investigational power. The scientific method presented in this study exposes also the sophisticated processes (or schemes) of money laundering. On the other hand, it is

known that it is harder to detect the more complicated and sophisticated schemes of money laundering, in comparison to the other less complicated schemes. Therefore, this study must be applied quickly (starting in the next 6 months). The set of the 70 indicators of money laundering (accompanied by the respective probabilities) and the formulas presented in the fifth section of the paper enable the calculation of the probability of money laundering of each client, whose behavior is monitored through these indicators.

Also it is reasoned that this set of 70 indicators of money laundering harmonizes with the juridical legislation of the Republic of Albania. **The process of money laundering, even though is in itself a serious economic crime, in its essence is also a tool to catch other crimes, whether drug trafficking, human trafficking, or illegal arms' sales.** The higher the number of banks, construction companies, hydro plants, resorts, hospitals, private medical or dental clinics, pharmaceutical companies, private universities, hotels, luxurious restaurants, etc. the higher is going to be the number of clients who will attempt to launder money.

Money laundering is also a very strong component of international terrorism. Recalling here that the modern strategy of CIA in the fight against terrorism has three major components:

- Physical assassination of the leaders of terrorism.
- Destruction of the financial support of terrorism.
- Neutralization of the connections between terrorism and a small part of the population.

Our study aims to prevent money laundering in the Republic of Albania, by detecting and penalizing, according to the law, the clients involved in this criminal activity. The direct impact of this study will hopefully result in increasing the probability of detection of those clients who launder money.

In some cases, the behavior of the client will not only be monitored by the money laundering indicators, but also by the indicators of corruption, because money laundering harmonizes strongly with corruption. To concretize the implementation of this study, in the appendix are formulated some indicators of corruption, accompanied by their respective probabilities, see Kolaneci (2008).

A preferred scheme of money laundering, used by politicians or other employees, is the creation and usage of several free spaces, that are not covered by the laws or regulations oriented against corruption. In many modern democratic states there have been many scandals of politicians, who have exploited free spaces to engage in corruptive activities, combined with money laundering. The latest case would be that of the 32 high executives in Greece, which happened four weeks ago. These 32 executives were accused for political corruption, combined with money laundering, in amounts that were not less than 2 million euros each. In all democratic states in the world (therefore including the Republic of Albania), no leader, politician or another high executive, is immune toward political corruption, entwined with money laundering.

Practically, it may be hard or even impossible to monitor the behavior of each client by using the 70 indicators of money laundering. Consequently, to assure a high level of monitoring and identification of the clients who launder money, it is advisable to use primarily the indicators with these corresponding numbers: 43, 12, 29, 25, 27, 47, 40, 49, 45, 70, 41, 14, 26 and 28, because these indicators have the highest probability to identify the money laundering process, in comparison to the other indicators.

The originality of our study stands on the calculation of the probability identifying each client that launders money in the Republic of Albania, monitoring the behavior of the client by using the indicators. If the monitoring process will be executed superficially, then the probability of the discovering of the clients who launder money will critically decrease. Consequently, this will cause the reduction of the effectiveness of the prevention of money laundering process in the Republic of Albania.

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