Proposal for evaluation of money laundering and terrorist financing country risk in Latin America

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Abstracts

An alternative indicator is built to Basel Index, which provides a broader view of country risk of ML / FT by incorporating new variables associated with this type of crime and the use of statistical techniques in the construction of the index which we call RLC Index. There will be an application to Latin American countries called RLC-LA index, adjusting to their social, legal, economic and political in our region.

Keywords: factor analysis, multidimensional, indicator.

1. Introduction

Today, money laundering is one of the most significant phenomena economic, political and social. This negative impact on financial stability and macroeconomic development of a country. Decreases welfare and resources from more productive economic activities, and even generates destabilizing spillover effects on the economies of other countries.

The legitimizing take advantage of the inherent complexity of the global financial system, the differences between national laws and prevention systems. Reason for focus in jurisdictions where there is a low risk of detection of these activities, caused by the absence, weakness or inefficiency of its regulations regarding this matter. To this we would add: civic culture in relation to money laundering, economic and social problems that could be exploited by organized crime to further the activities of money laundering and terrorist financing (ML / FT).

That is why international organizations recommend the assessment of country risk by geographic area. Since this is the most commonly used criterion for the effectiveness of a risk-based approach, still is, according to FATF Recommendation 1 (2012) the most effective way to combat ML / FT.

Until 2012 a vacuum existed in relation to indicators to assess country risk of ML / FT. Basel Institute on Governance, developed by then the Basel Index, with an independent approach and academic, using a methodology based mainly on the judgment of a group of experts in the field.

Additionally to that date, there was no accepted standard of practice for the identification and ranking of countries according to their risk of ML / FT. It was not until February 2013, when the FATF issued the National Guidelines for Risk Assessment of Money Laundering and Financing of Terrorism, which allows for some general guidelines for making this assessment.

Based on the background of the Basel Index, the guidelines in the Guide and its Recommendations FATF, was decided to develop an alternative indicator that can include as many variables as possible before determining the overall risk.

The Basel Index, is an indicator that could be extended into dimensions and variables,

and the technique used in its construction produces an unquantifiable bias in the results. In its technical paper also indicate the existence of other methods for the preparation of the index, such as factor analysis and data envelopment analysis (Governance, 2012), but decided to opt for the participatory method experts.

The justification for the proposed alternative index, arises from the methodology used by Basel. First: do not consider the variability analysis to determine the overall risk, second, the incorporation of expert judgment should be part of the equation of the index and not to determine the weight of dimensions. That is why the authors we are concerned about the dimensions and consistency of the resulting final risk with this methodology.

Additionally, there are important aspects to consider. One of them is to extend and deepens subjective indicators, through the perception on the social aspects. The legitimizing take advantage of inefficiencies in the legal system, but also the knowledge on the subject by the citizens who make up the country, which could facilitate financial crimes.

For these reasons it was decided to develop an alternative indicator. A Country Risk Index ML / FT we shall call RLC Index. With an application in Latin America we shall call RLC-LA Index, adjusted to our realities, to measure the level of supra-national country risk of ML / FT and determine the comprehensive risk classification. By Incorporating new variables to the criminal environment, financial and perception of social actors. Supported by factor analysis statistical techniques that provide multivariate and multidimensional approach.

Very despite reference institutions as FATF and Basel indicate that: statistical techniques should not be used in the construction of the index, justifying this limits the study to the information available. We refute this condition. In this approach we answer: that the current methodology implemented by Basel, also limited to the information available and any study which uses statistical information apply this argument.

The methodology applied is the realization of multivariate factor analysis to classify countries as risk analysis result. This analysis based on the variability, statistically determined, the weight of the dimensions and contributions of the countries in the different variables that determine the level of risk.

The input variables considered are analyzed by means of Principal Component Analysis (PCA) to associate risk and exclude variables that do not contribute to determine the final risk. Then the remaining variables will be categorized into three levels: high risk, medium risk and low risk for Multiple Correspondence Analysis (MCA) and build the index. So to determine the behavior of risk depending on the category, the variable and the individual, with the final index constructed by the following equation which will be discussed.

We analyze the relationships between the (Q) categories of qualitative variables and (n) individuals.

Ind. \ Var.	v_1	v_2	$\cdots$	v_q	$\cdots$	v_Q
1	v_{11}	v_{12}	$\cdots$	v_{1q}	$\cdots$	v_{1Q}
2	v_{21}	v_{22}	$\cdots$	v_{2q}	$\cdots$	v_{2Q}
$\vdots$	$\vdots$	$\vdots$		$\vdots$		$\vdots$
i	v_{i1}	v_{i2}	$\cdots$	v_{iq}	$\cdots$	v_{iQ}
$\vdots$	$\vdots$	$\vdots$		$\vdots$		$\vdots$
n	v_{n1}	v_{n2}	$\cdots$	v_{nq}	$\cdots$	v_{nQ}

It is considered the coordinates or position of individuals according to the category of the variable that corresponds. The reason for this, is that the coordinates (Figure 1) is a summary measure indicating the importance of the individual variability and category of the variables in the drawing by the distance between them and the origin of the factors, also determines the distance including their similarities or differences.

Figure 1
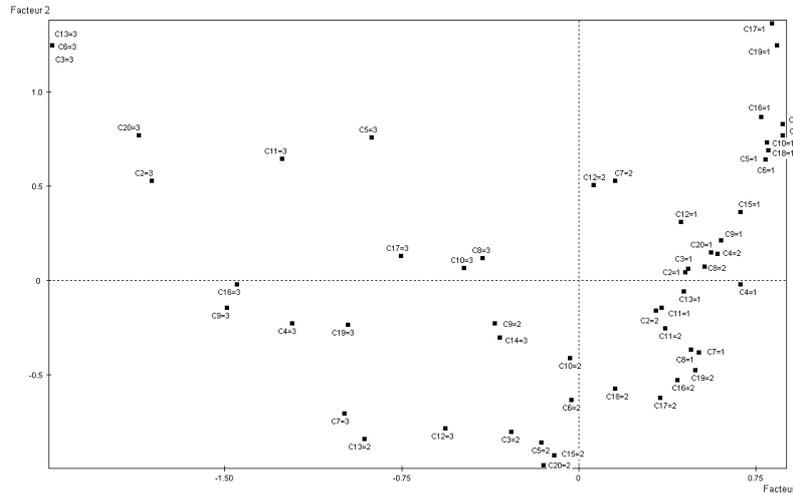
Then these coordinates of the categories are summed to obtain the index value for the individual.

$$S_i = \sum_{q=1}^{Q} H_{jq\alpha}$$

Where:
Hjqα = coordinate of i-th individual in the j-th category of the q-th variable for the factor α. Since α = 1 = First Factor that collects the greatest percentage of variability.

Then normalize the results in order to locate the index values between [0, 100].

$$RLC_i = \frac{S_i - Min\ S}{Max\ S - Min\ S} x100$$

Where:
Min S = {S1, S2, … , Sn}
Max S = {S1, S2, … , Sn}

In dynamic societies like ours, it is important to note that this methodology should be run each year and the weights in the dimensions should not be rigid, as the case of Basel. The world changes, and can also change the size and weight of the variables that compose them.

The application of the index in Latin America RLC-LA, addresses the need to allocate an index that reflects our local realities. Subjectivity for dimensions in Switzerland are certainly very different to the subjectivity of our experts to determine importance of the dimensions. For example, civic culture is very important in our countries. The fact that countries have an established legal structure is not suficiante indicator to determine the risk. Basel gives greater weight to such indicators. It should be

classified within societies with greater weight, ethics and awareness. This we try to get through subjective indicators incorporated into the model, ie, include social, everyday and popular sentiment through perception.

The FATF Guide (2013) indicates the 3 dimensions that should be considered for risk approach ML / FT: threat, vulnerability and consequence. Based on these three dimensions describe the input 32 variables according to reliable sources, some contemplated by the Basel ratio.

In the dimension of threats, are the variables: homicide rate (*), business costs of crime and violence (*), compliance with the law by citizens, most important problem the country as crime / safety, organized crime (*), cost of terrorism business (*) and evade taxes. The vulnerability dimension, are the variables: democratic development index (*) country risk (*), efficiency of the state (*), free press (*), freedom in the world (*), deficient strategies ML / FT , existence of the financial intelligence unit, auditing standards and reporting, regulation of stock exchanges, rule of law (*), anonymous donations to political parties, political party finance, the candidates finance, defense budget as % of GDP, transparency of government policies (*), transparency of state (*) irregular payments and bribes (*), drug producers, a tax haven, perception index of corruption (*), voice and accountability (*), net errors and omissions in $ in the balance of payments. Consequence dimension, are the variables: country progress (*), solidity of banks (*) and the Human Development Index (*).

2. Results

After running the input data in Principal Component (PCA) the 18 variables in the above dimensions denoted with (*) are qualified to construct the index RLC-LA. This resulted purified PCA with two factors that help explain the 73.15% of the variability.

The resulting variables were categorized into three scales, low = 1, medium = 2 and high = 3. Applying Multiple Correspondence Analysis (MCA) to get the coordinates (Figure 2) and applying the equation for the RLC-LA index, the following results obtain for the index (Figure 3), which in turn we will compare with the Basel Index (Figure 4) .
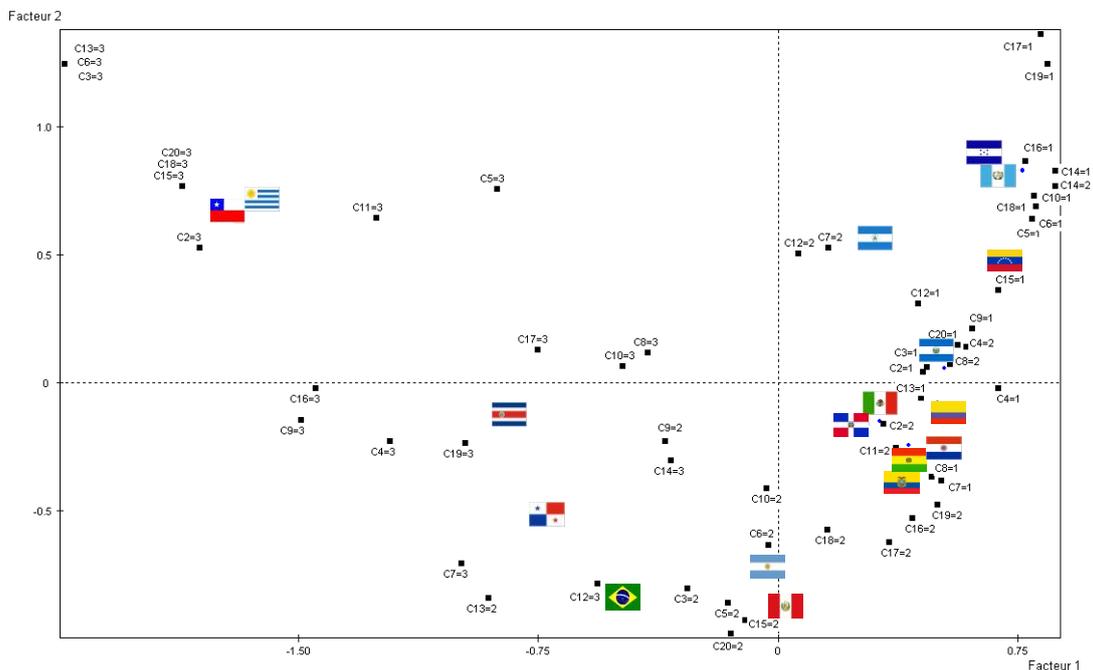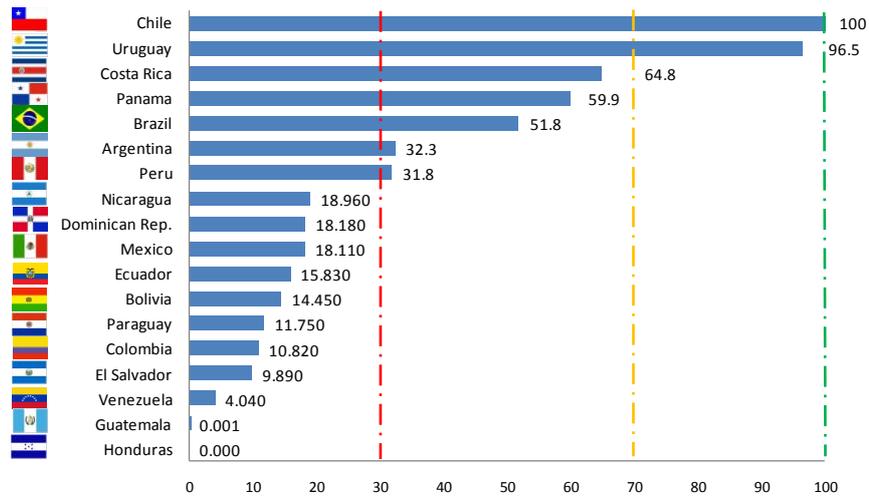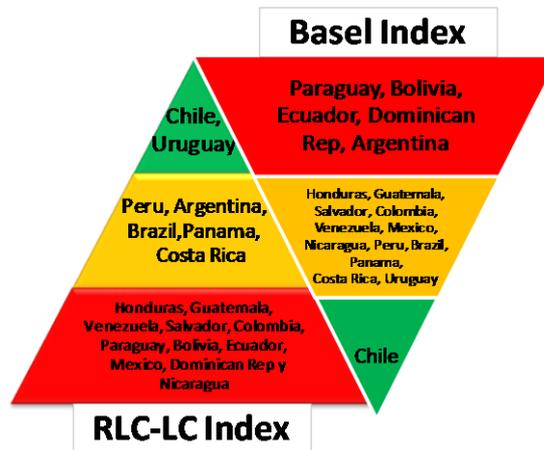
Figure 2

Figure 3

Figure 4

It is seen in Figure 3 the result of the RLC-LA index by country and shows the color bar red, orange and green which means the limit of the risk level high, medium and low respectively according to the distribution of the data.

Importantly, the addresses of the indexes are different. Basel qualified high risk to the maximum value and the rate of RLC-LA to the lowest value. Comparing the result, in Figure 4 can be appreciating the differences that exist between both indices. Basel qualifies the majority of medium risk countries, while RLC-LA qualifies the majority at high risk. Basel qualifies one country as low risk and RLC-LA two countries, coincide in the case of Chile.

5. Conclusions

We believe that this academic exercise serves to demonstrate the usefulness of applying a statistical methodology with multivariate and multidimensional approach. In such an important issue for the countries of the world, especially in the Southern Hemisphere, where organized crime around for years has been an obstacle to the development of our societies.

The resulting index may support the prevention and mitigation of the organizations in the South. Support the planning, review, update policies and strategies adopted by the countries in this area. Primarily by national and international regulatory organizations, financial institutions, banking and insurance corporations.

Considering that every day you should find the best methodology for measuring such a complex activity such as money laundering and terrorist financing. With a risk approach illustrates the probability that in some countries, can proliferate such activities. But at no time determines the amount of money laundered.

Controls should be legal, but it is also necessary to promote citizen awareness, educated and with a greater sense of these activities. Just as the economic and political actors, must be increasingly aware that the actions of ML / FT can trigger a social risk and loss of the welfare state.

References

- Governance (2012). *The Basel AML Index 2012*. Basel Institute on Governance, Basel, Switzerland.
- BCV (2000). *Country Risk and Determinants*. Central Bank of Venezuela, Caracas, Venezuela
- César, Pérez (2004). *Multivariate Analysis Techniques Data*. Pearson Education, Inc., Madrid, Spain.
- FATF (2012). *The FATF Recommendations*. Financial Action Task Force, Paris, France.
- FATF (2013). *National Guidelines for Risk Assessment of Money Laundering and Terrorist Financing*. Financial Action Task Force, Paris, France.