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Methodology for Measuring Financial Stability in Countries

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ABSTRACT

This research proposes for international analysis, a methodology for measuring the level of financial stability in any country in the world. In this sense, it has been inspired on the financial analysis model that modern financial theory generally recommends. This research is quantitative, cross-sectional, it is non-experimental and descriptive. It is quantitative because it provides numerical results. It is cross-sectional because it used economic indicators corresponding to the year 2010. It is non experimental because the sources of data have not been manipulated and have been obtained from good qualified sources of information. It is descriptive because this research figures out why some countries like China and Russia are better prepared to resist financial and economic disturbances that may happen in the future. In other hand it explains why countries like Greece, Ireland and Portugal have been subjected to face an acute financial and economic crisis, from an innovative point of view based in the financial statement analysis.

Keywords: *Countries, financial analysis, risk.*

1. INTRODUCTION

The scenario of global financial crisis worsens every month and in this sense, the experiences of Greece, Ireland and Portugal are clear examples. It is common identifying the degree of risk in public finances by calculating the public debt percent in terms of gross domestic product (GDP). However, it is necessary to propose new methods to measure the health of public finances. That is why this research proposes an alternative way to measure the financial health of a country based on the philosophy of the financial statements analysis.

2. HYPOTESIS

It is possible to identify the risk level in the public finances of a country by applying the methodology of financial statement analysis.

3. GENERAL OBJECTIVE

The general objective of this research is to demonstrate that it is possible to identify the level of risk of any country using for this purpose the methodology of financial statements analysis, by selecting useful economic indicators in order to pursue this goal.

4. THEORETICAL FRAMEWORK

The financial statements analysis is used to identify problems in an entity in order to evaluate its performance and allow making decisions towards achieving its goals. In this task, the financial ratios or accounting ratios allow the decision makers to evaluate the degree of success or fail in the entity´s development. In this sense it is necessary to elaborate financial statements, the balance sheet and the profit and losses statement, for later apply different kinds of ratios in order to identify aspects related to risk and return [1].

The annual reports of entities must document their performance through the issuance of the main financial statements: balance sheet, profit and loss statement, statement of changes in stockholders' equity and cash flow statement [2].

The balance sheet represents a "photo taken in a specific moment". That means it shows the financial position of an entity in a specific date that is commonly the end of the year.

The balance sheet can be viewed as a picture of the company's financial position at a point in time. Due to the daily operations of the entities, the balance sheet is constantly changing mainly as a result of the inventory increase or decrease, as a result of acquiring or reducing assets, and as a result of increasing or decreasing liabilities [3].

Another basic financial statement is the "Profit and loss statement". This financial statement summarizes the revenues generated and expenses incurred by the entity during a period. The difference between revenues and costs and expenses is the net income.

The financial statements provide information about the situation of an entity at a point in time. However, the actual usefulness of financial statements is that they can be used to predict the possible future performance of the entity. The financial statement analysis is useful as a tool to anticipate future conditions, as a starting point for planning actions including the future course of events [4].

To fund its assets the entities must issue debt and equity. The debt represents outstanding loans and they are divided into two categories: short and long term. Stockholders' equity represents the property of the owners

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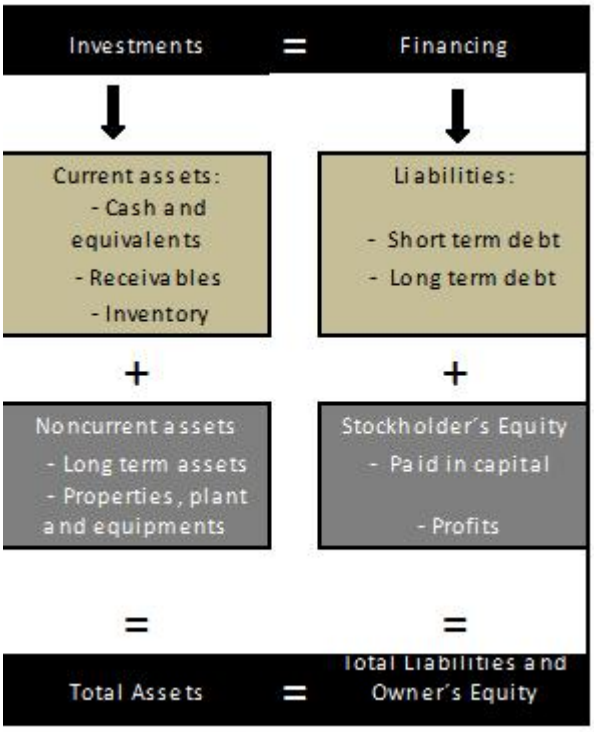
of the entity that have to be paid to them. In this sense, the equity is the amount to be paid to the owners in the event that the assets could be sold according to the values shown in the balance sheet. In this context, it is suitable to take into account that the value of assets, liabilities and Owners' Equity stated in the financial statements must rely on the concept of "fair value" in order to produce useful information for decision making, no matter that the concept of fair value defined by The International Financial Reporting Standards, among other guides, implies some restrictions and limitations [5].

The balance sheet shows the assets of an entity and the manner how they have been acquired: by acquiring debts or by stockholder´s equity contributions (Table I). The assets represent investments in the company and they are classified as current assets and noncurrent assets. Current assets include items that will become cash within one year, while long-term assets include investments that contribute to cash flows in longer periods.

Table 1: Balance Sheet Structure



Source: Own elaboration.

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The accounting figures that are reported in the balance sheet are called "book values". In this context, the book value of an asset often does not necessarily coincide with its market value. For its part, the book value of debt of an entity is generally the same or very similar to the market value of its liabilities. Because most of the debt represents a contractual obligation to pay a certain amount at a specific time, amounts reported as liabilities on the balance sheet of the entities are amounts owed to creditors effectively [6].

Consequently, the equity section should be equal to the book value of assets minus the book value of liabilities. Since it is likely that the book value of assets differ from their market values, it makes possible to assume that the book value of liabilities are similar to their market values. Thus the difference between book value and market value of the stockholders' equity will depend largely on the differences between the book values and market values of the assets of the entity. If the added value of the assets of an entity is much lower than its aggregate market value, then the book value of equity will be much lower than the market value of common stock of an entity and vice versa [7].

Understanding the financial statement information is necessary in order to identify the signs of a problem in the entity. For these purposes, there are at least six classes of financial ratios: liquidity ratios, activity ratios, debt ratios, profitability ratios, equity ratios, and dividend payout ratios.

Liquidity ratios are used to determine an entity's ability to pay its debts in the short term. Activity ratios are used to measure the efficiency of resources and assets. Debt ratios are used to measure the ability to pay the total debt showing the level of default risk. The profitability ratios are used to identify the ability to generate profits. Equity ratios are used to measure the value creation in the contribution of the stockholders. And finally, the dividend payout ratios are used to identify the level of distribution and retention of profits [8].

In this context of financial statement analysis, there are three main components to pursue: margin on sales, proficiency in the use of assets, and the financial leverage degree as synonymous of risk indicator.

An efficient financial analysis includes an assessment of financial ratios. The financial ratios are designed to show relationships between various financial statement items, allowing the comparison of different economic entities even though they may differ in magnitude. One concern that has gained relevance in the current scenario of global financial crisis is the excessive debt. In this sense, debt management ratios are used to measure the risk level of the entities, in terms of risk of default [9].

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The debt management ratios show the extent to which an entity uses debt financing, which has three important implications. First, the entity collects funds through debt in order to avoid diluting the ownership of the stockholders or owners. Second, when the entity collects its funds through debt, its creditors must examine the equity provided by the owners since it provides a safety margin. Third, in this context if the entity earns more profits on investments financed with borrowed funds than the interests paid on debt, return on equity of the owners is magnified or is leveraged.

Financial leverage or obtaining loan funds affects the expected rate of return earned by owners of the entities, primarily for two reasons. First, interests on debt are tax deductible and in this sense, paying interests must reduce the tax liability if it is a taxpayer entity. Second, the rate at which an entity generates a profit from their investments in assets (deposit rate) usually differs from the rate at which it borrows (lending rate) [10].

If the entity has profitable operations, it usually invests the borrowed funds at a higher rate of return than the interest rate on its debt. Combined with the tax advantage of debt due to the interest payments, the highest rate of return on the investment produces positive returns magnified to the owners of the entity. In these conditions, the financial leverage works for the benefit of the entity and its owners.

Unfortunately financial leverage is a double edged sword. When the entity is experiencing poor business conditions generally there are lower income and there are higher operating costs, in addition to the financial costs that are usually fixed but they do not disappear. Interest payments associated with loans are contractual and not vary with income, so this kind of payment must be done to avoid the threat of bankruptcy.

Therefore, the required interest payments may impose a very onerous burden on an entity in conditions of liquidity problems. In fact, if interest payments are high enough, a company with a positive operating income could end up with a negative return for the owners. Under these conditions, the financial leverage works in detriment of the entity and its owners [11]

The debt ratio of an entity measures the percentage of assets financed by creditors and is calculated as follows (Table II):

Table 2: Debt ratio

$\frac{\text{Total liabilities}}{\text{Total Assets}}$

Source: Own elaboration.

In this context of debt, higher debt levels must provide higher yields when the evolution of the business is normal or stable. However, entities with high leverage are more exposed to default risk when business performance is poor. Entities with low debt ratio have a lower risk of default but in other hand, they waive the opportunity to get better return on equity. The prospect of high yields is desirable in the entities but always exist the risk aversion in the investor decisions [12].

Therefore, decisions about the use of debt require balancing the desire for higher expected returns by assuming higher risk as a result of using more debt. The process to determine the optimal amount of debt for an entity requires a constant analysis, since higher debt in order to look for better return may lead risk of default in a scenario of financial crisis.

The concept of financial crisis usually has been associated to a situation in which flow of credit is constrained and the real economy is adversely affected, starting this situation world-wide since 2007 when the downturn in U.S. subprime housing markets raised [13].

The current financial crisis is considered as the worst in the last fifty years and its intensity is similar to that of the Great Depression of 1929-33 according to several international organizations, because the damage caused to the world economy is enormous [14].

On Monday, September 15, 2008 happened something never seen in history when Bank of America agrees to a $50 billion rescue package for Merril Lynch and in other hand, Lehman Brothers filed for bankruptcy protection and thousands of its employees lost their jobs. This has been until now, middle 2011, the largest bankruptcy filing in the history of the United States, around $639 billion dollars [15]. As a consequence of this financial and economic crisis, in the last years has been registered unprecedented financial assistance for countries due to their excessive sovereign debt, as it has happened with Greece, Ireland and Portugal.

In this context, sovereign debt issues are concerns in other large economies like the U.S., Japan and also the U.K., countries in which excessive public debt and public deficit problems have become major issues [16].

By July 2011, Greece is the best example of the consequences related to high public debt because this country has been granted with two major financial assistances by more than 100 billion Euros in less than thirteen months. In this context, the sovereign debt crisis in Greece has leaded low liquidity in government securities markets and it is expected that the government debt-to GDP ratio will peak at 161% in 2012, and fall to 127% by 2020. So, the current times are surrounded by uncertainty about

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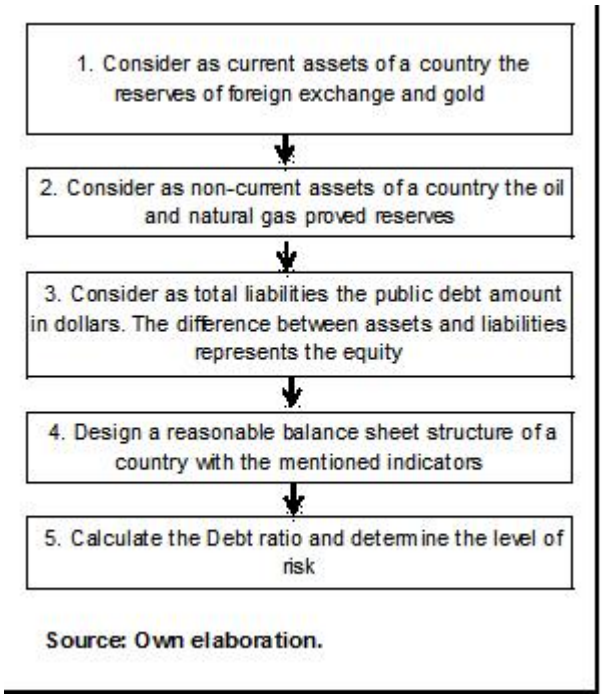
the Greek government's consolidation programmed that has been required and about the prospects for a restructuring of Greek debt. Moreover, fears of the crisis spreading to other euro area countries beyond Greece, Ireland and Portugal continued to weigh on market sentiment suspecting about Spain and Italy, driven this feeling due to their important public debt [17].

So, it has been usually determined for a country the level of risk in terms of debt-to GDP, however, in this research it is proposed a new manner to measure this risk based in reasonable assets of a country.

5. MODEL OF STUDY

The following illustrates the process established to conduct this research and achieve the general objective (Table III).

Table 3: Model to identify the level of risk of any country using the methodology of financial statements analysis



6. METODOLOGY

For this analysis, the research has been designed with the following characteristics (Table IV).

Table 4: Research design

Variables used	Not experimental research	The research required to collect historical information about the indicators selected, in order to design a reasonable balance sheet of a country
Information sources	Documentary research	The source of information were the following databases: The World Fact book 2010 by the Central Intelligence Agency (CIA), and the World Economic Outlook Database 2010 by the International Monetary Fund
Extension of the study	Cross-sectional research	The documental research focused on information corresponding to the year 2010
Analysis of information	Descriptive research	The research calculated the debt ratio to total assets according the model of study, in order to get conclusions about it

Source: Own elaboration.

In this context, the process to identify the risk level in the public finances of a country by applying the methodology of financial statement analysis is summarized next:

- Selection of countries to analyze. It has been taken into account 129 countries that represent at least the 95% of the worldwide GDP and population.
- Investigation in well recognized economic databases. The research process reviewed the CIA World Fact book 2010 and the World Economic Outlook Database. The reserves of foreign exchange and gold were gotten directly in dollars. However, in order to determine de amount of the oil and natural gas proved reserves were necessary to do the next: the oil barrels were considered with the average crude oil price of $100 dollar per barrel and the natural gas cubic meters first were converted in millions of British Thermal Units (BTU) and next, they were converted in dollars with the average price of $4.5 dollar per million of BTU.

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- In order to calculate the public debt amount in dollars has been multiplied the GDP amount by the corresponding Public Debt Ratio.
- Finally, it has been applied the model of study that this research proposes in order to identify the level of risk of any country using the debt ratio methodology for financial statements analysis.

7. RESULTS

First, according to the model applied it has been identified the 20 countries with high financial risk synonymous of deficient financial stability (Table V).

Table 5: Countries identified with deficient financial stability: Public debt in percentage of Gold, foreign exchange, oil and natural gas reserves

Ranking 2010	Country	Public debt as a percentage of gold, foreign exchange, oil and natural gas reserves
1	Greece	6878%
2	Ireland	4392%
3	Zimbabwe	1981%
4	Spain	1978%
5	Slovenia	1841%
6	Malawi	1745%
7	Sri Lanka	1632%
8	Belgium	1620%
9	Jamaica	1532%
10	Seychelles	1523%
11	Dominican Republic	1344%
12	Malta	1324%
13	Portugal	1282%
14	France	1239%
15	Slovakia	1148%
16	Italy	1124%
17	Cyprus	1098%
18	Germany	982%
19	Finland	925%
20	Nicaragua	889%

Source: Own elaboration.

Next, according to the model applied it has been identified the 20 countries with low financial risk synonymous of strong financial stability (Table VI).

Table 6: Countries identified with strong financial stability: Public debt in percentage of Gold, foreign exchange, oil and natural gas reserves

Ranking 2010	Country	Public debt as a percentage of gold, foreign exchange, oil and natural gas reserves
1	Libya	0.10%
2	Kuwait	0.20%
3	Turkmenistan	0.20%
4	Qatar	0.20%
5	Saudi Arabia	0.40%
6	Oman	0.50%
7	Azerbaijan	0.50%
8	Iran	0.70%
9	Equatorial Guinea	0.80%
10	Venezuela	0.80%
11	Kazakhstan	0.90%
12	United Arab Emirates	1.00%
13	Iraq	1.10%
14	Nigeria	1.10%
15	Russia	1.40%
16	Angola	1.50%
17	Uzbekistan	2.10%
18	Canada	2.50%
19	Gabon	2.70%
20	Algeria	2.90%

Source: Own elaboration.

8. CONCLUSIONS AND DISCUSSION

The results of this research conclude that:

- Greece, Ireland and Portugal, have shown low financial stability as the recent history has demonstrated due to the financial assistance received by those countries since 2010.
- The results also notes that countries like Spain and Italy are included in the 20 countries with deficient financial stability. In addition, it is remarkable the excess of public debt in comparison with foreign exchange reserves, gold, oil and natural gas that posses the countries of France, Italy and Germany, the main economies in the euro zone.
- The results confirm the difficult pace that the euro zone is facing since 2010 because of the excess of public debt in comparisons with the assets of the countries in terms of gold, foreign exchange, oil and natural gas reserves.
- According to the methodology applied in order to identify the countries with deficient financial stability it is important to remark that Japan was ranked in the position 21, while the U.K. was

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ranked 31 and the U.S. was ranked 44 of 129 countries considered.

- Finally in the other hand, about the countries identified with strong financial stability, the results shown that most of them are important oil and natural gas producers, in addition to posses moderate level of public debts (except in the case of Iraq). In this context, China belongs to this group and was ranked in the position 39 due to excess of foreign exchange reserves, gold, oil and natural gas, in comparison with its public debt.

This research seeks to contribute to the development of guidelines in order to better analyze the financial stability of the countries because of the severe financial crisis that are facing the international community at present. This last comment far from being pessimistic, seeks to be realistic. In addition, it is important to note the following limitations in the development of the research. First, the results strongly rely on the quality of the sources of information and databases; second, there are possibilities of considering another kinds of assets in order to compare them with the public debt and to improve the measurement done; and third, the financial crisis is so severe and unprecedented that the countries better and worst ranked could change its position easily depending on certain events that the current history may show in the future as severe earthquakes, the adverse effects of climate change, social disturbances, and the negative implications of the current food crises.

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