

Risk in Financial Business - Case Study Applied to the City of Cali

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Abstract

By consolidating financial analysis executed in Valle del Cauca's SMEs during the years 2012, 2013 and 2014; it is observed that 2012 was a prosperous year, with 21% of financial risk. From then on, the business sector (SMEs) in the city of Cali has been growing in number of companies, it is remarkable that the studied financial indicators have been decaying significantly from the good results obtained in the year 2012 which were really encouraging, to the results of 2013 that presented a financial risk of 58%. Also following the financial analysis, 2014 continues showing unfavorable indicators until arriving at 75% of financial risk in the analyzed companies in the SME sector of the city.

Keywords: Finance Risk, Liquidity, Indebtedness, Portfolio Turnover

Classification JEL: C01, D81, G1

Introduction

Around the world, small and medium enterprises make up most of the network business in numerical terms "in Colombia, about 94% of the enterprise system is made up of SMEs, which being the engine of the economy do not have the importance or enough support to survive over time "(Aguirre Ortiz, et al, 2006), although this image has begun to change, considering that during "the last governments some policies have been established in order to promote the development of these enterprises through loans and other kinds of aids "4. Because of the large percentage that these companies represent, a concern arises for investigating and knowing the risks they are exposed to, with the intention to create tools that allow them to act timely, since there are few studies in this field, and nonexistent in the case we. Similarly, the interest also arises because small and medium-sized enterprises often do not have (a priori hypothesis) with a financial department to conduct a full and proper monitoring of the various risk indicators and from this, take the relevant decisions and implement strategies conducive to mitigating the risks that are embedded as indicated by Miller (1994). This work aims to provide evidence to allow businesses to internalize the processes that serve to balance the results of the calculated indicators and have a controllable risk. According to St. Martin et Rodriguez (2011) the current crisis has highlighted the close relationship among three circumstantial aspects to the development of financial markets in recent decades: the globalization process, the volatility of financial figures and uncertainty. In this sense the subsectors of the economy in the geographical scope of this study should be prepared for a continuous improvement, so that it helps them to achieve national and international economic growth, according to the negotiations that are taking place in this context of globalization. However, it is important to note that companies also need consultants in other fields in order to make a diagnosis versus what is going wrong in the organization, which means their indicators could be at inadequate levels.

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⁴Retrieved on August 1, 2011 in <http://bdigital.eafit.edu.co/bdigital/PROYECTO/P004.678CDS211/INTRODUCCION.pdf> analyzed in this work, particularly in the field of liquidity management, debt and portfolio management.

This means that in many cases you might find that the company should diversify its products and services to supply a demand that is being ignored and this will generate greater profitability or value creation. The intention is making the financial area assist the company in the creation of value.

SMEs often have some adaptive advantage to quickly change its production structure in case of changing market needs, which is often more difficult in a large company. Thus, TORO (2009 and 2012) mention the following:

- Small businesses have more difficulty finding funding in an appropriate cost and term, because of their increased risk and in order to solve this difficulty, they resort to financial institutions.
- They are companies with greater labor rigidity and difficulty in finding skilled labor, so the employee prior training is essential for them.
- Because of the small volume of profits presented by these companies, they cannot dedicate funds to research, however, in many cases they have innovative processes and products.
- For their size, they have a small customer base.

Other disadvantages of this type of organizations, according to Beltran (2004), are as follows:

- SMEs have great structural weakness for several main reasons:
- They lack strategy and planning, which becomes a limiting factor for inclusion in an international context and jeopardizes their continuity in the domestic market.
- The access to credit lines is difficult and therefore the investment in technology, working capital and knowledge is not possible
- Administrative, financial, accounting and operational management is very informal and intuitive.

Taking into account what was mentioned previously in SMEs and knowing their high degree of vulnerability facing the international market, they were considered as an object of study, in order to contribute to their permanence in time. To contrast the hypotheses, the sample of SMEs indicated above was taken with regard to observe what the behavior is of the financial risk of SMEs in the city of Cali during the years 2012, 2013 and 2014. To this end, a number of primary and secondary objectives were established as:

- Characterize the financial risk in companies in the city of Cali.
- Debugging the financial statements of the companies under study.
- Determine liquidity ratios, debt and portfolio recovery that are influencing the financial risk of a group of companies in Cali.
- Establish the risk condition possessed by the companies under study.
- Analyzing financial risk according to the productive sectors for companies under study.

Similarly, before developing the work, research about studies that were related to the main objective was done. One might mention at this point the study by Ávila Bustos (2005), in the city of Bogotá, called Measurement and control of financial risks of companies in the real sector. The author believes that there are three types of financial risks in organizations known as market risks, credit risks and liquidity risks, and he develops for each aspects on management, administration and measurement, being these risks classically described by authors such as Markowitz, Miller and Sharpe (1990), also retaken by Tudela and Young (2005) ie not articulated for an integral analysis, but for an individual perspective of them. An important aspect of this study is that it recognizes the need for risk measurement in organizations; moreover it deepens the research on management and administration of the same one; to the extent that is considered to be a complementary element to the development of the corporate purpose of the organizations. In this context, Zorrilla (2003) also conducted a study in the city of Veracruz (Mexico) on financial risk management of exportation SMEs in contributions to the economy, which aims to provide guidance and show the entrepreneurs the importance of using derivative financial instruments such as "forwards", "futures", options, "swaps", to achieve the reduction in market risks. This work focuses on these derivative financial instruments, for their ability to mitigate or reduce the risks faced by SMEs. Another study, is the one made by Navarro and Lopez (2009) from the University of Sevilla, this is a proposal for simplified model risk detection in companies: empirical study applied to the construction sector (SMEs).

Its purpose is to identify the variables or more significant ratios of corporate solvency in construction companies by analyzing the annual accounts of a sample of societies, some of them without continuity problems in their activities (a sound and profitable enterprise) and others that are in situation of bankruptcy or receivership (failed or unsuccessful companies), with the ultimate aim of proposing a simplified method for detecting in advance possible risks situations.

The author uses information about sound and profitable companies and failed companies, taking into account the economic and financial data of all companies for the preceding four years before the business failure. The statistical technique used to reduce the variables that finally are integrated into the system is their multivariate analysis. According to Ballesteros, the usefulness of the discriminant method is its ability to provide a comprehensive analysis model, comprising a combination of ratios correlated with each other, which summarizes the financial economic information in a more assimilative way to the user.

Discriminant analysis also applies for predictive purposes. The main issue in the predictive application of discriminant analysis is to determine early enough business crisis situations. The idea is cataloging in advance a company as sound and profitable or failed depending on the values of its ratios in the precedent years of the crisis, by applying built discriminant functions. Hincapié (2007) in his study of financial risk analysis for micro, small and medium enterprises in the metallurgical sector of the city of Manizales makes a theoretical study with an analysis unit similar to the object of this work, albeit with a different methodological model. This study proposes the use of the Z2 index, which is an econometric model that is constructed from financial ratios. Such ratios are linearly combined with a specific weight to each, to obtain a final result score (Z-score) that discriminates companies that breach their commitments. The model was created by Altman (1968) for predicting bankruptcy. Altman's model uses discriminant analysis as a multivariate statistical technique that is a sequential process in which the analyst excludes those financial reasons that are not statistically significant and include those that are considered meaningful. The author considered that the model above, required to have risk measurement, since the factors of independent variables will enter as numeric variables that will qualify each observation according to the company, the sector effect, the economic environment and the overall environment.

Consequently, the dependent variable of corporate performance to be used will be the calculation of Altman Z model, known as the probability of bankruptcy. Therefore, the concept of risk is articulated in this perspective, with those factors that at the moment of doing an internal or external evaluation can affect the company negatively. The positive impact transforms them into successful factors as Alvarez and Garcia said in 1996. Under these proposals, the performance of this work has been considered appropriate, since companies can generate agreements based on the results presented by them, agreements by which companies can design necessary tools, so they can anticipate unfavorable situations for the company that perhaps can seriously affect or compromise in a short or medium term the enterprise. Therefore, those signals are the ones that will allow the company to take appropriate decisions and act at the right time. The aim is to provide support criteria for decision-making, this being the cause that led to the search for new and better alternative solutions to organizational problems of SMEs, in order to respond to their needs. One element that brings the design of this tool within its methodology is the integral analysis of the financial indicators that will be calculated, as they always are analyzed and evaluated individually in some organizations.

Finance and Financial Risk

In 1973 after the first oil shock until today, scientific studies on Financial Management of the Company have expanded and deepened considerably. New lines of research emerged as the Option Pricing Theory, Arbitrage Pricing Theory and Agency Theory. In the eighties and nineties, the theoretical and methodological investigation of the aspects above was brilliant, as well as the diversity of empirical validations, with sophisticated valuation models and mathematical techniques and widespread use of information technology. In addition, it is deepened in research streams as the Agency Theory and methodology provided by the Theory of Fuzzy Sets applied to the Financial Subsystem in an atmosphere of uncertainty with significant results. Interest is bolstered by the internationalization of phenomena and financial decisions, leading to many studies on issues such as political risk and the risk of variability in the exchange rate of the currencies in which International Finance Management operates. Also, to overcome some criticism of the CAPM the ECAPM has emerged "Porque" in which initial work in an international context referred to pipeline companies, and expanded later by Litzenberg, Ramaswamy and Sosin (1980). Risk management, evidence on risk hedges. Hull (1980 - 2002); and later Díez de Castro & Mascareñas (1994), Izquierdo (2004). Regarding, financial structure, De Angelo and Masulis (1980) admit the existence of an optimal financial structure contemplating the effects of taxation, amortization and private investments of each company. Ross (1985) adopts a position in the same direction in risk conditions and perfect market. Regarding dividend policy, the work of Jalilvand and Harris (1984) is remarkable, they conclude that market imperfections may involve interdependencies among investment decisions, financing and dividends. On the fiscal impact on the dividend policy Poterba and Summers (1984) conclude a higher taxation of dividends versus capital gains.

Moreover, Sarig and Scott (1985) are positioned in a similar line to Dim, Lewellen and McConnell, reaffirming the phenomenon of different segments or clienteles about the APT, new researches continue being added such as Roll and Ross (1980, 1984) using the multivariate analysis, this last one subjected to criticisms as Dhrymes, Friend and Gultekin (1984). It is also remarkable that during these years many studies among supporters of CAPM have been conducted, as Tinic and West (1984, 1986), and on APT, Gultekin and Gultekin (1987, 1989) without reaching definitive conclusions about which of the two models is better, both in national and in the international version. Titman and Wesseles (1989) verify the APT and conduct empirical research on capital structure, in which they draw conclusions such as that transaction costs can be an important determinant in the choice of the capital structure, especially in small businesses by issuing long-term financial instruments. Leland (1994)⁵ in the search of the optimal financial structure finds that the value of debt and optimal indebtedness are explicitly connected with the risk of the company, taxes, bankruptcy costs, the free rate risk and pay-out ratios. Fama and French in 1992 revealed important findings in this regard and concluded that in the American market for non-financial firms there is a weak positive relationship between the average and beta profitability. These same authors in 1995 try to detect whether the behavior of asset prices in relation to the previous ratio, reflects the behavior of the benefits.

However, definitive and satisfactory conclusions were not drawn, making necessary other researches. Daniel and Titman (1997) reexamined the Fama and French model. They argue that the characteristics rather than the betas determine the expected benefits. Specifically, they found that stocks with low market-to-book ratios, but higher betas with respect to market-to-book portfolio factor, tend to have similar benefits to other low market-to-book stocks. Enrique Sentana has published over the years numerous works related to factor models of conditioned heteroskedasticity applicable to ATP and other models as (Pricing Options On Assets With Predictable White Noise Returns) or quadratic predictions and mean-variance analysis in models with conditioned heteroskedasticity and GARCH models. In recent years there have been numerous articles and research conducted about the great existence of SMEs and their role in today's society.

One example is the work done by Lopez Revuelta and Sanchez (1998)⁶ in which they pretend to show, in a synthetic and global manner, the specific problems that these family businesses can suffer. From this work, interesting conclusions were drawn such as that due to the family structure of the company; the maximizing criterion of the market value may not be the most suitable in some cases. In other works it has deepened in the study of human resource management in SMEs, funding, or direct investment in developing countries. The companies valuation theory seemed to be bogged down, at least since the seventies and only recently it has gained a significant boost under the influence of authors as Cornell (1993), Copeland, Koller and Murrin (1995) and Damodaran (1996). O Fernandez (1999) and Amat (1999) in Spain. In the nineties, the theory and practice of business valuation was centered on very classic and somewhat obsolete methods such as static approaches or balances and mixed models such as the German and Anglo - Saxon.

These methods have been overcome nowadays, even admitting their virtuality and usefulness for small business valuation. Currently, the methodology based on discounted cash flows seems indisputable and is the most consistent and solid in terms of its theoretical foundations. By this line some authors have tried to advance such as Martín Marín and Trujillo Ponce (2000) in their book "Manual of business valuation." Regarding the issue of new economy or Internet-related virtual economy companies, these authors in their own words prefer waiting a period of time before tackling such a thorny issue. These companies seem to escape the logic of the so far developed valuation models. High volatility and soaring prices seem to prevail in the shares listed on the North American NASDAQ.

Associated with the previous idea, it is important to take into account the increasing value acquired by the information and communication technologies within the company, factors that enable organizations to create value through the integrated management of the physical and virtual chain value. Something like what Ordiz and Pérez-Bustamante (2000) believe when they say that "these technologies can bring benefits to the company, such as reductions in costs or increases in value, but for that, it should be assumed that investment in information and communication technologies is not a business decision, but acquires the category of strategic investment for the business, given the impact it may mean for the future of the business."

⁵LELAND, Hayne and GOLDSTEIN, Robert. An EBIT - Based Model of Dynamic Capital Structure. The Journal of Business. University of Chicago, 2001, Vol. 74, No. 4.

⁶SANCHEZ p., José and REVUELTA B., Daniel. Desafíos de las PYMES Familiares (Challenges of Family SMEs). ISSN 0212-1867, No. 99, 1998. Pag. 159 - 173

In recent years theories on Risk Management have been considered as an interactive process based on knowledge, assessment and management of risks and their possible impacts, whose fundamental purpose is to improve decision-making in organizations. Thus, on the basis of the studies on the cost of capital made by Modigliani and Miller (1958), then the valuation models and risk regulation by Lopez, J. (1996) and MARSHALL, C. SIEGEL, M. (1996) ⁷, stochastic models of risk assessment developed by Berkowitz, J. (1999) are presented as a process applicable to any situation where a desired or unexpected outcome could be obtained, which at the same time could be significant or may bring an impact to the organization, Izquierdo (2005). Risk management ensures that financial resources have been properly assigned to the corresponding functions, favoring the maximization of the value of shareholders partners, including third parties. ("Financial Risk Management, 2006). Some benefits to the organization are related to achieving the goals and objectives; hence the decision-making turns out to be an important element to observe, within risk management in the company.

Added Value of SMEs in Colombia

Micro, small and medium Colombian enterprises (MSME), as in most countries, are the engine of the economy. They generate more than 50% of national employment, they represent 36% of industrial added value, 92% of commercial establishments and 40% of total production of the country, demonstrating its importance and great potential for growth (comparing its participation in the GDP and the number of establishments) but, unlike the fundamentals that have been a relevant actor in the remarkable growth of the countries of South East Asia and Europe like Italy and Spain due to their outstanding participation in foreign trade, the contribution of SMEs to the country 's trade balance has been very poor⁸. While exports (US \$ 12,547 million) of SMEs in Taiwan correspond to 56% of total exports of the island, in Korea we talk of (US \$ 18,241 million) 40% and Italy (US \$ 110,552 million) 53% , the Colombian SMEs correspond to no more than 20% of total exports from Colombia. With the aim of doubling and diversifying exports of non - traditional products, the Government developed the Strategic Export Plan, which included the Expopyme program, designed and coordinated by Proexport Colombia, aimed at promoting the successful and permanent position in exports of SMEs and their adaptation to the demands of the global economy.

At the end of 2001 Proexport had invested more than \$ 6000 million in its development and 1650 MSMEs had participated, of which more than 600 made exports of US \$ 110,700,029 in that year. However, Colombia continues representing only 0.2% of total world merchandise exports, with a per capita export income of US \$ 270 in 2000 compared to the world average of US \$ 600 in that year⁹. As for SMEs, in 2000, exports as a percentage of gross sales (measured in pesos) only reached 14%, being the packaging and cardboard boxes sector with 37.6% the highest export coefficient and the furniture sector with 10.5% the lowest coefficient, which shows that our SMEs have been born and raised considering basically the local market and demonstrating that only when domestic demand has shrunk have they looked for the world market¹⁰. In view of the above, one of the greatest difficulties faced by the Colombian PYME's is their low administrative capacity to be linked to the external sector, the lack of information on opportunities for competitive and sustainable exports, with high levels of local added value

As a result of a minimal training and management in the international arena and their limited access to technologies, especially those related to foreign trade, because as shown by the recent work developed at the University of the Andes about this topic. The biggest obstacles to the export process of domestic SMEs are referred to factors related to marketing such as the suitability of the product to the requirements of the external market, lack of markets information (knowledge), access to adequate distribution channels and lack of training in international marketing ¹¹.

⁷MARSHALL, Christopher and SIEGEL, Michael. Value-at-Risk: Implementing a Risk Measurement Standard. Massachusetts Institute of Technology - Sloan School of Management. June 1996

⁸Ayyagari and Others, World Bank 2003. Mentioned by CLAVIJO Sergio .Perspectivas de las PYMES (Perspectives of SMEs), Center for Economic Studies - National Association of Financial Institutions, October 2007. Pag.11

⁹SANCHEZ p., José and REVUELTA B., Daniel. Desafíos de las PYMES Familiares (Challenges of Family SMEs). 1998, Pag. 159 – 173

¹⁰SANABRIA D., Sor Esperanza. Las PYMES en Colombia: Evolución, Desarrollo y Fomento (SMEs in Colombia: Evolution, Development and promotion). Superintendencia of Corporations. May 2004

¹¹Op.Cit 48

Without overcoming these shortcomings, it will be difficult for Colombian SMEs to take advantage of the great opportunities offered by the global market, particularly those occurring as a result of the integration agreements and preference systems such as CAN, ALIDE, ATPA and SGPA, signed and granted to Colombia. In this regard, it is important to highlight the recent approval given by the US Congress to ATPA, which opens great possibilities to expand the participation of Colombian SMEs in the market of manufactures of that country (a trillion dollars were their purchases to countries around the world in 2001) given that, with the expansion of the number of products benefiting from the relief, it is estimated that 75% of the national export supply may enter without paying tariffs, opening up new sources of employment and generation currency, becoming a crucial support in the process of reviving local production and the recovery of the US market.

Also, it should be noted that the FTAA (Free Trade Area of the Americas) from 2005 will change the fate of their member countries and in particular of the SMEs, which should face the expanded market (800 million people) by using international strategies and new and multiple competitors and therefore the MSME's entrepreneurs must be prepared to be competitive with those of other countries¹². It is necessary therefore to provide them with high quality support in these areas if we want to consolidate this business sector as an emerging possibility for Colombia to take risks outside its borders. Because of all this, a government program that helps them to solve in part these weaknesses, giving them the required management tools and business knowledge to start and successfully develop an optimal process of internationalization of its products and services, supporting them in their use, becomes of paramount importance when there is a marked decrease in domestic demand and weakness in our major trading partners (the United States and Venezuela).

Methodology

The emphasis of a case study is to describe or measure two or more features or units of analysis in order to determine how it is or how the phenomenon occurs. In this sense this study is aimed to observe and characterize a reality of some companies of Cali, where the financial statements of some companies were analyzed during 2012, 2013 and 2014, to then proceed to perform calculations and analysis of financial liquidity indicators, debt and portfolio turnover and description of their behavior in risk for each one. Initially liquidity ratios, debt and portfolio management will be calculated, based on the historical series of financial statements selected from the database of the Super Intendencia de Sociedades de Colombia (Colombian superintendence of corporations). In order to obtain the liquidity the index ratio or current ratio calculation was used. This tries to verify the availability of the company, in the short term to meet its commitments, also in a long term. The formula is

Current Ratio = Current Asset / Current liabilities

For the indebtedness, the rate or level of Indebtedness was used: This indicator provides the percentage of participation of creditors in the company. The formula is:

Indebtedness level = Total Liabilities to Third Parties / Total Assets

In the case of the portfolio turnover, the portfolio turnover rate was used which shows how many times the accounts receivable or portfolio are converted into cash or are recovered during this period, this period may be month or year:

$$\text{Portfolio Turnover} = \frac{\text{Credit sales}}{\text{CXC average}}$$

Among the risks described by the literature that may affect companies, there is the operational or business risk treated as the derivative of decisions that are taken daily within the company, either in relation to production, distribution, prices, etc. On the other hand JORION (2001) defines financial risk as the risk of not being able to cover the financial costs of a company. Among the main financial risks described in the literature there are: market risk, credit risk, liquidity risk, operational risk, legal risk and transaction risk, but as we can see the theory shows and describes how they are calculated and analyzed independently, which is why this study aims to show a model for risk assessment of companies that have no market prices (unlisted) more holistically, based on operational risks (management or recovery portfolio) and financial risks (liquidity risk and debt or credit risk), which affect in a short- and medium-level the operation of enterprises and even more so in countries with emerging economies.

¹²Op. Cit 49

This work was based on the database of the Superintendence of Corporations of Colombia, excluding those that are in liquidation process where companies were classified by sub-sectors, which according to the studied companies were: Construction of Residential Construction, construction of Civil Works, Adequacy of construction Works, Trade of Vehicles and Related Activities, Trade of fuels, lubricants and Wholesale. Subsequently, with the results of the companies under study, every financial indicator was calculated, in addition descriptive statistics was applied in order to obtain simplified information to be analyzed and interpreted in a more comfortable and quick way. This information was obtained with the intention of being used effectively for the purpose of this work. Specifically, measures of central tendency were used, which served as landmarks to interpret and corroborate the results obtained through indicators. After calculating each index (liquidity, debt and portfolio turnover), this result will be converted in terms of risk as a dichotomous variable as follows:

- 1 - if the financial index has risk
- 0 - if the financial index has no risk

A "dummy" or dichotomous variable is a numeric variable used in the linear regression analysis to represent subsets of the sample in study. In the research design, a "dummy" variable is often used to distinguish different groups of variables. In the simplest case, with values 0 and 1. The "dummy" variables are useful because they allow the use of a single regression equation to represent multiple groups. Finally, after having the results of each indicator, a conditional probability formula was applied to determine whether the company owned any risk, according to the three indicators calculated. The formula consisted in whether the sum of the three indicators was less or higher than 2, then the company had risk, as the analysis described above was aimed at only determining the risk indicator. This means, the analysis in this part of the work was done holistically. Once this data is obtained, a risk table is generated in order to determine individually per industry and sector its financial risk through the following criteria:

- The company that owns 2 or 3 of the indicators at Risk condition (1) shall possess financial risk.
- The company that owns 2 or 3 of the No risk indicators (0), has no financial risk.

Once the financial risk for businesses is calculated the next procedure is to make a descriptive analysis of risk behavior by company type (small or medium), by productive sectors as conglomerates done through cluster analysis. This model will be applied to each company and with these results a classification table is constructed including levels, and risk scale intervals, being the amount of variables odd number (3). After debugging the financial statements of the series 2012, 2013 and 2014 supplied by the Colombian Superintendence of Corporations, calculating the dichotomous variables of "risk" and "No Risk" for each indicator (liquidity, debt and portfolio management) as well as determining the risk by enterprise and sector, it was proceeded to run the logit model using the SPSS software. In order to do the above mentioned process, figures were taken as a basis calculation of average data previously performed on the pilot test in 50 and the references were established as follows: The analysis of the Logistic Regression Results, whose statistical technique aims to express the probability of an event as a function of certain variables, is considered potentially influential. The logistic regression, like other multivariate statistical techniques, gives the possibility to evaluate the influence of each of the independent variables on the response variable and control the effect of the rest. The analytical way in which the probability object of interest is linked to the explanatory variables is as follows.

$$P = \frac{1}{1 + e^{-(b_0 + b_1 x_1 + b_2 x_2 + \dots + b_k x_k)}}$$

This expression is known as logistic function; where "e" denotes the exponential function and $b_0, b_1, b_2, \dots, b_k$ are the parameters of the model.

If the exponential function produces values greater than 0 for any arguments, p will take only values between 0 and 1. If the betas are positive (greater than 0) then the function is increasing and decreasing in the opposite case. A positive coefficient indicates that p increases as the variable grows. For the interpretation of the beta coefficients, it is necessary to refer to the concept of relative risk. The relative risk of an event is defined as the ratio of the probability that this event occurs (p) and the probability of not occurring (1-p). The exponential of b_i is known as the relative risk, which means, it is a measure of the influence of variable x_i on the risk that the event occurs and assuming that all the other variables of the model remain constant. A confidence interval for the exponential b containing 1 indicates that the variable has no significant influence on the occurrence of the event and, conversely, values further from this indicate a greater influence of the variable.

Once the values of the parameters or coefficients b are estimated, we can determine the probability of the event for different values of X^i . To run the model data for the third series, the results of some indices were softened, in the same way it was done for the previous series.

In the debt ratio, indices or outliers much higher than the maximum debt ratios (100%) were replaced, given that in real life a company that surpasses its capital adequacy comes to be operated by entities of the state or shall enter into liquidation laws or concordat. For portfolio management index, all high outliers or extreme values were taken and replaced by 360 days, being these, the maximum rotation days, because all periods higher than this are understood as delinquent accounts and are punished as lost in the Income Statement for the following period. The model was run for the time series in 2012, 2013 and 2014, trying to strengthen the model, the analysis and besides to see the consistency of the same. Next, the result of the logistic regression is shown. The dependent variable (**risk**), which is dichotomous (0 when there is no risk and 1 when there is a risk) and one or more independent variables, for our case (liquidity, debt and portfolio). In analyzing the results for the risk variable, it can be seen that all coefficients are positive indicating a direct relationship with risk, except for liquidity which shows an inverse relationship with a negative coefficient. As shown in the table, all the coefficients are statistically significant at 0.05 except by indebtedness which is significant at 0.1. The previous table also contains five ways to evaluate the benefits of the model optimization: Omnibus Test $-2 \log$ likelihood, R^2 of Cox and Snell, R^2 of Nagelkerke. Omnibus model coefficients or Chi-square test is highly significant, reflecting good model fit to the data, additionally; a high percentage of correctly classified observations (80.6%) is noticed.

Results and Sector Analysis

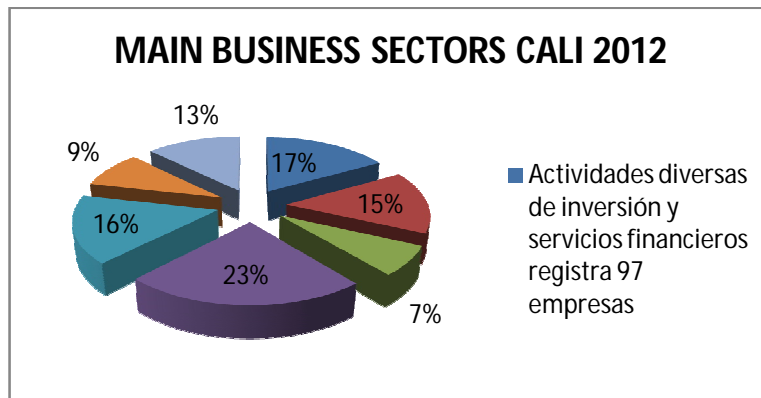
The analysis of detailed results of financial variables liquidity, debt and portfolio recovery was conducted to determine the financial risk between 2012 until 2014 in the city of Cali in order to make decisions that favor business development and business support.

Financial Risk Analysis in Companies Of The City Of Cali - Year 2012

The analysis was conducted in 924 companies in Cali during 2012. The companies were registered and they correspond to several business subsectors. 11 companies related to computer activities, 6 to tourism activities, 97 companies related to various investment activities and financial services, 87 related to estate activities, 21 to livestock activities and hunting companies, 22 companies related to construction sector, 41 to agricultural companies especially exporter, 4 companies to storage and other activities related to transport sector, 8 housing companies, 1 coal derivatives, 135 wholesale companies, 94 retail companies, 15 fuels and lubricants trading companies, 49 vehicle trading companies and related activities, 51 construction of civil works, 20 companies of construction of residential activities, 2 mailing companies, 1 company of oil derivatives and gas, 15 publishing and printing companies without regular publications, 6 educational institutions, 9 distribution of food and beverage companies, 8 manufacture of machinery and equipment companies, 6 companies of manufacture of other textile materials, 4 companies of papermaking, cardboard and derivatives, 20 clothing manufacture, manufacturing of cement, concrete, plaster and lime, 2 manufacturing companies of fabrics and related activities, 1 production company of motor vehicles and parts, 9 metalworking derivative industries, 1 company of basic metal, 6 manufacture of footwear companies and related products, 22 companies of community and social services, 73 companies with other business activities, 6 other manufacture industries, 5 companies of agricultural sectors, 5 companies of other systems passenger, 1 company for fishing, fish farming and related activities, 18 companies of food products, 1 company of rubber products, 14 companies of plastic products, 8 companies of chemicals, 1 company of periodicals, 2 companies of radio and television, 2 companies of social services and health, 10 companies of telephoning and networks, and 3 land freight transportation companies.

The analysis show that subsectors of wholesale marketing and retailing, entertaining activities and real estate services join most of the companies and the ones which the economic and social development of the city move around.

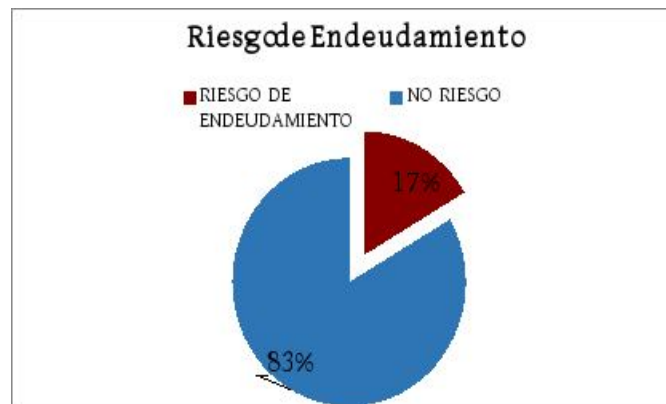
Graph 1



Source: Self made

The graph shows the status of companies in Cali in 2012 about the risk of indebtedness, liquidity and portfolio. And the next graph refers the risk of indebtedness.

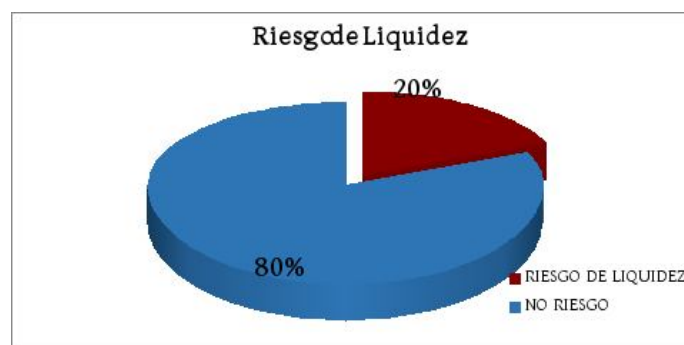
Graph 2



Source: Self-authorship

It is observed that 17% of the companies under study are at risk of indebtedness. From an accounting point of view, the graph shows a good percentage of debt capacity when comparing financial structure and financial capacity; therefore these companies do not need to be financed with suppliers, labor and / or financial institutions to operate. For this financial year, Cali showed good financial paramount and this is shown in analyzing how companies did not have to fall into debt to make their proposed activities.

Graph 3

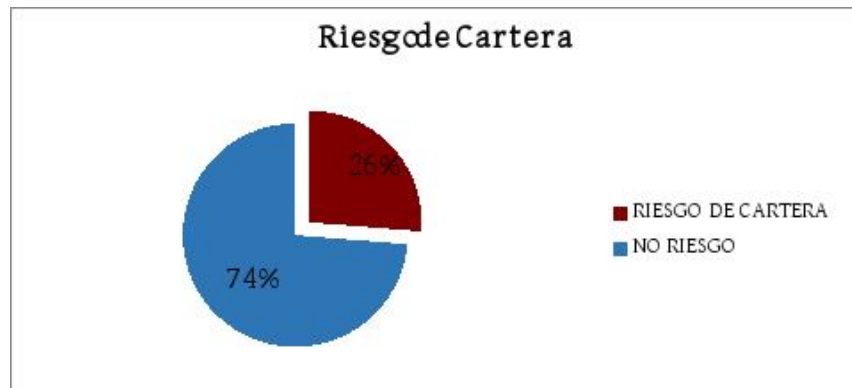


Source: Self-authorship

Regarding liquidity risk, most of the companies, 80% had no such risk due to the type of companies and sectors that mostly composed the population under study.

The marketing wholesale and retail companies, entertainment activities and real estate services are the subsectors that gather most companies in Cali in 2012. These subsectors represent more companies and require minimal funding for suppliers due to the lack of liquidity risk, without bearing in mind that the other companies joined in other subsectors. They were not so representative and were not taken into account to draw the percentages that were represented in the previous graph.

Graph 4



Source: Self-authorship

The analysis showed lower risk of portfolio, as the graph shows the indicators percentages corresponding to 26% portfolio risk and 74% no portfolio risk. It reveals that credit sales are lower, and it is inferred that the companies were having good turnover in cash sales and profits since it cannot have invested too much time or working capital in loan recovery. Regarding the portfolio there is always risk and uncertainty, however the resources can be used in the best way as it happens within most of the companies under study, and more specifically to portfolio risk in this case with a minimum percentage.

Graph 5



Source: Self-authorship

The analysis on the previous graphs showed that from 924 companies analyzed in 2012 in Cali, 79% did not have financial risk and this situation makes them feasible to obtain credits. It was concluded that in that year, the companies had a good financial viability, since as discussed above it showed how companies that used risk analysis had lower percentages 60% in comparison to debt risk, liquidity and portfolio. Multiple factors are involved in the activity of a company, the financial risk management is paramount in order to be prepared for disaster situations and this is achieved through financial risk management preventing possible events that may affect the normal running of the company. However, the companies studied in the city showed positive results, only 21% of them had chance of financial risk.

Financial Risk Analysis in Companies in Cali in 2013

The study reveals which sectors were most active that year and the ones that contribute the most according to the participation within the economy of this city. The table shows that WHOLESALE TRADE has the highest participation, 127 of companies were dedicated to this activity and it represents 14.16% of the companies. In addition, DIVERSE INVESTMENT ACTIVITIES, PROPERTY BUSINESS AND RETAIL TRADE SECTORS have an average of 92 to 96 companies each that represent between 10.2% and 10.7% of all companies. 179 companies of the city represent between 1% and 2% and the sum of their percentages constitutes the minority with 19.96%. Other economic sectors are agriculture with export PREDOMINANCE, 49 companies that represent 5.46%, TRADE IN VEHICLES AND RELATED ACTIVITIES with 45 companies, 5.02%; CONSTRUCTION OF CIVIL WORKS 48 companies that correspond to 5,35% and finally OTHER BUSINESS ACTIVITIES, 64 companies that represent 7,13%. This information is shown in the following table.

Table 1

COMPANIES	TOTAL	PERCENTAGE
DIVERSE ACTIVITIES INVESTMENT AND FINANCIAL SERVICES	92	10.26%
REAL ESTATE ACTIVITIES	96	10.70%
LIVESTOCK AND HUNTING ACTIVITIES COMPANIES	18	2.01%
ADAPTATION OF CONSTRUCTION WORKS	16	1,78%
AGRICULTURAL EXPORT DOMINANCE WITH	49	5.46%
WHOLESALE TRADE	127	14.16%
RETAIL TRADE	92	10.26%
FUELS AND LUBRICANTS TRADE	12	1.34%
VEHICLES TRADE AND RELATED ACTIVITIES	45	5.02%
CONSTRUCTION OF CIVIL WORKS	48	5,35%
RESIDENTIAL CONSTRUCTION WORKS	23	2.56%
OTHER COMMUNITY, SOCIAL AND PERSONAL	18	2.01%
OTHER ACTIVITIES WITH LESS THAN 1% OF INVOLVEMENT	179	19.96%
OTHER BUSINESS ACTIVITIES	64	7.13%

Source: Self-authorship

Graph No 6

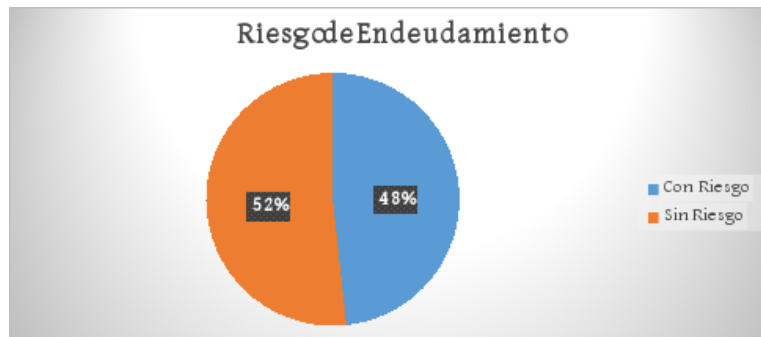


Source: Self-authorship

Regarding the liquidity risk, after comparing the current assets over current liabilities to get the current ratio, it was observed that 897 companies in Cali, 80 % showed high liquidity risk and only 183, 20% did not show this risk. This result probably corresponds to the type of companies under study, since most companies belong to the service sector, such as trading and construction because they are leveraged by their suppliers.

Liquidity risk. When the index is less than 1.1 When the result is > 1 there is liquidity, and when the index is < 1 there is no liquidity.

Graph 7

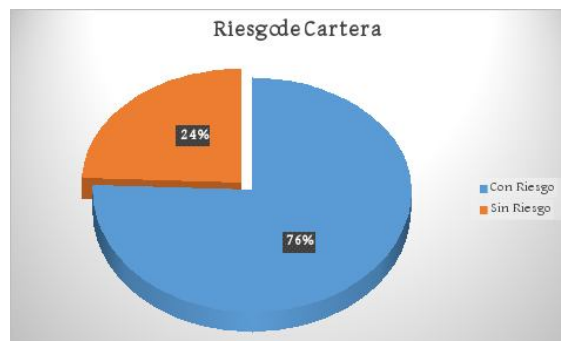


Source: Self-authorship

Traditionally, it has been used to assess the ability of future indebtedness of the company and shows the proportion of assets belonging to creditors: *Indebtedness level:* This indicator provides the percentage of participation of creditors in the company. The risk of debt of 464 of the companies under study that correspond to 52% did not show risk but 48% that correspond to 433 of the companies showed indebtedness risk. Although there were a higher percentage of companies without indebtedness risk, the indicators show that this issue should be monitored in order to be aware of the sector debt and help to keep the balance within their financial structures while still use the leverage provided by external entities (suppliers, labor or financial institutions) that provide important resources.

Indebtedness risk: When the index is higher than 50%. If the debt is more than 50% there is a risk or if it is less than 50% there is no risk.

Graph 8



Source: Self-authorship

The graph shows the times receivable accounts or portfolio are converted into cash during the period: The number of days that is determined by dividing 360 days (accounting period) into this turnover. The turnover is determined by the collection policies of the company but it is also influenced by the economic situation of the region of the company and contract of clients or the political credit of the company. The results of portfolio risk reveal that in this city, the credit sales are very common and the 76% that corresponds to 678 companies are at risk and only 24% in other words, 219 companies are not. This indicator reflects the slow portfolio recovery in the city due to the credit sale is very common especially in trading companies. Action must be taken in the management and loan recovery in order to improve cash flow and provide solutions to portfolio recovery that may be above 60 days (Difficult Portfolio recovery). This situation allows companies to improve cash flow, reduce inventory, rotate goods and balance finance.

Risk in portfolio management. If the result of the index is higher than 60 days there is risk and if the result of the index is lower than 60 days there is no risk.

Graph 9



Source: Self-authorship

Based on the three indicators the financial risk was evaluated in 897 companies registered, 58% (524) showed financial risk while 42%, (323) companies did not show financial risk. There is a close relationship between liquidity ratios and portfolio turnover, both are present at high risk in most companies, the receivable account as a current asset, makes part of the analysis of two indicators mentioned, since it reduces the cash incomes. Studies should be conducted to create strategies for companies that allow implementing corrective action plans designed according to their needs in order to achieve their sustainability over time and generate higher revenues. In addition, it is necessary to focus efforts on the recovery of portfolio in order to obtain higher liquidity and although the risk of indebtedness is not so high, working on these two indicators, most certainly cover the payment of obligations and thus it may initially realize a balance and subsequently get higher profits and a sustainable economy for the city.

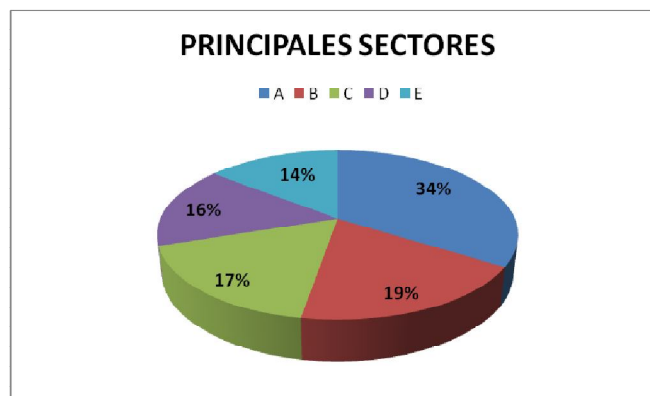
Financial Risk Analysis in Companies of the City of Cali 2014

Table 2 Sectors

MAIN SECTORS		
	SECTORS	
A	WHOLESALE AND RETAIL TRADE	388
B	AGRICULTURE, LIVESTOCK, FORESTRY AND FISHING	216
C	FINANCIAL AND INSURANCE ACTIVITIES	198
D	MANUFACTURING INDUSTRIES	181
E	PROPERTY ACTIVITIES	163

Source: Self-authorship

Grafica No 10



Source: Self-authorship

It is important to note that from 1586 companies surveyed most of them are concentrated into wholesale and retail trade, repair of motor vehicles and motorcycles, 388 companies; agriculture, livestock, forestry and fishing 216 companies; financial and insurance activities 198; and to a lesser extent manufacturing companies and real estate activities, indicating that this experimental model prototype applies to all productive sectors of the economy in general and it helps to clearly determine if there is financial risk in the company to take decisions that favor economic and financial development of the company. Studies in Colombia determine approximately between 90% and 95% of companies in the country are classified as SMEs. These variables, *debt*, *liquidity* and *recovery of receivables* were deeply analyzed based on the analysis of the context and a database of such companies in Valle del Cauca. An experimental model was used to assess financial risk and be able to deliver a clearer financial picture. The aforementioned risk indicators were studied to determine the sector of the country, the behavior of each of these variables and to clear arguments to make decisions. A company should have as priority and necessity to measure the risk in order to be more competitive and effective in the globalized world. A concrete judgment of the variables for supporting decision-making of the analyzed variables a particular view of the aforementioned variables and studied a sample of SMEs in the department of Valle del Cauca.

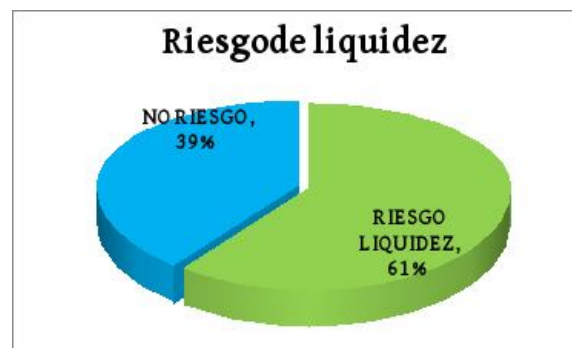
Grafica No 11



Source: Self-authorship

After analyzing the financial risk as a dichotomous variable, 1,135 companies are at risk of debt, it corresponds to 71.6 over 100%. On the other hand, 451 companies of this same overall trend do not show risk of debt, in other words 28.4% of all companies. Most of the companies have a tendency towards indebtedness. It demonstrates that companies in Colombia and especially of Valle del Cauca perform practices that eventually become operational risk to stability. Average indebtedness in companies in this sector represents three-quarters. This situation often limited operational and functional capacity. In addition, the companies that have no debt risk manage their financial and operational capacity better. It is not promising that 28% of the companies correspond to this group. In the study of liquidity and financial risk, 61% of companies are under liquidity risk it corresponds to 961 of the companies meanwhile, 39% of the companies that correspond to 625 of the companies did not show risk of liquidity.

Graph 12

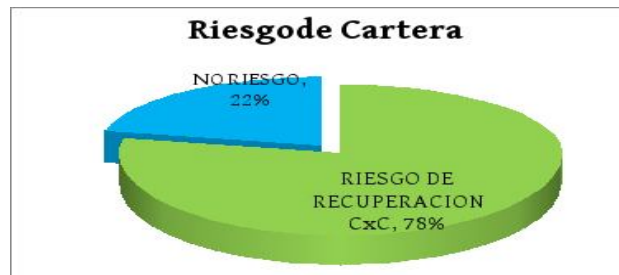


Source: Self-authorship

This liquidity indicator result showed that 61% of companies are at risk. A further assessment revealed that the total numbers of companies have delayed recovering their portfolio; it is often up to 60 days. This situation directly affects liquidity and cash flow that businesses can have.

However, only 39% of companies did not reveal liquidity risk, the portfolio recovery is much faster or they possibly have few accounts receivable. It means, they have higher liquidity, higher cash flow, and greater financial autonomy. Perhaps the most disturbing trend variable in the risk, 1,235 companies are at risk of receivables out of 1,586, this correspond to 78% of all companies under study. On the other hand, only 22% of the companies have no risk in the portfolio recovery, it corresponds to 351 companies on a sample of 1,586 companies.

Graph 13



Source: Self-authorship

This phenomenon showed a trend of the risk of recovery of receivables as totally daunting for the businesses field. This trend can basically have two explanations: Firstly, the needs of businesses have a committed department when there is no one person or department in charge of accounts receivable payments times dilate and portfolio recovery takes longer each time. The second cause of delay recovery or receivables portfolio responds to the inability of debtors to repay their debts and in many cases not only inability but the repeated failure.

Financial risk

A final assessment of financial risk demonstrated that 1,182 out of 1,586 companies under study are at risk in these types of variables. On the other hand, 404 companies have no financial risk meaning only 25% of the companies.

Grafica No 14



Source: Self-authorship

Finally, 75% of companies surveyed in Valle del Cauca perform practices that favor financial risk, 1,182 companies do not perform good practices in their variables debt, liquidity and recovery of portfolio. It was shown that on average three-quarters of companies have financial risk and are under the experimental model. It is essential that companies have a clear picture of their financial risk to make assertions and timely decisions, therefore, reverse bad decisions previously taken and correct timely errors. In the latter part of the investigation a comprehensive analysis of the three variables above was performed, it was determined that companies with two of these three variables prone to risk will be classified as company in financial risk. The companies should make analysis studies, implementation action plans and continuous improvement to be sustained within the market and hence to be competitive.

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Translator's note

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