British Journal of Economics, Management & Trade
14(1): 1-13, 2016, Article no.BJEMT.23260
ISSN: 2278-098X

SCIENCEDOMAIN *international*
www.sciencedomain.org

Relationship between Cash Flow of Companies in Risaralda and Regional Gross Domestic Product for the Industrial Sector in the 2002-2011 Period

Gabriel Escobar[1,2*], Jairo Carmona[1] and Jairo Toro Diaz[1]

[1]Department of Administration and Economy, Autonoma University of Manizales, Colombia.
[2]Department of Administration, National University of Colombia, Colombia.

Authors' contributions

This work was carried out in collaboration between all authors. Author GE designed the methodological structure of research. Author JC made in conjunction with other authors. Author JTD made the results and build the appropriate conclusions. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJEMT/2016/23260
Editor(s):
(1) Li, Hui, School of Economics and Management, Zhejiang Normal University, China.
(2) Igor Matyushenko, Department of Foreign Economic Relations, V. N. Karazin Kharkiv National University, Ukraine.
(3) Kamarulzaman Ab. Aziz, Deputy Dean of R&D, Faculty of Management, Multimedia University, Persiaran Multimedia, Malaysia.
(4) John M. Polimeni, Associate Professor of Economics, Albany College of Pharmacy & Health Sciences, New York, USA.
Reviewers:
(1) Ondabu Ibrahim Tirimba, Mount Kenya University, Kenya.
(2) Anonymous, Nova Southeastern University, USA.
Complete Peer review History: http://sciencedomain.org/review-history/14743

Original Research Article

Received 23rd November 2015
Accepted 16th April 2016
Published 23rd May 2016

ABSTRACT

This study aimed at analyzing the cash flows of some companies in Risaralda of the industrial sector in the 2002-2011 period, in their operating, financing and investing activities, as well as at determining their relationship with the regional economic environment during the same period. The mentioned relationship is represented by economic variables such as Gross Domestic Product, unemployment, interest rates and financial indices such as the Colombia Stock Exchange General Index (IGBC), Consumer Price Index (CPI), Representative Market Exchange Rate (MER) and Fixed Term Deposit (FDT), which were analyzed and explained based on the information to the Superintendency of Corporations. To achieve the goal of the study, a documentary, descriptive and correlational research was carried out by debugging cash flow accounts of financing, investment, operation, and total flow cash and by correlating them with the time series of macroeconomic variables of Risaralda, through statistical packages such as SPSS and tools such as Excel. In the

**Corresponding author: E-mail: gabrieledo@autonoma.edu.co;*

main results of this study, a significant relationship between cash flows and regional GDP was not found. Although the industrial sector contributes to GDP, it is no longer the main actor; it is displaced by sectors such as services and trade. The analysis carried out in the industrial sector showed that net cash flows had positive and negative variations, which generated resources related to the liquidity of companies. The 12 analyzed industrial companies of Risaralda achieved positive profitability, which had an average of 8.29% for the 2002 – 2011 cycle.

Keywords: Cash flow; macroeconomic variables; financial indices; Risaralda industrial sector.

1. INTRODUCTION

Finance, like other areas, evolves with technology developments, innovation, knowledge generation forms, etc. Nowadays, not only does accounting aim at showing results of business transactions occurring within the company, it is also a tool used to try to explain those results to facilitate business decision making such as the ones mentioned by Solomon [1]: Funding decisions, operation, investment and payment of dividends, decisions focused on the value creation and permanence of the company in the market. Financial analysis, which studies liquidity, profitability, indebtedness and leverage are some finance tools meant to improve company analysis and organization growth [2].

According to the report of funds, liquidity and financial flexibility ANIF [3], in some countries, the economic environments in which companies operate are marked by high interest rates in the market, which means that companies disclose high levels of profit and lower cash levels. This generates concern about the utility and real analysis of information from financial statements. For this reason, cash flows presentation was implemented in Colombia from the 1980s as an additional financial statement to improve the analysis of the information generated by accounting. In these cash flows, operating, financing and investing activities were differentiated in order to formulate and predict cash results and, hence, supplement the information presented in other financial statements, such as balance sheet, statement of earnings and changes in equity.

Cash flows, as well as some of the mentioned tools, are the basis for making business decisions, since they determine where resources come from and how they must be used, [4]. Besides, they are the fundamental basis to determine business liquidity and growth as well as the value of the organization and the treasury decisions in its long and short-term investments. In educational processes, cash flows have been studied in depth; as a result, they have been determined as a very important tool to support decision-making processes within organizations since such decisions affect liquidity, growth and permanence in a competitive environment. Additionally, financial institutions make decision to grant monetary resources to companies for investment and operation taking into consideration these cash flows; therefore, cash flows became a management tool and not only a simple financial statement that presents accounting information. The extent to which the result of cash flows can be related to economic environment will make decisions stronger to try to determine the path to be taken by the company in accordance with the relationship between the different cash flows and the environment in which the organization operates. Several authors have studied the topic of cash flows and have linked them to different types of variables in order to analyze and predict them. Some of the most contemporary authors are shown below.

1.1 Cash Flows

The preparation of certain financial statements for the assessment and functioning of organizations is really important; cash flow statement is one of them. It provides information to the financial analyst about the sources and applications of funds within the organization, which is also used to predict a medium and long-term future funding, unlike the preparation of the cash budget that allows the establishment of the prediction of short-term resources [4]. Finances, aside from being a short-term result, are also a long-term product and financial planning is a fundamental tool for this process, since, as [2] states, to achieve the basic financial objective, which is a long-term concept, companies should remain and grow. That is why cash flow statement is an essential tool for making long-term decisions within organizations.

For Weston and Copeland [5], the commission of financial accounting principles formulated the

need to build a financial statement that improve the information provided by basic financial statements such as balance sheets and income statements. This statement is called cash flow statement, which was required for companies from the year 1987. Cash flows are presented in three categories: Cash flow from operating activities, investing activities and funding activities. This was implemented because it is vital for entrepreneurs to determine if the main activity of the company is generating cash or, on the contrary, it is necessary to inject resources, so that the company can operate normally.

Cash flow has become a key tool for making business decisions, since it explains the origin of money movements made within the key and the alternative activities of the company.

Cash flows are divided into: Cash flow from operating activities, financing activities and investing activities. The result of adding these flows is called Total Cash Flow.

Cash flow from Operating activities is understood as cash inflows and outflows derived from the main business activity, *i.e*., the consequence of manufacturing and selling goods, commercializing or providing a service. Cash Flow from investing activities shows the inflows and outflows of monetary resources as a product of investing activities different from the main business activity, an example could be the interests from bank deposits of different financial products. The Cash Flow from financing activities shows the cash inflows and outflows that exist within the organization thanks to third parties and their owners or shareholders.

The calculation of cash flows can be done through the construction of the Statement of Sources and Applications of Funds (EFAF), which is a financial statement that shows the origin and use of monetary resources in the organization. The purpose is to determine whether funds were used in main, financing or investing activities. In EFAF, different financial statements consecutive in their regularity (Balance Sheet and Income Statement) are compared in order to get to know the source and use of resources.

A company can obtain resources from capital contributions of the owners, external loans, sales of fixed assets, issuing shares and through Internally Generated Funds (IGF), which refers to resources generated within organization as a result of the main business activity and other alternative activities such as financing and investment. All the above items are called funds, which are understood as those economic resources that the company has or expects to obtain for normal operation.

Cash outflows are represented by the payment of financial and labor obligations to owners or suppliers; payment of the income tax, complementary tax and valued added tax, amongst others. These are better known as use of funds.

The Statement of Sources and Applications of Funds (EFAF), mainly, consists of source of funds and application of funds, which means:

- Source: represents the economic resources that are permanently available for the company to carry out its operations, where cash can become one of the resources, ([2] Pag. 342). Resources are generated through inventories, accounts receivable, fixed asset sales, and divestitures, amongst others.
- Application: a commitment in the disbursement of resources, which means it shows the accounting category in which they were used.

The establishment of future cash flows of companies is based on internal information, *i.e*., by using basis elements of financial statements such as income, working capital and investments, amongst others. The probability that economic growth has a reasonable impact on the cash flows of the companies is high, for this reason it is important to initially determine the correlation between these two variables to determine the degree of impact that the independent variable (economic growth) can have on the dependent variable (cash flows).

1.2 Economic Growth - GDP

The term "GDP" was introduced to the world by the economist Simon Kuznets [1901-1985], a researcher who focused on the analysis of business cycles and quantitative studies, Nobel Prize in 1971 for his contributions to the analysis of global economic activity and developing countries. For Dornbusch [6] the Gross Domestic Product (GDP) "is the value of all final goods and services produced in the country within a given period". The sum of all products and services valued in monetary units produced by an

economy such as houses, records, vehicles, machinery, clothing hairdressing, health and education, amongst others, constitute the GDP. According to Delong [7], we can divide the meaning of Gross Domestic Product into two parts: first, Gross means that this measure includes the replacement of the equipment, and the worn and obsolete structures, as well as the entirely new investment (gross measures only include investments that increase the capital stock, in contrast, net measures are better than gross ones, but the information needed to produce them is not reliable). Second, internal or internal expression means that this measure takes into consideration the economic activity taking place in the country regardless of whether workers are legal residents and factories are owned by the companies in our country. Finally, the expression product means that the real GDP represents the production of final goods and services. It includes both consumption goods (things that consumers buy, take home or take out from home to consume them) and investment goods (things like machines, tools, buildings, highways and bridges, that increase the capital stock and the productive capacity of the country). To quantify GDP, the final product value must be taken into account, it is to say, the sum of all the elements that were used to obtain the product itself. GDP can be analyzed and presented in nominal or in real terms. The former means that the value of production is given in prices of the period, *i.e*., it does not take into consideration the value of money over time, which for the specific case is inflation. When GDP is measured in real terms, variations experienced by the physical production of economy between different periods valuing all goods produced in the two periods at the same prices are measured, which means it includes the inflation variable.

GDP depends on variables such as consumption, investments and external sector mainly; therefore, GDP increase or decrease depends on the results or performance of these variables. Consumption is mainly composed of the demand for goods and services by households economies, which purchase all kinds of products and services such as food, education, utilities, transport, housing, etc. This consumption is based on the capacity of people in a country to purchase such goods and services. Family income and the level of inflation of the economies primarily determine this capacity.

Investment can be defined as the increase of the economy capacity for future production [8]. This investment is essential because it generates the resources for the future and companies also make investments for the increase of their long-term income.

This item is essential for the economies, as it is the main variable that ensures long-term economic growth. Consumption contributes to short-term GDP growth because this type of expense does not produce income or what is commonly known as profitability, while investment is the guarantee for achieving long-term income made by the economies.

Net exports, which are the result of exports minus imports, are also an essential variable to increase the value of GDP to the extent that goods and services are produced within the economy and consumed in other countries. This increases domestic production, which makes income for the economy increase.

Solow [9] presents an initial basic model, which indicates that GDP equals a productivity parameter multiplied by the amount of capital and the number of workers in the economy. As capital increases with a constant level of workers, GDP will increase. The model shows how GDP grows at a higher rate in economies with a good level of savings and investment, than in those economies with a very low level of investment.

Antúnez [10] shows another model of significant growth, which is raised by Kaldor [11], who states that the growth rate of an economy is positively related to the manufacturing sector and considered the engine of growth. Likewise, Kaldor focused on the role of savings in economy, stating that the profit rate of a society depends on the propensity to save regarding income level.

The growth model proposed by Kaldor defended the theory that regions within a country where the free movement of production factors prevails have restrictions at a demand level that tend to slow down economic expansion. The problem of economic growth is largely related to the efficient delivery of a broad range of public goods, *i.e*., in this model of growth, scarce incentives are not the main obstacle for the development of a region, but the lack of resources.

Growth models such as the one proposed by Kaldor try to explain the differences in the economic cycles of a country. Economic cycles

are defined as increases and decreases, which means fluctuations that occur recurrently in the global economic activity, within a given period. The phases of the cycles are not presented in the same way, since its intensity, duration or behavior vary and may have ascending and descending phases.

Thus, economic growth models are used consistently in daily economy and they are significantly related to the problems that occur directly in regional economies and within companies. Macroeconomics suggests that a balanced economy with good performance seeks to pursue certain goals, which aim at generating high and fast growth of production. This is achieved through the improvement in productivity and growth of regional companies, in this way the amount of goods and necessary services increase [12]. We know that economic growth in a country is measured by the behavior of national production, we observe how companies generate an impact on GDP growth and this is mainly due to the internal strengthening, productivity and cash flow situation of companies.

The main objective is to have a sustained long-term growth of the real GDP, which can be translated into improvement in the living standards of the population and a real growth in the productive sectors of the region. For macroeconomics, it is essential to maintain a low unemployment rate. This happens because the level of employment is the macroeconomic variable that affects individuals most directly in an economy through wages and good or bad working conditions. Another important objective is to maintain prices stability. This is essential because high price levels cause that economic decisions of businesses and individuals get distorted, as a consequence, an efficient allocation of resources is not achieved.

1.3 Relationship between Cash Flows and Economic Growth

There are no authors that theorize about the relationship and effects of cash flows of companies as predictors of economic growth, *i.e.*, by using basic elements of financial statements such as income, working capital, and investments, amongst others. Thus, some authors as Solow [9] uses capital and labor as key variables to explain economic growth; Romer [13] shows how growth is driven by technological change, which comes from investment decisions made by agents who want to maximize their profits. Grossman and Helpman [14] demonstrate, through the use of a model of product improvement, how encouragement of research and development (R + D) of new products leverage economic growth in some countries. This theoretical gap is encouraging the establishment of a system that can explain this relationship from the existing theory.

The economic growth of a country is given more by supply than by demand, since the model is based on the level of production as a fundamental variable to explain growth, where this supply is linked to the goods and services offered in the economy of a country. And this supply will increase or decrease according to the level of production, which can be achieved by increasing investment in capital, which necessarily leads to economic growth.

The fundamental variable that explains the economic growth of a country is investment in capital. According to the previous conclusions, capital investment is highlighted as the basis for the economic growth of a country, and it is from this element that the relationship between cash flows and economic growth is generated, due to the fact that there is a fundamental connector between these two variables, which is LIQUIDITY as explained below:

Cash flow shows the available resources of a company to meet its financial obligations, invest or distribute profits, [2]. Thus, investment becomes a fundamental part within cash flow, since the resources for the development of the activity within the companies are generated from cash flow.

Both private and public investments, generally, require large outlays of money (liquidity). In several occasions neither the entrepreneurs nor governments have the resources to carry out these investments. This is the reason why the financial system becomes part of this relationship, since it is responsible for leading the sufficient monetary resources for them to be transferred to investment.

Cash flow, as explained in the present theoretical framework, determines the required liquidity that can be taken to investment; in many cases, flow itself does not contain the resources to make investment and this is the reason why entrepreneurs turn to the financial system to achieve the required liquidity to boost their investments, [15]. To achieve this, companies

must have sufficient liquidity or ability to generate funds to pay the loans to the financial institutions at appropriate interest rates in a reasonable time.

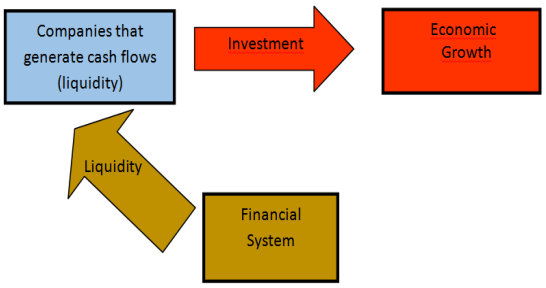

Fig. 1. Mobility of investment
Source: authors

The financial system injects liquidity to companies, resources that are invested in capital accumulation and technological innovation, which contribute to economic growth. Cash flow is, at the same time, liquidity that can be used for investment in capital accumulation and technological innovation, which mostly require large amounts of monetary resources. In order to carry out this investment, entrepreneurs leverage on the financial system. This is why financial institutions are fundamental in the economic growth of a country [15].

2. METHODOLOGY

This research will be a documentary, descriptive and correlational study, since in the process, cash flows from operating, financing and investing activities reported by the Superintendency of Corporations of Colombia [16] during 2002 – 2011 were identified. These cash flows will be correlated with the different macroeconomic variables that can affect them, such as Risaralda GDP, unemployment, interest rates and financial indices as Fixed Term Deposit (FTD), Representative Market Exchange Rate (MER) and Colombia Stock Exchange General Index (IGBC), identifying year by year the increases or decreases that cash flows may present and their relationship with the economic behavior for the same periods. These correlations can be direct or reverse type. It is direct when the results of the correlation coefficient is positive, *i.e.*, when cash flows increase as macroeconomic variables, object of study, do; it is reverse when the results of the correlation coefficient is negative, *i.e.*, when cash flows increase and macroeconomic variables under study decrease or vice versa. It is considered a documentary study because the primary sources of information were extracted from the Superintendency of Corporations [16], Bank of the Republic, the Stock Exchange and the National Administrative Department of Statistics (DANE), amongst others.

To develop the study, only the time series of financial statements of companies that reported to the Superintendency of Corporations continuously for the periods under study were taken as a reference. Only twelve companies in the industrial sector of Risaralda met the inclusion criteria.

The time series of the financial statements were taken from the information and business registration system (Sirem). In this system, financial statements, including income statement, balance sheet and cash flows can be found by periods of time. For information processing, we worked with Microsoft Excel and the statistical package SPSS.

3. RESULTS

The study showed how the industrial sector in Risaralda has been steadily growing and it is consistent with the department and national average. Risaralda generated GDP growth in 2004, principally, the most representative sectors are: Construction, trade, telecommunications, transport and industry. The GDP growth was succeeded by an increase in the levels of confidence of investors and consumers. This was possible thanks to the large supply and rapid growth of the world economy.

In Risaralda, the industrial sector has grown steadily but slowly, which does not allow neither the proper development nor a high contribution to the GDP in the region. According to the Chamber of Commerce of Pereira [17], there was a decrease in the creation of establishments in 2004, due to the decline of the industrial sector. Nevertheless, this was compensated by other activities, mainly, trade and services.

In 2005, a better performance in the industrial sector was evident, due to the generation of a very good level of investment, a consumption generated by the confidence of buyers, low financial intervention rates and a good performance of the trading portfolio. Industry nationwide has grown very little, as an example, between 2006 and 2007, the average for the industry was 7% and in 2009 it was reduced to 3.9%.

In 2007, according to the regional situation report from the Bank of the Republic, the manufacturing industry was one of the largest contributors to the national GDP; in turn, industry was one of the largest contributors to exports made by the Department of Risaralda with a performance of 98.72%. Similarly, region imports, involved in transport equipment manufacturing, were related to industry in 97.12%. In 2009, Risaralda participated with 1.3% of the total exports nationwide, 95.8% correspond to the contribution of the industrial sector with a high influence of food products mostly. According to the report on the industrial sector published by the National Department of National Planning, in 2010, the industrial sector showed some improvement reaching a growth of 4.5%.

Although the industrial activity in Risaralda has shown good behavior, this is not the main economic activity carried out in the department. According to the Business Census conducted by the Chamber of Commerce of Pereira [17], the main economic activities in Risaralda are trade and services, which replace the industrial sector. Therefore, it is necessary to seek greater growth of the industrial sector in the region, creating alliances between the academy and the sector to facilitate regional growth and raise competitiveness and innovation. Cash flows of the different activities within companies, such as the operating, investing and financing activities, as well as the result of cash flows in monetary units, and net cash flows, which correspond to the sum of cash flows from the activities mentioned before, are shown below.

Net Operating Cash Flow clearly shows the different ups and downs and its highest growth, which occurred between 2004 and 2005. This growth coincides with the good performance of the Colombian economy at that time. It also shows its largest drop between 2010 and 2011, due to the economic slowdown in the country, in which the most affected areas were industry and agriculture.

Investment Cash Flow shows not very noticeable investments, which is not affected by financial indices and leaves a good position to cover cash levels and operational and non-operational activities, avoiding to resort to financial resources for indebtedness.

3.1 GDP- IGBC

The found value is r = -0.46. The two variables have an inverse relationship, it is to say, if GDP increases, the interest of investors in the industrial sector does not increase; GDP is not the causing factor of the variations in IGBC.

3.2 GDP–FTD

The found value is r = -0693 **. The analyzed variables are inversely related. In the study, there is no a relationship between GDP and FTD, because GDP is a regional indicator and FTD is a national indicator.

3.3 GDP–LR

The found value is r: -0.437. It is a negative value with inverse relationship. Lending rates have declined allowing companies to resort to a fresh financial capital, as well as competitive interest rates, suitable for the development and growth of the economic sector. As GDP increases, there is a reduction in the lending rates, due to capital surplus.

Table 1. Average cash flow in the industrial sector activities (Amounts expressed in thousands (Colombian pesos))

Year	Average net cash flow from operating activities	Average net cash flow from investing activities	Average net cash flow from financing activities	Total net cash flow
2002	374,760.67	(1,130,878.25)	1,045,853.42	289,735.83
2003	2,122,571.42	(2,514,645.92)	641,287.25	249,212.75
2004	(1,844,857.08)	(113,519.92)	1,919,369.33	(39,007.67)
2005	5,602,147.42	(3,995,044.75)	(1,110,648.92)	496,453.75
2006	3,961,534.00	(3,538,601.50)	692,332.42	1,115,264.92
2007	3,587,105.50	(3,710,913.08)	(400,539.58)	(524,347.17)
2008	1,885,194.08	(664,326.50)	(1,154,299.42)	66,568.17
2009	5,269,804.17	(3,360,775.17)	428,971.08	2,388,000.08
2010	5,007,617.17	1.278,659.50	(899,508.25)	5,386,786.42
2011	74,958,25	(2,009,955.36)	883,770.92	(1,390,978.83)
Total	**2,604,083.56**	**(2,009,955.36)**	**204,638.83**	**798,676.03**

Source: authors, based on the information supplied by the Superintendency of Corporations

Table 2. Data for correlation industrial sector (Based on the information provided by the Superintendency of Corporations)

Data for correlation industrial sector in Risaralda											
Year	**Industrial sector Risaralda (Billions of pesos)**	**Unem-ployment Rate Risaralda**	**Annual variation (National)**	**Annual average (National)**	**Average lending rate (National)**	**Exchange rate annual average (National)**	**Consumer price index**	**Average net cash flow from operating activities**	**Cash flow from investing activities**	**Cash flow from financing activities**	**Total net cash flow**
	GDP	**UR**	**IGBC**	**FTD**	**LR**	**MER**	**CPI**	**CEO**	**CEL**	**CEF**	**TCF**
2002	549.000.000.000	16,27%	50,22%	9,03%	14,11%	$ 2.506,55	6,68%	374.760.667	(1.130.878.250)	1.045.853.417	289.735.833
2003	574.000.000.000	16,15%	45,07%	7,79%	12,81%	$ 2.875,91	6,71%	2.122.571.417	(2.514.645.917)	641.287.250	249.212.750
2004	721.000.000.000	15,96%	86,22%	7,89%	13,07%	$ 2.628,47	5,53%	(1.844.857.083)	(113.519.917)	1.919.369.333	(39.007.667)
2005	795.000.000.000	14,21%	118,91%	7,07%	12,58%	$ 2.321,49	4,46%	5.602.147.417	(3.995.044.750)	(1.110.648.917)	496.453.750
2006	866.000.000.000	12,62%	17,32%	6,25%	11,51%	$ 2.358,96	5,60%	3.961.534.000	(3.538.601.500)	692.332.417	1.115.264.917
2007	866.000.000.000	11,91%	-4,18%	7,94%	14,32%	$ 2.076,24	5,77%	3.587.105.500	(3.710.913.083)	(400.539.583)	524.347.167)
2008	965.000.000.000	12,58%	-29,30%	9,68%	16,36%	$ 1.967,11	7,20%	1.885.194.083	(664.326.500)	(1.154.299.417)	66.568.167
2009	1.077.000.000.000	17,71%	53,45%	6,33%	12,49%	$ 2.153,30	1,77%	5.269.804.167	(3.360.775.167)	428.971.083	2.338.000.083
2010	1.114.000.000.000	18,25%	33,57%	3,68%	8,84%	$ 1.898,68	2,84%	5.007.617.167	1.278.659.500	(899.508.250)	5.386.768.417
2011	1.209.000.000.000	14,90%	-18,27%	4,13%	10,86%	$ 1.846,97	3,74%	74.958.250	(2.349.508.000)	883.570.917	(1.390.978.833)

Source: Done by the authors based on the information provided by the Superintendency of Corporations, Bank of the Republic, the Colombia Stock Exchange and the National Administrative Department of Statistics (DANE)

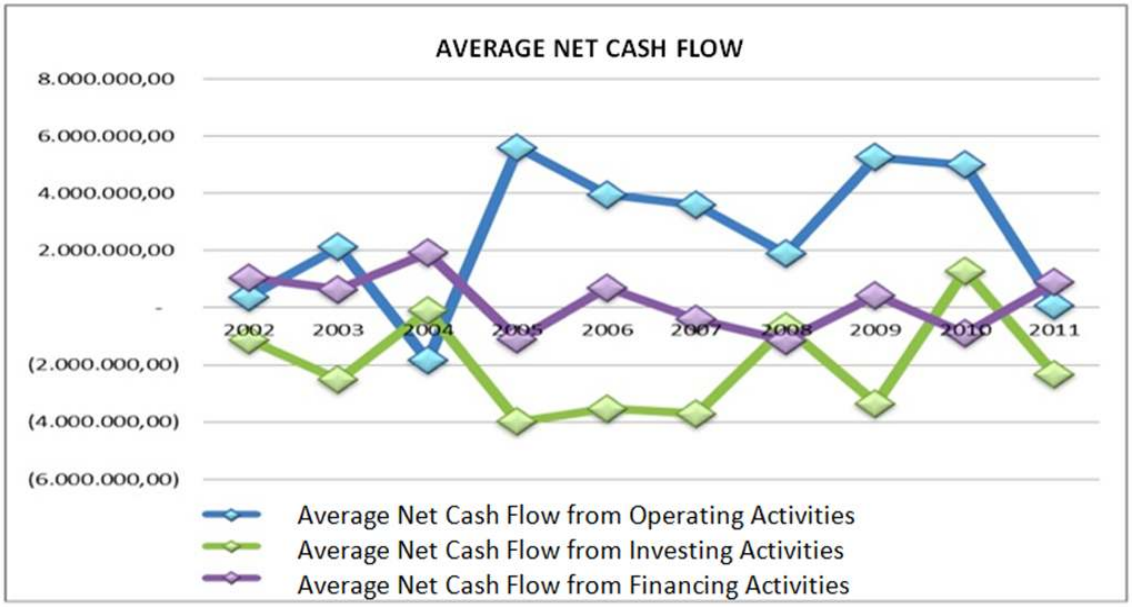

Fig. 2. Cash flow in the industry sector of the department of Risaralda
Source: Authors, based on the information provided by the Superintendency of Corporations

3.4 GDP–MER

The value that resulted from the correlation between variables is r = -0889 ** negative value. The correlation between the variables is very significant and an inverse relationship is shown. Amongst the variables studied, there is a close relationship between exports and imports in the industrial sector of Risaralda. Consequently, as long as the MER decreases, there can be greater investment in machinery and goods that allow for a better production to a lower cost, generating better prices for the final consumer.

Profitability of companies is affected by variations in the exchange rate. There are random effects, which show that the exchange rate does affect profitability. The exchange rate affects the functioning of the economy in different ways, such as the internal trade. This occurs because the companies, that focus their activities on the international market, depend, to a large extent, on the fluctuations of the exchange rate.

3.5 GDP–PCI

The found value is r = -0700 showing a negative value and inverse relationship. If the GDP increases, the Consumer Price Index tends to fall. According to studies into the economic theory, inflation has a negative effect on economic growth, which leads the monetary policy to focus on achieving low inflation level to avoid the disruption of the economy.

3.6 GDP–CFO

The found value between the modeling of the two variables is r = 0.299, which results in a positive value. The relationship between the two variables is direct, but the statistical significance is low, which shows that the sector does not make large contributions to generate income. In addition, its contribution to GDP is very low. If companies in the region are not being strong in operating activities, this will not be reflected in the economy and the region's GDP will not increase.

3.7 GDP–CFI

The found value is r = 0.079. It is a positive value with direct relationship. The little significance evidenced between the variables shows us that there is little investment in the financial system; therefore, it contributes little to GDP. Although investment activities within companies are considered essential for its operation, the correlation obtained shows that in companies in the region these operations are not strengthened and has minimum contribution to the GDP growth in the region.

3.8 GDP–CFF

The correlation found between variables is r = -0325, resulting in a negative value, an inverse relationship and a low significance, which show the little relationship between GDP and financing activities, which shows that, although the industrial sector in the region invests financial resources for its growth, these will not affect GDP.

3.9 GDP–UR

The value of the correlation between variables is r = 0.063. It is a positive value. It shows that the two variables have a direct relationship and a very little meaningful relationship. This relationship shows us that, the higher productivity in the department, the higher unemployment. The relationship resulting from this study shows a positive correlation and evidences that the department is not taking growth and development processes that generate a decrease in the unemployment rate. However, the level of unemployment tends to rise, as GDP growth.

3.10 CFO–UR

The found value in the correlation is r = 0.015. It is a positive value with direct relationship and a very low significance. This indicates that there is a direct relationship. As far as the operating net cash flow increases, unemployment may increase. Although, there is a direct relationship between the variables, there is almost no relationship between the variables. This is due to the fact that companies in the region are not strengthened in operating activities; besides, they do not have an impact on the unemployment rate and do not generate economic growth, *i.e*., a GDP increase.

3.11 CFO–IGBC

The found value is r = 0.143. It is a positive value with direct relationship. In this case, as far as the IGBC show a good growth, the Net Cash from Operating activities will tend to increase. Nevertheless, despite this relationship, the level of significance between variables is very low, probably because operating activities within companies focus on normal business transactions, according to their social object, developed to generate income.

3.12 CFO–FTD

The resulting value of the correlation is r = -0301. It is a negative value with inverse relationship, which is logical because if interest rates go down, the operating results of the organization tend to increase.

3.13 CFO–LR

The found value is r = -0.282. It is a negative value with inverse relationship and low significance. Even though, it could be possible that the obtained financial resources are being properly allocated to the operation, this shows that in general the companies of the department do not take into account the levels of employment rates to expand their production capacity. The interest rate is not greatly affecting the operating activities of companies in the region.

3.14 CFO–MER

The found value is r = -0295. The resulting relationship between these two variables is negative, *i.e*., they have an inverse relationship but this value is low and shows that the significance of the relationship is very high, demonstrating that these two variables do not have a high degree of correlation and the MER does not have a direct effect on the net cash flows from operating activities. In contrast, industry income is related to alternative markets and not with the local ones.

3.15 CFO–CPI

The found value between variables is r = -0475. It is a negative value with inverse relationship. CPI tends to adversely affect the operation of the industry.

3.16 CFI–UR

The found value in the correlation between unemployment rate and investing activities within companies is r = 0.474, with a positive value and direct relationship. This indicates that at any time the net cash flows of investment contribute to the low unemployment rate. Investing activities carried out by companies of the region in the capital market are contributing to employment growth in the department. This may occur because temporary and indirect investments have been increasing and are being carried out

successfully because investment is in the process of attraction in the department.

3.17 CFI–IGBC

The found value is r = 0.474. It is a positive value with direct and fairly high correlation. This shows that as IGBC increases or decreases, the investor is willing to take risks in buying productive assets. This variable has a higher and significant correlation with this financial indicator, since investing activities are focused on conducting transactions that are related to money lending, collection, acquisition and sale of both current and non-current investments, as well as investments in property, plant and equipment sale.

3.18 CFI- FTD

The found value is R = -0095. It is a negative value with inverse relationship. In this case, if interest rates decrease, investment tends to increase, *i.e.*, work is being done with fixed income securities. Besides, the correlation is too low.

3.19 CFI–LR

The found value is r = -0173. It is a negative value with inverse relationship. A low correlation occurs and the financial resources are not being properly allocated to investments. There is a correlation with low significance between these two variables. The relationship is very low and it is evident that a degree of independence between variables may occur.

3.20 CFI–MER

The found value between the variables is r = -0122. It is a negative value and inverse correlation. As the representative market rate decreases, incentives for investment in foreign currency are generated. The resulting correlation is not very significant and shows that the exchange rate is not having a major impact on investing activities within the companies of the department. While exchange rate increases, devaluation occurs and activities within companies will benefit. Entrepreneurs should take advantage of this devaluation time, in order to strengthen their exports and diversify production.

3.21 CFI–CPI

The found value is r = 0.039. It is a positive value with direct relationship and little significance between the variables. The investments made by the industry generate little reaction even if CPI increases.

3.22 CFF–UR

The resulting correlation between variables is r = 0.253 with a positive value and direct relationship, which shows that if financing cash increases or decreases, it will lead to increase the unemployment rate, but significance level and affectation will remain low.

3.23 CFF–IGBC

The found value is r = 0.154. It is a positive value with direct relationship. The loans are being properly allocated for the normal development of the operations of the company. Then, financing activities will be the ones intended to obtain resources by third parties and owners, which provide profitability on investment and its due return, as well as the payment of the lend money.

3.24 CFF- FTD

The found value between these variables is r = 0.026. It is a positive value with direct relationship, although there is a too low correlation. If the interest rate granted in the financial system for credits increases, financing expenses obtained by the industry tend to increase. However, this correlation is too low, showing that FTD does not greatly influence financing activities of companies in the region.

3.25 CFF–LR

The found value is r = -0080. It is a negative value with inverse relationship. There is not any significant correlation. It is bound to decisions on debt financing without taking into consideration the rates that are offered at the time. As lending interest rates remain high, most companies decide not to acquire debts, since the possibility for companies to access to credit is reduced. Financing activities of several companies of the department are taking into account interest rates when making movements and activities to fund operations within organizations.

3.26 CFF–MER

The found value is r = 0.532**. It is a positive value with direct relationship and a

representative correlation. As MER increases, it becomes necessary to lower the foreign currency debt and to settle in local currency. Fluctuations in the exchange rate are benefiting cash flows in financing activities. As the exchange rate increases, financing activities in companies of the department will also increase.

3.27 CFF–CPI

The found value is r = 0.085. It is a positive value with direct relationship and low statistical significance. Financing activities bear little relation to variations in the consumer price index. The relationship between the variables is positive, showing how financing activities benefit from increases in inflation but in very small proportion. It evidences nearly a possible independence on the correlation of the variables. Inflation affects the value of the shares and the stock market in general.

Regression Model: This model simple bivariate regression which took into account the relationship between the following variables was used:

GDP-TCF: Although the correlation established between the variables is not high, however in the process of statistical regression, the significance between these results in 0%, which allows you to set the model for the realization of future predictions relationship is appropriate and which yielded the following data:

> X = c + b, where c is the constant with a value of 846008815177.82, and b the slope with a value of 34.542, then and is the factor that is multiplied to obtain the net cash flow expected.

As shown in the following table:

Concept	Value
Correlation	0,31
Constant	846.008.815.177,82
Pending	34,542
Significance	0

UR - TCF: The relationship established between the variables Net cash and the unemployment rate reached 60%, showing that there is good reliability for making predictions under this relationship and that the statistical model applied so it proved as their regression significance was less than 5%, yielding a constant 0,145 worth and a slope of 0.00. This means that before changes in net cash flows, the unemployment rate is constant.

Concept	Value
Correlation	60%
Constant	0,145
Pending	0,0
Significance	0

MER-TCF: For variables Net cash and representative market rate, the correlation between these is very low so the regression model shows that as the value of one variable increases, the likelihood of decreased the other is high, this mainly due to its low ratio and the results obtained in the process of statistical regression, which yielded the following data: the constant with a value of 2293.87 and slope -3.817 worth.

Concept	Value
Correlation	21%
Constant	2.293,87
Pending	(0,0000000381700)
Significance	0

4. CONCLUSIONS

In the main results of this study, a significant relationship between cash flows and regional GDP was not found. Although the industrial sector contributes to GDP, it is no longer the main actor; it is displaced by sectors such as services and trade. In terms of the economic context, the stock index that shows the behavior of the stock market (IGBC) has a direct and positive correlation with the operating cash flow, displaying good behavior in the market of fixed and variable income of the country during this study period.

According to the analyses carried out by the Chamber of Commerce of Risaralda (2014), although the industrial sector contributes to the GDP, it is no longer the main actor, due to its movement through sectors such as services and trade. This is caused because investments in capital assets in the industrial sector have fallen dramatically, which does not permit sustained economic growth as mentioned [9]. In the analysis carried out in cash flows from the industrial sector, net cash flows presented positive and negative variations, which generated resources related to liquidity [15]. The total cash flow was positively influenced by the cash flow generated from operating and financing activities, while cash flows from investing activities

impacted negatively. All this can lead us to conclude that the industry sector of Risaralda generates resources through its operating activities, which continues demonstrating that the sector is viable and can grow and mark out the growth of the region.

Among the 12 companies of the industrial sector of Risaralda that were analyzed, there is a positive profitability, calculated on 8.29% on average for the 2002 – 2011 cycle, which does not show that all companies are growing evenly, but those growing faster mark out the sector average, since all are not profitable on their core business activity.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Solomon E. Theorie de la Gestion Financiera. Dumond, Paris; 1972.
2. García O. Administración financiera fundamentos y aplicaciones. Tercera edición. Editorial prensa Moderna, Cali Colombia. 1999;13.
3. Asociación Nacional de Instituciones Financieras (ANIF); 2005.
4. Gitman JL. Fundamentos de administración financiera. Editorial Harla S.A. México. 1978;106.
5. Weston JY, Copeland T. Finanzas en administración. Novena edición. Editorial Mc Graw Hill, México. 1995;34-36.
6. Dornbush, Rudigery Fischer, Stanley. Macroeconomía. Editorial McGraw Hill. Sexta edición. Madrid; 1994.
7. Delong MY, Hung M. An empirical analysis of analyst´s cash flow forecast. Journal of Accounting and Economics. 2003;35:73-100.
8. Dornbusch R, Fischer S. Macroeconomía. Editorial Mc Graw Hill, sexta edición, Madrid España. 1994;31–35.
9. Solow R. A contribution to the theory of economic growth. The Quarterly Journal of Economics. 1956;70(1):44-68.
10. Antúnez C. Crecimiento Económico. 2009;18-252.
11. Kaldor Nicholas: Inflation and recession in the world economy. The Economic Journal. 703-714.
12. Rios M, Sierra H. Lectures on regional economic growth, Popular Catholic University of Risaralda, First Edition. 2005;6-11.
13. Romer P. Endogenous technological change. The National Bureau of Economic Research. 1990;98:71-102.
14. Grossman GY, Helpman E. Quality ladders in the theory of grrowth. The Review of Economics Studies. 1991;58:43-61.
15. Levine R. Desarrollo financiero y crecimiento económico: Enfoques y temario. Journal of Economic Literatura. 1997;XXXV:688 - 726.
16. Superintendencia de Sociedades. (2011-2012). Tomado de Available:http://sirem.supersociedades.gov.co/Sirem2/index.jsp
17. Chamber of Commerce Pereira. Socio-economic Research; 2014. Taken from Available:http://www.camarapereira.org.co/es/ipaginas/ver/G111/21/investigaciones_socioecon%20omicas/

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/14743