Is there a correlation between the CEO compensation and the firm wealth after the financial crisis of 2007?


Authors: Mathieu Angibaud
          Jérémy Buan

Supervisor: Janne Äijö

Student
Umeå School of Business
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Mathieu Angibaud

Jérémy Buan
Abstract

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Authors: Mathieu Angibaud
         Jérémy Buan

Degree/Education: Master Thesis in Finance

Supervisor: Janne Äijö

Title: Is there a correlation between the CEO compensation and the firm wealth after the financial crisis of 2007? Empirical Evidence from the Stock exchange index CAC 40 (2008-2010)

Problem: Do CEO compensation have an impact on the firm performance?

Purpose: To evaluate whether there is a link between remuneration of the CEOs from the CAC 40 companies and the performance of their companies.

Method: Quantitative study, covering the CAC 40 index (40 companies) during the period from 2008 until 2010. Empirical study leaded through a regression analysis of the data.

Conclusions:

The empirical results indicate a strong positive link between three important elements: the duration as CEO, the market capitalization of the company and the non-executive ownership. Our findings also indicate an important but negative impact of two variables on the CEO compensation: the institutional and block holder shareholders. We also observed that there is no CEO pay-performance elasticity for the Total and base salary: the control variables do not have a significant impact on changes in CEO compensation.

These results are in line with the ones of Ozkan (2011, p. 260-285). Those elements would demonstrate the active monitoring of these investors on the top management and especially on their remuneration. Those are also consistent with the paper of Khan et al. (2002, p. 1078-1088), which demonstrates the negative impact on CEO compensation of institutional ownerships when they are concentrated.

Our study didn’t find a strong correlation between the other variables as the board size or sales for example and the level of remuneration of the CEO. That would mean that the number of member of the board doesn’t significantly impact the discussion about the CEO remuneration.

Key words: “CEO compensation”, “firm performance”, “France” and “CAC 40”

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1. Introduction

All around the world, CEO compensation has always been a serious problematic. This problematic becomes even more important in crisis time. Indeed, the remuneration of the top management seems to be less flexible than the financial performance of the companies. The amount of compensation for the CEO can be so scandalous and non-understandable for the public.

The high level of the CEO wage can be easily understandable; according to Simon (1957, p. 279) organizations have to keep differential levels of salary according to the different management levels. This fact has a direct consequence: the more there are different management levels the higher is the salary of the chief executive officer. Nowadays, with the globalization, the multi-national companies have multiplied the number of management’s levels. Moreover the study of Mahoney (1979, p. 349-375) shows that a difference of two levels of management is equivalent to a difference of 30 or 40 in term of salary. Thus, we can well understand the increasing difference of salary between a regular employee and a chief executive officer.

However, for a CEO the wage is only a part of his income. The incentives, in several kinds (bonus or stock option) are also an important part of the income of the chief executive officer. These incentives are mandatory for a good matching between management and shareholders’ interests. Indeed many studies showed, in particular the one by Berle and Meane (1932), that even if the shareholders had legal control of a company, the real control would be held by the management. So the incentives are the best way to align the interests of top management and shareholders.

Capitalism is the doctrine that governs almost all countries in the world; it is a concept at the same time economical, sociological and political. It is a system based on private ownership, the means of production and the free movement of people and capital. This doctrine has allowed a quick development of many countries around the world and has got out of poverty millions of people. But in the same time, the inequalities have grown considerably. Indeed, in 1985 the average ratio of CEO pay relative to the one of the average employee was 40 to 1 in the US. According to research firm Equilar, the median salary of a CEO of S&P 500 is $ 1.025 million, or 25 times the average pay of an employee's private amounting to 40,174 dollars. Taking the total compensation, which includes variable elements, stock options, etc., they earn $ 7.5 million, 187 times the average total compensation of an employee. In France the problem is the same; in 2009, CEOs of the CAC 40 companies shared a total compensation of € 79.5 million, up 4% from the previous year. In addition there are stock options and dividends and directors' fees in large boards; the expansion reaches € 100 million euros in 2009, an average gain of € 2.5  million. It is 90 times the average French wage.

The recent scandals, like Enron or Worldcom, as well as the financial crisis of 2007 have been an eye opener on the limits and on the drifts of the capitalism. The multi-million bonuses for the traders and/or the top management were routine. It is in this logic, that the movement of Indignados was born. It is the opposition of 99% of the population working for survival and the 1% which is increasingly enriched.
The main purpose is not to study the appropriateness of the CEOs remuneration but more to at least verify if there is a link/correlation between the compensation of the CEO and the performance/wealth of his company. Furthermore, even if the literature about this topic is large, never this kind of study has been done in France.

1.1. Purpose of the study

This quantitative study examines the link and the correlation between the CEO salary and the economic and financial performance of the firm he is responsible. This paper analyses the main salary of the CEO but also the different incentives that can be set up in each company in order to be sure of the entire involvement of the CEO (stock options, perks etc…).

The empirical testing is carried out using the data of the French stock exchange index CAC 40 for the period from 2008 to 2010. This period is really interesting because all the companies had to deal with a global recession and so had to define a new strategy to get through the financial crisis. We don’t want to compare the results before and after the crisis. We want to take a special event, a starting point and analyze the data after this date. We decided to focus on this stock index because it’s composed of similar sized companies (the index is composed of almost all the biggest French companies) but also because their social status force those firms to publish annually the salary of their CEO.

The purpose of the research is not to compare the salary of the different Chief Executive Officer, the ones with the others, but it is to estimate the CEOs annual compensation (salary, bonus and the market value of stock and options…). We also analyze the economic and financial performance of their companies and examine if there is a correlation between these two elements. It is the main question of the research design which is a cross-sectional one. We explain further in this paper the different required steps to conduct this kind of study.

To conduct the analysis, we chose three different variables: Institutional investors, Board of director characteristics and the CEO age. As we explain further in this paper, these three variables are important in the remuneration of the CEOs in France. The data are collected in the legal and annual publication of the CAC 40 and the correlation is revealed by statistic software (SPSS) in order to be able to do some re-treatment (depending of the sector, size of the company etc.) to have the most accurate data possible.

1.2. Structure of the study

For this paper we decided to follow the same structure as the one of Ozkan (2011, p. 260-285). The Ozkan’s paper is a recent and serious study, which deals approximately the same topic as ours in a different country (UK).
Our paper contains two major parts: a theoretical and an empirical one. These two parts are linked. Indeed the main purpose of the theoretical part is to sum up and explain the research already done in this field until now, and so to explain the concept of management control, salary, incentive and financial efficiency and company performance.

The first chapter provides general information about the subject and does an introduction about the research issue. In the second chapter, we focus on methodology we used throughout our paper. It defines the assumptions we took, the design we used, the strategy followed, the method of data collection employed, the quality criteria to respect and the ethical considerations we kept in mind to write our paper. France is a specific country; the rules and taxation are quite unique in the world, that’s why we decided to focus the third chapter on the “situation” of the French CEOs. The chapter number four, called the literature review, highlights the different hypotheses, the different papers which deal about this topic. This chapter is divided into three parts: The different CEO compensation strategies, the literature about the firm performance and the relationship between CEO remuneration and firm wealth.

To deal with a problematic it’s important to find accurate variables. We explain and define the several variables we chose in the chapter number five. This chapter is split into three parts: dependent variables, independent variables and control variables.

The second part is the empirical part of the paper. The data are presented in the chapter six. The seventh chapter is called model specification and estimation; it shows the different results and analyses we obtained with the data we collected. This chapter is split in two parts: The relation between level of CEO compensation and firm performance and CEO pay-performance elasticity. The last chapter is the global conclusion of our paper.

1.3. Limitations of the Study

The limitations of our paper are pretty clear. The amount of data used, we took the data from the CAC 40 index from the period 2008-2010. Thus the sample size is limited. In addition we used a quantitative approach of the problem. This approach doesn’t allow us to understand the phenomenon but just to quantify it.

The principal variables we decided to use are based on the previous literature so our paper is not really innovative on this point. The limited time, approximately two months, to write this thesis, represents another main limitation. That didn’t allow us to go further, to widen our scope/sample. That also didn’t permit us to make international comparisons which could be interesting.

More generally, the very limited time, approximately two months, to produce this thesis, represents as limitation in its own right and thus prevents us from broadening the scope of the study further, such as for instance compare companies from two countries or similar approaches.
2. Methodology of the study

Our research design is based on a quantitative study; the graph below is summarizing the different steps to take into consideration to fulfill all the requirements. We decided to conduct a quantitative study because of plenty reasons. We wanted to quantify the phenomenon and not enquiry on the reasons of this one, even if we consider that people have a direct influence on this point. We needed to use measurements and data quantifications in our paper. We also decided to use a deductive research approach; this method is totally suitable with a quantitative study.

Figure 1: quantitative study process

Source: Bryman and Bell, 2011, p. 151

This description gives us the important lines to follow to be as precise/accurate as possible. The 5 important and required steps are:

- Determine the research problem and hypotheses to be tested. The decision of choosing this problematic is due to the actuality and the different debates about the remuneration and the “over remuneration” of the CEOs of the biggest companies all around the world. We decided to focus on the French market as a result of the lack of literature about this topic in France. Many studies have been done on this topic, especially in the US and in the UK, but none in France. These are the two main reasons, the current problem and the lack of literature in France, why we decided to study further this subject.
Select the variables to be used in the study. This step is also really important. Prima facie, we took the same control variables as the paper of Ozkan (2011, p. 260-285) namely the presence and the proportion of institutional investors, the characteristics of the board of directors and the CEO age and tenure. The reason why we took the same control variables is because they fit particularly well with the situation of CEOs in France. We also fixed dependent and independent variables to support our study.

Collect the data. To collect the data we read all the annual reports for the 40 companies and took all the useful information we needed. We took as much possible primary information. Indeed, a new regulation imposes to the companies to publish the global remuneration of the CEOs and the main components. But we also took much information from the website “Boursorama”. It’s a leading financial portal in France which proposes much news, stock index analyses, the main quotations etc… The data from this website are considered as reliable.

Analyze the data. To analyze the data we used the software SPSS which is one of the most used software in the world for the analysis of data. This software is easy to use and allows many restatements. We thought it was the easiest and the quickest way for us to analyze our data.

Interpret the results. This is probably the most important part of the paper; it is using the data collected and analyzed to put into perspective. With the data, the interpretation leads us to draw conclusions and to link the paper to the existent literature.

Another part of the paper not mentioned above is the study of the existent literature. In fact, the study of the previous literature leaded us for the building of our paper. This also gave us a lot of useful information, a lot of useful theories that we kept in mind in the redaction of our study.

2.1. Methodological assumptions

The first component of the methodological assumption is the epistemological orientation. The main question here is: do researchers consider that natural sciences can’t be analyzed in a scientific way? There are two main currents of thought: positivism and interpretivism. Positivist approach puts equal social sciences and natural sciences and so they have to be analyzed with the same processes; data are quantified to prove or build theories. Searchers collect data in accordance with the existing theories, with these data they develop and test hypothesis. This process leads to the creation of new knowledge. Interpretivist approach is the opposition of the previous one. Natural sciences methods can’t be used to interpret social sciences actions because social sciences are based on human actions and not object. The researchers who follow that approach tries to understand the subjective meaning of social actions (Bryman and Bell, 2011, p. 15).
After examining these two approaches, we decided to adopt a positivist one. The first reason is that we used the previous theories about CEOs compensation and firm performance. Then we collected data from the annual reports and from the website Boursorama. These data can’t be influenced by any kind of social actors. Our hypothesis is tested with data which leads to a credible building of knowledge. This method leads us to natural science methods that correspond to a positivist approach.

The second component of the methodological assumption is the ontological orientation. The main question here is: social phenomena are independent of humans or are they linked to human activities? There are two main currents of thought: objectivism and constructivism. Objectivist theory considers that all social phenomena are independent from social actors, they can exist by themselves. Constructivist theory considers social phenomena as totally influenced by human beings and they are in constant evolution due to the changes of humans’ interactions. Each approach gets its own advantages and disadvantages (Bryman and Bell, 2011, p. 20).

For our study, we chose the objectivist approach as an ontological consideration. The main reason is CEO remuneration and firm performance are two independent elements and one or several social actors can’t influence them. We don’t need subjective interpretation to analyze these elements. In addition, our sample made of 40 listed French companies can’t be changed / impacted by a single social actor. We want to discover the relations between CEO compensation and firm performance since there are certain strategies (such as incentives) that can have an impact on firm performance.

Therefore, there is a logical link between ontological and epistemological orientations. Positivist approach, in most of the case, is linked to an objectivist orientation and vice versa. That’s why in our paper we used objectivism because it best suits to the approach of our problematic and positivism as explain above.

### 2.2. Research Design

There are 4 main types of research designs: case study, experimental, longitudinal and cross-sectional design (Bryman and Bell, 2011, p. 35-58). Case study design leads to the empirical study and analysis of a single case. Empirical design is generally used for natural science researches but some searchers started to use it for social science researches. The main goal of this design is to find links/relationships between variables by making many experiments. This is more useful in “explanatory” research when someone tries to answer the questions “how and why”. This is a design which requires many steps for data collection which may take months. Bryman and Bell (2011, p. 35-58) precise that an important element is to create two different groups, one is the experimental group and one is the control group. The purpose of that is to compare the differences between these two groups.

Longitudinal design purpose is to provide (casual) influences on phenomena and study the changes on those phenomena. This design is not really used in business and management.
because it takes too much time and money. Cross-sectional design, the data are collected and analyzed for several cases at a defined period of time. The purpose is to gather quantitative and quantifiable data with several variables to detect patterns of association.

After studied these different kinds of research design, we thought that the cross-sectional one was the most suitable to our study. The most decisive element in our choice was that our thesis employs quantitative data and comparisons between variables and data collected at a same period of time. A successful cross-sectional research gives researchers a clearer picture of the important variables in a research topic: what is the problem, what to measure, the conditions or contexts of occurrence that must be monitored.

### 2.3. Research Strategy

In research processes, there are two main approaches used by the searchers: deductive and inductive. Each method has its own specificities and has to be used according of which kind of results the searchers want to find. The logical strategy for our paper is the deductive one.

The deductive approach is the most used/common one. In this approach, theories and hypotheses are the bases of the research and all the processes depend on them. Researchers deduce hypotheses from the knowledge they get about a particular topic and the theoretical considerations. Once hypotheses are well defined, they have to be tested and checked to prove or not if they are working. There is a step, after the data collection and analysis, where searchers perform a feedback of all the findings and realized surveys. That will lead to a deductive hypothesis on the topic, different to the original one. The last step allows the searchers to either confirm the primary made hypothesis or to amend it.

The second one is inductive approach which is quite different that the deductive one. Inductive researches begin with the collection of observation and end with a general, always applicable, laws. Theory is created as a product of the research and creates a new vision of a scientific approach.

Our research topic is focusing on the link between CEO compensation and firm performance. Our preliminary researches allowed us to find several different theories on the topic. Our main goal was to confirm or invalidate these previous theories through a quantitative research and try to highlight some important elements on the French market. In this way, our paper follows a deductive approach and the final goal is to confirm or invalidate the existing theories on this topic.

### 2.4. Specific data collection methods

The choice of the sample is really important because it has to be representative; it is one of the major concerns for the searchers. We have already given some explanations on the
reasons why we chose the CAC 40 index for the period 2008-2010. One of the reasons is the easy access of the financial information. Indeed, the French regulations oblige the companies listed in France, to publish an annual report with all, or almost, the data we needed for our study, the financial results, the composition of the board of directors, the structure of the ownership, the age and tenure of the CEO and his remuneration. All these reports are available on internet, for free and in English. The main advantage of these data is they are primary data.

The second main reason to choose this sample is the gap in the literature. Indeed, during our researches we didn’t find another paper with the same topic as ours. There was plenty about the US market or the UK but not even one for France.

The third reason is the similarity of the companies inside of the CAC 40. In fact, this index gathers almost all the biggest French companies. Even, if some companies as Total have a higher weight in the index than some smaller ones, the data are reliable. Thus, the conclusions we reached were not biased by the difference of size.

We are aware that nor the sample is that large neither the period of the study but we preferred to focus on companies we were sure to be able to obtain reliable data than on smallest firms for which we would have to take more secondary data. We are sure that the conclusions reached with this sample are trustworthy.

2.5. Quality Criteria

During the process of research, data collection is one of the fundamental steps in the writing of an academic research. It is necessary for the searchers to be sure that the data collected are suitable and reliable for the topic. That is one of the reasons why it is better to use primary data instead of secondary ones. There are two main aspects that have to be checked: the reliability of the survey and the repeatable of the survey. That means that if a data collection is well done, is reliable, researchers could reproduce the study and find the same results with the same tested sample.

For our study, these two elements are respected. Indeed, we used financial data, this kind of data is really trustworthy because we can’t modify them, and it’s written in the reports. Our sample is pretty clear and stable in the time. An error is possible of course, a miscalculation for example, but with the utilization of the software: Excel and SPSS, this risk is highly reduced. We also tried as much as possible to take primary information from the annual reports or from the website of the companies to be sure there was no error in the data.

There are three important factors that have to be taken into consideration to verify if a research process is reliable. The first element is the stability, searchers have to be sure that the measures are stable, that means the results would be similar (or almost) if another person wanted do the same survey in a similar situation. The second element is the internal reliability that refers to the fact that all the indicators are related to each other. One way to test this factor is to split the collected data into two groups, make the total value for each
group and realize the correlation between both amounts. The third element to take into consideration is the inter-observer consistency. Human beings are not always rational and the possibility of making misunderstandings exists, searchers must find solution to reduce the risk of inappropriate results. The first solution is used if the measurement made by searchers is based on different categories. Thus, it can be checked by analyzing which categories are the most chosen by raters. For example, if on a sample of 1,000 raters, 780 pick up a certain category; we can conclude that the inter-observer consistency is to 78%. The second solution is to do a continuous measure between two raters. Searchers have to check, every minute for example, the correlation between ratings of those two raters to determine the closeness of the results and check the reliability in the results.

A searcher, who checks these three elements above, decreases significantly the risk of reliability mistakes inside of his results. As we explained above we don’t have any problem of stability because of the kind of data we collected. The data are stable in the time. For the two other elements, they don’t apply to our paper. In a way to obtain useful results, searchers have to check the validity of their surveys. We didn’t use this kind of data collection so we don’t develop more this point.

2.6. Ethical considerations

According to Diener and Crandall (1978, p. 178-180), there are four main ethical issues for a researcher to keep in mind:

- Whether there is harm to participants
- Whether there is a lack of informed consent
- Whether there is an invasion of privacy
- Whether deception is involved.

What is harm to participants? Diener and Crandall (1978, p. 178-180) define the different facets of harm: physical harm; harm to participant’s development or self-esteem; stress; harm to career prospects or future employment; and inducing subjects to perform reprehensible acts.

Concerning our paper, this kind of nuisance is really limited. In fact, we conducted a quantitative study with only publicly available data. We just put the data into perspective, and may be that could harm few CEOs but the impact is really restricted. Another important element is that we don’t make any comparison between the CEOs compensation. We just want enquiry the relation/correlation of CEOs remuneration and firms’ wealth. In that way no single CEO could feel targeted by our study. We don’t consider that our paper could have an impact on the career prospects of any person, quote in this study.

What is lack of informed consent? To summarize the entire definition, it is given as much information as possible to the prospective participants to give them the possibility to choose to participate at the study or not.

Once again, we don’t have that problem in our paper. We don’t conduct any interview, we just analyze financial data. The same analysis can be done by everybody with an internet
connection. Thus, this paper will not create any problem of this kind. We don’t need any consent to perform this study.

What is an invasion of privacy? This problem is linked to the degree to which invasions of privacy can be condoned.

What is the deception involved? It’s the fact that the researchers present their study as something different than what it really is.

For these two last elements there is no particular issue for our paper. In our quantitative study, there is no invasion of privacy of any kind. We just took public available data and we didn’t enquiry on the private life of any CEO. We think that the abstract and the title of our study present well the work we did. We didn’t try to present in a different way that it really is.

In our paper we also avoided plagiarism by making the right reference to the give honor to the authors of the articles and books cited all along our work. We made also proper quotations when we quoted a passage/chapter/definition from any book, article or website. We followed the Harvard system recommendations for all the quotations made in this paper. We mentioned all our sources in the reference list, with the correct reference. We didn’t try to hide any kind of sources. We followed all the recommendations of our supervisor and the Business School of the University of Umeå.

Another important issue is the problem of conflicts of interest. It is general accepted that affiliation can have an indirect influence on the way that researches are leaded and the results presented. We certify to not have any relationship of any kind whatsoever with one or several companies quoted, directly or indirectly, in this paper.
3. Institutional Framework and CEO compensation in France

3.1 Economic situation of France (2008-2010)

As of 2010, France is the fifth largest economy (behind the US, China, Japan and Germany) by nominal figures and the ninth largest economy by Purchasing Power Parity (PPP) figures. It’s the second largest economy in nominal figures in Europe behind Germany which is also its main economic partner.

To well understand the economic situation of France during the period 2008-2010, we decided to focus on some indicators:

- the Gross Domestic Product and all its components
- the unemployment
- the inflation rate
- the balance of trade
- the public debt

In the following chapters, we used data from the INSEE. INSEE is the French National Institute for statistics and Economic Studies. It publishes regularly information, analyzes about the French society but also the French economy. Those data can clearly be considered as reliable for our paper.

3.1.1. Gross Domestic Product

According to investopedia, the gross domestic product is defined as: “The monetary value of all the finished goods and services produced within a country's borders in a specific time period, though GDP is usually calculated on an annual basis. It includes all of private and public consumption, government outlays, investments and exports less imports that occur within a defined territory.”

The figure number 2 shows the evolution of the French GDP over the period 2008-2010. This graph illustrates the direct impact of the financial crisis on the GDP. Indeed, the GDP’s growth started to be negative at the end of the first quarter of 2008 and it stayed negative until the second of 2009. The fiscal stimulus had a direct impact on the final consumption. This component is the main element of the French GDP; it’s the only component that had always been a positive impact on the GDP over the study period. The GDP’s growth in 2009 and 2010 stayed relatively low.
3.1.2. The unemployment

The unemployment in France has always been relatively high compared to the other countries of the OECD. The financial crisis of 2007 had a significant impact on the unemployment rate. Indeed, this rate was at 7.7% at the beginning of 2008 and little below 10% at the end of 2010. The curve of unemployment is represented in the figure 3.

3.1.3. The inflation rate

The inflation rate is defined by the website investopedia as: “The rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling. Central banks attempt to stop severe inflation, along with severe deflation, in an attempt to keep the excessive growth of prices to a minimum.” Most central banks try to sustain the inflation rate between 2 and 3%.

The table below shows an important inflation in 2008 due to the rising price of oil and raw materials in general. In 2009 and 2010, because of the economic problems as the unemployment the inflation stayed calm.
Table 1: Inflation rate in France

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation</td>
<td>2.8%</td>
<td>0.9%</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

Source: INSEE and official statistics, 2011b.

3.1.4. The balance of trade

Investopedia defines the balance of trade as: “The difference between a country's imports and its exports. Balance of trade is the largest component of a country's balance of payments. Debit items include imports, foreign aid, domestic spending abroad and domestic investments abroad. Credit items include exports, foreign spending in the domestic economy and foreign investments in the domestic economy.”

The crisis had a negative impact on the French exportations and also importations, but the increase of oil prices palliated the decrease of the importations. The year 2008, is famous for the history record of French deficit of trade balance. France suffers from a too expensive labor cost and this element impacts the exportations of the country. Indeed, labor costs in France are one of the highest in the world. The board below represents the balance of trade CIF-FOB of France for the years 2008-2009-2010. CIF and FOB are two International Commercial Terms used to evaluate the amount of trades across countries. CIF refers as: Cost, Insurance and Freight. A trade is expressed as CIF; it means its price includes costs necessary to transport to the border. In that case, it is used to evaluate the imports of France. In contrary, a commodity is bought or sold FOB (Free On Board) when it is purchased without transportation costs and other fees and charges relating thereto and without insurance for the goods.

Table 2: French Trade balance CIF-FOB

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>-67,30</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>-53,49</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-64,28</td>
<td></td>
</tr>
</tbody>
</table>

Source: INSEE and official statistics, 2011c.

3.1.5. The public debt

As shows the following graph, the French government debt is increasing for many years and the crisis has a direct impact on the financial situation of France. The curve shows stagnation, and even a little decrease, of the government debt before the crisis of 2007. Indeed, the debt was around 64% of GDP in 2007. In 2010, it is more than 81% and the debt is still growing in the following years.
All these elements indicate the difficult economic and finance situation of France after the financial crisis of 2007. France had to make a Keynesian stimulus to not live again the great depression of the 30s, but the debt at the end of 2010 represents more than 82% of the annual GDP and the ratio is still increasing. In this period of difficulties a national effort had been requested to restore the public accounts and the competitiveness of the French companies. Thus we could expect the same kind of effort from the highest income in France, like the sportsmen, the artists and the CEO of the biggest French companies.

3.2 Details of the index CAC 40

The CAC 40 (Continuous Assisted Quotation) is the benchmark stock index in France. The CAC 40 index is determined from the stock prices of forty shares traded continuously on the market among the first one hundred companies whose trade is the most abundant on Euronext Paris. Euronext Paris is as part of Euronext, the first European stock exchange. These companies, representing different branches of activities, in principle reflect the overall trend of the French economy. The composition of the index is reviewed regularly to maintain that representation.

The CAC 40 is almost exclusively composed of French-domiciled companies (except of Arcelor-Mittal) but about 45% of the shares of those firms are owned by foreign investors. This rate is the highest among the main European indexes. The reason is that CAC 40 firms are more international, two thirds of their business is outside of France, than the other ones from European markets.

The table below illustrates the composition of the CAC 40 index. If we take a look at this board we can notice several interesting things:

- The 40 companies represent well all the French branches of economy. There are no more than three companies of the same branch in the index (three banks).

- Even if (almost) all the biggest companies are in this index, we can notice the difference of weight of each firm. Indeed, Sanofi, the pharmaceutical company and Total the oil company weigh respectively 11.14% and 14.13% of the total
index. Contrary, for example PSA Peugeot-Citroen represents only 0.33% of the global index.

- All the companies are at least in the top 10 of their own branch, except of Renault which is ranked 13th in the automobile but with the partnership with Nissan is ranked in the top 5. 14 firms are ranked first of their branch, that demonstrates the quality of the French companies and their international positions.

- The 2010 turnovers are also highly different. Total is the leader of this category with a turnover of almost € 160 billion. The second one is AXA with solely € 91 billion. The smallest firm in term of turnover is Essilor with € 3.9 billion.

- An interesting fact is that all the companies of this index have a positive earning. The most profitable is Total with more than € 10 billion of profit.
3.3 Literature about CEO compensation in France

The literature about CEO compensation, in France, is quite recent and not really developed. Indeed, few papers, whether in English or French, have been written on this subject. The CEO compensation is increasingly debated in France, especially by the politicians in this year of elections. To well understand the CEOs’ situation in France, it’s important to be aware of the superstars’ literature. This literature analyses the increase of CEO stars’ compensation (for example: Carlos Ghosn, CEO of Renault-Nissan; Bernard Arnault, CEO of LVMH) in a competitive context (Rosen, 1981, p. 845-858). The bonus of the CEO of Publicis (an advertising group) received in 2012 is €16 million and created a huge scandal in France. The “talent” is relevant to analyze high earnings in fields like sport and arts; can we attribute such talent to the CEOs? Schoar and Bertrand (2003, p. 1169-1208) underlined the effect of the presence of a CEO on the performance of large US companies. In the

<table>
<thead>
<tr>
<th>Company</th>
<th>Sector</th>
<th>Index weighting</th>
<th>world rank in the sector</th>
<th>Turnover 2010 (billion of euros)</th>
<th>net earnings 2010 (billion of euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accor</td>
<td>hotels</td>
<td>0.49</td>
<td>top 5</td>
<td>5.9</td>
<td>3.6</td>
</tr>
<tr>
<td>Air Liquide</td>
<td>commodity chemicals</td>
<td>4.64</td>
<td>1</td>
<td>13.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Alcatel-Lucent</td>
<td>telecommunications equipment</td>
<td>0.47</td>
<td>/</td>
<td>16.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Alstom</td>
<td>industrial machinery</td>
<td>0.83</td>
<td>1 (trains)</td>
<td>19.6</td>
<td>1.2</td>
</tr>
<tr>
<td>ArcelorMittal</td>
<td>steel</td>
<td>2.05</td>
<td>1</td>
<td>58.9</td>
<td>2.2</td>
</tr>
<tr>
<td>AXA</td>
<td>full line insurance</td>
<td>3.21</td>
<td>1</td>
<td>91.0</td>
<td>2.7</td>
</tr>
<tr>
<td>BNP Paribas</td>
<td>banks</td>
<td>5.01</td>
<td>5</td>
<td>43.9</td>
<td>7.8</td>
</tr>
<tr>
<td>Bouygues</td>
<td>heavy construction</td>
<td>0.80</td>
<td>2</td>
<td>31.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Capgemini</td>
<td>computer services</td>
<td>0.65</td>
<td>5</td>
<td>8.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Carrefour</td>
<td>food retailers and wholesalers</td>
<td>1.75</td>
<td>2</td>
<td>90.1</td>
<td>0.4</td>
</tr>
<tr>
<td>Crédit Agricole</td>
<td>banks</td>
<td>0.74</td>
<td>10</td>
<td>34.2</td>
<td>1.3</td>
</tr>
<tr>
<td>EADS</td>
<td>aerospace</td>
<td>1.70</td>
<td>2</td>
<td>45.8</td>
<td>0.6</td>
</tr>
<tr>
<td>EDF</td>
<td>electricity</td>
<td>0.9</td>
<td>3</td>
<td>65.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Essilor</td>
<td>medical supplies</td>
<td>1.91</td>
<td>1</td>
<td>3.9</td>
<td>0.5</td>
</tr>
<tr>
<td>France Télécom</td>
<td>fixed line telecommunications</td>
<td>3.96</td>
<td>6</td>
<td>45.5</td>
<td>4.9</td>
</tr>
<tr>
<td>GDF Suez</td>
<td>gas distribution</td>
<td>4.41</td>
<td>2</td>
<td>84.5</td>
<td>4.6</td>
</tr>
<tr>
<td>Groupe Danone</td>
<td>food products</td>
<td>4.73</td>
<td>6</td>
<td>17.0</td>
<td>1.9</td>
</tr>
<tr>
<td>L’Oréal</td>
<td>personal products</td>
<td>3.41</td>
<td>1</td>
<td>19.5</td>
<td>2.2</td>
</tr>
<tr>
<td>Lafarge</td>
<td>building materials and fixtures</td>
<td>0.86</td>
<td>1</td>
<td>16.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Legrand</td>
<td>electrical components and equipment</td>
<td>0.94</td>
<td>1 (switches/ outlets)</td>
<td>3.9</td>
<td>0.4</td>
</tr>
<tr>
<td>LVMH</td>
<td>clothing and accessories</td>
<td>4.84</td>
<td>1</td>
<td>20.3</td>
<td>3.0</td>
</tr>
<tr>
<td>Michelin</td>
<td>tires</td>
<td>1.40</td>
<td>1</td>
<td>17.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Pernod Ricard</td>
<td>distillers and vintners</td>
<td>2.28</td>
<td>2</td>
<td>7.1</td>
<td>1.0</td>
</tr>
<tr>
<td>PSA Peugeot Citroën</td>
<td>automobiles</td>
<td>0.33</td>
<td>9</td>
<td>56.1</td>
<td>1.1</td>
</tr>
<tr>
<td>PPR</td>
<td>broadline retailers</td>
<td>1.47</td>
<td>2</td>
<td>14.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Publicis</td>
<td>media agencies</td>
<td>0.83</td>
<td>3</td>
<td>5.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Renault</td>
<td>automobiles</td>
<td>0.88</td>
<td>13</td>
<td>39.0</td>
<td>3.4</td>
</tr>
<tr>
<td>Safran</td>
<td>aerospace</td>
<td>0.90</td>
<td>/</td>
<td>11.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Saint-Gobain</td>
<td>building materials and fixtures</td>
<td>1.99</td>
<td>1</td>
<td>40.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Sanofi</td>
<td>pharmaceuticals</td>
<td>11.14</td>
<td>4</td>
<td>30.4</td>
<td>5.5</td>
</tr>
<tr>
<td>Schneider Electric</td>
<td>electrical components and equipment</td>
<td>3.36</td>
<td>1</td>
<td>19.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Société Générale</td>
<td>banks</td>
<td>1.98</td>
<td>9</td>
<td>26.4</td>
<td>3.9</td>
</tr>
<tr>
<td>STMicroelectronics</td>
<td>semiconductors</td>
<td>0.48</td>
<td>top 5</td>
<td>7.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Technip</td>
<td>oil equipment and services</td>
<td>1.33</td>
<td>top 5</td>
<td>6.1</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>integrated oil and gas</td>
<td>14.13</td>
<td>5</td>
<td>159.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Unibail-Rodamco</td>
<td>real estate investment trusts</td>
<td>2.14</td>
<td>/</td>
<td>1.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Vallourec</td>
<td>industrial machinery</td>
<td>0.79</td>
<td>2</td>
<td>4.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Veolia Environnement</td>
<td>water</td>
<td>0.53</td>
<td>1</td>
<td>34.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Vinci</td>
<td>heavy construction</td>
<td>2.60</td>
<td>1</td>
<td>31.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Vivendi</td>
<td>broadcasting and entertainment</td>
<td>3.27</td>
<td>10</td>
<td>28.9</td>
<td>2.2</td>
</tr>
</tbody>
</table>
actual competitive situation, Gabaix and Landier (2008, p. 49-100) explain that the talent has to be spread but also concentrated in the highest talents. They explain that the perception of differences between CEOs is less homogeneous in France than in the US. Llense (2010, p. 165-191) in her paper look at the size elasticity of CEOs remuneration in France and at the cost to create an upper limit. She concludes at a size elasticity of CEOs remuneration of 0.5 and so justifies a large range of compensations.

Hamouda (2010, p. 149-167) examines the utilization of stock options in France from 1997 to 2003 for the companies listed in the SBF 120. Indeed, stock options are became one of the most used elements of remuneration of the CEOs. The most interesting point of this study is the comparison made between the high technology firms and the other ones. He demonstrates that for the “new economy” companies the utilization of stock options is more important than the other ones.

Another interesting study is the one leaded by Vigliano and Barré (2010, p. 97-109) about the effect of the network structure of the manager on his remuneration. In France, the private network is an important element. Indeed, Many CEOs sit on the board of other companies, thus some links can be created between them especially on the remuneration’s subject. The study mentioned above, on 103 CEOs from the SBF 120, demonstrates the importance of the network on the amount of the remuneration of the CEOs in France.

A study found on the website “Stratégie et Management” (2009), describes the average percentage of each element of the remuneration of the French CEOs. Thus, the main elements are: The fixed salary (33% of the global remuneration), the stock options (28%) and the bonuses (22%). This French remuneration’s structure is quite different than the other ones among the OECD. Indeed, the different tax rates are different in all the countries. The utilization of Stock options for example, is more common in the Anglo-Saxon countries. We detailed the differences later in this paper.

### 3.4 Taxation of high-income in France

The following graph (Figure 5) is particularly interesting. It shows the ratios of levy for the secondary revenues for the ten richest centiles in France.

The overall tax rate on high incomes is almost constant at the 90th percentile P99.9, from 37% to 38.5%. Then, there is a significant drop in the tax rate from the 99th percentile. The tax rate in effect amounted to 32.5% for 0.001% of the wealthiest individuals. Finally, we note that until the 98th percentile, the weight of the different taxes paid by taxpayers is relatively similar. The tax rate under the social security contributions and payroll tax is about 12 percentage points of overall tax rate. Indirect taxes represent about one third of their overall taxation. The final third consists of income taxes, payroll taxes and capital taxes. The part of social contributions in the secondary income rises from 12% for P97-98 to 1.5% for 0.001% of individuals with the highest incomes. This is due to the strong decrease of the part of wage income and non-wage income in total from the 98th percentile. It goes from 81% for P97-98 to 7% for 0.001% of the wealthiest individuals.
Another important point to well understand the situation of the CEOs is to take a look at the taxation system in France. If we just focus on the income tax for individuals we get the figure 6.

Figure 6: Income tax rate in France in 2009

<table>
<thead>
<tr>
<th>2009 Rates by units in a household</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Unit (-1 Adult household)</td>
</tr>
<tr>
<td>Below €5,875</td>
</tr>
<tr>
<td>From €5,075 to €11,720</td>
</tr>
<tr>
<td>From €11,720 to €26,030</td>
</tr>
<tr>
<td>From €26,030 to €69,783</td>
</tr>
<tr>
<td>Beyond €69,783</td>
</tr>
</tbody>
</table>


This figure shows us that the remuneration of CEOs is taxed at a rate of 41%. This rate is quite high compared to the other OECD countries. There are plenty other taxes, like a health tax or social tax, thus CEOs in France are among the most taxed ones in the world. The taxation has a direct impact on the CEO compensation.

The new French president, François Hollande, would like to create a new level of tax of 75% for the people who earn more than 1 million euros per year.
4. Literature review

4.1. Background for CEO compensation strategies

The directors of such [joint-stock] companies, however, being the managers rather of other people’s money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master’s honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company.

— Adam Smith (1776)

The previous extract from “An Inquiry into the Nature and Causes of the Wealth of Nations” (Smith, 1776) shows us that the problem of directors’ compensation is almost as old as the creation of corporations. Indeed, the separation of shareholders and management leads to a problem known as the principal-agent problem or shortly agency problem and the globalization of the economy has increased this separation and then the agency cost. This problem formulated and solved by Grossman and Hart (1983, p. 7-45) is one of the biggest issues for the shareholders. Kevin Murphy is also one of the most famous economists who tried to solve this problem. He devoted plenty articles and books to the chief executives’ compensation and to the different incentives to solve the principal-agent problem. In an article wrote with Michael Jensen (1990, p. 225-264), they suggest that the remuneration of the CEO is intended to reconcile the shareholders’ interests, i.e. the value creation, and his own interests, sometimes conflicting. The CEOs might have “personal” projects that wouldn’t create any or few value for the stockholders: acquisition of a private jet, unnecessary acquisitions to satisfy the ego of the CEO (J-M Messier with Vivendi Universal for example) etc.

The problem of the remuneration of the CEO is straightly linked to the agency theory explained, among others, by Jensen and Meckling (1976, p. 305-360). The agency problem is a contract by which one or several people (the principal) hire a person (the agent) to execute on his behalf some tasks with delegation of a certain decision-making power at the agent. Therefore, all contractual relationship between two people leads to an agency problem due to the divergence of interests and asymmetry of information between both parties. These divergences generate different costs: monitoring cost, opportunity cost or insurance cost. It’s necessary for the shareholders to minimize these costs.

In the article, Performance Pay and Top-Management Incentives (1990, p. 225-264), Jensen and Murphy demonstrate that the sensitivity of the CEO remuneration to the financial performance of the firm is relatively low. Indeed, a value creation for the stockholders on the order of $ 1,000 only increases the remuneration of the CEO of 3.25$. This global remuneration includes the stock-options, the fixed salary, the variable pay and also an
assessment of the opportunity cost of termination. In addition, this sensitivity to the performance seems to have decreased in USA since 1930.

There are plenty possible ways to remunerate the CEO; we can separate them into two different kinds: the short-term remuneration (fix salary, perks...) and the long-term remuneration (stock-options, free stocks...). The structure of the CEO remuneration depends largely of the country in which the company is based. (Murphy, 1999). Murphy based is paper on the Towers Perrin’s 1997 Worldwide Total Remuneration; this study demonstrates the huge difference between the remuneration in the US and in the rest of the world, almost the double than the average total pay elsewhere. Another interesting fact from these data is the difference of structure between the countries: US CEOs have a larger part of their remuneration in the form of stock options and a lower in the form of salary, than any other countries in the panel. We can also see that the stock options are absent in nine of the twenty-three countries of the panel and don’t represent more than 5% of the total pay in thirteen of the twenty-three countries. This study has been done also in 2002 and the results are quite similar, even if the American’s model of remuneration tends to spread.

There is a growing interest from searchers (especially after the financial crisis) on the level and structure of executive compensation all around the world, United Kingdom (Conyon, 1997, p. 493-510), Japan (Kato, 1997, p. 493-510), Germany (Kaplan, 1997, p. 3-12), Canada (Zhou, 1997, p. 213-251) etc. Fewer studies were focused on international comparisons because of the difficulty to compare data from countries with different taxation systems or different business rules. (Example, Conyon and Schwalbach, 1997). The reason is the comparisons are really difficult to make due to the heterogeneity of available data, regression specifications (definition of dependent and independent variables) and institutional details (tax and exchange rates).

The most reliable international comparison is from Abowd and Bognanno (1995, p.67-103). They use the available data from four different consulting firms to analyze between 1984 and 1992, the remuneration in twelve OECD countries (Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, the UK, and the US). The result of their study is US CEOs, even with adjustment as tax rates, purchasing power and public benefits, have a higher global remuneration compared to the eleven other ones. Another interesting point from this study is that the difference between US and the other countries is limited to the CEO level. Indeed, the “lower-level” executives and production workers have a barely similar average remuneration.

The compensation depends also on the size of the company. Remuneration increases with company size, larger the firm is, higher the wage is. The reason is a larger company may employ better-qualified managers and then better-paid (Kostiuk, 1990, p. 90-105). Another interesting study has been leaded by Rosen (1981, p. 845-858), he tried to cover and summarized all the academic researches about a variety of time periods and industries in US and UK. He finally concluded to “a relative uniformity [of estimates] across firms, industries, countries, and periods of time is notable and puzzling because the technology that sustains control and scale should vary across these disparate units of comparison.”
Numerous studies have focused on the CEO remuneration in different kind of industries, we can quote for example, Carroll and Ciscel (1982, p. 505-509), Rose and Wolfram (1997) on executive compensation in electric utilities, Barro and Barro (1990, p. 448-481), Hubbard and Palia (1995, p. 105-130) in banking industries. Murphy (1999) compared all the different industries between each other and came to the conclusion that CEOs in electric utilities earn less than their counterparts in the other industries, while directors in financial companies earn more. Murphy has also studied the evolution of the remunerations between industries between 1992 and 1996. In manufacturing firms, the median pay level increased 55% to $3.2 million in 1996. In financial area, median pay increased 53% to $4.6 million. In utilities companies, median pay increased 34% to $1.5 million. In the same study Murphy, showed that the increase is mainly due to the appreciation of stock options.

The website salary.com gives us some information about the salaries of the American CEOs nowadays. The average total compensation for the CEOs is $1,436,763 and the structure of this remuneration is represented in the following graph.

**Figure 7: The structure of American CEOs compensation.**

The following graph, number 8, provided by the website executive insight, represents the median total compensation and the median total cash compensation for the CEOs in the US in 2009. The data are classified by deciles. We can notify that among the deciles there is a huge heterogeneity. Indeed, the median compensation for the first decile is “only” $ 87.8 thousand and for the tenth decile the median compensation is equal to $ 10.2 million. That’s why when one speak about CEOs compensation it’s really important to separate well the CEOs form the biggest companies and the CEOs from the small and medium firms.
4.2. **Firm Performance**

The problem of how to evaluate the financial performance of a company is a current topic. Indeed, the different and recent financial scandals (Worldcom, Enron…) light the accounting manipulations and thus the problems of the control systems. The two above-mentioned companies were two of the biggest American companies in the end of the 1990s. The similarity between them is a willingness of the top-management to hide, to manipulate the financial statements in order to not reflect the correct situation of the company. We won’t discuss these problems in this paper but we thought it was important to mention them and to show how easy is to manipulate the accountancy of a company.

The book Financial Reporting and Statement analysis written by Stickney et al. (2004, p. 83-102) explains us how to analyze the financial statements of a company. There are three levels of analyzing the situation of a company. Firstly, the balance sheet measures the financial position of the company. Secondly, the income statement measures the operating performance. Finally, the cash flows analysis separates in operating, financing and investing cash flows.

Still according to this book to value a firm, it’s important to compare a company to other ones with similarities (size, turnover, area…) and more important to use ratios. There are two main kinds of ratios: the profitability ratios and the risk ratios. The first category contains ratios as earnings per share (EPS) who is the most commonly encountered ratio. Another useful ratio is the return on capital employed (ROCE). ROA is an indicator of how profitable a company is relative to its total assets. The second category contains ratios as the leverage ratio, the interest coverage ratio or the debt to equity ratio. The reason why the ratios are important is they are used, at least in part, to calculate the end of the year bonus of the CEOs.

The decisions of a CEO may have an impact for various performance outcomes, firm value in the stock markets, financial situation and firm’s market position (Sorescu and Spanjol,
Firm value refers to both current and future gains evaluated by the market (Tobin’s q, market-to-book ratio, market capitalization etc...) (Rust et al., 2004, p. 76-89). Financial situation refers to the elements as return on assets (ROA), return on investment (ROI), and return on equity (ROE). These ratios represent the cost of firm’s activities. Firm’s market position represents the revenue of the firm as sales, sales growth and market share.

Many scholars focused on the link between multinationality and the performance but it was inconclusive (Bausch and Krist, 2007, p. 1-29). The researchers found positive and negative effects between these two variables.

4.3. Relationship between CEO compensation and firm wealth

The range of researches about the executive compensation is rather large, since the 1980s there is the emergence of the modern view with the acceptance of the agency theory. The former studies in this area focused more on the relation between executives’ compensation and company performance (Coughlan and Schmidt, 1985, p. 43-66; Abowd, 1990, p. 52-73). Some other studies enquired on the sanction of the CEO in case of bad financial performance. (Weisbach, 1988, p. 461-480; Warner et al., 1988, p. 461-492). Some studies were focused on the link between CEO remuneration and market or industry competitors (Antle and Smith, 1986, p. 1-39; Gibbons and Murphy, 1990, p. 30-51).

As explained above, on the past decades, the literature on CEO compensation and agency theory has showed that CEO incentives should be linked to firm performance. This problem is become particularly sensitive after the financial crisis of the last years. The politicians, from different political parties, but also the media argued that the top-executives’ compensations, and their excess, push employees to privilege short-term risks without any regard for the long-term effects of these decisions. That’s why, mainly in Europe, regulatory proposals proposed, among others things, to increase the delayed remuneration and the long-term incentives. The delayed remuneration is based on current performance, perfectly known, but paid several years later. For example, a retirement plan. Long-term incentives are based on a result that depends on current action but is fully observed until several years later. Stock-options, restricted stocks are the perfect example.

The purpose of these remunerations is to bind the CEOs interests with the ones of the shareholders. This implies a positive relationship between long-term incentives and future firm performances. There are plenty papers that focus on connections between CEO remuneration and future accounting performance (Leonard, 1990, p. 13-29; Hayes and Schaefer, 2000, p. 279-293). Some other researchers, like Cooper et al. (2008, p. 1609-1651) tried to study the link between CEO incentives and future stocks’ performances. In that case, incentive compensation is understood as restricted stocks, options and other forms of long-term compensation.

The sensitivity of CEO compensations is discussed in several papers, Leone et al. (2006, p. 167-192) showed a higher sensitivity to negative stock returns than to positive stock returns. That would result to the willing of the boards of directors to privilege an ex post
settling up on CEOs. According to the paper of Shaw and Zhang (2010, p. 1065-1093), the results would be totally contrary and the CEO wouldn’t be punished for poor firm performance. Baker et al. (1988, p. 593-622), for their part, studied the relation between firm sales from 1973 to 1983 and the CEOs remuneration. This study demonstrated negative pay-sales elasticity. Indeed, a firm 10% larger than the average pays its CEO only 3% more.

For Fich and Shivdasani (2005, p. 2229-2254), there is an implicit assumption if the markets are efficient when the incentive remunerations become public, then investors will capitalize the present value of future performance increases into the stock price. But there are several reasons to think that information about CEO incentive remunerations don’t immediately affect the stock price.

First, CEO compensations incorporate public and non-public information, like the measurement of economic performance. If un-observable measures are correlated with future firm performance, then unexplained variation in current compensation should predict future variation in firm performance (Hayes and Schaefer, 2000, p. 279-293). This suggests positive relationship between remuneration and future earnings. Second, incentives are not totally transparent; indeed there is a huge volume of non-cash components of pay. There is a lot of different papers on that topic, for Bebchuk et al. (2002, p. 751-846), the managers use the incentive compensation to facilitate the extraction of rents from shareholders. Hayes and Schaefer (2009, p. 280-290) developed a model in which no firm wants to admit having a CEO who is below average. Firms with highly paid CEO are the wealthiest firms, with the best returns. (Core et al., 1999, p. 371-406). Third, a highly paid CEO can become too confident and may engage the company in wasteful activities and in an empire building (Ben-David et al., 2008).

The end-year earnings are the most common criterion to measure the performance of a firm and so calculate the ex-ante bonus of the CEO. Murphy (1999) used survey data to illustrate that among 125 large industrial firms, 40% used a single performance measure, and 88% of these firms used a measure based on earnings and none were using stock price as a performance measure. All of the remaining 75 firms included financial earnings as a measure of performance, while only five firms used stock price as one of the measures. It is important to note that, according to Healy (1985, p. 85-107) and Holthausen et al. (1995, p. 29-74) and others, the majority of CEO bonus contract contain both a lower and an upper bounds. Indeed, the last searchers mentioned, created an interesting graph, the “ROA-based compensation curve” in Figure 9. This graph illustrates the amount of bonus obtained by the CEO in terms of the firm performance reached. The CEO receives a bonus equal to 7% of salary if the performance reaches the lower bound, the average target bonus is set at 55% of salary and once the upper bound is reached, the bonus of the CEO is equal to 88% of salary and doesn’t increase anymore.
The following graph illustrates an important element. The largest firms have a higher ROA than the medium and the small ones. This fact is important because as we explained just above there is a correlation between ROA and bonuses, even if there are lower and higher boundaries. We can also learn from this graph that the ROA over the period 1989-1998 for Canadian companies that the ROA is globally increasing over the period 1991 and 1998.

Figure 10: ROA of American non-financial industries.

It seems also important to look at the impact of stock returns in CEO compensation. Holmstrom (1979, p. 74-91) demonstrates that when both accounting earnings and stock returns are relevant about the evaluation of the activity of the CEO, both should be used to determine his compensation. Sloan (1993, p. 55-100) illustrates this theory in his paper by concluding that there is a positive relation between stock returns and CEO remuneration. The compensation committee, at the end of the year, has all the financial informations
(stock returns, earnings) available, and then is able to gauge the performance of the CEO. Thus, the committee can punish the CEO for poor earnings except if these results derived from investment decisions (for example: research and development, restructuring) because these investments are supposed to create positive future returns. For Barclay et al. (2005, p. 1-25) poor results suggest that the future returns will also be poor, because returns are the reflection of both delivered and expected performances.

Another field of study in the literature, focused on both cash and equity-based elements of CEO compensation. Conyon and Murphy (2000, p. 640-671) compare the differences of the wage of the CEO and incentives in the US and in the UK. Their study concludes of a higher level of remuneration in the US than in the UK based on these elements for 1997. Ozkan (2007, p. 349–364), after an examination of CEOs compensation for 414 UK firms for 2003, concludes that the financial performance of the firms (for this sample) doesn’t have an important impact on CEOs remuneration, whereas board and ownership structures may impact (positively and negatively) the CEOs compensation. But one of the biggest problems of these studies is that they are limited at a one-year study of the situation, and this may affect their results (Murphy, 1985, p. 11-42)

This paper will contribute to the literature by using a panel data set of 40 French firms from the CAC 40 for the period 2008-2010 to empirically look at the link between CEO compensation and financial performance of the company.
5. Variables

The choice of the control variables early quoted is the result of different elements. Foremost, it’s based on the existing literature and on the specificity of the French way of business. In fact many scholars focused on the relation between CEO remuneration and firm wealth, but none in France. The second element, in the choice of those variables, is the simplicity of access to the data. In France, it’s mandatory for many years to publish information as the members of the board of director or the CEO remuneration. All these data are free-access and available in Internet for many past years.

Searchers investigated different corporate governance mechanisms as proportion of institutional shareholders, numbers of executive and non-executive directors, board characteristics or age of the CEO. In this paper, we explore other ways, as the impact of corporate governance variables including structure of ownership and board characteristics on the CEO remuneration. We also examine the pay performance-relation for CEOs in French firms.

The purpose of this thesis is to empirically investigate relationships between CEO compensation and the firm performance of 40 French companies during the period 2008-2010. We want to find relation relations between these two elements, that’s why we decided to use a regression analysis. Our variables are divided into three groups: dependent, independent and control variables. Considering all the elements, we thought that the firm performance would be dependent variables; measurements of CEO compensation would be independent variables. The control variables are used to control the dependent variable, that’s why we chose the institutional investors, the board characteristics and the age horizon of the CEO as control variables.

Our paper participates to the literature on CEO compensation by investigating the link between CEO remuneration and firm wealth for a sample of French firms for the period 2008-2010. The analysis is controlling for institutional investors’ share ownership, block holder ownership and board structure variables.

5.1. Independent Variables

To evaluate the firm performance, we decided to choose three dependent variables: the market capitalization, the sales and the shareholders return.

5.1.1. Market Capitalization

The market capitalization is the total value of the shares, publicly available, of a traded company. The calculation to obtain this value, is the share price times the number of shares outstanding. Preferred stocks are, generally, not included in the calculation.
We used the stock prices at the end of each year (31st December) and the number of shares outstanding provided by the annual reports to calculate the data for this variable. The data collected are presented in the chapter number 6.

### 5.1.2. Sales

In finance and accounting, sales or net sales are generally characterized as the revenues earned by a company when it sells its products or services. The sales can be (almost) considered as the turnover of a company and are reported in the income statement.

To obtain the data we simply took the financial report of each company for each year and we compute the data in a board. The data are available in the chapter 6.

### 5.1.3. Shareholders return

Shareholders return or total shareholder return (TSR) is a ratio used to compare the financial performance of different companies and especially their stocks. This ratio is the combination of share prices movement and dividends paid and at the end show the return obtained by the shareholders. The TSR varies with stock markets but it mainly reflects the perception by the market, the investors of the overall performance of this company compares to a reference industry for example.

\[
TSR = \frac{\text{Price} (t - 1) - \text{Price} t + \text{Div}}{\text{Price} t}
\]

With \(TSR\) = Total Shareholder Return, \(\text{Price} t\) = stock price at beginning of period, \(\text{Price} (t-1)\) = stock price at end of period and \(\text{Div}\) = dividends paid over the period

The data are collected for the financial reports for each year and each company. They are presented in the chapter 6.

### 5.2. Dependent Variables

We took several elements to evaluate the CEO compensation: base salary, bonuses and Attendance fees and Benefits in kind. The new French regulation obliges all the listed companies to publish all these elements.

#### 5.2.1. Base salary

The base salary is the fixed amount of money paid to the CEO in return for his work performed. It does not include the benefits in kind, the bonuses and all the other kind of compensations.
We simply took the information from the annual reports. The data are available in chapter 6.

5.2.2. **Bonuses**

The bonuses are all the cash and non-cash elements that the CEO can receive in terms of his goals achievement. We can quote some as:

- The profit sharing. The remuneration committee sets a predetermined amount of payroll as bonus. The main purpose of profit sharing is to encourage the CEO to improve the company’s profitability.
- Sign-on bonuses. As professional footballers, some CEOs receive a bonus when they sign a contract with a new company.
- Spot bonus award. The CEOs can receive a bonus if the stock price of the company achieves a certain price.

We took the available data from the annual reports, but the main problem is that they don’t separate the bonuses and the stock-options. Thus the data we provide in the chapter 6 include the different bonuses and the stock-options. The French regulation doesn’t enforce such distinction.

5.2.3. **Benefits in kind**

Benefits in kind are defined as all the elements (goods and services) provided by the company for free or at reduced costs to its CEO. This includes car, chauffeur, cellphone, laptop etc…

The fees are compensation paid to members of the board of directors of limited companies. This remuneration is normally shared between the directors according to the attendance at these committees. The total amount is fixed by the shareholders at a general meeting.

These elements are specified in the annual reports and are reported in the chapter 6.

5.3. **Control Variables**

5.3.1. **Institutional investors**

The definition of institutional investors providing by the website investopedia is: “A non-bank person or organization that trades securities in large enough share quantities or dollar amounts that they qualify for preferential treatment and lower commissions. Institutional investors face fewer protective regulations because it is assumed that they are more knowledgeable and better able to protect themselves”. We can quote as examples: the pension funds; Insurance companies; Hedge funds; sovereign wealth funds.
The globalization of the economy leads to a dominant position of the institutional investors in financial markets. The Rockefeller foundation estimates the total assets owned by the institutional investors at over $20 trillion. Even if the North-American pension funds stay an important investors (with more than 25% of total amount invested), new actors as the middle-eastern or Asian sovereign funds became more and more important after the financial crisis of 2007. For example, the Qatar sovereign fund owns significant participation in many big French companies as Total (3% of the total amount of stocks), Vinci (between 5 and 8%), Véolia (5%) or Lagardère (10%). These significant shareholdings allow institutional investors to exert a substantial role on the managerial control. The sovereign funds and the pension funds are generally appreciated by the companies because they are less aggressive than the hedge funds and they invest in companies with long-term objectives. Gillan and Starks (2003, p. 4-22) made an interesting survey of the institutional investor activism.

In the United-States, institutional investors play an active role in the process of fixing the executive remuneration (Hartzell and Starks, 2003, p. 2351-2374). Sapp (2008, p. 710-746) corroborates this survey, with a paper on the influence of institutional investors on the executive compensation for a sample of publicly listed Canadian firms. In a previous study, Ozkan (2007, p. 349–364) demonstrates the negative impact of institutional ownership on the CEO compensation for a sample of British firms. The main problem with this paper is that it is based only on one year data. Such kind of studies hasn’t been done for France.

A new word appeared some years ago about the institutional investors’ literature it’s: activism. Indeed, many recent studies demonstrate the evolution of the behavior of the large institutional shareholders to a more active way (e.g. Monaco and Finet, 2011). Thus, this variable is an important element to take into account for analyzing the CEOs compensation in France.

The ease of access to information (Bushee and Goodman, 2007, p. 45) is a paramount consideration in their choices of participation (Golec, 2004, p. 44; Chen and Hong, 2006, p. 2471-2488). Thus, the institutional investors avoid those firms for which the level of information asymmetry is high. Following this logic, these investors privilege the listed companies than the non-listed ones, because the market is more liquid and the portfolio is easier to evaluate. Ferreira and Matos (2008, p. 499-533) showed a preference for the American institutional investors for the large sized companies whereas the non-American ones prefer the cross-listed companies.

Thus, we think the institutional investors are an important variable that they can influence the strategic and financial decisions of the companies, the market valuation, the risks taken etc. All of these elements are totally linked to the CEO compensation. The information about the institutional investors come from the different annual reports.

Our paper will be part of the literature by investigating on the CEO pay-performance sensitivity and the impact of institutional investors’ shareholding on it.
5.3.2. **Board of director characteristics**

According to Investopedia, a board of directors is: “A group of individuals that are elected as, or elected to act as, representatives of the stockholders to establish corporate management related policies and to make decisions on major company issues. Such issues include the hiring/firing of executives, dividend policies, options policies and executive compensation. Every public company must have a board of directors”.

As we explained, the separation of ownership and control is the basis of the agency theory. The literature on this topic is quite large and supports the fact that is important for the companies to align the interests of the directors and the ones of the shareholders. The theory explains that if the director ownership is increased, the directors would be less likely to waste resources in non-profitable projects. Thus, there is a negative relationship between directors’ ownership and CEO remuneration. There are some problems with this situation. Indeed, if the directors’ ownership is too high, their decision power will be too important and the outside investors will have problems to monitor them. Another problem is the entrenchment of the directors if they have too much control of the firm. All these elements lead to a reduction of the effectiveness of the internal control. Berle and Means (1932) affirm that a weak managerial propriety and a dispersion of shareholders lead the management to use the assets of the company for their own interests.

Le Maux (2004, p. 195-231) studies the French structure of ownership and shows that the dominant shareholders and the management form a control coalition and jointly affect the decisions of the board of directors. This study corroborates the one of Charreaux and Pitol-Belin (1987), they examine a sample of French firms and discover that the propositions of nomination come generally from the board of directors and then the proposed persons are approved by the general meeting of shareholders. That’s why Le Maux (2004, p. 195-231) proposes that the enquiry of conflicts between economic agents must be leaded in the board and not in the general meeting because it’s the strategic decision unit of the companies. Le Maux also defines what he calls a control coalition with the following elements:

- Access to all tools and mechanisms for management and control. This access is impossible for outside shareholders.
- Extensive information about the company controlled: the coalition control has better access to information compared to all partners of the firm.

The analysis of the structure of board of directors by Fama (1980, p. 288-307) demonstrated that the executive directors highly influence the decisions of the board of directors. Furthermore, they have an important impact on the deliberations of the board. The presence of internal directors in the board allows better information of the board and better transfer of information between the members and the external directors. Given the role that the board is expected to play, the existence of administrators involved in the management does not allow it to fulfill its oversight functions effectively. Fama and Jensen (1993, p. 195-235) recommend the presence of independent directors to improve the operating efficiency of the Board and participate in decisions that involve serious agency problems between shareholders and managers. The independent directors would be encouraged to act in the interests of shareholders and deterred from collusion with management since their reputation is at stake.
Our paper participates to the literature by investigating the impact of executive and non-executive directors on the CEO compensation for a sample of 40 French companies.

5.3.2.1. Executive ownership

Executive ownership, also called executive directors, has been a largely developed topic. The theory suggests that managers’ and shareholders’ interests are not totally aligned. That refers to the agency theory that reduces firm value. This theory predicts that a presence of shareholdings of executives helps to connect the different interests in the company (Jensen and Meckling, 1976, p. 305-360). Moreover, the managerial ownership would lead to better decision making and so would lead to a better corporate performance (Morck et al., 1988, p. 293-315).

However, the literature also suggests that after a certain level, the increase of management ownership could have a negative impact on firm value. In fact, the possession of “too many” shares would provide managers sufficient wealth to pursue their own benefits. But when managerial ownership is really high, the alignment of interests of managers and shareholders is nearly perfect. Several searchers as Cho (1998, p. 103-121) demonstrated the non-linear relationship between executive ownership and firm value.

Another element demonstrates by (Fama and Jensen, 1983, p. 195-235) is that managers with a high ownership tend to get entrenched. Thus, that would exacerbate the agency problem. Jensen and Meckling (1976, p. 305-360) suggested that managerial shareholding would create another conflict in the company, a conflict between the shareholders and the bondholders. Shareholders have an incentive to try to expropriate the value from the bondholders. Executives’ ownerships are responsible of the investment decisions and would modify the financial structure of the company for their own privileges. For example, they could increase the lever of the company, decide to invest in riskier project or increase the amount of the dividends.

To conclude, executive ownership is at the same time good for the company, by the alignment of interests between management and shareholders but also bad for it because of the different problem of entrenchment or risk-shifting problem. The percentages of executive ownership come from the annual reports.

5.3.2.2. Non-executive ownership and shareholder

A non-executive director, generally called outside directors is a member of the board of directors of a company but who are not a member of the executive management. He is not an employee of the company.

Unlike the non-executive ownership, a non-executive shareholder is not member of the executive management and and is not also in the board but has some share of the company. So different member can compose this category: block holder (share but neither member of the board or the executive management), institutional shareholder or the family owner (Bouygues or Peugeot Family etc.).
In the last years, and the scandals as Enron and Worldcom, many new rules or recommendations have been edited on how to increase the effectiveness of the board of directors and on the active role of non-executive directors. These outside directors are considered as one of the best solution to avoid this kind of problem (Daily et al., 2003, p. 371-382). Depending on the country the recommendations are not the same. In the UK for example, the recommendation is to nominate at least independent non-executive directors for at least half of the seats.

The non-executive directors have two main tasks: control the activity of the board and the activity of the executive directors (Cadbury 1992). To fully accomplish this mission, there are three important elements for the non-executive directors to take into account: the time, the remuneration and the reputation. The time, generally they work part time and for several companies, so it’s quite complicated for them to be really effective in the control mission. The remuneration, the directors’ fees are relatively less important than the executive directors. The reputation, indeed they care about their own reputations which provide an important incentive to be effective in the monitoring.

The studies lead in the UK, such as Cadbury (1992), focused on the board monitoring role and on the impact of non-executive directors on this role. On a sample of US firms, Core and Guay (1999, p. 151-184) find that less numerous the independent outside directors are, greater the CEO compensation is. This result is corroborated by the study of Coakley and Iliopoulou (2006, p. 609-631), which find that less independent and larger boards grant higher CEO bonuses and salary after a Merger and acquisition for one hundred completed bids in the UK.

In her previous research, Ozkan (2007, p. 349–364) determinates that the proportion of non-executive directors has a direct and positive impact on CEO remuneration and thus, these directors wouldn’t play their monitoring role. In our paper, we analyze the impact on CEO compensation of two different elements: the proportion of non-executive shareholder and share ownership by the executive. The board size will be one of our control variables, and this board size will contain the executive and non-executive directors.

5.3.3. CEO age and horizon problem

The literature about the relation between CEO age and firm performance is quite inexistent. That’s why in our paper we decided to use the CEO age and his tenure, i.e. the number of years he has been CEO as variables. These two elements might be favorable for the CEO. Indeed, older the CEO and longer the tenure are, more power to negotiate his package the CEO have. Thus, the pay-performance would be less elastic for older CEOs and longer CEOs tenure.

This paper will be part of the literature by the innovative approach we used. Except in the paper of Ozkan, the age variable hasn’t really been studied. This study of the French most important index would be useful for many researchers. Generally, the CEO age or tenure of the different companies is publically known. Otherwise, these data are in the annual reports.
6. Data

The sample covers the years 2008, 2009 and 2010 for the 40 companies of the French index CAC40. We have a panel of data with 2005 firm-year observations. These data, usually, come from the yearly annual reports and the French document called « document de reference ». This last one is a mandatory paper published by each French quoted company and which gives explanation about the activity, the financial situation or the forecast for the company. Since the French financial market authority has to verify the documents, reliability can be assumed.

For each company, we collected salary information from the remuneration section of the annual reports. The salary elements are in Euro (€) and include the base salary, the annual attendance fees, the benefits in kind and the bonuses. The bonus part contains the bonus in cash and the stock options. Unlike British and US companies, the French companies do not have the obligation to publish the amount and the number of stock-option given to the CEO. The data collected about CEO’s stock option can are either unreliable or inexistent; therefore we decided to induce the global bonus amount, which contain the bonus in cash and also in stock option.

Data concerning the age and the tenure of the CEO were taken from the companies’ website. The tenure of the CEO is the duration as CEO in the company. For the ownership structure we collected the required information in the reference document, in the “shareholder part”, especially in the structure of the capital part. So for each company we noted the proportion of institutional Ownership (financial company, pension fund and also the long-term shareholder company), block holder ownership (owner who is not in the management and non-member of the board, usually it’s the shareholder called “public” in the reference document). We also decided to calculate the proportion of executive directors and non-executive shareholders for each company, (see part 5.3.2.2. for more details about these variables). The proportion of executive director is computed from the total number of directors and the number of executive director found in the annual report in the board part. The proportion of non-executive shareholder is also extracted from the Annual report, in the capital structure part: this number is the proportion of shareholder of the company neither member of the executive management or of the board.

In this part, a table explains the composition of the capital in percentage and also the percentage of voting right for each shareholder.

Table 4 reports descriptive statistics for components of CEO compensation for the test period. We can observe that there has been an increase in average base salary and especially about the bonus which is the largest increase with around 35% of increase between 2009 and 2010 with an average bonus of 1,357,641€ in 2010. Furthermore, it’s interesting to note that the attendance fees (presence during a board session) and the benefits in kind (driver and/or car, corporate apartment etc.) have dropped by 36 % between 2009 and 2010, to reach the average sum of 38, 246 € by CEO in 2010.
Table 4: Descriptive statistics about the sample’s CEO compensation

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Salary (€)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>888 644</td>
<td>940 615</td>
<td>983 690</td>
</tr>
<tr>
<td>Median</td>
<td>900 000</td>
<td>916 200</td>
<td>950 000</td>
</tr>
<tr>
<td>S.D.</td>
<td>372 804</td>
<td>341 373</td>
<td>353 111</td>
</tr>
<tr>
<td><strong>Bonus (€)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>968 737</td>
<td>1 006 375</td>
<td>1 357 641</td>
</tr>
<tr>
<td>Median</td>
<td>855 195</td>
<td>924 054</td>
<td>1 365 000</td>
</tr>
<tr>
<td>S.D.</td>
<td>825 732</td>
<td>745 562</td>
<td>791 673</td>
</tr>
<tr>
<td><strong>Attendance Fees &amp; Beneﬁce in kind (€)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>57 460</td>
<td>59 821</td>
<td>38 246</td>
</tr>
<tr>
<td>Median</td>
<td>13 855</td>
<td>21 651</td>
<td>6 960</td>
</tr>
<tr>
<td>S.D.</td>
<td>116 115</td>
<td>107 755</td>
<td>52 519</td>
</tr>
<tr>
<td><strong>Total compensation (€)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1 970 766</td>
<td>2 015 298</td>
<td>2 432 854</td>
</tr>
<tr>
<td>Median</td>
<td>1 828 613</td>
<td>1 942 035</td>
<td>2 405 954</td>
</tr>
<tr>
<td>S.D.</td>
<td>917 618</td>
<td>915 436</td>
<td>814 929</td>
</tr>
</tbody>
</table>

Table 5 shows descriptive statistics for the variables, ownership and board structure. As explained in the theoretical part, we decided to compute the impact of the kind of shareholder on the CEO compensation.

The results show that the average of institutional investor and block holder ownership increases between 2009 and 2010 meanwhile the executive ownership average drops by 21% during this period. Furthermore the standard deviation dropped by 30%. Thus it can be concluded that the spread of executive ownership dropped considerably around the average of 4.63% among the companies of the CAC40.

That illustrates also that the institutional ownership is as important as the block holder ownership. This can be explained by the fact that CAC40 index contains the forty biggest French companies. Thus, it contains many old state companies who became private but the French state has kept shares and interests of them (for example 91% of the shareholders of France telecom are institutional investors).
Table 5: Descriptive statistics about the sample’s control variable

<table>
<thead>
<tr>
<th>Institutionnal Ownership</th>
<th>2008</th>
<th>2009</th>
<th>Evolution</th>
<th>2010</th>
<th>Evolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>46,43%</td>
<td>46,76%</td>
<td>0,7%</td>
<td>46,83%</td>
<td>0,1%</td>
</tr>
<tr>
<td>Median</td>
<td>37,35%</td>
<td>38,08%</td>
<td>2,0%</td>
<td>39,80%</td>
<td>4,5%</td>
</tr>
<tr>
<td>S.D.</td>
<td>28,08%</td>
<td>28,50%</td>
<td>1,5%</td>
<td>28,25%</td>
<td>-0,9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blockholder Ownership</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>41,66%</td>
<td>41,52%</td>
<td>-0,3%</td>
<td>41,75%</td>
<td>0,6%</td>
</tr>
<tr>
<td>Median</td>
<td>37,35%</td>
<td>38,08%</td>
<td>2,0%</td>
<td>49,73%</td>
<td>30,6%</td>
</tr>
<tr>
<td>S.D.</td>
<td>30,49%</td>
<td>30,72%</td>
<td>0,8%</td>
<td>30,83%</td>
<td>0,4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Executive Ownership</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>5,85%</td>
<td>5,88%</td>
<td>0,5%</td>
<td>4,63%</td>
<td>-21,2%</td>
</tr>
<tr>
<td>Median</td>
<td>3,42%</td>
<td>3,46%</td>
<td>1,0%</td>
<td>3,59%</td>
<td>3,8%</td>
</tr>
<tr>
<td>S.D.</td>
<td>6,89%</td>
<td>6,96%</td>
<td>1,0%</td>
<td>4,87%</td>
<td>-29,9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non Executive shareholder</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>94%</td>
<td>94%</td>
<td>0,0%</td>
<td>95%</td>
<td>0,9%</td>
</tr>
<tr>
<td>Median</td>
<td>97%</td>
<td>97%</td>
<td>0,0%</td>
<td>96%</td>
<td>-0,1%</td>
</tr>
<tr>
<td>S.D.</td>
<td>7%</td>
<td>7%</td>
<td>1,7%</td>
<td>5%</td>
<td>-26,9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board Size</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>14</td>
<td>14</td>
<td>-0,2%</td>
<td>14</td>
<td>0,5%</td>
</tr>
<tr>
<td>Median</td>
<td>14</td>
<td>14</td>
<td>0,0%</td>
<td>14</td>
<td>0,0%</td>
</tr>
<tr>
<td>S.D.</td>
<td>3</td>
<td>3</td>
<td>0,4%</td>
<td>3</td>
<td>1,1%</td>
</tr>
</tbody>
</table>

The next table for the descriptive statistics contains information about the companies and the shareholder return for each company. This return was computed by the financial website “Boursorama”, which use the annual report of these companies, and includes the dividends reinvested. The market capitalization was calculated by the multiplication of the number of share by the price of one share at the 31/12/2010. All monetary variables are in kilo-Euro.

Table 6: Descriptive statistics about the sample’s other component

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Max</th>
<th>Min</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market capitalisation (end 2010)</td>
<td>25,322</td>
<td>16,832</td>
<td>93,274</td>
<td>3,889</td>
<td>20,876</td>
</tr>
<tr>
<td>Sales (end 2010)</td>
<td>31,512</td>
<td>20,224</td>
<td>159,268</td>
<td>1,485</td>
<td>31,190</td>
</tr>
<tr>
<td>Shareholder return</td>
<td>3,00%</td>
<td>2,63%</td>
<td>9,15%</td>
<td>0,00%</td>
<td>2,08%</td>
</tr>
<tr>
<td>CEO age</td>
<td>56</td>
<td>57</td>
<td>68</td>
<td>43</td>
<td>5</td>
</tr>
<tr>
<td>CEO tenure</td>
<td>5</td>
<td>4</td>
<td>23</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>
7. Model Specification and Estimation

In this paper we try to compute the link between CEO compensation and firm performance. Therefore we used different methods that have been used and described in the compensation literature. In section 7.1, we used a regression model which attempts to explore the relation between the level of CEO compensation and firm performance after controlling for corporate governance variables and other firm-specific characteristics. Furthermore in section 7.2, we focus on the elasticity of CEO compensation in order to further test the relation between CEO compensation and firm performance. We used a regression model similar to the one from Conyon and Murphy (2000, p. 640-671).

7.1. The relation between level of CEO compensation and firm performance

In this part, we focus our analysis on the CEO compensation and try to give an explanation about the link between the compensation and the firm performance, after a first check about firm size, the corporate governance variable, the level of sales etc.

It is possible to use a model to compute the relationship between two or several data in statistic. This tool is called linear regression, when there is one explanatory variable it’s called a simple regression, when there is more than one explanatory variable it’s called multiple regression.

This statistic tool refers commonly to a model in which the conditional mean of Y given the value of X is an affine function of X. That means that given a variable y and a number of variables X1, ..., Xp which can be related to y, the linear regression analyzes if it is possible to quantify the strength of the relationship between y and the Xj, but also assess which Xj may have no relationship with y at all, and additionally identify which subsets of the Xj contain redundant information about y. We can obtain the general formula for a multiple linear regression:

\[ y_i = \beta_1 x_{i1} + \cdots + \beta_p x_{ip} + \varepsilon_i = X_i^T \beta + \varepsilon_i \quad i = 1, ..., n, \]

Where \( \beta \) is the coefficient of regression and \( \varepsilon_i \) is called the error term.

Nevertheless to use the linear regression, some assumptions have to be respected (linearity, constant variance etc.). After a check that our data respect these assumptions, we deduce than we can use this model:

\[ \ln(\text{compensation}_{it}) = \eta \text{ performance}_{it} + \sum_{k=1}^{m} \delta_k \text{ corporate governance variable}_{i,t} \]

\[ + \sum_{j=1}^{n} \beta_j \text{ control variable}_{i,t} + \varepsilon_{it} \]
where $e_{it}$ is the error term, and the dependent variable, $\ln(\text{compensation})$ is the log of compensation, which is measured by either cash compensation (the sum of salary and bonus) or total direct compensation (the sum of base salary, bonus, and benefit in kind). Thanks to this relationship we can use a linear regression model for each of the right term of this equation. A linear regression is an approach to model the relationship between two variables. Through the software SPSS, we could realize a multiple linear regression (more than one explanatory variable), and so obtain the coefficient of correlation between the compensation and the firm variables.

Nevertheless, unfortunately numbers of our variables are statistically insignificant (coefficient of significant more than 10%). This problem could have many reasons. The first one could be the number of the sample. Indeed our study focuses on three year and about forty companies, therefore we have only forty observations for each year, we can assume than with a sample more important the variables would be significantly better. But it is not sure and other reasons could also explain this problem. Indeed the financial crisis period could be another and possible explanation: these three years were really tumultuous on a financial plan, so many decisions or facts were illogical or irrational and lead to the difficulties to obtain variables statistically significant.

Table 7: Linear regression between CEO’s base compensation part and firm-specific characteristics

This table shows coefficients from the regression of the CEO base compensation against firm size (sales), firm performance (shareholder return), board size, proportion of non-executive shareholder, percentage of total institutional share ownership, proportion of block holders’ ownership, executive and non-executive directors’ share ownership. As we explained in the sixth part the data come from or are computed from the document called “Annual Report”, the shareholder return data is calculated from the end of year return index (which includes the dividends reinvested) provided by Boursorama. For more details about the data used, see the Data part (section 6). All monetary variables are in Euro. The linear regression was calculate trough the software SPSS to a level of confidence of 5%. $T$-statistics (underline in grey) are calculated using also through SPSS and ***, ** and * indicate that the coefficient is significant at the 1, 5 and 10% level, respectively.

<table>
<thead>
<tr>
<th>Age of the CEO</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0,024</td>
<td>-0,026</td>
<td>0,055</td>
</tr>
<tr>
<td></td>
<td>-0,122</td>
<td>-0,117</td>
<td>0,28</td>
</tr>
<tr>
<td>duration as CEO</td>
<td>0,341*</td>
<td>0,099</td>
<td>0,072</td>
</tr>
<tr>
<td></td>
<td>1,764</td>
<td>0,497</td>
<td>0,381</td>
</tr>
<tr>
<td>Institutionnal Ownership</td>
<td>-0,674*</td>
<td>-0,895***</td>
<td>-1,032**</td>
</tr>
<tr>
<td></td>
<td>-1,875</td>
<td>-2,303</td>
<td>-3,046</td>
</tr>
<tr>
<td>Block holder ownership</td>
<td>-0,961***</td>
<td>-0,907***</td>
<td>-0,951***</td>
</tr>
<tr>
<td></td>
<td>-2,79</td>
<td>-2,406</td>
<td>-3,021</td>
</tr>
<tr>
<td>Executive Ownership</td>
<td>0,214</td>
<td>-0,008</td>
<td>-0,242</td>
</tr>
</tbody>
</table>
In this chart we can read for each year the variables, which have a positive or negative impact on the base salary of the CEOs. Thus we can conclude for the three years of the study that the block holder ownership and the institutional ownership have an important link to the diminution of the Base salary. If we put it in other words: in 2008, 2009 and 2010 the more there are institutional and block holder ownership in the CAC 40 companies, the less important the base salary of the CEO is.

Moreover, in 2009 and 2010, there is a link between the market capitalization and the base compensation salary of the CEO. This variable has a positive impact on the compensation but it is not a strong one (coefficient of only 0.422 and 0.427 in 2009 and 2010). We cannot do conclusion about the year 2008 since the data are not statistically significant. Furthermore, the variable of the tenure as CEO in 2008 is statistically significant and has a link with the base salary compensation; however the data of the other years are statistically insignificant so we cannot do correct statement about this variable.

The other variables, and for all the years, are statistically insignificant so it is impossible to conclude definitively about a potential link between them, even if they “seem” to have a coefficient close to 0, that can lead to any correct conclusion.

To check our results we have selected the ten first base salaries of the CEOs and compare these data with the ranking of their company in term of institutional and block holder shareholder and in term of market capitalization. The result is similar to our calculation. We can see that usually the highest base salary is obtained in a company with a low institutional and block holder shareholder (the first and second company are 36 and 39 on 40 in this ranking). It’s also interesting to see that companies in the top ten of market capitalization give the first five base salaries. There is a strange situation of the CEO of Capgemini who has the 6th best base salary whereas his company has the worst market capitalization. This situation could have some explanation: the actual crisis affected the market capitalization differently in function of the sector: therefore some industrials or service companies could be affected or not by the drop of the financial market. This could be a reason of the bad capitalization ranking of some companies (i.e.: the capitalization of
General Motor during the financial crises of 2008 was less than the value of its stock. Some CEOs prefer to have a strong base salary and a weak bonus part (i.e: the bonus part for 2010 for the CEO of Capgemini is ranked 29/40).

Table 8: Ranking Comparison of some sample’s companies, part 1

<table>
<thead>
<tr>
<th>Company</th>
<th>CEO Name</th>
<th>Fix part CEO 2010</th>
<th>Ranking base compensation CEO 2010</th>
<th>Sum institutional+blockholder 2010</th>
<th>Ranking insti+block 2010</th>
<th>Market Capitalisation 2010</th>
<th>ranking capitalisation 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>L’Oréal</td>
<td>Jean Paul Agon</td>
<td>2 200 000</td>
<td>1</td>
<td>67,00%</td>
<td>36</td>
<td>50 487 857 129</td>
<td>7</td>
</tr>
<tr>
<td>LVMH</td>
<td>Bernard Arnault</td>
<td>1 721 391</td>
<td>2</td>
<td>48,00%</td>
<td>39</td>
<td>63 174 324 581</td>
<td>3</td>
</tr>
<tr>
<td>ArcelorMittal</td>
<td>Lakshmi Mittal</td>
<td>1 651 000</td>
<td>3</td>
<td>99,23%</td>
<td>5</td>
<td>43 377 817 012</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>Christophe de Margerie</td>
<td>1 426 452</td>
<td>4</td>
<td>95,40%</td>
<td>18</td>
<td>93 274 258 171</td>
<td>1</td>
</tr>
<tr>
<td>Carrefour</td>
<td>Lars Olafsson</td>
<td>1 350 000</td>
<td>5</td>
<td>98,96%</td>
<td>6</td>
<td>21 772 718 800</td>
<td>18</td>
</tr>
<tr>
<td>Capgemini</td>
<td>Paul Hermelin</td>
<td>1 321 000</td>
<td>6</td>
<td>92,00%</td>
<td>25</td>
<td>3 889 585 898</td>
<td>40</td>
</tr>
<tr>
<td>Peugeot</td>
<td>Philippe Vann</td>
<td>1 300 000</td>
<td>7</td>
<td>44,48%</td>
<td>40</td>
<td>10 421 914 895</td>
<td>30</td>
</tr>
<tr>
<td>Renault</td>
<td>Carlos Ghosn</td>
<td>1 200 000</td>
<td>8</td>
<td>95,64%</td>
<td>16</td>
<td>12 940 807 148</td>
<td>25</td>
</tr>
<tr>
<td>Alcatel-Lucent</td>
<td>Ben Verwaayen</td>
<td>1 200 000</td>
<td>8</td>
<td>76,04%</td>
<td>33</td>
<td>5 208 858 655</td>
<td>39</td>
</tr>
<tr>
<td>Sanofi</td>
<td>Christopher Viebache</td>
<td>1 200 000</td>
<td>8</td>
<td>97,34%</td>
<td>10</td>
<td>63 291 367 879</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 9: Linear regression between CEO’s bonus compensation part and firm-specific characteristics

This table shows coefficients from the regression of the CEO bonus compensation against firm size (sales), firm performance (shareholder return), board size, proportion of non-executive shareholder, percentage of total institutional share ownership, proportion of block holders’ ownership, executive and non-executive directors’ share ownership. As we explained in the sixth part the data come from or are computed from the document called "Annual Report", the shareholder return data is calculated from the end of year return index (which includes the dividends reinvested) provided by Boursorama. For more details about the data used, see the Data part (section 6). All monetary variables are in Euro. The linear regression was calculate trough the software SPSS to a level of confidence of 5%. T-statistics (underline in grey) are calculated using also through SPSS and ***,** and * indicate that the coefficient is significant at the 1, 5 and 10% level, respectively.

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of the CEO</td>
<td>0.156</td>
<td>0.005</td>
<td>-0.027</td>
</tr>
<tr>
<td></td>
<td>0.791</td>
<td>0.028</td>
<td>-0.106</td>
</tr>
<tr>
<td>Duration as CEO</td>
<td>0.604***</td>
<td>0.601***</td>
<td>0.361</td>
</tr>
<tr>
<td></td>
<td>3.173</td>
<td>3.451</td>
<td>1.47</td>
</tr>
<tr>
<td>Institutionnal Ownership</td>
<td>0.039</td>
<td>-0.231</td>
<td>-0.024</td>
</tr>
<tr>
<td></td>
<td>0.109</td>
<td>-0.678</td>
<td>-0.054</td>
</tr>
<tr>
<td>Block holder ownership</td>
<td>0.08</td>
<td>-0.031</td>
<td>0.022</td>
</tr>
<tr>
<td></td>
<td>0.234</td>
<td>-0.095</td>
<td>0.055</td>
</tr>
<tr>
<td>Executive Ownership</td>
<td>0.256</td>
<td>0.318</td>
<td>-0.136</td>
</tr>
<tr>
<td></td>
<td>0.558</td>
<td>0.774</td>
<td>-0.691</td>
</tr>
<tr>
<td>Non Executive Shareholder</td>
<td>0.355</td>
<td>0.461</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0.764</td>
<td>1.108</td>
<td>-</td>
</tr>
<tr>
<td>Board size</td>
<td>-0.26</td>
<td>-0.023</td>
<td>-0.181</td>
</tr>
<tr>
<td></td>
<td>-1.471</td>
<td>-0.148</td>
<td>-0.908</td>
</tr>
<tr>
<td>Market Capitalisation</td>
<td>0.039</td>
<td>0.278</td>
<td>0.199</td>
</tr>
<tr>
<td></td>
<td>0.184</td>
<td>1.47</td>
<td>0.815</td>
</tr>
<tr>
<td>Sales</td>
<td>0.184</td>
<td>0.131</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>0.807</td>
<td>0.677</td>
<td>0.162</td>
</tr>
<tr>
<td>Shareholder return</td>
<td>-0.018</td>
<td>0.231</td>
<td>-0.067</td>
</tr>
<tr>
<td></td>
<td>-0.095</td>
<td>1.271</td>
<td>-0.278</td>
</tr>
<tr>
<td>Number of observation</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>R²</td>
<td>0.384</td>
<td>0.529</td>
<td>0.154</td>
</tr>
</tbody>
</table>
Only the tenure of the CEO for the year 2008 and 2009 (coefficient of 0.604 and 0.601) are statistically significant and can be analyzed. The coefficient of this variable has a quite strong link with the bonus salary. The Market Capitalization, the Board and the non-Executive Ownership could be linked to the bonus compensation of the CEO but the coefficient of regression is not enough significant to be used.

Therefore, because of the same problem of statistically insignificant variables we cannot conclude a real link with the six other variables.

It is difficult to conclude with these data since almost all of them are insignificant. The main reason of these statistically insignificant data is the fact that the bonus data contains the cash bonus but also the stock options (see part 5 about the data). So the incapacity to get precise data does not allow us to use correctly the linear regression method and therefore get significant data.

Table 10: Linear regression between CEO’s Total compensation part and firm-specific characteristics

This table shows coefficients from the regression of the CEO bonus compensation against firm size (sales), firm performance (shareholder return), board size, proportion of non-executive shareholder, percentage of total institutional share ownership, proportion of blockholders’ ownership, executive and non-executive directors’ share ownership. As we explained in the sixth part the data come from or are computed from the document called “Annual Report”, the shareholder return data is calculated from the end of year return index (which includes the dividends reinvested) provided by Boursorama. For more details about the data used, see the Data part (section 6). All monetary variables are in Euro. The linear regression was calculate trough the software SPSS to a level of confidence of 5%. T-statistics (underline in grey) are calculated using also through SPSS and ***, ** and * indicate that the coefficient is significant at the 1, 5 and 10% level, respectively.
In this table only the duration as CEO for the three years of the study and the market capitalization for the years 2009 and 2010 are enough significant to be used. Thus, we can conclude that there is a positive link between the total CEO compensation and the duration as CEO, however, we can see in this table that the strength of this link decreases with the years. The coefficient of this variable falls from 0.623 in 2008 to 0.385 in 2010.

Like the previous chart, the other variables cannot be used since they are statistically insignificant. But if we try to sum up this chart we can put the variable in three categories depending of the importance of their link with the CEO compensation.

The **first category of variables** has a strong link with the CEO compensation and is statistically significant. We can say that they have a “positive” impact on the CEO compensation. According to this table, there is a strong but decreasing link with the duration as CEO (coefficient between 0.623 in 2008 and 0.385 in 2010.), and the market capitalization (only for the year 2009 and 2010) with the compensation of the CEO. We can thus conclude that **the longer the duration as CEO and bigger the Market Capitalization are, the higher the CEO compensation will be.** Like for the bonus compensation, the non-Executive Ownership could be also one of a variable with a strong link but the data of 2010 cannot be calculate by the linear regression because they are not enough significant.
If we focus on the last tenth biggest CEO total compensations, we can see that the result is relevant. Indeed, we can see that there is a link between these three variables, apart some exceptions, the average ranking for the duration is 23 (on 40) and the average of market capitalization is 25. It could be less clear or relevant with the most important compensation because of the bonuses which have an obscure attribution and are hard to explain.

Table 11: Ranking Comparison of some sample’s companies, part 2

<table>
<thead>
<tr>
<th>Company</th>
<th>CEO Name</th>
<th>Total Compensation CEO 2010</th>
<th>Ranking compensation CEO 2010</th>
<th>duration as CEO in 2010</th>
<th>Ranking Duration as CEO</th>
<th>Market Capitalisation 2010</th>
<th>ranking capitalisation 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alstom</td>
<td>Patrick Kron</td>
<td>1 750 794</td>
<td>40</td>
<td>4</td>
<td>14</td>
<td>107 431 670</td>
<td>2 010</td>
</tr>
<tr>
<td>Renault</td>
<td>Carlos Ghosn</td>
<td>1 242 655</td>
<td>39</td>
<td>5</td>
<td>9</td>
<td>129 40 007</td>
<td>1 188</td>
</tr>
<tr>
<td>Vallourec</td>
<td>Philippe Crouzet</td>
<td>1 384 340</td>
<td>38</td>
<td>2</td>
<td>28</td>
<td>9 787 611</td>
<td>3 655</td>
</tr>
<tr>
<td>Legrand</td>
<td>Gilles Schnegg</td>
<td>1 395 000</td>
<td>37</td>
<td>4</td>
<td>14</td>
<td>8 236 171</td>
<td>8 744</td>
</tr>
<tr>
<td>Safran</td>
<td>Jean-Paul Hertman</td>
<td>1 406 792</td>
<td>36</td>
<td>3</td>
<td>24</td>
<td>11 301 414</td>
<td>6 653</td>
</tr>
<tr>
<td>Veolia Environnement</td>
<td>Antoine Frérot</td>
<td>1 552 755</td>
<td>35</td>
<td>2</td>
<td>28</td>
<td>10 983 036</td>
<td>9 450</td>
</tr>
<tr>
<td>EDF</td>
<td>Henri Proglio</td>
<td>1 554 620</td>
<td>34</td>
<td>1</td>
<td>36</td>
<td>9 638 967</td>
<td>1 991</td>
</tr>
<tr>
<td>Vinci</td>
<td>Xavier Huillard</td>
<td>1 614 846</td>
<td>33</td>
<td>1</td>
<td>36</td>
<td>23 444 551</td>
<td>9 952</td>
</tr>
<tr>
<td>France Télécom</td>
<td>Stéphane Richard</td>
<td>1 658 729</td>
<td>32</td>
<td>1</td>
<td>36</td>
<td>399 858 087</td>
<td>9 057</td>
</tr>
<tr>
<td>STMicroelectronics</td>
<td>Carlo Bosetti</td>
<td>1 717 392</td>
<td>31</td>
<td>5</td>
<td>9</td>
<td>730 268 696</td>
<td>9 696</td>
</tr>
</tbody>
</table>

The second category of variables also has a strong link with the total CEO compensation but has a “negative” impact on the CEO compensation. But this second category is not statically significant so we can only assume this conclusion.

The variables of this category have a coefficient below - 0.3. Therefore, we can conclude that there could be a strong link about the proportion of institutional shareholder (coefficient average of -0.449 on the three years), and the block holder shareholder (coefficient average of -0.382 on the three years) with the compensation of the CEO. We can assume that the more institutional and block holder shareholder there is, the less the CEO compensation will be.

If we take the same sample, we can see that this link is less accurate. If we calculate the average of the institutional and block holder shareholder ranking we get 19, so just under the median ranking. So as we said, this variable as a “negative” impact but the link is less important than for the duration as CEO or market capitalization.

Table 12: Ranking Comparison of some sample’s companies, part 3

<table>
<thead>
<tr>
<th>Company</th>
<th>CEO Name</th>
<th>Total Compensation CEO 2010</th>
<th>Ranking compensation CEO 2010</th>
<th>Sum institutional + Blockholder 2010</th>
<th>Ranking insti + block shareholder 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alstom</td>
<td>Patrick Kron</td>
<td>1 750 794</td>
<td>40</td>
<td>67,00%</td>
<td>37</td>
</tr>
<tr>
<td>Renault</td>
<td>Carlos Ghosn</td>
<td>1 242 655</td>
<td>39</td>
<td>95,64%</td>
<td>16</td>
</tr>
<tr>
<td>Vallourec</td>
<td>Philippe Crouzet</td>
<td>1 384 340</td>
<td>38</td>
<td>94,20%</td>
<td>22</td>
</tr>
<tr>
<td>Legrand</td>
<td>Gilles Schnegg</td>
<td>1 395 000</td>
<td>37</td>
<td>95,80%</td>
<td>15</td>
</tr>
<tr>
<td>Safran</td>
<td>Jean-Paul Hertman</td>
<td>1 406 792</td>
<td>36</td>
<td>82,40%</td>
<td>50</td>
</tr>
<tr>
<td>Veolia Environnement</td>
<td>Antoine Frérot</td>
<td>1 552 755</td>
<td>35</td>
<td>95,50%</td>
<td>17</td>
</tr>
<tr>
<td>EDF</td>
<td>Henri Proglio</td>
<td>1 554 620</td>
<td>34</td>
<td>98,06%</td>
<td>9</td>
</tr>
<tr>
<td>Vinci</td>
<td>Xavier Huillard</td>
<td>1 614 846</td>
<td>33</td>
<td>95,80%</td>
<td>28</td>
</tr>
<tr>
<td>France Télécom</td>
<td>Stéphane Richard</td>
<td>1 658 729</td>
<td>32</td>
<td>96,00%</td>
<td>13</td>
</tr>
<tr>
<td>STMicroelectronics</td>
<td>Carlo Bosetti</td>
<td>1 717 392</td>
<td>31</td>
<td>100,00%</td>
<td>1</td>
</tr>
</tbody>
</table>
The third category is still not statistically significant but they seem do not have a strong link with the total CEO compensation and so could have a “neutral” impact on the CEO compensation. The coefficients of the variables of this category are between 0.3 and -0.3. According to this method, five of these variables have a weak coefficient. The age of the CEO has a coefficient really low and close to zero (-0.014 in 2010 and -0.06 in 2009) and hence we can assume to a non-impact of this variable on the total CEO compensation. The executive management and the board size also seem to have a weak link with the total compensation (respectively -0.25 and -0.136 in 2010). The variables related to the firm which are the sales and the shareholder return seems, do not impact the total CEO compensation too (coefficient of 0.12 and 0.133 in 2010). We can assume that these variables do not influence the CEO compensation significantly.

With the same sample, we can see that there is no link between these three elements, the ranking are different each time.

Table 13: Ranking Comparison of some sample’s companies, part 4

<table>
<thead>
<tr>
<th>Company</th>
<th>CEO Name</th>
<th>Total Compensation CEO 2010</th>
<th>Ranking compensation CEO 2010</th>
<th>Sales 2010 (K€)</th>
<th>Ranking sale 2010</th>
<th>Shareholder return 2010</th>
<th>Shareholder return ranking 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alstom</td>
<td>Patrick Kron</td>
<td>1 170 794</td>
<td>40</td>
<td>20 923 000</td>
<td>19</td>
<td>2,62%</td>
<td>21</td>
</tr>
<tr>
<td>Renault</td>
<td>Carlos Ghosn</td>
<td>1 242 655</td>
<td>39</td>
<td>38 971 000</td>
<td>12</td>
<td>0,00%</td>
<td>37</td>
</tr>
<tr>
<td>Vallourec</td>
<td>Philippe Crouzet</td>
<td>1 384 344</td>
<td>38</td>
<td>4 491 272</td>
<td>37</td>
<td>2,42%</td>
<td>23</td>
</tr>
<tr>
<td>Legrand</td>
<td>Gilles Schneppe</td>
<td>1 395 000</td>
<td>37</td>
<td>3 890 000</td>
<td>39</td>
<td>3,11%</td>
<td>16</td>
</tr>
<tr>
<td>Safran</td>
<td>Jean-Paul Herteman</td>
<td>1 406 294</td>
<td>36</td>
<td>11 028 000</td>
<td>30</td>
<td>1,71%</td>
<td>31</td>
</tr>
<tr>
<td>Veolia Environnement</td>
<td>Antoine Frérot</td>
<td>1 552 255</td>
<td>35</td>
<td>34 786 600</td>
<td>13</td>
<td>6,24%</td>
<td>4</td>
</tr>
<tr>
<td>EDF</td>
<td>Henri Proglio</td>
<td>1 554 820</td>
<td>34</td>
<td>65 165 000</td>
<td>5</td>
<td>3,24%</td>
<td>14</td>
</tr>
<tr>
<td>Vinci</td>
<td>Xavier Huillard</td>
<td>1 614 846</td>
<td>33</td>
<td>34 003 000</td>
<td>14</td>
<td>3,97%</td>
<td>11</td>
</tr>
<tr>
<td>France Télécom</td>
<td>Stéphane Richard</td>
<td>1 658 729</td>
<td>32</td>
<td>45 503 000</td>
<td>9</td>
<td>9,15%</td>
<td>1</td>
</tr>
<tr>
<td>STMicroelectronics</td>
<td>Carlo Boccoli</td>
<td>1 717 392</td>
<td>31</td>
<td>7 941 987</td>
<td>32</td>
<td>1,41%</td>
<td>34</td>
</tr>
</tbody>
</table>

7.2. CEO pay-performance elasticity

In this part, we follow the approach by Conyon and Murphy (2000, p. 640-671) and Murphy (1999) and we will try to estimate pay-performance elasticity for bonus compensation and total compensation. The regression model is as follows:

$$\Delta \ln(\text{compensation})_{it} = \alpha + \beta \ln(\text{shareholder value})_{it}$$

$$\times \sum_{k=1}^{m} \delta_k \text{ corporate governance variable}_{i,t} \times \sum_{j=1}^{n} \beta_j \text{ control variable}_{i,t} + \varepsilon_{it}$$

Where $\Delta \ln(\text{compensation})_{it}$, the change in log shareholder value, is equal to the rate of return on common stock and $\beta$ is the elasticity of cash compensation with respect to shareholder value.
The table 14 shows coefficient estimates for equation below. In using a regression model with the dependent variable $\Delta \ln(\text{base salary})$ we can observe that these control variables do not have a significant impact on changes in CEO compensation. Therefore the value for CEO pay-performance elasticity for cash compensation stays approximately the same.

Table 14: CEO pay-performance elasticity for total direct compensation (base salary)

This table reports coefficient estimates for equation below using $\ln(\text{base salary})$ as the dependent variable. The base salary is the regular salary; Shareholder return is calculated from the end of year return index (which includes the dividends reinvested) provided by Boursorama. Board size is measured as the total number of executive and non-executive board members and sales is the average on the three year. Executive management shareholder is the proportion of the member of management who have share in the company. All monetary variables are in Euro. The linear regression was calculate trough the software SPSS to a level of confidence of 5%. $T$-statistics (underline in grey) are calculated using also through SPSS and ***, ** and * indicate that the coefficient is significant at the 1, 5 and 10% level, respectively.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln(1+\text{shareholder return})$</td>
<td>0.199</td>
<td>0.815</td>
</tr>
<tr>
<td>$\ln(\text{sales})$</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Board size</td>
<td>0.109</td>
<td></td>
</tr>
<tr>
<td>Executive management shareholder</td>
<td>-0.095</td>
<td></td>
</tr>
<tr>
<td>Number of observation</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.087</td>
<td></td>
</tr>
</tbody>
</table>

The table 15 shows coefficient estimates for the same equation. In using the still the same regression model but with the dependent variable $\Delta \ln(\text{total salary})$ we can observe that these control variables still do not have a significant impact on changes in CEO compensation. Again the explanatory power of the regression model is not increase by the addition of these control variables.

Table 15: CEO pay-performance elasticity for total direct compensation (Total salary)

This table reports coefficient estimates for equation below using $\ln(\text{Total salary})$ as the dependent variable. The Total salary is the base salary and the bonus. Shareholder return is calculated from the end of year return index (which includes the dividends reinvested) provided by Boursorama. Board size is measured as the total number of executive and non-executive board members and sales is the average on the three year. Executive
management shareholder is the proportion of the member of management who have share in the company. All monetary variables are in Euro. The linear regression was calculate through the software SPSS to a level of confidence of 5%. T-statistics (underline in grey) are calculated using also through SPSS and ***, ** and * indicate that the coefficient is significant at the 1, 5 and 10% level, respectively.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>In (1+shareholder return)</td>
<td>0.222</td>
</tr>
<tr>
<td></td>
<td>0.554</td>
</tr>
<tr>
<td>In (sales)</td>
<td>0.143</td>
</tr>
<tr>
<td></td>
<td>0.762</td>
</tr>
<tr>
<td>Board size</td>
<td>-0.078</td>
</tr>
<tr>
<td></td>
<td>0.59</td>
</tr>
<tr>
<td>Executive management shareholder</td>
<td>0.054</td>
</tr>
<tr>
<td></td>
<td>0.36</td>
</tr>
<tr>
<td>Number of observation</td>
<td>120</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.087</td>
</tr>
</tbody>
</table>
8. Conclusion

The communication agency Euro RSCG realized a study on the financial data of the CAC 40 companies between 2006 and 2011. This etude illustrates the increasing gap between the CEOs and the employees. Euro RSCG highlights some important data in the period 2006-2011:

- increase of operational margins: 23%
- increase of benefits: 10%
- increase of cash flows: 22%
- increase of presidents’ remuneration: 34%
- increase of salaries’ remuneration: 13%
- decrease of the index CAC 40: 30%
- more than one third of the jobs are precarious

This study gives us several useful inputs. Firstly, the international companies, like the ones member of the CAC 40, didn’t suffer so much after the financial crisis of 2007. Secondly, the remunerations of the CEOs increased a little bit less than 3 times the one of the employees. Thirdly, even after a global decrease of the stocks prices, which is generally a bad news for the shareholders, the CEOs remuneration increased.

Given those results one could think that the shareholders are not really active in the fixation of the CEOs remuneration but it’s important to note that on the same period the dividends increase of more than 21%. There was no limit for the CEOs remuneration as long as the shareholders received an important amount of dividends. But many recent events show a fed up of the abuses in the CEOs compensation. The most famous is the invalidation of CEO compensation of Citigroup by 55% of the shareholders the 17th April 2012. The shareholders used their right to vote on the remuneration of executives, thanks to the rule called “say on pay”. This rule that appeared in 2000 after the Enron scandal takes aim at reducing the agency theory. “say on pay” gives the power to the shareholders to ensure that board members fulfill their fiduciary duty.

Another interesting case of changing attitudes on the subject of CEOs compensation is the public apologies made by the president of Barclays to the stockholders about the annual bonus of the general manager of the firm. Indeed, he was to receive a bonus of 17.7 million pounds (almost 22 million euros) for 2011 despite a fall of the financial results of the company. In France, a similar debate appeared in April 2012, the CEO of Publicis received 16 million euros of bonus for the period 2003-2011 while he asked to the employees to make a global effort to deal with the financial crisis. Cynically, the same CEO wrote a letter with other French CEOs to ask to be more taxed. In the midst of elections, this case created a scandal.

The first data that we have about the CEOs remuneration in 2011, given by the business newspaper “Les Echos”, show mixed results. Indeed, 19 CEOs have an increase of their compensation compared to the data of 2010, 18 a decrease and 3 have a stable remuneration. Without analyzing too much these data, we can highlight the automotive sector. Carlos Ghosn, the CEO of Renault, got an increase of his global compensation in 136% compared to 2010. The reason of this spectacular rise is due to the fact that he
abandoned all of his bonuses in 2010 and not in 2011. Philippe Varin, the CEO of PSA, got a decrease of 60% of his remuneration due to the fact that he didn’t get any bonuses in 2011.

Our paper participates to the literature by inquiring the correlation between CEO compensation and the firm performance in France for a sample of 40 French companies from the CAC 40 index for the period 2008-2010.

8.1. Research Question

The empirical results indicate, for the three years a strong positive link between three important elements: the duration as CEO, the market capitalization of the company and the non-executive ownership. Duration as CEO has a positive impact of 0.534 (average of the three years), but the coefficient drop over the period of study. The capitalization of the company has for its part a positive impact especially for 2009 and 2010. These ratios mean that when the duration as CEO and/or the market capitalization of the firm increase, the CEO compensation increases too. Those results are rather logical. Indeed, that suggests that a larger company pay its CEO a higher compensation than a smaller one. One could interpret that as a willing for the companies to attract the best CEOs and because a larger company would be more difficult to manage than a smaller one. Moreover the tenure of the CEO has an impact on his compensation like for any other employee: the more you stay in a company the easier it is to negotiate your compensation. Indeed it is easier to negotiate a salary after several years in the same company, you are fully efficient and you know really well the company and its key success factors, it is also easier to require an increase of the compensation since it will be very difficult for the company to find a substitute as efficient as you. Finally this finding is also logical since the more you stay in a company the easier it is to proof your value and deserve a rise of your compensation. Nevertheless, the findings about CEO tenure are not really consistent with the ones of Ozkan (2011, p. 260-285). Indeed, in her paper she didn’t find any correlation between CEO tenure and CEO remuneration. Her results about this variable were really close to 0. Thus, this element would have more impact in France than in the UK. But it is important to keep in mind that the samples are different and the periods of study too.

Our findings also indicate an important but negative impact of many variables on the CEO compensation. However, as we saw, many of the variables are not statistically significant so we can only assume this result. The first significant result is the average negative impact (-0.449) of institutional shareholders on CEO compensation. The block holder shareholders have also a negative impact (-0.382) on CEO compensation. These results are in line with the ones of Ozkan (2011, p. 260-285). Those elements would demonstrate the active monitoring of these investors on the top management and especially on their remuneration. Those are also consistent with the paper of Khan et al. (2002, p. 1078-1088) which demonstrates the negative impact on CEO compensation of institutional ownerships when they are concentrated. They also illustrated that the dispersion of institutional ownerships has a positive impact on the level of CEO remuneration. This study was conducted in the US.
Our study didn’t find a strong correlation between the other variables as the board size or sales for example and the level of remuneration of the CEO. That would mean that the number of member of the board doesn’t significantly impact the discussion about the CEO remuneration. In our study, the board size has an impact negative or close to zero while Ozkan (2011, p. 260-285) found a promiscuous positive correlation between these two elements. The findings about other variables are approximately similar.

Like in the Ozkan paper, we observed that there is no CEO pay-performance elasticity for the Total and base salary: the control variables do not have a significant impact on changes in CEO compensation.

8.2. Research Contribution

With this paper and the results we got, we believe that we contribute to the literature of corporate finance and especially the problem of correlation between CEOs compensation and firm performance in France.

The gap in the literature of CEOs compensation in France, allows us to enquiry this particular topic and to provide evidences. As explained above, several elements impact, positively or negatively, the CEOs compensation. Our findings are not exactly the same as the one of Ozkan (2011, p. 260-285), which proves that the differences in countries as UK and France and in periods provide different empirical results. France has several economic and social specificities that can explain the differences between this Anglo-Saxon country and the European one. We believe that the recent events mentioned above, as the non-approval of the remuneration of the CEO of Citigroup or Sarbanes–Oxley Act of 2002, will change the way of calculation and the level of the remuneration of the CEOs.

Thus, our findings are meaningful for this specific period and for this specific country. The results leaded in another country or another period of time would be different than the ones we got. Nevertheless, this study provides useful information for this period of after crisis. The same kind of study could be leaded in other countries, following the same structure, the same goals as ours. An international comparison could be interesting to conduct.

8.3. Future Research Recommendation

During the writing of this research, we figured that there were still several gaps in the research literature:

- The literature about French companies and French CEOs are not that large.

- A qualitative research could be leaded to understand the motivations of each person involved in the determination of the level of the CEO compensation.

- A qualitative research could be conducted on the impact of the CEO remuneration on the employee’s feelings, work etc…
- A study on smaller companies could be interesting to conduct.
- A study focused on the French index SBF 120, in order to have more accurate results.
- Someone could make a study on the same topic as us but with different variables as employee stock ownership.
- The same thesis subject but in other countries and/or times.
References


