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Privatization: A Catalyst for the Profitability of French Companies: Empirical Validation

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Abstract

The aim of this paper is to test the static and dynamic effects of the long-term privatization of public companies, on the one hand on their economic and financial profitability, and on the other hand on their stock market performance. To achieve this goal, we used a sample of 14 French companies observed during the period 1986-2014. The econometric approach used in this study is of the longitudinal type, the data cover a horizon of seven years (three years before privatization, the year of privatization and three years later), while applying tests of median differences (Wilcoxon test) and mean difference (Student's test), applied to the two series of averages of profitability ratios and market performance indices calculated before and after privatization. The empirical results indicate firstly that there is a significant static effect for most companies on the profitability ratios (ROA, ROE), as well as on the stock market performance indices (BHR, BHAR), except the ratio of investment expenditure that is not statistically significant. Secondly, although the coefficient of the variable TP (expressing the interaction between the variables T and P) to only five positive signs out of 14 firms, there is a good linear adjustment (R^2) between the independent variables (the time variable T, the privatization dummy variable P) and the dependent variable (Performance), which has just confirmed the dynamic efficiency of privatizations.

Keywords: Privatization, Public companies, Profitability, Performance, Static efficiency, Dynamic efficiency

1. Introduction

After the collapse of the Soviet Union and the collapse of the Berlin Wall in 1989, symbols of the decline of communism, liberal-minded economic arguments flourished in both developed and developing countries, with end of the «Bretton Woods» system, which resulted in the general drop in tariffs, the disappearance of fixed parities between currencies and the advent of the new international financial system. These socio-political and ideological changes are due to a context of loss by the state in several countries, its legitimacy and the demonstration of its limits and its inefficiency in many areas.

Indeed, this failure of state entrepreneurship has been the fundamental cause of the emergence of a new approach, which focuses on the ability of competition and free markets to self-regulate under the rule of law to serve the general interest much better than the state could do it seemed the essential solution to allow a return to growth, so it is a new economic area of thought which is capitalism translating radical reforms while passing from the public form of business to the private form that gave birth to a new management policy, then it is privatization that will occupy the front of the world economic scene.

Privatization, then, of public companies is at present a remedy for the difficulties of the public sector and not for doctrinal or theoretical reasons. Indeed, the debt crisis of 1982 emphasized the reality that the public sector is the main source of the various macroeconomic deficits and imbalances (trade deficits, budget deficit, unemployment, inflation, and so on). This finding was much more meaningful in countries that have been directly affected by the fiscal crisis, such as Mexico, Brazil, Morocco, Egypt, and so on.

However, it should be noted that the problems of the public sector were not limited only to developing countries, since even in the developed countries, public companies have had difficulty operating in an environment characterized by the intensification of internal and external competition. As a result, many developed and even developing countries have resorted primarily to the consolidation of the public sector, as evidenced by the experience of the "plan contract" implemented by France in the early 1970s.

This experience is in fact only one form or facet of privatization as these contracts were aimed at the adoption of rules and criteria of private management within the public companies while exposing it to inside or outside competition. But the main problem that leaders faced was essentially the interaction and interdependence between economic and social goals. In other words, the state has often forced managers to pursue non-profit activities or to invest in unprofitable projects that are much more in the right social context than in a profit-generating economic environment.

For its part, Britain began its privatization program very early (in 1979), which focused on reducing the budget deficit, promoting share ownership and promoting capitalism. British privatization has become today a basic reference for privatization which has succeeded since it has achieved almost all its objectives, it is in a sense "political voluntarism". In Eastern European countries, the privatization of state-owned companies has been a rather complicated process given the economic and social specificities in economies that have been highly planned, hierarchical and completely isolated from the market decision of its constraints. Therefore, privatization has been considered as the best way to carry out the withdrawal of the state of economic life and trigger private initiative.

But beyond the transfer of public ownership to private property, several goals are also targeted. It is mainly about increasing the efficiency of the economy in general and privatized companies in particular, the increase of competition as well as the rationalization of the behavior of the state for an efficient use of scarce public resources. Moreover, by the turn of the 1980s, France had found itself involved in the wave of economic liberalization like the majority of countries in the world. But what is noteworthy in the French case is the fact that the implementation of the privatization of public enterprises, proceeded the British experience after experiencing a wave of nationalization during the post-war period.

This was certainly one of the strengths of the French process, as the macroeconomic conditions that started the process were acceptable and beyond the critical thresholds of 1986 during the first privatization of Saint Gobain. For example, the decline in public debt has improved significantly (from 17.4% in 1984 to 7.3% in 1987). For its part, the budget deficit has declined following the decline in public sector investment on the one hand and in the braking of the evolution of wages paid by the state on the other hand.

But, although privatization is probably a solution to public sector difficulties if it is well conducted; It is this, generating a social impact that affects almost all of society. Indeed, since privatization represents a new distribution of wealth, then, we can say that the groups that are linked to the public companies like the state, the employees, the consumers and the buyers of privatized companies, will all be affected either positively or negatively by the process.

In this general context, we are developing our work entitled «The long-term performance of privatized French companies», which will offer us the opportunity to study the effects of a program as complicated as the privatization of French public companies in terms of profitability whether economic, financial and stock market.

At the end of these radical changes that have affected the global economic system of, the problem must follow our chain of questioning adopted throughout this research, then it will be as follows; «Can we confirm that privatization has improved the performance of French companies over the long term in terms of profitability in a general way, based on this comparative study in terms of time for the two situations that characterize the change from public status to private status ? »

The remainder of this paper is as follows: A brief literature review is given in section 2. Empirical methodology and the discussion of the major findings are presented in section 3, while section 4 concludes.

2. Literature Review and Hypotheses: The Long-term Performance of Privatized French Companies

In France the ideas of deregulation and privatization came after the initiative of the British government of Thatcher but well before the other governments of industrialized European countries considered as continental or even world economic powers, such as Germany, Italy and the Soviet Union at the beginning of the 80s. On the other hand, the ideology of the liberal economy was at the time the most dominant in Western Europe, and mainly France, Great Britain and Germany who have been like leaders of this stream of thought. Then the policy of deregulation in France was started in 1982 by the socialist government for reasons of necessity, although that of privatization started in 1986 under the protection of the neoliberal right for ideological reasons.

At the end of these ideological ideas, and the adaptation of this policy of denationalization of the French companies, the impact of this decision was remarkable on the economic reality of this country. Indeed, privatization has been the turning point of the French economy in terms of financial and economic results, but this new form of corporate organizational architecture has been of great benefit to all sectors of activity who have been affected by this radical change. This policy has further facilitated the adaptation to the financial globalization of France, a phenomenon that has marked the front of the global financial scene, which will lead us to the analysis of the stock market performance of privatized French companies after their introduction in France stock market that is the consequence of the transition from a state-led debt economy to a market economy that operates according to the game of supply and demand in a context of liberal thinking that favors capitalization financial sector, and which puts private actors in competition.

2.1 The Financial and Economic Performance of Privatized French Companies

The research studies that have studied the impact of privatization on the performance of French companies have adopted the same method, in fact they have compared the results in terms of economic and financial profitability ratios achieved before and after the privatization, as there are studies that have attempted to explain this impact from the descriptions based on actual data in the form of statistics and graphs, which indicate the great effect of privatizations on the economic and financial performance of French companies.

Vivien A Schmidt (1999) (note 5) has focused on the radical change experienced by the French industrial and financial institutions after the adaptation of the privatization program, in terms of their organizational structures and their integration into the local and international financial markets. This study then showed that the privatization could modify the environment of the regulation of the French industry, indeed it diminished the direct control of the government on the latter by ignoring most of the controls of the prices, as it loosed the governing laws in the workplace hiring, firing and working hours created semi-independent agencies to control the stock market and the radio and television industries, and liberalized financial markets creating this way of new non-governmental sources of financing for other categories of industry at a time when government subsidies and low-interest loans were becoming scarce, so privatization policy may have diminished government control over the industry in a way wider by reducing state property at the same time. However, this privatization policy in France is mainly focused on public companies in the competitive sector and was conducted in a very dirigiste manner despite its anti-dirigiste effects since the government reserved a very large percentage of the shares of the main investors and limited the acquisitions of the shareholders foreigners.

From the point of view of the ownership, control and organizational structure of the French industry that resulted from this privatization policy resulting from the ideologies of right and left that have succeeded each other and which have been marked by complete and partial privatizations equity sales between nationalized companies, and acquisitions of shares of privatized companies by nationalized companies, have resulted in a mixed economy in which private and public industrial and financial companies are owners of each other and control each other this is the case of the corporate-bank partnerships that emerged as a result of this privatization program. Thus, the empirical work of Charreaux and Alexandre H (2001) (note 6), confirms through the theory of governance, on the one hand the positive effect of privatization on the economic and financial performance of French privatized public companies, and this through an average and median comparative study between the different economic, financial and productive performance ratios of a sample of 19 French companies over a seven-year horizon before and after their privatization. On the other hand, this study analyzed the static and dynamic effect of privatization on each firm, whereas this analysis showed that the positive significance of this effect was not remarkable for a minority of privatized companies, which leads us to conclude that the French privatization program has not been able to achieve all the expected results in terms of performance. Thus, at the level of this article the authors have approached the analysis of measurement of efficiency from financial performance point of view, as well the type of behavior of shareholders that emerged after privatization regardless of whether foreign or local.

Albouy and Obied (2006) (note 7), lead to a more stringent conclusion that tends to confirm the positive effect of privatization on the average and median economic and financial profitability before and after the privatization of French companies. In fact, this study compares the different indicators of the economic and financial performance of privatized companies while examining a sample of 40 companies in total, 20 of which were public and 20 private throughout the period from 1986 to 2004, the methodology of this empirical study consists in making an analogy between private and privatized firms of comparable sizes operating in the same sector of activity.

The results of this empirical analysis confirm in an absolute way the improvement of the overall efficiency of privatized French public companies, in a first step in terms of economic and financial performances, and in a second part the increase of the volumes of productivity and, finally the remarkable growth in their capacity to create jobs, not to mention the significant reduction in their level of indebtedness and the significant increase in their profitability index.

Ultimately, the works of Albouy and Obied validate empirically the previous theoretical approaches that defend the hypothesis of the effectiveness of privatization of companies, such as the theories studied in their article and which affect ideologically this economic phenomenon namely; property rights theory, X-efficiency theory, agency theory and public choice theory. In addition, the results found by these authors of the performance of privatized French companies have confirmed this hypothesis.

We can then arrive at our first hypothesis for this present research work, in fact these various studies were all convinced about the positive effect of privatization, whereas our hypothesis is as follows:

Hypothesis 1: «The transition from public property to private ownership leads to an improvement in the performance of the firm, that is to say that the privatization of French *public companies has a long-term accelerating effect on their economic and financial profitability, which confirms the superiority of private management over state management»*

2.2 Stock Market Performance of Privatized French Companies

On the real plan, this hypothesis was validated through the article published by Celia Firmin titled; «Eclairage: Réformes institutionnelles et financiarisation en France et en Europe».

At the level of this work the author has tried to describe the trend towards the financialization of the French economy since 1970, and the influence of institutional and macroeconomic reforms, among these changes Firmin analyzed the phenomenon of privatization and its manifestation on the French financial market. This study shows first and foremost the importance of the nationalization program during the post-war period, when the operation of French economic activities was based on the total intervention of the State and the national banks that finance the economy. French as well as that of the French financial market. Secondly, the author highlights the effect of the major transformations that have appeared on the world financial sphere, in fact France has been one of the most important countries at the continental level in terms of these changes and, mainly, changes in the modes of management adopted by financial and non-financial institutions. In short, the restructuring that has made the turn of the French economy and has achieved its financialization, as well as its integration into the international financial market, is privatization as a new organizational architecture in terms of monetary policies, financial and economic.

So, the French financing system of the investment rested mainly on the debt during the Thirty Glorious. The reforms carried out then aim to develop a financing market in which the applicants arbitrate freely between the various offers. Competition is thus increasing between markets and financial intermediaries. The growing importance of liberalized financial markets relative to financial intermediaries is based on several reforms. First, financial liberalization accompanied by the privatization of industrial and financial companies, then the creation of a vast capital market, particularly at European level, and the creation of the single currency strengthen the financial character of the economy. The increase in securities financing is largely due to the liberalization and decompartmentalisation of capital markets. The financial market was reformed during the 1980s to promote its development and internationalization.

In addition, this privatization policy has been very successful in gaining a competitive advantage for the French financial market by giving it a broader European dimension while unifying the old local stock exchanges (Bordeaux, Lille, Lyon, Marseille, and so on), since January 1991 with that of Paris, while leading to the birth of a system of computerized quotation "CAC or quotation continuously assisted" since 1986 as a stock index of the French State. As a result, privatization has given a new objective for French companies, which is the stock market performance in the most important international financial markets, where the market capitalization of privatized French companies has experienced strong growth following the evolution of legislation that favored the structure of private management to the detriment of the state.

This new institutional specificity that affected the French banks after their privatization, could ignore the hard core of the main local investors organized by the French authority in the first wave of privatizations in France and gave priority to institutional investors, especially foreigners. Their share of capitalization increased from 23.5% in 1993 to 36.9% in 1999 and 43% at the end of 2002 (note 8). In 1999, as a whole, the share of foreign investors sometimes exceeds 50% in some companies, although they are in the minority individually, with participation rates generally less than 1% of the capital. This significant financial performance of the privatized French financial firms saw an increase in its indicators both after the foundation of the European Union which was followed by the launch of the Euro as a common monetary unit and the creation of the European Central Bank (ECB).

By way of conclusion, this article has confirmed the effectiveness of French privatization, as it has set the stage for a new line of research concerning the performance of privatized French listed companies while indicating the importance of the role of financial institutions and in the 1980s and 1990s, monetary policy changed profoundly as a result of legislative developments and privatizations of the banking sector and a large number of industrial enterprises. The financial market has grown significantly, as illustrated by the weight of market capitalization.

In reality, the impact of privatization on the operational performance of privatized companies in general is a topic that has been of great interest for the recent financial literature, although for privatized French companies.

While the recent empirical analysis of Hassan Obeid and Mr Ishaq Bhatti (2011), entitled; «The impact of stock exchange performance of selected French privatized firms» (note 9), has just highlighted the stock market performance of privatized French companies, this article measures this performance from the new indicators which are the abnormal returns (AR), Cumulative abnormal returns (CAR) and BAH (buy-and-hold abnormal returns), as opposed to old jobs that use traditional economic and financial performance indicators. However, this paper tries to determine the effects of privatization on the performance of privatized companies' shares, and adopts a comparative approach between the stock market performance of privatized companies and the benchmarks of private companies, using data from the 1986 period. to 2004 for selected French firms, while the sample of this study consists of 36 companies including 18 privatized public companies and 18 private companies.

In addition, the methodology of this research used consists in measuring and analyzing the stock market performance of privatized French companies over a period of 36 months, after the date of their privatization, according to four methods used namely; the first is to compare the performance of the foreign exchange equities, the AR and the CAR of the privatized companies with those of the private companies, the second which carries out the test the equality of the RAs or the tests of nullity of CAR, the third one achieved with the calculation of asymmetric coefficients and statistical tests of the three BHARs for dates 6, 12, 18, 24, 30 and 36 months after the event and the fourth one used to determine the relative wealth ratio of each privatized firm. The results of this method confirm that the returns of recently privatized firms are still higher than those of private and market firms.

The main objective of this study is to carry out an empirical study on the stock market performance of French companies which were privatized between 1986 and 2002. This study, which completes the work carried out on the impact of privatizations, justifies as far as the most of these transactions are actually IPOs (Initial Public Offering).

In line with previous empirical findings, we conclude that there is an increase in the stock market returns of recently privatized French companies relative to market indices. We also observed in this study that the difference in performance was in favor of privatized firms in the early months, and was in favor of medium-term market indices.

However, a simple comparison of the profitability of the stock market can not completely explain the phenomenon highlighted. This is why the authors have carried out a complete methodology to test the robustness of the results obtained. Thus, the comparison of the CAR confirms the superiority of the performance of privatized companies.

In definitive this article has just confirmed the hypothesis of the effectiveness of the French privatizations on the one hand, and which resulted in a fundamental idea which closes our current work of research on the other hand, then the second hypothesis of our research is the next;

Hypothesis 2: «The stock market returns of French companies are higher after their privatization, and are more significant compared to those of private companies».

3. Empirical Analysis

In this section, we will first present the data and the methodology. Second, we will specify the econometric model used in this study and provide the definitions and measures of the variables. Finally, we will interpret the long-term static and dynamic effects of privatization on the economic performance of the firms in question.

3.1 Data and Methodology

To explore the catalytic impact of privatizations on overall performance, we used a sample of 14 French companies (note 3) over the period 1986 - 2014, while referring to the work of Megginson et al (1994), where we have opted for a longitudinal study for each of the companies, which requires data processing over a period of only seven years (three years before privatization, the year of privatization and three years later).

This longitudinal approach proposed by Megginson et al (1994) consists of comparing the values taken by certain performance indicators (the ratios presented above) concerned by the study, before and after privatization. Indeed, two subsamples are formed, one for data from the three years before privatization and one for the data for the most recent three years (in the database) after privatization. Then, for each company and for each indicator, a series of averages are determined in each sub-sample. These two series of averages allow us to characterize the median and average evolution of each indicator before and after privatization, except that the indicator of the stock market performance of our sample will be studied on average and median over a horizon of three years before privatization and four years after privatization. The decision-making principle is to say that there is an improvement in profitability after the privatization of the company if the averages of ratios before privatization are lower than those after privatization.

In addition, we will treat our sample in two stages, the first of which consists mainly of testing the static efficiency of privatization, by company evaluating the impact of privatization on the calculated performance variables by company and, on average, on periods of three years, before and after privatization. Tests of differences in median (Wilcoxon test) and Student's average difference, applied to the two series of averages, calculated before and after privatization, made it possible to identify this impact. The Wilcoxon test, is considered a non-parametric test, more explicitly, theoretically test is done on four steps to confirm or invalidate our basic hypothesis;

- ✓ **Step 1:** Determine the differences of the medians and rank them in ascending order of their absolute value by discarding the null differences.
- ✓ **Step 2:** the summation of the ranks of the positive differences that are noted T +, and that of the negative differences in absolute value noted T-.
- ✓ **Step 3:** for the rest of the test, we take the minimum value between T + and T-. This value rated T will be used to make our decision.
- ✓ **Step 4:** we decide. In the Wilcoxon table, we read the critical value of T corresponding to N and to a threshold of significance.

Then, in order to account for the temporal dynamics of privatization, a complementary analysis was made; in reality we have performed from the Stata 10 software on profitability ratios (ROA and ROE), as well as that of the stock market profitability and the ratio of capital expenditure, in order to highlight, at least in a rough way, the dynamics of the privatization process. As part of this principal component analysis, we assigned to each ratio on average and median were conducted on the values of the same indicators by successively opposing the following extreme years; -1 to +1, -1 to +2, -1 to +3 (pre-privatization period), year 0 of privatization, then 0 to +1, 0 to +2, and end 0 to +3 (post-privatization period) to designate respectively three years before the privatization of the company, two years before privatization, one year before privatization, the year of privatization of the company, one year after the privatization of the company, two years after privatization, three years after privatization. In the following subsection we proceed to the presentation and analysis of the results.

Regarding the second step of this methodology adopted in our study, we will lead to the construction of a simple linear regression model which aims at clarifying the dynamic effect of privatization as a function of time on growth rates post-privatization performance.

3.2 Model Specification and Variable Definitions

Following the work of Albouy Michel and Obeid Hassan (2007) who studied the impact of privatizations on economic and financial performance on French companies, the econometric model used in this study can be written in the following form:

Model:

$$\mathbf{PERF_{it} = \alpha_i + \beta_{1i} * T_{it} + \beta_{2i} * P_{it} + \beta_{3i} * TP_{it} + \beta_{4i} * taille_{it} + \beta_{5i} * cycle_{it} + \varepsilon_{it}}$$

With:

- **$PERF_{it}$:** la variable mesurant la performance à l'année t pour la firme i.
- **T_{it}:** the time T for firm i (value ranging from 1 to 7).
- **P_{it}:** a privatization dummy variable taking the value 1 when firm i became privatized, and 0 before privatization.
- **TP_{it}:** a variable expressing the interaction of the two previous variables.
- **$Size_{it}$:** the size (measured by the turnover) of company i at time t.
- **$Cycle_{it}$:** gross Domestic Product (GDP) growth rate, year t for firm

For this, the main performance indicators were regressed on six variables: a first time variable «T », the values 1 to 7 designating the seven years (3 years before privatization, the year of privatization, 3years after privatization), a second dummy variable «P »reflecting privatization, worth 0 when the company is public and 1 when it is private, and a third variable, called «TP » which is specific for each firm, equal to the product of the time variable and the dummy variable «privatization », while the fourth variable reflects the effect of growth rate of the French GDP named «cycleit »as well as the fifth variable characterizes the size effect «sizeit » measured by the turnover. Given the double dimension of the cross-sectional and temporal data, the regression involved 98 observations (14 companies over seven years).

This construction makes it possible to translate the structure into temporal data of the sample, whereas our model will be estimated by the ordinary least squares method using the SAS software, in fact the presence of the variables of the common control respectively the size (total active) and the economic cycle (GDP) relatively overcomes the problem of the existence of autocorrelation, on the other hand one can also consider that the hypothesis of heteroscedasticity as plausible according to several arguments: the difference between the sizes of the variances of the residues , the diversity of the areas of activity of the companies studied, the temporal alignment of the date of the privatization of each firm and the small size of our sample. We then proceed in the next section to the presentation and analysis of the results. As with previous studies on privatization (Charreaux and Alexandre 2001, Albouy and Obeid 2006 and Obeid and M. Ishaq Bhatti), we opt for the use of performance measurement indicators which are respectively the economic return ratios, financial and stock market, as well as that of investment expenditures.

3.2.1 Return on Assets (ROA)

This ratio makes it possible to measure the profitability obtained from all capital invested by shareholder and financial creditor investors. In addition, it measures the ability of a company to obtain optimal use of funds borrowed, ie the highest return. This indicator is calculated as follows;

Formula (1): $\boxed{\text{Net Income / Average Total Assets}}$

3.2.2 Return on Equity (ROE)

This report, also known as the rate of return on equity, remains the only indicator that is based as an accounting estimate of shareholder value, a true measure of the company's profitability. It effectively embodies the idea that the shareholder is the only residual creditor and strictly asserts that the net result is only secreted by equity. The disadvantage of this ratio is that it is very sensitive to accounting manipulations. His formula is following;

Formula (2): $\boxed{\text{Net Income / Shareholder's Equity}}$

3.2.3 Ratio of Capital Expenditures

For this category, the capital expenditure report of the total assets will be considered, in fact an expense is considered a capital expenditure when the asset is a newly acquired capital asset or an investment that improves the useful life of the asset an existing capital asset. If an expense is a capital expenditure, it must be capitalized, forcing the enterprise to allocate the cost of expenditures over the useful life of the asset. However, if the expense is the one that keeps the asset in its current state, the cost is fully deducted in the year of the expense. So the report is as follows:

Formula (3): $\boxed{\text{Investment expenditure / Total Assets}}$

3.2.4 The Indices of the Profitability of the Stock Market

For this type of indicator we will use the «Buy And Hold Return» (BHR) indicator, or «buy-hold», in fact it is a strategy of valuation of the stock market return in which an investor buys shares and the holds for a long period of time, regardless of market fluctuations. An investor who employs a buy-and-hold strategy must actively select stocks, regardless of his position (short or long), and is not affected by short-term price movements and technical indicators. In reality this calculation is as follows;

Equation (1): $$\mathbf{BHR_{it} = \prod_{t=1}^{n}(1 + R_{it}) - 1}$$

With:

- BHR_{it} : Buy And Hold Return function of "i" companies and "t" time.
- Π: the profit made during the period concerned.
- n: the number of years.
- R_{it} : the market profitability of the company according to time.

This calculation strategy also involves the measurement of abnormal "Buy And Hold Abnormal Return" (BHAR) stock returns, as it consists in determining the difference between the expected return of a security and the real return. For the stock markets, it is the difference between a single stock or the performance of the portfolio compared to the average performance of the market for a defined period of time. The abnormal yield of this fact is calculated as follows;

Formula (4) $\boxed{\text{Abnormal Yield = Real Return - Normal Yield}}$

By applying the Buy And Hold Abnormal Retuns (BHAR) strategy, which depends instead on the market price evolution of the BHR, it also takes into account fluctuations in the stock market indices. following equation;

Equation (2): $$\mathbf{BHAR_{it}} = \prod_{t=1}^{n}(1 + \mathbf{R_{it}}) - \prod_{t=1}^{n}(1 + \mathbf{R_{Bt}})$$

With:

- $BHAR_{it}$: Buy And Hold Abnormal Retuns function of "i" companies and "t" time.
- Π: the profit made during the period concerned.
- n: the number of years.
- R_{it} : the market profitability of the company according to time.
- R_{Bt} : the profitability of the stock market index in terms of time.

After presenting the variables on which we will operate, the second section will be dedicated to the presentation of our sample and the explanation of the methodology that will be adopted for the confirmation of our hypotheses empirically.

3.3 Empirical Finding

At the level of our results we will proceed to two parts of interpretation, the first will be devoted to analyze the significance of the different ratios in average and median before and after privatization from the tests used, so this is the explanation of the static effect of privatization, while the second part will be in charge of the study of the dynamic effect according to our regression model as a function of time.

3.3.1 The Static Effect of Privatization on the Different Ratios

Table (1) shows the percentage results of the first procedure. For each indicator, the medians and averages are indicated throughout the period concerned, the seven years are respectively distributed on the columns in chronological order (3 years before privatization, the year of privatization, 3 years after privatization).

Table 1. The evolution of the various business indicators 3 years before and after privatization (in percentage)

Indicators	Median (Averag) Before 3 years	Median (Average) Before 2 years	Median (Average) Before 1 year	Median (Average) Year of privatization	Median (Average) After 1 year	Median (Average After 2 years	Median (Average) After 3 years
Return On Assets (ROA) (Net Income / Average Total Assets)	2,428 (1,241)	1,818 (3,695)	1,766 (1,160)	2,907 (3,523)	2,576 (2,984)	3,044 (3,439)	3,756 (1,698)
Return On Equity (ROE) (Net Income / Shareholder's Equity)	4,355 (9,276)	5,0500 (10,243)	4,640 (7,937)	7,391 (10,861)	8,386 (8,878)	11,438 (11,513)	12,977 (10,954)
Investment expenditures (Investment expenditure / Total Assets)	0,071 (0,074)	0,089 (0,084)	0,062 (0,058)	0,049 (0,041)	0,057 (0,055)	0,063 (0,066)	0,054 (0,062)

The values found for the ratio of economic profitability to median, show that there is a strong growth of this indicator after privatization for all the companies in our sample, this report marked its strongest performance which is equal to 3,756% after three years of privatization as long as before 3 years was at the level of 2,428%, so there is a positive sign improvement of +

1,328%, which confirms that privatization has a positive effect on economic profitability. Whereas at the level of Table (2) in which we have adopted the calculation of averages of the mean and median series for the different indicators, whereas this is not the case where we distinguish a decrease of this indicator in median for the seven-year average (from 4.004% to 3.125%). On the other hand, this indicator (ROA) experienced an average increase in average series (Table 2), where it increased by + 0.675%, this positive progression being in line with the values in Table (1), which illustrated a positive evolution on average of + 0.457% (from 1.241% before 3 years to 698% after 3 years). These results then confirm our first hypothesis.

Regarding the ratio of financial profitability, its results were consistent in terms of the median value at the level of the gross values (Table 1), that is to say at the average values of the median and average series. Indeed, we note that after the privatization that this indicator has achieved a very important improvement, that is to say we can distinguish a real positive peak throughout the time interval concerned (from 4.355% before 3 years at 12.977% after 3 years), while registering a positive increase of + 8.622% during the seven years, as well as in Table (2), it was found that average median series values were in line with this significant increase, in fact we have a transition from 4,681% before privatization to 10,933%, thus a positive evolution of + 6,252%, which is in agreement with our idea which defends the financial efficiency of the French privatizations. About the results on average this ratio (ROE) showed as well an improvement (of 9,276% before 3 years to 10,954% after 3 years), as for the values of the averages of the series of averages one has a negative evolution and contradictory with that of the median, such as -9.152% before privatization to -10.448%.

For the Investment Expenditure Indicator, which we have used as a complementary indication to examine the investment policy adopted after privatization, that is to say this ratio is intended to confirm the superiority of private management over privatization. the state one. Indeed, the results of this report (investment expenditure / total assets), were not positive in terms of improvement some are on average or median (Table 1).

In median there is a decrease of 0.071% before 3 years up to 0.054% after 3 years, same interpretation for the values on average which there is a decrease of 0.074% before 3 years to 0.062% after 3 years, whereas in the table (2) this indicator recorded a decrease in the median series averages (from 0.074% before privatization to 0.058% after privatization) resulting in an unfavorable change of -0.016%, the mean values of the series of averages were not unfavorable to those of the medians as we have an increase of -0.072% before privatization to -0.061% after privatization, so a positive trend of +0.011 %.

All these results can not be considered as absolute confirmations for our basic assumptions, since there are contradictions between the figures in gross (Table 1), and those in average of the median and mean series (Table 2), so we will opt for an analysis of the static effect that highlights the comparison of the extreme years because of unreliability of the tri-annual data, then we will integrate the temporal effect from the application of the median difference of Wilcocxon and, the Student's mean difference Test at different thresholds of significance, on the time intervals that are expressed by the extreme years (Table 4).

Table 2. The evolution of the various indicators on average of the companies before and after 3 years of their privatization (in percentage)

Indicators	Median (Average) Before 3 years	Median (Average) After 3 years
Return On Assets (ROA) (Net Income / Average Total Assets)	4,004 (2,032)	3,125 (2,707)
Return On Equity (ROE) (Net Income / Shareholder's Equity)	4,681 (-9,152)	10,933 (-10,448)
Investment expenditures (Investment expenditure / Total Assets)	0,074 (-0,072)	0,058 (-0,061)

Finally, the Table 3 tells us about the stock market performance of privatized French companies, in fact we will proceed to a comparative study between the evolution of the French stock market index "CAC40" (third line) and the stock market profitability all the companies in our sample before 3 years and after four years of their privatization (fourth line). The calculation is based on the "Buy And Hold Return" method on average of the median and average series.

Table 3. Comparison between the evolution of purchases and holdings of privatized companies and that of the CAC40 stock index (in average and in percentage)

Buy And Hold Returns (BHR)		
	Average	Median
Privatized companies	63,06%	76,37%
Benchmark (CAC40 Index)	54,72%	51,79%

It can be seen from this table that the averages of the average and median series of stock market returns (BHR) during the period studied by the privatized French companies are higher than those of the stock market index (CAC40), which confirms that the French companies are more efficient in their trading activities than those of public companies.

3.3.2 Test of the Statistical Significance of the Static Effect of Privatization on the Different Ratios

Table 4 summarizes the results of the median difference (Wilcoxon) and the mean difference (Student), respectively, as the first line indicates the time intervals (pre-privatization, the year of privatization, post-privatization) on average and median, while the other lines list the different indicators, for the seven columns we have the different tests according to time and indicators.

Beginning with the ratio of economic profitability (ROA), for the interval (-1 to +1) and it (0 to +1), that is to say a year before and a year after privatization , this indicator was not significant on average and median at the level of the different risk thresholds, which indicates to us the absence of a median difference as well as the absence of a difference of mean, on the other hand it gives us significance for the period (-1 to +2) at the risk threshold of 5% at the median and at the risk threshold of 1% on average, hence the presence of a median difference and a difference in average during this period, we can conclude then that the privatization after two years has a significant effect on the economic profitability which confirms the favorable evolution of the economic performance of the French companies after their privatization.

On the other hand, we distinguish a significance before a year, which gives us information on the relative efficiency of the state. In addition, the comparison of the results of the different tests for the intervals studied can carry out our reasoning, in fact concerning the extension of time (-1 to +3), that is to say after three years of privatization. economic profitability was able to maintain its significance at the risk threshold of 5% in the median and the risk threshold of 1% on average, in other words according to the Wilcoxon test, the assumption of the positive effect of privatization on economic profitability is checked, as well for the Student's test, which confirms the presence of median and mean differences, respectively.

According to the work of Charreaux (2001), in order to be able to attribute the evolution observed to privatization, the ratio must be significant over the period (0 to +3), which is the case for our study on average where this ratio is significant according to the Student's test which validates the alternative hypothesis of the presence of a mean difference at the risk threshold of 1%, but at the median it is not significant, from which we accept the null hypothesis of the no difference in median.

By summarizing the results of this ratio (ROA), overall for the different periods studied according to the two tests, privatization has an accelerating effect on the economic profitability of French companies, which explains the reason for which stipulates the superiority of private management on the state.

Finally, for the period (0 to +2) this ratio is significant at the median at the risk threshold of 10%, and on average at the risk threshold of 5%, so the assumption of the presence of a positive effect after two years of privatization is verified.

For the ratio of financial profitability (ROE), its evolution throughout the period concerned in terms of improvement was favorable, in fact based on the two tests adopted in our study we see that the profitability of the majority of different median and average periods were significant at the 1% level. As we notice a median not significance for the two periods; (0 to +1) and (0 to +3) which is the case of the ratio of the economic profitability, on the other hand the first time interval (-1 to +1) for the ratio (ROE) marks a significance in median and on average, respectively, at the risk thresholds of; 5% and 1%. In addition to the compliance of the results of the two profitability ratios on average at the period level (0 to +3), such that the value of the ratio of financial profitability was also significant at the risk threshold of 1%, which validates our main idea which proposes the financial and economic efficiency of the French companies after their privatization. So we say that there is a difference in median and average for the majority of the periods concerning the two profitability ratios, although in terms of value these two ratios have experienced uncompleted growth for the different time intervals studied and , mainly after privatization.

Table 4. Test of the static efficiency of privatization

Indicators	Median (Average) -1 à+1	Median (Average) -1 à+2	Median (Average) -1 à+3	Median (Avergae) 0 à+1	Median (Average) 0 à+2	Median (Average) 0 à+3
Return On Assets (ROA) (Net Income / Average Total Assets)	0 (0,604)	**0,593**** **(1,060*)**	**0,718**** **(1,547*)**	0 (0,097)	**0,205***** **(0,552**)**	0,040 **(1,039*)**
Return On Equity (ROE) (Net Income / Shareholder's Equity)	**0,778**** **(3,005*)**	**1,339*** **(5,254*)**	**1,655*** **(6,388*)**	0 **(1,122*)**	**1,051*** **(3,371*)**	0 **(4,505*)**
Investment expenditures (Investment expenditure / Total Assets)	0,010 0,004	0,009 0,006	0,014 0,002	-3,60E-05 0,001	0,002 0,002	0,0001 5,00E-05

, and *** indicate level of significance respectively at 1%, 5% and 10%*

Our results then, were in agreement with those found by the works of Charreaux and Alexandre (2001) and, Obeid and Albouy (2007). Our logic also justifies the inferiority of the public form compared to the private one, hence private management remains more reliable than that of the state because at the level of economic profitability (net result / total assets) after privatization is greater than before privatization, the management of the assets of privatized companies could lead them to amplify their net profit results, as well as for financial profitability (net income / equity), which depends on the leverage effect depending on the ratio of debt (total assets / equity), whereas for our case this ratio (ROE) to achieve too high returns in the private form, thus management in its private form to show its effectiveness at the level of the distribution of the total of the own funds which depends on the need of the company, and which managed its self-financing according to time.

With regard to the ratio of capital expenditure, which was used as a complementary indication, its results displayed in Table 4 show us not significant at the different risk threshold levels for the two tests (Wilcoxon and Student) implying an absence of median and mean differences, so there is no increase in capital expenditure after privatization.

Table 5 shows us the results of the tests of the static effect on the market profitability of privatized French companies, based on the "Buy And Hold Abnormal Returns" indicator, that is to say the evolution of abnormal purchases and holdings during the period studied (3 years before privatization and 4 years after privatization), by calculating the average of the median series and the averages, as in the second column we have the T statistic of the mean difference test (t-stat), while in the fourth column we have the Wilcoxon Z of the median difference (ZW) test.

Table 5. Test of the static effect of privatization on the evolution of purchases and abnormal conservations of privatized companies

BHAR			
Average	t-stat	Median	Z_W
27,96%	0,4803	-18,80%	0,560

There is an abnormal average purchase-retention profitability of 27.96% and the median level of -18.80%. This shows that privatized firms recorded higher average and median returns than the CAC40 index over the period studied. However, this difference is not statistically significant.

The results of these two tests indicate the absence of an accelerating effect of privatization on the stock market returns of French companies, which is contradictory with the results displayed in Table (3), while we will accept the null hypothesis of the absence of median and mean differences. To overcome this contradiction with our hypotheses, we will precede a temporal analysis in the form of a simple regression model at the level of the subsection that follows.

3.3.3 The Dynamic Effect of Privatization

As mentioned at the presentation level (section 3); our model assumes that the effects of size and the economic cycle on performance are the same regardless of the firm and implicitly assume that the common factors «size» and «cycle» are beyond the control of firms and that there is no direct link between the impact of privatization on performance and size. The effects of the variables T, P and TP, on the other hand, are specific to each company and are assumed to be fixed. Table 6 groups together the results obtained for economic profitability, a variable consider the most relevant to evaluate the performance of the companies in our sample one by one according to the methodology adopted by Charreaux (2001). This table is entitled; test of the dynamic effect of privatization on economic profitability.

Table 6. Test of the dynamic effect of privatization (model) on economic profitability

	Constant	T	P	TP	R^2	R^2 ajusted
Saint Gobain	0,01281 (3.14)	0,00936 (5,05)	-0,01136 (-3,17)	0 -	99,55%	98,21%
Paribas	0,00147 (0,34)	-9,089 E-05 (-0,05)	0,00565 (1,01)	7,238 E-05 (0,04)	97,89%	89,47%
Havas	0,00110 (0,03)	0,01283 (2,02)	0 -	0 -	83,11%	49,33%
Suez	0,02555 (3,45)	5,2457 E0-4 (0,18)	-0,01446 (-1,51)	0,00346 (1,11)	96,74%	83,71%
Total Sa	0,01868 (1,10)	0,01873 **(3,34***)**	0,03692 (1,54)	-0,02222 **(-3,21***)**	96,11%	88,32%
Banque Nationale de Paris	0.01329 (1.94)	3,969 E-05 (-0.02)	-0.04261 **(3.45***)**	0.00617 (1.85)	93,37%	80,12%
Elf	0,09187 (2,24)	-0,02702 (-1,58)	-0,13437 (-2,48)	0,03966 (2,17)	78,20%	34,60%
Renault	0,01207 (0,52)	0,01005 (1,05)	-0,04449 (-1,46)	-0,01053 (-1,02)	94,64%	83,92%
Usinor	-0,03453 **(-8,58*)**	0,00550 (2,90)	0,14315 **(18,35*)**	-0,02550 **(-11,56*)**	99,81%	99,44%
Pechiney	0,03664 (0,50)	-0,1828 (-0,53)	-0,05625 (-0,40)	0,02569 (0,64)	32,41%	-1.0277

****,** and * indicate level of significance respectively at 1%, 5% and 10%*

In accordance with the results of Charreaux (2001), let us take the example of Usinor, a company for which the majority of the coefficients are significantly different from 0 at the risk threshold of 1%. The coefficient related to variable T is positive, reflecting, on average, an increase in economic profitability over the seven years as a whole. The coefficient of variable «P», also positive, represents an increase in profitability during privatization (threshold effect). Finally, the negative coefficient of «TP» means that the recovery of profitability is slower, on average, after privatization (year 0 to +3), so that the dynamic efficiency has decreased after privatization, thus for Total Sa the variable T and the variable «TP» are significant at the risk threshold of 10%, while indicating a positive sign for «T», reflecting a favorable evolution of the performance, while the variable «TP» has a negative sign, that is to say that after privatization there is an inhibiting factor of the profitability growth of this company.

These results for these two companies tell us about a growth in profitability over the period concerned despite the unfavorable evolution of the variable «TP», which implies a decline in efficiency after privatization, this presence of significance of the parameters estimated as well that their positive signs give us an idea of the accelerating effect of the privatization of the profitability of industrial activities in France.

For the other companies studied there is only one variable «P» which is significant at the risk threshold of 10% for the National Bank of Paris, if based on our results for the other financial institutions and banks, we see that the different coefficients estimated by our present model are not statistically different from zero, which cancels the hypothesis of the accelerating effect of privatization on the profitability of French companies operating in the banking sector. For the two media companies (Havas and TF1) we can not interpret its results because of the missing data for these two companies, but for Havas there is a positive evolution of the variable T where we can say that its profitability could increase relatively.

Summarizing our conclusions, first of all the evaluation of the coefficient of the variable «P» for all the companies that make up our sample, there are only two observations that are significant, which only makes it possible to define the threshold effects static of privatization. Secondly, to properly evaluate the actual dynamic efficiency of privatization on the performance of French companies, we must consider the coefficients of the «TP» variable. If they are positive for 5 out of 14 companies in the sample, then they are negative and significant only for two companies. Given the dynamic efficiency, the favorable effect attributed to privatization is far from being systematically confirmed for French privatized firms over the horizon. If our results were not able to confirm our hypotheses perfectly it is because of the time horizon studied which is supposed to be short, whereas according to the work of Villalonga (2000) the positive effect is manifested, significantly only seven to eight years after privatization.

For the coefficients of variable «T», we have eight positive signs out of 14 observations of the sample, so we can conclude that there is an improvement in the performance of French privatizations according to the time variable which is in agreement with the idea that privatization has an accelerating effect on profitability generally, it is an assumption that can be confirmed from the coefficient of correlation (R^2), which shows us for the most part of the companies studied a good fit, ie there is a marked and increasing linear link between the independent variables (T, P and TP) and the dependent variable (the performance). This good linear fit for most of the companies studied in this sample leads us to conclude that our model is interesting in validating our hypothesis of the dynamic efficiency of privatization.

4. Conclusion

Using a sample of 14 French companies over the period 1986-2014, the objective of this study is to test the static and dynamic effects of the long-term privatization of public companies, on the one hand on their economic and financial profitability, and on the other hand on their stock market performance. The econometric approach used in this study is of a longitudinal nature, the data cover a horizon of seven years (three years before privatization, the year of privatization and three years later), while applying median differences tests (Wilcoxon test) and mean difference (Student's test), applied to the two series of averages of profitability ratios and market performance indices calculated before and after privatization. The main empirical results show that: (i) there is a significant static effect for most companies on profitability ratios (ROA, ROE), as well as on market performance indices (BHR, BHAR), except that investment expenditure that is not statistically significant, (ii) although the coefficient of variable TP (expressing the interaction between variables T and P) to only five positive signs out of 14 firms, a good linear adjustment is found (R2) between the independent variables (the time variable T, the privatization dummy variable P) and the dependent variable (Performance), which has just confirmed the dynamic efficiency of privatizations. This study contributes in a general way to the research and the scientific practices of the French financial sector and these companies, in a particular way. Indeed, this contribution manifests itself by identifying the superiority of private management over that of the state by studying the impact of privatization on the overall profitability of public companies.

Like all works, this research work suffers from certain limitations. We have analyzed only the main effects of privatization on the long-term profitability of French public companies, whereas we intend to analyze in the future the effectiveness of private management as a mode of operation in an uncertain universe. On the other hand, France seems to have been a special experience since the privatization process, even though it has managed to improve the efficiency of its companies in terms of profitability, it has not been able to cope with the various imbalances in the market (the subprime crisis in the United States and the eurozone crisis) which led to the bankruptcy of a fairly large number of French private companies. Overall, our future expectations as to the observation of the two fundamental theories namely; property rights theory and the theory of X-efficiency will show how privatization mechanisms allow the firm to be more efficient in its management mode

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Notes

Note 1. In our current study, the Stata 10 software was used to perform the various tests, while processing our data using Excel 2007.

Note 2. The number in the first line is the coefficient and the number in the second line is Student's t. If T is a positive sign (performance growth), a sign of positive TP means that after privatization the efficiency grows more and to screw it.

Note 3. Actually our sample is made up of 19 companies, five are missing because of missing data, the study then relates to 14 companies. The final sample, on which the tests were conducted, includes six banks and financial institutions (Paribas, Sogénal, Crédit Commercial de France, Société Générale, Suez, BNP), an insurance group (AGF), and six industrial groups (Saint-Gobain, Total Sa, Elf, Renault, Usinor, Pechiney) and two media groups (Havas, TF1). In fact, this sample is characterized by the diversity of the fields of activity in which these companies operate.

Note 4. The empirical results obtained in Table (6) concern only 11 companies in our sample because of the problems specific to the software used.

Note 5. Vivien A Schmidt (1999): «La France entre l'Europe et le monde Le cas des politiques économiques nationales», Revue française de science politique, 49e année, n°1, 1999. pp. 51-78.

Note 6. Charreaux et Alexandre H (2001): « L'efficacité des privatisations françaises: une vision dynamique à travers la théorie de la gouvernance ».

Note 7.Albouy et Obied (2006): «L'impact des privatisations sur la performance des entreprises françaises », Finance Contrôle Stratégie – Volume 10, n°1, mars 2007, p. 6 – 37.

Note 8. Banque de France, 2003.

Note 9. Investment Management and Financial Innovations, Volume 8, Issue 1, 2011.