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Innovation and Performance during the Financial Crisis: The Case of French Firms

Amira Houaneb [α] & Rim Benhassen [σ]

Abstract- This research is a contribution to establish an empirical background on the capacity for innovation in French firms listed on the SBF 120 covering the period before and after the financial crisis. The purpose of this research paper is to analyze the factors that influence the capacity for innovation and to prove the existence of a possible relationship between the innovation capacity and the performance. Firstly, the study reveals that research and development expenditure has a negative impact on the financial performance of SBF 120 firms during the period from 2004 to 2016. Secondly, this negative relationship between performance and innovation persists during the pre and post financial crisis period.

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I. Introduction

The relationship between financial innovations, which are often associated with liberalized and deregulated markets, and macroeconomic stability has become a very controversial economic issue. The financial crisis of 2007/2008 brought to the fore the inquiry about the positive role of the evolution of financial markets in the economic stability.

So far there have been many investigations on the impact of innovation on firms' financial performance, which come out with mixed results. This study examines the possibility that business innovation improves financial performance by allowing the firm to be distinguishable.

Studying the SBF 120 firms' innovation has not received enough attention through academic research. Recently, a considerable effort to conceptualize the scope of the strategy has been provided for the first time by Hoskisson et al. (2000). Four conceptual perspectives- transaction cost theory, agency theory, and institutional theory - were analyzed by these authors in 64 countries. Using the same analytical approach, other more targeted research focused on countries in Asia and Central Eastern Europe (Peng et al., 2001; Meyer and Peng, 2005). One of the main purposes of this research is to assess whether the theories and methodologies used to study this strategy in the developed countries are appropriate for the diverse socio-economic contexts and different firms of given characteristics.

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For several years, there has been some fascination for innovation, both at the theoretical and practical levels. Indeed, Berrone et al. (2013) highlight its current popularity in the business community. This study reveals that over 90% of senior managers believe that innovation is fundamental to achieving their strategic and financial goals. However, only half of the main innovations and the strategies that were improved met the hoped-for objectives on the market side as well as on the of the firm side. This ascertainment might lead to many conflicts within the agency. As a matter of fact, for nearly two decades, French firms have undergone some of changes, the most important of which is the growing importance of innovations in the process of value creation. This advancement questions the need for a renewed conception of the corporate governance.

Several authors (Wang and Ahmed, 2004; Button, 2002; Brown and Petersen, 2009) focus on the benefits of continuous development of new studies and up growth research and development investments for organizations. Even today, the failure rate of new investment decisions remains high (Genus and Coles, 2008). We find that many studies agree that on the one hand innovation is an interesting source of competitive advantage (Straska and Waller, 2010). On the other hand, firms can only take full advantage of progress when all functional activities support innovation. The latter is generally related to the terms research and development. Also, modernization includes the process of driving the new technology into use (Brown et al., 2009). Achieving this essential activity for the organization improves and maintains its position in the market.

According to Bhagat and Garg (2008), research is about developing new knowledge while development is about applying knowledge and increasing the application possibilities. All managers testify to the crucial role of research and development activities. More specifically, it is a strategic function (Munari, 2002). Indeed, research and development is the very heart of a firm's innovation capacity. Respectively, investment in research and development has risen in recent years. Technological evolutions, competition and financial benefits are at the origin of an important industrial event, led by firms: The race for innovation is increasingly based on the firm's specialized resources (Hatch and Dyer, 2004; Tsai and Wang, 2009).

Besides, all developed and emerging countries have been affected by the financial crises. These crises

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have taken very different forms: banking, stock market, and real estate crises. If we look at the statistics, there is about one crisis every two years, that is to say, a financial shock that results in falling stock prices or bankruptcies chain banks. According to Orléans (2009) in the World between 1970 and 2007, there were no less than 124 banking crises, 208 currency crises, and 64 sovereign debt crises. The crisis "subprime," which hit the sector subprime mortgages is a crisis of enormous severity: all economists agree that it is the most serious regarding importance and depth since the crisis of 1929.

What follows is an enumeration of the major causes behind a crisis. There are three fundamental causes. First, financial globalization process makes global economies more interdependent. Second, the policies of economic liberalization give a great freedom of action to the financial actors. Indeed, the freedom of activity granted to the financial actors favors the international circulation of capital and contributes to globalizing crises. Third, a wave of unprecedented financial innovations that have weakened the international financial system and whose role has been underestimated, yet historical experience shows that they are at the very heart of crises.

Entrepreneurial innovations are supposed to be one of the key sources of economic growth and competition is seen as an incentive to innovate. Schumpeter (1947) points out that perfect competitiveness from textbooks through the hypotheses ad hoc on the atomicity of agents. The homogeneity of goods and services contradicts the intuition one might have about the role of incentives to innovate. The same objection can be considered about the financial sector. Bluntly, Minsky (1986) identifies the issue of the evolution of financial systems regarding productive activities as a principal problem in a monetary market economy. When the focus of financial innovations is on speculative profitability strategies, the financial fragility is endogenously increased and reflects the incapacity of micro-prudential regulatory schemes to meet the assumptions of efficient markets. Macroeconomic stability then calls for a redefinition of regulatory mechanisms

We contribute by this article to the literature related to the performance of firms by studying the impact of research and development expenditure on the performance of the firm in the French context. Few studies have previously discussed the relationship that may exist between these expenditures and performance on the French setting. Also, our study is one of the first studies that analyze the effect of the financial crisis of 2008 on the relationship between innovation and the firm's performance. We also contribute by studying the plurality of the functions of the manager on the firm's performance.

The object of this study is to define the impact of research and development expenditures on firms' performance for the case of French firms and the effect of the Subprimes crisis on this relation. Therefore, this paper is structured as follows: The first section reviews the relevant literature and hypothesis development. The second section presents our methodology, while the third section focus on the results obtained. In the last one, we make a conclusion.

II. Literature Review and Hypothesis Development

The theoretical foundation of this work lies primarily on the concept of innovation developed in 1939 by the economist Joseph Schumpeter, who gave a prime role to innovation activities for the evolution of capitalist societies.

In this respect, several theorists (Lau, 2009; Czarnitzki and Kraft, 2003) have indicated that economic growth is endogenous to innovation. There is an increase in the level of knowledge and intellectual capital of innovative firms thanks to innovation. Thus, it varies in importance from one firm to another which is explained by the preferences of those responsible for investment decisions, who possess discretionary decision as to the prominence and choice of innovative activities.

Some authors consider that the competitive advantage that a firm has is possible through continuous innovation (Huang et al., 2010). Henceforth, firms may orient their efforts to creating value and creating organizational knowledge. Modernization, resulting from research and development activities, can be considered as a transformation of skills into economic activity. Following the globalization of markets, firms are facing international competition. These firms must, therefore, be innovative to survive in changing environments (Ding and Stolowy, 2003).

Therefore, and according to Charreaux and Desbrières (2001) firms, adopting innovation strategies, have the power to increase or maintain their market shares, while leading a competitive advantage over other firms. The strategic decision to undertake innovative activities, hence, leads to the economic growth of the markets and the long-term profitability of the firms (Azadegan, 2011).

There are many studies on the impact of innovation on the long-term performance of firms. Some research has found a positive relationship between innovation and the value of societies (Hill and Snell, 1988). In their study analyzing the effect of organizational control on innovation decisions, Yang et al. (2010) find a positive relationship between innovation and corporate profitability. Thus, Gunduz (2013) analyzes the interdependence of investments and the value of

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firms and finds that capital investment positively affects the worth of firms.

The positive relationship between innovation and performance could also be interpreted by the importance of the control measures used in firms adopting innovation strategies. Research indicates that firms assuming such procedures use strategic control measures (Gurhan et al., 2011; Yang, 2010), while firms following other strategies, such as diversification, and apply performance-based controls.

Guan et al. (2009) examine how innovation affects firm performance. They argue that the relationship between investment and sales differs significantly from firm to firm. Firms that invest heavily are more competent to be the best to increase their income and profits. Through a sample of manufacturing firms, Yam et al. (2011) observed that sales, the growth of innovation and the return on assets (ROA) are very high for firms which pay extensively compared to the firms which spend less on innovation. According to North et al. (2001), the innovation strategy is a source of competitive advantage, for it signals to investors and other stakeholders that their business is growing. Thus, executive managers are launching a signal based on increased research and development spending. So it is by capturing this announcement that the financial market reacts positively. These analysts point out that such projects contribute in particular to productivity and value creation. Henceforth, there is a positive correlation between business performance and innovation investments.

Dechow and Schrand (2010) note that research and development investments vary according to the discretion and preferences of senior management. Consequently, the second theoretical foundation is rooted in the agency theory developed by Jensen and Meckling (1976), which states that the ownership structure and the board of directors are mutually determined as well by the nature of the firm's activities. They also show that these governance mechanisms interact with each other and subsequently influence the firm's performance.

Obvious enough, by linking the concept of innovation to agency theory, we can evoke the underlying assumption of our study, which predicts the existence of an interaction between innovation choice, governance structure, and performance of the firm. This interaction leads to two types of relationship to be investigated, namely the factors that may explain the adoption of innovation projects and their consequences. It should be noted that we use research and development investments as a measure of innovation.

Zheng (2014) shows the existence of a direct and positive correlation between innovation investment, economic growth, and firm's earnings. As for Gunday et al. (2011), they believe that innovation is synonymous to better growth opportunities, which impact the firm's performance positively.

To magnify the value of the firm, the manager is required to take many advantageous measures. The manager is required to undertake investments for many reasons. First, investments allow him to increase the consumption of the assets. Second, it permit him to be more interested in the cash flow that can be realized during the period of his mandate to increase his remuneration and consequently the firm's value. He must also seek some invested shares to invest in the firm. Not only must he to take into account the effect of research and development projects on the hoped-sales, but he must also guarantee a liquidity return as a dividend when unprofitable investments are not available and also achieve investments whose revenues manage to cover their costs. These above mentioned-measures illustrate that innovation has a tremendous impact on performance.

Based on the previously mentioned theoretical and empirical foundations, our supposition can be deduced such:

Hypothesis 1: Performance positively affects innovation.

III. Methodology

a) *Sample Selection and Data*

On the whole, our sample is made up of French listed firms. The study depicts the period extending from the year 2004 until the year 2016. The data related to the duality of the functions of the manager were collected manually from the financial reports while the other data relating to the characteristics of the firms were collected from multiple resources such as straight forward data, World scope database, Data stream, as well as the Guru Focus database. The selected firms belong to ten sectors. We adopt the global industry standard classification system, Industry Classification Benchmark (ICB) adopted by Euro next to classify the listed firms into homogeneous business segments. We took the ICB, which divides firms into ten major groups. The table 1 shows the distribution of French firms by industry and then by the super sector.

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Table 1: Distribution of French firms by industry and super sector

Industry	Super Sectors
Oil and Gas	Oil and Gas
Basic materials	Chemistry, Raw materials
Industries	Industries
Consumer goods	Automobiles and equipment manufacturers, agri-food and beverages, household and personal care products.
Health	Health
Consumer Services	Distributions, Media, Travel and Leisure
Telecommunication	Telecommunication
Community Services	Community Services
Financial corporations	Banks, Insurance, Real Estate, Financial Services, Investment Instruments.
Technology	Technology

Also, we excluded missing data from our observations and we winsorised data at 2% of each end of our data distribution.

b) Econometric Modeling

To assess the hypothesis that we have suggested to study the impact of innovation on the performance of the French firms, the following model has been established:

$$ROA_{i,t} = \alpha_1 + \alpha_1 Innovation_{i,t} + \alpha_2 Beta_{i,t} + \alpha_3 Risk_{i,t} + \alpha_4 Growth_{i,t} + \alpha_5 CAPEX_{i,t} + \alpha_6 Liquidity_{i,t} + \alpha_7 Size_{i,t} + \alpha_8 Leverage_{i,t} + \alpha_9 MTB_{i,t} + \alpha_{10} Cumul_{i,t} + \varepsilon_{i,t}$$

With:

ROA: The firm's performance measured by the ratio between earnings before interest and taxes and total assets.

Innovation: The natural logarithm of total research and development.

Beta: The market risk of the firm measured by the volatility of the securities of the firmi at the moment t.

Risk: The operational risk of the firm measured by earnings before interest and taxes divided by income after interest and taxes.

Growth: The growth of the firm measured by the growth rate of sales between year t and t-1.

Liquidity: The ratio of general liquidity measured by the ratio between current assets and current liabilities.

Size: The size of the firm measured by the natural logarithm of total assets.

CAPEX: Ability of investment of the firm measured by the ratio of new capital asset acquisitions to total assets.

Leverage: The debt ratio firm measured by the ratio between total debt and total assets.

MTB: The market to book ratio measured by market capitalization on the total assets of the firm.

Cumul: Is a dichotomous variable which takes the value of 1 if the general direction of the firm and the presidency of the board of directors is ensured by the same person and 0 otherwise.

IV. Results and Discussion

a) Descriptive Statistics

What follows present the descriptive statistics and the correlation analysis of all the variables used in our study.

Table 2 presents the descriptive statistics of all dependent and independent continuous variables. The average performance of the firms in the study sample is 0.031 with a variance of 0.080. The average value of innovation expenditures is 18.70 for a 1.69 of standard deviation, and 75% of the firms in our sample have spent on research less than or equal to 20,022 development. Regarding the risk variables, we note that the average beta is 0.982 and a standard deviation of 0.219, so the market varies by 10%, the firms' shares move 9.82%. Regarding operational risk, we find out that the average is 2.013 and the variance is equal to 7.530, reaching a maximum value of 134.121, which indicates the diversity of our sample. The average growth of the firms in the study sample is 7.4% and a maximum value of 7.008. The average investment capacity is 20,646 with a variance of 14.04, so we can once again assert the diversity of our sample and that firms do not have the same capital expenditures. The average value of liquidity ratio is 1,484 which allow us to conclude that firms finance their current debts by their current assets and 75% of the firms in our sample have a liquidity ratio lower than or equal to 1,628. The debt variable has an average value of 0.153 and a variance of 0.105,

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so the debts of the firms in our sample represent 10.5% of the total assets, we have to also mention that our sample contains firms in debt and those that are not indebted.

Table 2: Descriptive Statistics

	Average	Std.	Minimum	Median	Q1	Q3	Max
ROA	0031	0080	-0658	0042	0015	0066	0224
Innovation	18708	1690	12.190	18,800	17619	20,022	22,363
Beta	0981	0219	0490	0998	0940	1,000	1,770
Risk	2.013	7.530	38315	1,570	1364	1829	134121
Growth	0074	0441	1000	0045	-0.010	0109	7008
CAPEX	20646	14401	0087	18247	9643	28328	62694
Liquidity	1484	1.195	0403	1267	0989	1628	14737
Size	22825	1689	17742	22793	21666	24131	26358
Leverage	0153	0105	0	0146	0079	0204	0609
MTB	0973	0.861	0029	0725	0414	1272	9507

Table 3 displays the correlation coefficients of Pearson and Spearman between the different variables in our study. According to the Pearson and Spearman coefficients, we noticed that there is not a problem of correlation between the variables and for that we can resort to the estimation of our model. For this, we opt for Thompson's double clusters method (2009) which takes into account the correction of the heteroscedasticity problem.

Table 3: Correlation Analysis

	ROA	Innovation	Beta	Risk	Growth	CAPEX	Liquidity	Size	Leverage	MTB	Cumul
ROA	1.00	0.03	-0.01	0.0005	-0.12 ***	0.01	-0.31 ***	0.13 ***	-0.08 *	0.22 ***	-0.11 ***
Innovation	-0.04	1.00	0004	-0.06	-0.10 *	-0.13 ***	-0.16 ***	0.63 ***	-0.13 ***	-0.22 ***	-0.12 ***
Beta	-0.12 ***	-0.06	1.00	-0.01	-0.0001	-0.12 ***	-0.22 ***	0.08 *	0.09 **	-0.13 ***	-0.03
Risk	0.07	-0.09 **	0002	1.00	-0006	-0.03	-0.01	-0.03	-0.01	-0.00008	0.02
Growth	0.36 ***	-0.09 **	-0.03	0.13 ***	1.00	-0.09 **	0.30 ***	-0.18 ***	-0.05	0.15 ***	0.04
CAPEX	-0.01	-0.06	-0.00 9	0.21 ***	-0.06	1.00	-0.07 *	0.17 ***	0.19 ***	-0.05	-0.11 ***
Liquidity	0.21 ***	-0.20 ***	-0.20 ***	-0.01	0.10 **	0.01	1.00	-0.40 ***	-0.20 ***	0.27 ***	0.11 ***
size	-0.14 ***	0.69 ***	0.06	0.10 **	-0.15 ***	0.17 ***	-0.39 ***	1.00	0.08 *	-0.45 ***	-0.13 ***
Leverage	-0.21 ***	-0.08 **	0.17 ***	0.26 ***	-0.05	0.18 ***	-0.15 ***	0.10 **	1.0 0	-0.25 ***	-0.05
MTB	0.69 ***	-0.23 ***	-0.22 ***	-0.03	0.39 ***	-0.11 ***	0.37 ***	-0.41 ***	-0.25 ***	1.00	0.01
Cumul	-0.11 ***	-0.21 ***	0.02	0.01	0.03	-0.13 ***	0.11 ***	-0.17 ***	-0.05	0009	1.00

The coefficients that are located above the diagonal are those of Pearson and those of Spearman are below the diagonal.

b) Results of Explanatory Analyzes

Table 4 presents the results of the model estimates, which highlight the potential relationship between innovation and business performance. The coefficient of innovation is negative and significative at the 1%. This result suggests that spending on research and development negatively affect the performance of the French firm. Indeed, new technologies from research and development are not necessarily translated into better accomplishments. Hsu et al. (2013) suggested that research and development processes are tainted by uncertainties and do not meet the estimated expectations. Also, newly designed products may encounter unexpected manufacturing problems or may not be commercially viable. Besides, profits from new products cannot justify the expense of research and development required to develop such products and research and development expenses is becoming a very costly procedure. Thus, research and development expenses have a negative impact on the current performance of the firm. Nevertheless, the accumulation of experience in research and development could improve the future performance of the firm.

The cumulative function of the manager (Cumul) has a negative and significant effect on the performance of the French firm. The agency's theory suggests that the separation of director and board chair positions facilitates more the direction and the control of the executive and that firms, which fail, maybe underperforming those that separate the first two positions (Rechner and Dalton, 1991). In fact, the manager chairs the board of directors, who evaluates his work, goes against the goal of having a board of directors. Because the duality of the manager points out that there is no separation between decision management and decision control (Fama and Jensen, 1983), and the board will not be able to monitor and to evaluate the manager effectively. Indeed, the manager is

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more likely to use his power as Chairman to select the directors, who are not expected to challenge his decisions (Westphal and Zajac, 1995). As a result, a board that is officially controlled by the firm's manager may lack independence and vigilance, which leads to more agency problems and subsequently poor performance by the firm (Pi and Timme, 1993; Rechner and Dalton, 1991).

As far as risk is concerned, the market risk ratio (BETA) is negative and significant at the 10% threshold, while operational risk has no significant impact on the performance of French firms. The market risk generates an instability of results and cash flow and consequently deterioration of the firm's performance (Dhaniniet al., 2007; Goldberg and Drogt, 2008; Ammon, 1998).

Operational risk (Risk), which represents the uncertainty associated with the operating environment of the organization and reflected in the changes in the operating result, has a negative impact on the performance of the firm. By taking the risk, a firm can benefit from exceptional short-term profitability by accepting high levels of risk, but it is not able to cope with long-term negative industrial conditions which results in a low level of performance, leading to poor financial performance for the firm (Liargovas and Skandalis, 2010).

Regarding the relationship between liquid assets (Liquidity) and the performance of the firm, it is negative and significant at the 1% threshold, proving that firms with important liquid assets are the best performers. By holding back money, managers do not distribute dividends even if they do not have captivating investment opportunities (Blanchard et al., 1994). Moreover, managers may spend money to improve their utility, but do not necessarily increase the value of the business (Jensen, 1986). These firms, holding liquid assets, invest in projects that subsequently fail and have a negative impact on the firm's performance (Evans and Jovanovic, 1989; Hvide and Moen, 2007).

We also noticed that the leverage factor (Leverage) is negative and significant at the 10% level. This result stipulates that profitable, and high-performing firms are more dependent on equity as the principal financing option, while those that are not performing are dependent on external financing (Shubita and Alsawalhah, 2012).

The size of the firm (Size) has a positive and significant impact at the 1% level. Large firms are the most successful firms since they own more resources, better risk diversification and better management of expenses. Large firms are apt to have more resources and opportunities when using the capital market (Gupta, 1969). Worth noting is that firms can achieve better performance through more reasonable economies of scale, more promotion opportunities, improved asset efficiency, capital, technology management, and other operational synergies.

The market to book (MTB) coefficient is positive and significant at the 1% level. The relationship between growth opportunities and performance is positive. Firms with weighty investment opportunities have good performance. Indeed, the long-term value creation and assumption of Chemmanur and Jiao (2012) predicted that for firms with a more talented manager and the stronger croissant options have better performance (Cox et al., 2017).

Table 4: Impact of Innovation on Performance

	Coefficient	Student's T
Constant	-0089	(- 0.92)
Cumul	-0.009 **	(-2.34)
Innovation	-0006 ***	(-3.22)
Beta	-0021 *	(-1.68)
Risk	-0.00007	(-0.55)
Growth	-0.010	(-0.81)
CAPEX	-0.0003	(-1.14)
Liquidity	-0023 ***	(-4.13)
Size	0012 ***	(2.70)
Leverage	-0.060 *	(-1.88)
MTB	0036 ***	(3.00)
N	544	
R^2 Adjusted	0.2382	
Fisher	10.64 ***	

Table 5 shows the results relating to the impact of the subprime financial crisis on the association between innovation and corporate performance. We observed that the crisis (Crisis) has a positive and significant effect on this relationship, which led us to study the relationship between innovation and firm performance during the pre-crisis period and the post-crisis period. The results are shown in Table 5. As far as the duality of the duties of the executive (Cumul) is concerned, it keeps its negative and significant sign highlighting the adverse effect of the combined management of the firm and the board of directors on the performance and this result persist during both pre-crisis and post-crisis periods.

Table 5: Impact of the Subprime Crisis on the Relationship between Performance and Innovation

	Coefficient	Student's T
Constant	-0086	(-0.87)
Cumul	-0.008 **	(-2.22)
Innovation	-0.006 ***	(-3.17)
Beta	-0.024 *	(-1.88)
Risk	-0.0001	(-0.91)
Growth	-0011	(-0.89)
CAPEX	-0.0003	(-1.14)
Liquidity	-0.023 ***	(-4.04)
Size	0.012 ***	(2.66)
Leverage	-0.065 **	(-2.00)
MTB	0.035 ***	(2.83)
Crisis	0.011 **	(2.33)
N	544	
R^2 Adjusted	0.2410	
Fisher	11.62 ***	

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The results of analysis of the period pre-crisis and post-crisis are in Table 6. For innovation (Innovation), we find that its negative relationship with performance persists in both periods. This negative relationship is explained by the fact that the process of research and development are subject to uncertainty and does not achieve expectations and new products innovation are not necessarily translated into better performance.

Market risk (Beta) keeps its negative and significant effect on performance during both periods, while the firm's operational risk loses its significance during the post-crisis period. The explaination of this finding is that the financial risk is more essential for the survival of the firm during this period of credit and it is this risk that must be managed as quickly as possible so as not to affect the performance of the firm.

Moreover, growth opportunities (MTB) remain positive and significant during the post-crisis period and liquid assets (Liquidity) also maintain their negative relationship with performance during the pre- and post-crisis period. This finding suggests that managers hold the money to satisfy their own interests and invest even more during this period of crisis in unprofitable projects, which affects the performance of the firm. Leverage maintains its negative and significant effect on performance during the pre-crisis period but loses its significance during the post-crisis period. Farthermore, the firm's size (Size) has a positive but not significant effect during the pre-crisis period. However, it regains its significance during the post-crisis period as large firms are the ones that survive during crisis given the diversification of their activities.

Table 6: Analysis of the relationship between Performance and Innovation during the Pre- and Post-Crisis Periods of Subprimes

	Pre-Crisis	Post-Crisis
Constant	0.259 (1.49)	-0.182 * (-1.93)
Cumul	-0.014 ** (-2.33)	-0.008 * (-1.81)
Innovation	-0.008 * (-1.99)	-0006 *** (-2.87)
Beta	-0.031 * (-1.71)	-0027 * (-1.89)
Risk	-0.0004 *** (-2.94)	0.0001 (0.35)
Growth	-0.083 ** (-2.60)	-0.004 (-0.29)
CAPEX	0.0008 (1.41)	-0.0006 * (-1.80)
Liquidity	-0.019 ** (-2.53)	-0.022 *** (-3.42)
Size	0.001 (0.20)	0016 *** (3.18)
Leverage	-0.084 ** (-2.18)	-0043 (-1.16)
MTB	0010 (0.58)	0052 *** (8.70)
N R^2 Adjusted Fisher	145 0.2743 11.86 ***	399 0.2877 22.10 ***

V. Conclusion

In this article, we have examined the relationship between innovation and business performance. The idea is that research and development expenditures allow the firm to develop new products and whether these new products are able to improve its performance. On the other hand, this article also examines the impact of the subprime crisis on this relationship that may exist between innovation and performance. The sample of the study is made up of French firms during the period between 2004 and 2016, and we found that research and development expenses negatively affect the financial performance of the firm. This negative relationship is explained by the uncertain criterion of this innovation and the importance of the costs of research and development that may exceed the revenues generated by these investments. We have also found that this negative relationship persists during the periods before and after subprime crises. The measure of innovation used can be improved in future research by taking into account the different types of research

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and development expenditures separately to identify which of the research and development components have effect on the performance of the firm.

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