Index Approach of Corporate Governance

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Abstract

This paper has an empirical aim. It consists in assessing, in original way, the corporate governance practices of a sample of 205 US firms based on an index over the period 2007-2012.It is a score calculated using the non-parametric method of the efficiency frontier which reflects, for each firm, the distance separating the firm from the border representing "best practices" in corporate governance. Thus, we build a corporate governance index where governance mechanisms constitute inputs and governance standards from the codes of good practices constitute the outputs.The results analysis reveals that the firms of the sample are, on average, relatively wellgoverned with some sectoral disparities.

Index terms— corporate governance, index approach, data envelopment analysis, codes of good practices, efficiency frontier.

1 Introduction

or some years, we have been witnessing the emergence of index approaches to evaluating corporate governance practices. The proposed indexes are usually based on corporate governance codes through which scores are attributed according to predefined coding systems.

The majority of these empirical studies testing the link between governance and corporate performance focus on one axis or a few specific mechanisms of corporate governance.

However, focusing on a specific mechanism may result in biased studies given that the governance mechanisms are various and interrelated.

Also, most studies assumed that different mechanisms contribute in the same way in improving the corporate governance quality. But assuming that corporate governance is a linear function of the selected mechanisms or that they are even-weighed can skew the quality of the corporate governance index.

Therefore, this article aims to humbly contribute to address these shortcomings, thus, by exploiting, in an original manner, the advantages of the method of data envelopment analysis. This article presents in its first section an overview of the different corporate governance codes from which governance standards are derived. The construction of the corporate governa-nce index is the subject of the second section. The results are presented and analyzed in the third section.

2 II.

3 Corporate Governance Codes

Since the last decade of the 20th century we have been witnessing the emergence of new standards, principles and recommendations that increasingly regulate the practices in corporate governance.

Since the publication of Cadbury's Report in1992 in Great Britain, thinking on corporate governance is enriched by the regular publication of a number of codes of "good behavior". To date, there are more than 400 worldwide. Thus, these codes of corporate governance are developing standards that guide the functioning of boards of directors and their special committees and ensure the respect of the rights of investors and the clarity and the sincerity of useful information for all the stakeholders.

In France, the traditional corporate governance model is focused on the manager who has absolute power; hence, the disciplinary impact of market mechanisms remains limited (Charreaux, 1996). Thus, different working committees made recommendations for French companies wishing to strengthen their good governance practices. To this end, they issued many reports namely Viénot I and Viénot II reports, the Bouton report and The Corporate Governance Principles for listed companies, ... The report Viénot I (named after the President of the Committee, Marc Viénot, at that time CEO of Société Générale) is at the origin of a deep awareness for the importance of corporate governance principles in France. It is largely inspired by the Cadbury Report, of which it takes many recommendations.

The Viénot II report published in July 1999, makes a total of 35 recommendations, and brings a new and deeper reflection on the dual functions of Chairman and CEO, the executive compensation and shareholder rights to accees to information.

The report Button (named after the President of the committee, Daniel Bouton, who succeeded to Marc Viénotas CEO of Société Générale). It was published in September 2002, in the specific context of the financial scandals of the Internet bubble which ruined many small shareholders. The report focuses on corporate governance practices in the composition of the board and the independence of auditors and the accounting practices within the company. In September 2002, the corporate governance principles resulting from the It highlights the "competence" as an essential quality of the director; it is even more essential than the concept of independence. Since then, the recommenddations have been successively supplemented and updated in October 2008 with recommendations on the compensation of executive directors of listed companies and in April 2010, on the presence of women in the boards of directors.

More recently, in June 2013, the code of the AFEP and MEDEF was revised after consultation with public authorities, organizations representing individual and institutional shareholders.

As far as the German system of governance s concerned, it is largely based on internal monitoring mechanisms (Emmons and Schmid, 1998). The disciplinary power of the financial markets is particularly restricted, as opposed to the Anglo-American system characterized by more liquid markets and more active institutional shareholders (Elmeskov, 1995; Hanke and Walters, 1994). The internal monitoring of German companies is essentially characterized by the power of banks and the formal separation between management and surveillance bodies. In June 2000, the "German Corporate Governance Code" was published ; it was revised successively in 2002, 2003, 2005, 2006, 2007, 2008, 2009, 2010 and 2012, 2013, 2014 and finally in May 2015.

In June 2002, the "Swiss Code of Good Practice" was published and it addressed public companies. It intends to establish a charter of conduct and make recommendations particularly for institutional investors and financial intermediaries. This code was revised in December 2008 and most recently in September 2014.

Canada is inspired by American capitalism marked by the power of the financial market. However, the institutional ownership is less than in the United States.

In Indeed, after the highly publicized accounting fraud scandals, the US government was forced to strengthen national legislation in terms of corporate governance. Within this trend, the SOX (Sarbanes-Oxley Act) was submitted to congress. In 2002, the New York Stock Exchange (NYSE) issued a second report which requires that companies listed on the NYSE have boards of directors with a majority of independent members. In addition, the audit, nomination and compensation committees must be composed exclusively of independent. It should be added that the manager must certify each year that they are neither aware nor informed of violations of standards set by the New York Stock Exchange. This report was revised in September 2010.

More recently, The Business Roundtable (BRT) which is an association of Chief Executive Officers (CEO) has revised its code of corporate governance principles in March 2012. This association has long time fought for best practices in corporate governance. Morover, the « Organisation for Economic Cooperation and Development » (OECD) issued "corporate governance principles" in 1999 and 2004. Both reports addressed the rights of shareholders, the structure and responsibilities of the board of directors, internal and external audit, benefits of managers and stakeholder relations.

However, it is worth recalling that the culture, attitudes and economic history are country-specific; hence, corporate governance problems are treated differently. As a result, the rules on corporate governance were developed differently in different countries. But with the globalization of economic relations and more specifically with the globalization of financial markets, we are witnessing more and more convergence phenomenon for corporate governance practices. Thus, proximity to the corporate governance principles adopted by the various systems is highlighted by numerous studies and supporters of the convergence theory of corporate governance modes multiply the examples.

Definitely, "it does seem to be convergence around certain key principles usually based on the principles of corporate governance of the "Organisation for Economic Cooperation and Development (OECD)" Although the above studies consider a set of corporate governance practices when constructing the index, however the majority of empirical studies focus on one axis of corporate governance. Also, most studies assumed that all mechanisms contribute in the same way in improving the corporate governance quality.

That is why, a new approach based on efficiency frontiers was recently used to assess the quality of corporate governance.

The efficiency frontiers can be approached either by parametric methods such as "Stochastic Frontier Analysis" (SFA), or by the non-parametric methods such as "data envelopment analysis" (DEA). Few empirical studies have evaluated the quality of the corporate governance system of the countries using the efficiency frontier. Thus, the method of "data envelopment analysis" (DEA) was adopted especially by The score calculated does not reflect an intrinsic efficiency of corporate governance but rather a measure of optimization of the governing mechanism for a better corporate performance.

Therefore, this article aims to humbly contribute to address these shortcomings. Thus, by exploiting, in an original manner, the advantages of the method of data envelopment analysis, we build a corporate governance index where governance mechanisms constitute inputs and governance standards from the codes of good practices constitute the outputs. This way of building corporate governance score is consistent with the foundations of agency theory since firms use various mechanisms either of monitoring (board of directors) or incentive (pay, ownership structure) to produce more transparency, accountability, and credibility.

4 b) Sample

The sample consists of 205 US firms listed on the NYSE. This type of firms has usually significant agency problems, due to the dispersion of capital and the separation between share ownership and decision making.

This period stretches over 5 years, from July 2007 to June 2012.

Data on the ownership structure and corporate governance mechanisms are retrieved from reporting agents available thanks to Edgarscan services and the database "Value Line Investment". Stock market data are from the site www.yahoofinances.com.

5 c) Methodology

6 i. Presentation of the method

The basic rationale of 'Data Envelopment Analysis' method is to determine a production possibility frontier which links the given inputs to the "best practices" for outputs.

This technique can take into consideration endogenous or exogenous relations between different mechanisms and corporate governance standards. In addition, it has the ability to simultaneously integrate multiple inputs and multiple outputs without explicitly specifying a priori functional form. Also, it determines a "good practice" frontier, a kind of 'benchmarking' of firms whose combination of governance mechanisms abide by the best corporate governance standards. Not only does this technique determine the sources but also it decides on the level of inefficiency relative to each input (governance mechanism) and / or to each output (governance standard). Units which are operating efficiently have a score equal to 1 while the less efficient have scores lower than 1. Finally, this technique has the ability to objectively weigh inputs or outputs to build the efficient frontier. This reduces the bias of subjectivity and avoids equal weighting mechanisms.

However, one limitation of the method is the need for a fairly large number of observations so as to generate stable frontiers 1 1 We hope to exceed this limit with a sample of 205 firms.

. Furthermore, variables related to corporate governance have been defined and operationalized in the light of the literature review and codes of good practice, such as corporate governance principles of the OECD (2004). We adopt the following linear program:Min ?,?, OS, IS ? -(M1'OS+K1'IS), sc -y j +Y? -OS = 0, ? x i -X ? -IS = 0, ?, OS, IS ? 0, N1' ? = 1

where xi is the i ème input, y j is the j ème output, ? is a (N × 1) constants vector, OS is a (N × 1) variables vector related to of deviations outputs, IS is a (K×1) variables vector related to of deviations inputs, M1 and K1 are respectively (M×1) and (K×1) unit vectors 2 The additional constraint (N1'? = 1) allow to compare firms operating on a similar scale.

. 2 The value of ? obtained will be the (proportional) reduction applied to all inputs of the firm evaluated to achieve efficiency.

ii. The inputs As afore mentioned, we believe that firms are implementing corporate governance mechanisms in order to better manage the interests of shareholders and more generally all stakeholders and to show their good faith and their know-how in the use of resources which have been entrusted to them. The mechanisms and the measures chosen are summarized in the following table:

7 Structure of the Compensation Committee

8 Existence of the Compensation Committee

A dummy variable that takes the value 1 if there is a compensation committee and 0 otherwise. CEO is a member of the Compensation Committee A dummy variable that takes the value 1 if the CEO is a member of the Compensation Committee and 0 otherwise.

9 Structure of the Execution Committee

10 Existence of the Execution Committee

A dummy variable that takes the value 1 if there is an Executive Committee and 0 otherwise.

11 Structure of the Governance Committee

Existence of the Governance Committee A dummy variable that takes the value 1 if there is a Governance Committee and 0 otherwise.

12 Incentive and Compensation Plan

13 Existence of an Incentive Plan

A dummy variable that takes the value 1 if there is an incentive plan, and 0 otherwise. Compensation of the CEO The total remuneration of the CEO divided by total assets.

14 Compensation of the CEO in the form of stock option

The percentage of the remuneration of the CEO in the form of stock option divided by total compensation. Financial Policy Distribution of dividends Dividend paid per share per year.

15 Indebtedness

Long-term debt divided by total assets.

iii. The outputs Firms which use governance mechanisms to generate information,? This should signal the good faith, transparency, relevance of the strategic choices, etc. We believe that the principles and governance standards issued in various codes summarize this type of information sought by all stakeholders. To construct the corporate governance index, we used the outputs inspired by the "Corporate Governance Principles of the OECD (2004)". Thus, corporate governance standards call for the timely dissemination of information on all significant events occurring between the publications of periodic reports. They are also favorable to the simultaneous dissemination of this information to all types of shareholders so that they receive fair treatment. Furthermore, and as regards managerial accountability, Williamson (1994) states: « I am not saying that everyone is continually opportunistic, but individuals are sometimes opportunistic and that loyalty differences are rarely visible ex ante ".

Managerial opportunism can be approximated by the free cash flow (Charreaux, 1997). To summarize, we hold the following outputs: Furthermore, on the basis of the efficiency scores found, we classify the firms in a descending order. That is to say from the most efficient firms in terms of governance to the least efficient firms. We divided them into three groups:

16 Results Analysis

the first group corresponds to the three first deciles (30% of the sample) the second group corresponds to the median four deciles (40% of the sample) the third group includes the last three deciles (30% of the sample).

We construct the following two extreme portfolios: the first portfolio consists of firms of the first group, those of good corporate governance while the second portfolio consists of the last group firms those of weak corporate governance. Table 6 shows the difference between the average yield of the two extreme portfolios. The results show that the good corporate governance portfolio has an average monthly return of 0.3455% higher than the weak corporate governance portfolio, namely 4.15% per year. This difference is significant at the 10% threshold.

V.

17 Conclusion

In this article, we tried to exploit, in an original way, the advantages of the technique of the data envelopment analysis to build a corporate governance index. To the best of our knowledge, there is no empirical study that measured the efficiency of the corporate governance system by using the governance mechanisms as inputs and governance standards from the codes of good practice as outputs.

The 20 variable inputs characterizing the corporate governance mechanisms of the sample of 205 US firms are grouped around 4 themes: the ownership structure, the Board of Directors and its committees, compensation and incentive Plan and financial policy. As for outputs variables, we selected 2 which represent the following principles or corporate governance standards: financial transparency and dissemination of information and managerial accountability.

The results analysis reveals that the firms of the sample are, on average, relatively well-governed with an average score above 80% over the period 2007-2012. This confirms the fact that US firms adopt corporate governance standards, by their own free will or forced by the regulations. Furthermore, the descriptive statistics of the corporate governance index reveal some sectoral disparities.

Furthermore, the average monthly return of "good corporate governance portfolio" which is composed of all firms whose quality of governance is the best, is higher than the average monthly return of "weak corporate governance portfolio" with firms whose corporate governance is considered poor. This average return difference between the two extreme portfolios is statistically significant at the 10% threshold.

This makes us wonder whether there is really a relationship between the stock return and the corporate governance quality. The investigation on this issue can be the subject of future work.

18 Bibliography

Figure 1:

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Mechanisms	Variables	Measures adopted
Ownership structure	Ownership of the majority shareholders	Number of majority shareholders holding at least 5% of capital.
		The cumulative percentage of capital held by the majority shareholders.
	Institutional ownership	The cumulative percentage of capital held by institutional investors.
	Managerial ownership	The percentage of capital held by the managers.
Structure of the board of directors	Size	Total number of members of the Board of Directors
	Activity	Total number of meetings per year of the Board per year.
	Independance	The percentage of directors who are not current employees of the firm, or retired, or having links of kinship with the CEO.
	CEO duality	A dummy variable that takes the value 1 if the CEO is a member of the board and 0 otherwise.
Structure of the Audit Committee	Independance	The percentage of independent members of the Audit Committee.
	Activity	Total number of meetings per year of the Audit Committee.
	Expertise of the auditors	A dummy variable that takes the value 1 if there are auditors with finance and accounting skills, and 0 otherwise.
Structure of the nomination committee	Existence of the Nomination Committee	A dummy variable that takes the value 1 if there is a Nomination Committee and 0 otherwise.
	CEO is a member of the Nomination Committee	A dummy variable that takes the value 1 if the CEO is a member of the Nomination Committee and 0 otherwise.

Figure 2: Table 1 :

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Standards	Variables	Measures adopted
Transparency and dissemination information	of	

Figure 3: Table 2 :

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Figure 4: Table 3

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Figure 5: Table 3 :

4

Sector	Number of firms	Percentage
Basics Materials	20	10,39
Consumer Products	30	15,34
Health care	21	9,41
Industrial Goods	67	34,16
Retail	15	6,44
Services	11	5,44
Technologies	22	9,90
Transport	10	4,95
Utilities	9	3,96
Total	205	100,00

Years	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
Min	0.429	0.379	0.389	0.256	0.231
Max	1	1	1	1	1
Mean	0.869	0.875	0.811	0.829	0.793
Standard deviation	0.172	0.174	0.207	0.210	0.232

From Table 4, we note that firms in our sample are, on average, relatively well governed with an average score close to 80%. This corroborates that US companies adopt governance standards, voluntarily or forced by law and regulations. However, one point deserves special attention; a continuous increase in the standard deviation of the corporate governance index during 2007-2012. This should intrigue us because, since the enactment of the Sarbanes Oxley Act in 2002, firms should increasingly align their practices with new standards and their corporate governance index should then converge. A plausible explanation could be advanced: The data envelopment analysis method can establish efficiency scores relating to the remaining sample and every inefficient firm deviates from the efficiency frontier constituted solely by efficient firms. That is why, with the harmonization of rules of good corporate governance, any deviation from the efficiency frontier is heavily sanctioned and visibly seen thr the corporate governance index.

Moreover, since the financial crisis (subprime) of 2007/2008, the stock exchanges and regulators continued to revise their recommendations. There any firm which does not abide by new standards (especially those who remain optional) is severely punished by the data envelopment analysis metho which proposes a new «benchmark».

Furthermore, table 5 summarizes the descriptive statistics of the corporate governance by sector.

Figure 6: Table 4 :

5

Secteur	Nombre d'entreprises	CGI	MIN	MAX
Basics Materials	20	0,8339	0,6141	1
Consumer Products	30	0,8147	0,5321	1
Health care	21	0,8918	0,4980	1
Industrial Goods	67	0,8343	0,5184	1
Retail	15	0,8027	0,4988	1
Services	11	0,8654	0,6544	1
Technologies	22	0,7781	0,5540	0,9992
Transport	10	0,9368	0,6236	1
Utilities	9	0,8001	0,5061	1

Figure 7: Table 5 :

6

	Good corporate governance portfolio	Weak corporate governance Portfolio	Difference
Mean	0. 017286	0. 013831	0. 003455*
Standard deviation	0. 049785	0. 044520	

* significant at the 10% threshold.

Figure 8: Table 6 :

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