Corporate governance, industry dynamics and firms performance on the stock market

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An empirical analysis of a best practice model

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Abstract:

This paper intends to relate more closely corporate governance, industry dynamics and firms performance. In that perspective, it focuses on the impact of applying the normative, best practice model of corporate governance on industry dynamics and related stock market performances. At a theoretical level, it presents an integrated framework based on the connection between corporate governance and industry dynamics issues. But the core of the paper is to advance that the combination of corporate governance and industry dynamics also requires important investigations into empirical aspects. At a case study level, our major finding is that the adoption of the best practice model of corporate governance in the telecoms equipment supplier industry contributed to create large ups and downs in the industry dynamics. At a more general level, combining CGQ with DATASTREAM data sets, we show the variegated impact of the normative model on industry dynamics and firms stock market performances, and confirm the observed phenomenon of ups and downs amplifications formerly emphasized.

JEL Codes:

G30 L20 L60 L80 L90

Keywords:

Corporate governance, industry dynamics, firms performances, stock market, innovative *versus* traditional industries.

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1. Introduction[1]

Since the 1980s, uniformity in modes of corporate governance prevails with the belief that shareholder dominance is the optimal form (Jensen, 1986). Under this 'uniformity thesis', one unique model of corporate governance tends to be promoted, with the purpose of increasing the performance of firms adopting it (Gompers *et al.*, 2003). The uniformity thesis is based on a normative statement about what corporate governance ought to be, such as 'This company should be better governed and would perform better if the set of best practices promoting shareholder dominance was adopted'. However, a crisis in this normative model has emerged in the post financial crash era together with the development of important corporate governance difficulties and scandals (Worldcom, Enron, etc.). The post financial crash era has thus revealed a key puzzle: firms, industries and countries that were previously perceived to have adopted the normative, best practice model of corporate governance proved to be suddenly faced with major corporate scandals (Becht, Jenkinson and Mayer, 2005). As an illustration, in 2001, the scandalous company Enron was evaluated as doing better in terms of corporate governance than 42.1% of other companies listed in the S&P financial index (source: issproxy.com).

Today, accordingly, a more positive approach concerning models of corporate governance is pursued. Commentators increasingly describe and analyse what models of corporate governance are, without value judgement. Rather what is privileged is the understanding of the reasons why a corporate governance model may emerge in a given institutional context, develops in a coherent way, and generates distinctive performances. The major reason behind this more positive approach is that the observation of the real world shows that best practices

[1] The work has been carried out with the scientific support of CNRS, and is part of a research project funded by Agence Nationale de la Recherche (ANR, contract number: JCJC06_141306).

are most of the time a journey and not an end point, and that a one best way of governing companies is simply not achievable. In the literature, several key arguments can be identified supporting this emerging 'diversity thesis'. Some are at a macro level, others can be micro or meso.

The macro literature questions the assumptions behind the normative, best practice-oriented, uniform model of shareholder dominance, assumptions that may render the model inapplicable in most of modern economies. Allen (2005) notes that in the absence of complete markets, the beneficial properties of shareholder dominance do not necessarily apply and firms that pursue broader interests may outperform them. Moreover, throughout history, or in some fast growing countries like China today, shareholder dominance does not necessarily go hand in hand with high performance. In a similar perspective, Aglietta and Rébérioux (2005) characterize the incongruence of shareholder dominance with economies where markets are liquid, investors are short termists and financial markets are highly instable. Coffee (2005) helps to complement the argument by stressing that the structure of ownership, highly dispersed in the anglo-american system and more concentrated in the continental European one, can explain why recent corporate scandals have occurred more frequently in the USA.

At the micro level, there are also important supports of the 'diversity thesis', emphasizing a vision of the firm as a collective entity. Aoki (1984) notes that Japanese firms are predominantly characterized by an insider corporate governance model. In that case, firms cannot be limited to investors and managers but rather have to account for all the different parties engaged (employees, banks, suppliers and customers). The stakeholder perspective, developed by Blair (1995), Donaldson and Preston (1995), Kelly *et al.* (1997), Mitchell *et al.* (1997), develops the argument that the firm is composed of various actors all contributing to the economic performance and value of the firm, involving that they all should be rewarded adequately. For this reason, shareholders cannot be considered as the sole residual claimants. Zingales (2000) refines the argument by defining the firm as the web of specific investments built around a critical resource. Grandori (2004) offers a broader conceptualization of the notion of governance form, including important elements of the organizational form of the enterprise. Hansman (1996) shows that stock value maximization may not be in the best interest of shareholders themselves.

Finally, at a more meso level, contributors analysed the impact of corporate governance on the development and decline of the 'New Economy' at the turn of the millenium. Fransman (2002, 2004) analysed the processes and mechanisms that have played a significant role in causing the booms and busts in the telecoms industry during this period. The role of financial excesses, largely mediated by complex interactions between investors and financial analysts, is identified as determinant in explaining the turbulences observed in industry dynamics. Lazonick and O'Sullivan (2002) and also Carpenter, O'Sullivan and Lazonick (2003) show that the model of corporate governance adopted by US companies influenced the ways in which they used their stock and this rendered them more vulnerable when the stock market bubble exploded.

Our contribution is in the line of this meso literature that investigates how models of corporate governance can end up with different results in terms of performance depending on the characteristics of the industry in which these firms operate. In that perspective, this paper intends to relate more closely corporate governance, industry dynamics and firms performance. Though the ultimate and logic outcome of such a perspective is the elaboration of positive models of corporate governance on the basis of sound theoretical and empirical grounds regarding industry dynamics, our aim will be more modest in the present contribution. We will focus on the impact of applying the normative, best practice model of corporate governance on industry dynamics and related firms performance on the stock market.

In this paper, we advance that the combination of corporate governance and industry dynamics requires important investigations into empirical aspects. While a lot of empirical contributions have dealt with the issue of national convergence, i.e. the large adoption worldwide of the US shareholder dominance model, still little is known about sectoral aspects of corporate governance. Empirics on the basis of case studies, as well as more general evidence on the basis of large datasets, are thus a necessary step towards a better understanding of the link between corporate governance, industry dynamics and firms performance. The paper uses both types of empirical investigations in an articulated way. First, sectoral case studies are displayed as counter examples showing that the normative model of corporate governance is not necessarily the one best practice. Second, we make the observation more general by using a database to study the diversified impact of the normative model on industry dynamics and firms stock market performances.

The structure of the paper is the following. Section 2 presents an integrated framework based on the connection between corporate governance and industry dynamics issues. Section 3 develops case studies on the adoption of the best practice model in the telecoms equipment supplier industry, identified as one of the sectors where the financial crash created large ups and downs in the industry dynamics. Section 4 combines the Corporate Governance Quotient database (CGQ) with DATASTREAM to show on a more general basis the variegated impact of the normative model on industry dynamics and firms stock market performances. Section 5 summarizes the different results and concludes.

2. Firm governance and industry dynamics: proposal for an integrated framework

The aim of any research in industry dynamics corresponds to what Ronald Coase has defined in his lecture for the 50th anniversary of the NBER: "We all know what is meant by the organization of industry. It describes the way in which the activities undertaken within the economic system are divided up between firms. As we know, some firms embrace many different activities; while for others, the range is narrowly circumscribed. Some firms are large; others, small. Some are vertically related; others are not. This is the organisation of industry or – as it is used to be called – the structure of industry. What one would expect to learn from a study of industrial organisation would be how industry is organised now, and how it differs from what it was in earlier periods ; what forces were operative in bringing about this organisation of industry and how these forces have been changing over time ; what the effects would be of proposals to change, through legal action of various kinds, the forms of industrial organisation" (Coase, 1972, p. 60).

With this definition in mind, it is possible to decompose industry dynamics as a field of research into three distinct perspectives. The first perspective documents the fact that the organization of the industry is predominantly characterized by an important asymmetry in size distribution which has remarkable persistence across industries, countries, and over time. This is in the line of Coase's propositions on the comparative study of the organization of the industry from one period to the other. The second perspective goes a little bit further since the attempt is to identify the forces that structure the development of an industry from a birth stage to a decline stage, with the emergence of industry life cycles. This is consistent with what Coase suggested in terms of identifying the forces that drive change. The third perspective considers the conditions that guide changes in industrial organization, and not

only the result of these changes, i.e. the effects of proposals to change in Coasian terms. By doing so, an opportunity is given to get a picture of the competitive dynamics and of the drivers of secular changes in the industry, and especially the innovative choices of firms, that is different from and very much richer than what come naturally from the industry-level and even more aggregated data of the conventional statistical sources. For each perspective, we derive implications in terms of firms governance. The outcome of the section is thus the development of an integrated framework regrouping three major perspectives on industry dynamics and their related conclusions in terms of corporate governance. From this integrated framework, we identify research perspectives that motivate empirical work.

2.1. Firms size and governance implications

One of the major fields of investigation in industry dynamics is the asymmetric size distribution of firms, i.e. the fact that statistically there is a small number of large firms and a large number of small firms (Geroski, 1995; Sutton, 1998). Moreover, these numerous, small, new firms are often seen as crucial to the economic development, especially because they are generally at the origins of new technological and market opportunities, whereas older incumbent firms are often associated with defensive strategies materialized by the erection of barriers to entry (Audretsch, 1995). Implications in terms of corporate and firms governance have largely been discussed in the literature, and can be summarized as follows.

The governance of large, mature firms is relatively straightforward in the sense that there is a dominant, consensual vision of what corporate governance looks like. In the big corporation, the governance problem is essentially to persuade the manager to behave fairly on behalf of the investor, and to avoid any discretionary behaviour on the manager's side. The general solution to this agency problem is to grant managers a highly contingent, long term incentive contract *ex ante* to align his interests with those of principals (Schleifer and Vishny, 1997). The formalization, strongly based on a complete contract hypothesis, provides the essential requirements of shareholder dominance within a context of transparency of information and generalization of contractual relations in organizations (Jensen and Meckling, 1976). Managerial corrections may take various forms (board of directors, proxy fights, hostile takeovers, corporate financial structure), and are always oriented towards monitoring and disciplining management in the interest of shareholders and investors. Complementary approaches are also developed on the basis of transaction costs (Williamson, 1985), and

property rights (Hart, 1995a) in order to consider weaker rationality hypotheses, and higher costs of negotiating and writing down contracts. The transaction costs and property rights literature more deeply relies on notions of incomplete contracts and residual rights of control that are absent of agency theory. But, apart from these differences, transaction costs and property rights literatures generally come up to the same conclusions as agency theory concerning the rules of governance of large publicly held companies (Hart, 1995b; Williamson, 1988 and 2000).

The governance of small, new firms appears as a more disputed issue, since no convergent view really dominates. For a long time this issue has been treated in agency terms, i.e. in a framework based on asymmetric information and complete contracts, identical to the one used for the governance of large, mature firms. There are thus important agency problems between the entrepreneur and financiers. The entrepreneur has incentives to engage unproductive expenditures, since he does not bear the entire cost of it; or to develop an insufficient level of effort, since this level is not directly observable by the investor. These problems can be solved on the basis of a complete or quasi complete contract (Grossman and Hart, 1986; Hart and Moore, 1990). The solution broadly lies in the investor's scrutinization of firms before providing capital and monitoring them afterwards. In the case of new, innovative firms, the outcome is highly complex contracts with limited possibilities of application in the real world (Gompers, 1995, 1996; Kaplan and Stroemberg, 2003, 2004). In that context, new developments thus tend to recognize that the relation between the investor and the manager is necessarily based on incomplete contracts (Audretsch and Lehman, 2006). In that case, what entrepreneurs and investors know is highly dependent on their specific skills, experiences, and practices. Since this knowledge is not easily transferable, the investor and the manager have to develop close connections in order to progressively share their respective knowledge. Close connection is especially necessary, since lenders have to face with evaluating innovative but less proven business concepts. Small new firms do not generally demonstrate established history of earning and financial stability. Also, for many start-ups, the primary assets are intangible and difficult to value, thus failing to satisfy requirements for asset-based security. In that case, venture capitalists and business angels finance new and rapidly growing companies, and especially purchase equity securities. But, to do this, they generally control and assist the development of new products or services, and add value to the company through active participation. They usually take higher risks with the expectation of higher rewards, and have a long-term orientation.

Summing up, basic implications in terms of governance in this first perspective are that shareholders and financiers dominance has to govern large, mature firms, as well as small, new firms. However, if uncertainty is too high, implying that a complete contract between managers and investors is not achievable, the governance of small, new firms can be oriented towards more manager or stakeholder dominance, at least on the basis of a closer collaborative interaction between the key parties involved.

2.2. Industry life cycle and governance implications

The discovery that many industrial sectors have a life cycle is one important result in industry dynamics (Klepper, 1997; Malerba and Orsenigo, 1996). A large number of sectors have been found to follow a similar development path, going through the same series of stages which can be described as a life cycle. Those industrial sectors follow an industry life cycle and go from birth to youth to maturity in some sense as a biological organism. The most frequently observed regularity defining the industry life cycle is the number of firms in the industry, being very low at the stage of emergence of the life cycle, increasing exponentially during the stage of growth, and starting declining in the maturity stage. But different major stylised facts and regularities are also observed, such as:

- Production increases in the initial phases of the development of the industry, and then declines;
- entries are numerous in the beginning and tend to be exceeded by exits over time, especially when a shakeout occurs;
- key role is given to small, new firms in the early stages of the life cycle in terms of innovation and performance, while large, mature firms become the key actors in the final stages – sometimes because they have erected barriers to entry;
- market shares are highly volatile in the first steps and become more precisely defined later;
- product innovation from small, new firms is replaced by process innovation from large, mature firms;
- first movers generally enjoy a long-term leadership;
- dominant design and processes of standardization tend to appear over time.

As in the first perspective, we still found a dichotomy between small, new firms and large mature firms. As an outcome, implications in terms of governance may be very similar. The governance of large, mature firms has to be predominantly oriented towards shareholder dominance, while small, new firms should benefit of a more hybrid mode of governance, characterized by a joint dominance of the shareholder and the manager. However, the vision of firms highly innovative at the beginning of their life and much less as they age which is present in the first perspective, is less clear in the second one in terms of industry life cycles. Firms, as they age tend to reduce the spectrum of product innovation, but are the sole firms to possibly invest in process innovation. Accordingly, if large, mature firms are still innovative, a joint dominance from the shareholder, the manager, and the stakeholders should then apply (Krafft and Ravix, 2007; Filatotchev and Wright, 2005).

2.3. Evolution of industry and governance implications

The third perspective is based on detailed historical accounts of different industries, often but not always on the basis of large longitudinal micro-databases. Connections between different disciplines, especially industrial organization and business history, appear essential in most cases (Lazonick, 1991; Langlois and Robertson, 1995; Nelson, 1998; Dosi and Malerba, 2002). This trend of literature is less homogenous than the two preceding ones. Different complementary work – based on different methodologies – is proposed to address the question of the evolution of the industry, generally with an intellectual background in the study of innovation and economic growth that is different from the two preceding perspectives. The common orientation that links these different contributions, however, is that patterns, puzzles and anomalies revealed by empirical work are used to make progress in the analysis of the forces, such as corporate governance, that shape or drive the evolution of industry. Here, the most articulated arguments on the link between industry dynamics, corporate governance and firms performance are provided by Fransman (2002, 2004), Lazonick and O'Sullivan (2002), Carpenter, O'Sullivan and Lazonick (2003).

Fransman (2002, 2004) advances that, in the telecoms industry at the turn of the millennium, stock markets were dominated by the "beauty contest" phenomenon described by Keynes, according to which the judgement of players (especially investors and shareholders) is based on the expected judgement of other players (financial analysts acting as designers of a benchmark) leading to a vicious circle in expectations of stock prices. Namely, even if some

companies presumed to be largely overvalued, still investors and shareholders decided to invest in these companies since the most important deficiency for them would have been to be unable to meet the benchmark designed by financial analysts. This of course generated further rises in stock prices and fed exuberant expectations on the stock market. As an outcome, Fransman provides a detailed decomposition of the processes and mechanisms of rising stock prices in the telecoms industry, which were initially justified by the new opportunities for profits offered by telecoms liberalisation and the Internet, but which finally turned out to play significant role in the booms and busts observed in the industry.

Lazonick and O'Sullivan (2002) stress that shareholder dominance tends to be incompatible with innovation, i.e. with the basic characteristics of innovative firms, or with industries facing radical change. For these authors, shareholder dominance corresponds to an ideology from which we are obliged to take some distance as soon we look at how an innovative corporate economy operates. In an empirical study of optical networking sector, Carpenter, Lazonick and O'Sullivan (2003) show that corporate governance influenced the way in which companies used their stock to acquire new companies (via stock for stock acquisitions) and to compensate newly recruited talents (via stock options). In that process, they also show that companies developing standard shareholder dominance models performed worse and became more vulnerable to the fall in stock markets than companies that adopted a more hybrid model of corporate governance based on a joint dominance between investors and managers.

2.4. Summarizing research perspectives for empirical work

Within the integrated framework, the different perspectives on industry dynamics consider several models of corporate governance, from shareholder dominance to manager dominance, including all modes of stakeholders' dominance. Our empirical work to be developed in the next sections is in the line of these former contributions, with the purpose of extending and eventually discussing them according to the following points. The case studies are there to discover whether the normative model of shareholder dominance has effectively been largely developed or, alternatively, can be considered as a declining model as this is sometimes presented in the literature structuring the integrated framework. Case studies are also intended to clarify the role that shareholder dominance or other models of corporate governance play in the interaction between the ups and downs observed in the telecoms equipment industry and the rises and declines at the level of the stock market. Finally, case studies explore the idea

that, depending on the degree or rapidity of adoption of the normative model, ups and downs industry dynamics may turn to be accelerated or delayed. The dataset study is there to confirm on the basis of a general vision of industries whether the normative model of corporate governance is still in a phase of expansion, or on the contrary in a phase of regression or extinction. It is used to analyse the impact of the adoption of a normative model on the evolution of firms performance expressed in stock prices, and whether this impact is more important in some industries than others. The study is run with the aim to consider corporate governance on a multiple criteria basis, i.e. not only in reference to one single criterion, like stock options for instance. It also intends to check whether innovative industries are more or less sensible than traditional industries in terms of changes in models of corporate governance and associated stock market performances.

3. Case studies: telecoms equipment suppliers

We have developed a series of case studies on 5 telecoms equipment providers (Lucent, Nortel, Alcatel, Cisco and Nokia) in the period of the late 1990s and early 2000s (see also Krafft and Ravix, 2005; Carpenter et al. 2003; Fransman, 2002). This industry is central to the issue of corporate governance since it has been one of the sector most affected by the financial crash in 2000. The main finding is that the adoption of corporate governance principles in this industry has significantly amplified the ups and downs in terms of performance observed in this industry.

3.1. Firms and models of governance within the industry

Within the industry, a certain degree of firm's heterogeneity exists. The industry can broadly be separated into two groups of firms. The first group is composed of the incumbents, the traditional equipment suppliers such as Lucent, Nortel, Alcatel, whose entry date is generally before the mid 1990s and whose activity started with commutation-based telephony. The second group is essentially composed of entrants, the new equipment suppliers such as Cisco and Nokia, which entered since the mid 1990s and whose IP and wireless based activities started with the Internet and mobile revolution. Lucent, Nortel and Alcatel applied strict corporate governance principles, oriented towards the predominance of shareholders short term strategies. Cisco and Nokia had a more hybrid mode of corporate governance, since

decision making was shared between major shareholders and managers, and these major shareholders acted as managers and not as owners.

3.2. Financial crash, corporate governance and firms performance

At the turn of the millennium, the financial crash affected these companies badly, with several immediate results: R&D expenses were significantly decreased, revenues and share prices declined, with the effect of limiting opportunities for future growth, and downsizing were generalized (for further details, see Krafft and Ravix, 2005). The role played by corporate governance in this period can provide us with additional stylized facts. In fact, incumbent companies (such as Lucent, Nortel and Alcatel) which faced the pressure of their investors and shareholders were much more affected, compared to new entrant companies (such as Cisco and Nokia) which were not submitted to such a pressure:

– Shareholder value favored short-term investments over long-term investments. Though incumbent firms were not opposed to develop long term investments, investors tended to impose short term choices on managers as soon as profit warnings were communicated.

– For the incumbents Lucent, Nortel and Alcatel, the evolution of R&D was characterized by an important bust (see Annex 1a and 1b), while this evolution only slowed down or stagnated for the new entrants Cisco and Nokia (see Annex 1c and 1d).

– The scope of the coordination failures experienced by incumbent companies, illustrated in terms of R&D, revenues and share prices (see Annex 2a,b,c,d), as well as downsizing (see Annex 3), was however greater for Lucent and Nortel, compared to Alcatel which delayed the implementation of short term strategies imposed by investors, and finally had a smoother profile of evolution.

3.3. Results and comments

These empirical results suggest that corporate governance interacted with industry dynamics and resulted in many cases into durable and cumulative coordination failures. These results lead us to the following conclusions. Shareholder value tends to reinforce short term market pressures at the expense of longer term choices that innovation requires, leading to the acceleration of the ups and downs in innovative industries. The series of case studies indicates that distinct models of corporate governance exist, depending on the industry dynamics. The

incumbents such as Lucent, Nortel and Alcatel have implemented a different mode of corporate governance compared to Cisco and Nokia, the new entrants. The application of a single model of corporate governance on Lucent, Nortel and Alcatel has amplified the distortions in performance between these incumbent companies and the new entrants Cisco and Nokia. Finally, coordination failures in the incumbent Alcatel were relatively less important comparing to its incumbent competitors Lucent and Nortel. This can be related to Alcatel's initial refusal of financiers' pressure, and this relative inertia preserved its results though the company finally complied with shareholders' requisites. This shareholder dominance was however further reinforced in 2006 with the merger Alcatel-Lucent.

4. Evidence on the link between corporate governance, industry dynamics and firms performance

We have developed a dataset study on the relation between corporate governance, industry dynamics and firms performance in Europe [2] over the period of 2003-2007. Earlier contributions using a similar dataset for US companies in the 1990s (Gompers *et al.*, 2003) have found that shareholder dominance increased stock market performance, though some criticisms of these results were recently advanced in the literature (see for instance Core, Guay and Rusticus, 2006). Our main finding is that while shareholder dominance is increasingly diffused among European companies, it renders stock prices more sensible to changes in corporate governance over time, especially in innovative industries like semi-conductors where ups and downs are more likely to appear.

4.1. Data and variables

Corporate Governance Quotient (CGQ), from ISS (Institutional Shareholder Services), is a corporate governance rating system and database which is updated daily on over 7500 companies worldwide (2500 ex-US companies). It evaluates the strengths, deficiencies and overall quality of a company's corporate governance practices, and helps investors to guide their decisions. It covers over 25 industries on a firm basis. CGQ provides information about whether firms or industries conform to the best practice standards in terms of corporate

[2] More precisely the data includes EC countries like Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, United Kingdom, as well as non-EC countries like Norway and Switzerland.

governance. This database has become a reference in the domain, since it generates conclusions on the adoption of the best practice on a multiple criteria basis, and not only on a single criterion. Indeed, to generate a CGQ for each company, public disclosure documents are used to gather data on 55 different issues in the following eight categories: 1) Board of directors, 2) audit, 3) charter and bylaw provisions, 4) anti-takeover provisions, 5) executive and director compensation, 6) progressive practices, 7) ownership, 8) director education. Based on these information and a scoring system developed by ISS as well as an external advisory panel, the next step is to calculate a CGQ for each company. While each variable is evaluated on a standalone basis, some variables are also looked at in combination under the premise that corporate governance is improved by the presence of selected combinations of favorable governance provisions. It tracks country specific market regulations pertaining to each variable tracked. When market regulations do not limit corporate behavior and when a company has adopted a favorable corporate governance provision, an upward adjustment is made to the company's CGQ score. Further, each company's CGQ is compared with other companies in the same index: all companies (except US and Canada) are compared to the MSCI EAFE Index[3]. All these scores are relative, percentile basis. An example, Enterprise A scores 60% in CGQ, this means that Enterprise A is outperforming, in terms of corporate governance practices and polices, 60% of the companies in the MSCI EAFE Index.

To analyse the link between corporate governance, industry dynamics and firms performance, we combined two distinct databases: CGQ and DATASTREAM. GGQ uses SEDOL as company identifiers. SEDOL stands for *Stock Exchange Daily Official List*, a list of security identifiers used in the United Kingdom and Ireland for clearing purposes. From DATASTREAM, we collected stock prices for all the companies listed in CGQ using their SEDOL codes. The premise was to end up with a daily updated database regrouping all information on corporate governance and stock prices at the company level.

[3] MSCI EAFE (NYSE: EFA) is a stock market index of foreign stocks, from the perspective of a North American investor. The index is market capitalization weighted (meaning that the weight of securities is determined based on their respective market capitalizations.) The index targets coverage of 85% of the market capitalization of the equity market of all countries that are a part of the index. It is maintained by Morgan Stanley Capital International; the EAFE acronym stands for "Europe, Australasia, and Far East".

4.2. Variables

The purpose of the analysis is to find out the potential basic relationship between corporate governance and the stock price. Daily data are collected on a company basis from 29th Oct 2003, date of creation of the CGQ database for Europe, to 31st May 2007, date of our last updated download from the CGQ database.

We use the CGQ scores obtained by companies as a proxy for corporate governance, and we call it *IndexCGQ* for short later in the paper. Stock Price is SP for short. The analysis included only European companies from 6 different industries. Some of them are usually considered as traditional industries, such as Automobiles & Components, or Food beverage & Tobacco, while others are more innovative ones, such as Pharmaceutical & Biotechnology, Semiconductor & Equipment, Technology Hardware & Equipment, and Telecommunications Services.

As the data are not stationary, we hence take the log form of all the data. *IndexCGQ* will thus be *LnIndexCGQ* thereafter in the paper and SP will be *LnSP*. The graphs in Annex 4 show the basic distribution of *LnIndexCGQ* by industries, and Annex 5 shows the basic distribution of *LnIndexCGQ* by year. In the database, the CGQ is expressed in percentage; therefore, when taking log form some of the data become negative.

The first exercise we implemented on the data base, in order to provide summary statistics, is to capture the trend by year of *LnIndexCGQ* and *LnSP* (see Table 1 below). Since our analysis covers only the last two months in 2003 and the first five months in 2007, the number of observations varies according to different years. However, this number is generally very high since we have daily information, and this increases the quality of empirical results. The major result is that both *LnIndexCGQ* and *LnSP* have a positive trend over the period 2003-2007, suggesting that corporate governance quotient and stock values have increased gradually. Year after year, then, companies improve their score in terms of corporate governance. In the meantime, their stock price also goes rising. For both variables, however, standard deviation is high, suggesting a large diversity in concrete situations.

TABLE 1

SUMMARY STATISTICS CLASSIFIED BY YEAR

		N	Minimum	Maximum	Mean	SD
2003	*LnIndexCGQ*	7326	-0,22	4,59	3,53	1,12
	LnSP	7240	-1,35	7,95	3,24	1,73
2004	*LnIndexCGQ*	39518	-2,30	4,61	3,54	1,17
	LnSP	39149	-1,36	7,92	3,32	1,72
2005	*LnIndexCGQ*	37928	-2,30	4,61	3,67	1,14
	LnSP	37749	-1,17	8,47	3,45	1,79
2006	*LnIndexCGQ*	51840	-1,61	4,61	3,98	0,84
	LnSP	51600	-1,71	10,35	3,53	1,97
2007	*LnIndexCGQ*	16220	-0,51	4,61	4,04	0,67
	LnSP	16111	-0,31	10,52	4,31	1,77

The second exercise is to provide statistics on *LnIndexCGQ* and *LnSP* industries by industries (see Table 2 below).

TABLE 2

SUMMARY STATISTICS CLASSIFIED BY INDUSTRY

		N	Mini	Maxi	Mean	SD
Automobiles & Components	*LnIndexCGQ*	16892	-0.36	4.61	3.79	0.88
	LnSP	16891	-0.57	7.20	3.63	1.45
Food Beverage & Tobacco	*LnIndexCGQ*	42764	-2.30	4.61	3.70	1.31
	LnSP	42729	0.01	10.52	4.52	1.88
Pharmaceuticals & Biotechnology	*LnIndexCGQ*	27907	-0.22	4.60	3.79	0.94
	LnSP	26977	-0.31	8.17	3.98	1.77
Semiconductors & Equipment	*LnIndexCGQ*	7846	2.29	4.56	4.04	0.44
	LnSP	7848	0.86	6.65	3.18	1.34
Technology Hardware & Equipment	*LnIndexCGQ*	28346	0.26	4.61	3.80	0.91
	LnSP	28352	-0.87	7.32	3.67	1.57
Telecommunications Services	*LnIndexCGQ*	29077	-2.30	4.61	3.77	0.97
	LnSP	29075	-1.36	6.41	3.43	1.45

The number of observations is again very high. The highest *LnIndexCGQ* is obtained in the Semiconductors & Equipment industry with a mean in log of 4.04 (i.e. companies did better in terms of corporate governance than 61.33% of the other companies listed in the MSCI EAFE Index), while the other industries lag behind to some extent: Technology Hardware &

Equipment is 3.80, Automobile & Components as well as Pharmaceuticals & Biotechnology are 3.79, Telecoms services is 3.77, and Food Beverage & Tobacco is the last with 3.70.

Paradoxical results are obtained when we look at both *LnIndexCGQ* and *LnSP* (underlined in Table 2). Industries that perform the best in terms of corporate governance quotient (i.e. industries with highest *LnIndexCGQ*, like Semiconductors & Equipment industry) are the ones that have the worst performances in terms of stock prices (i.e. lowest *LnSP*). In the meantime, industries that have low scores in terms of corporate governance quotient, like Food Beverage & Tobacco, are also characterized by the highest stock prices mean values. This preliminary result is interesting since it would suggest that improving corporate governance is not necessarily reflected by stock prices increase, which is not the dominant view in the field (see again Gompers *et al.*, 2003). If the preliminary result is confirmed by further empirical analysis, then this would highly question the rationale for applying the best practice model of corporate governance, normally intended to generate better stock price performances. Here, a further investigation into the characteristics of industries may help. Highly innovative industries like Semiconductors & Equipment industry can be the subject to more radical changes in terms of corporate governance, compared to more traditional industries like Food Beverage & Tobacco. Moreover, the way in which investors perceive and interpret these radical changes is also subject to high uncertainty, leading potentially to higher fluctuations in stock market performances.

The third exercise is to show the correlation pairs of *LnIndexCGQ* and *LnSP* (see Table 3 and Table 4 below). In general, Table 3 emphasizes by year correlations and displays positive though not extremely high correlations between the two variables. The correlation starts from 0.19 in 2003 and raises up to 0.29 in 2007, with a decline in 2006. This means anyway that corporate governance quotient and stock prices are more and more related in the post-financial crash era.

TABLE 3

CORRELATIONS WITH *LnSP* (by year)

	LnIndexCGQ
2003	0.19
2004	0.23
2005	0.26
2006	0.18
2007	0.29

By industries, Table 4 shows that the correlation is around 0.23 for the lowest one (Telecommunications Services) up to 0.44 for the highest one (Automobile & Components). This suggests that depending on industries, the respective evolutions of corporate governance quotient and stock prices are more or less closely linked. For lower values of correlation, then corporate governance quotient, on the one hand, and stock price, on the other hand, may be more closely related to other variables such as book to market ratio, firm size, trading volume, Tobin's Q, dividend yield, etc.

TABLE 4

CORRELATIONS WITH *LnSP* (by year)

	LnIndexCGQ
Automobile & Components	0.44
Food Beverage & Tobacco	0.352
Pharmaceutical & Biotechnology	0.291
Semiconductors & Equipment	0.396
Technology Hardware & Equipment	0.394
Telecommunications Services	0.235

Differences in terms of correlation values affect all industries, innovative or more traditional ones. As an illustration, the highest correlation is observed in a traditional industry (Automobile & Components), followed by two innovative industries (Semiconductors & Equipment and Technology Hardware & Equipment), one traditional industry (Food Beverage & Tobacco), and finally again two innovative industries (Pharmaceutical & Biotechnology and Telecommunications Services).

However, in all cases, the correlation is positive. It clearly shows that improving (respectively decreasing) *LnSP* will result in improving (respectively decreasing) *LnIndexCGQ*.

4.3. Empirical relationships

The purpose is to find out the relationship between corporate governance and the stock price. We use a simple regression which includes only two variables: the dependent variable *LnSP* and the independent variable *LnIndexCGQ*.

$$LnSP_{i,t} = \alpha + \beta LnIndexCGQ_{i,t} + \upsilon_{i,t}$$

For reasons of homogeneity with respect to our daily data it has not been possible yet to consider control variables like book to market ratio, firm size, trading volume, Tobin's Q, etc. These control variables have to be included in further developments of our empirical analysis but, even with this basic, less constrained model, it has been possible to derive three important findings.

The first important finding is that the best practice model is still developing, despite criticisms and attempts to sustain an alternative and more positive approach to corporate governance, criticisms and attempts which are especially vivid in this post-financial crash period. Table 5 regroups all the results concerning the regression between *LnSP* and *LnIndexCGQ* by year.

TABLE 5

REGRESSION RESULTS BY YEAR

Year	Intercept			Coefficient *LnIndexCGQ*		
	Value	Standard Error	Significant	Value	Standard Error	Significant
2003	2.177	0.067	0.000	0.300	0.018	0.000
2004	2.118	0.027	0.000	0.339	0.007	0.000
2005	1.984	0.030	0.000	0.399	0.008	0.000
2006	1.838	0.041	0.000	0.425	0.010	0.000
2007	1.224	0.083	0.000	0.762	0.020	0.000

The results are all very significant, as well as positive, which means the impact of corporate governance quotient on stock price is definitely positive. Moreover, the magnitude of the

impact increases with time. If corporate governance quotient has increased (respectively decreased) by 1%, the stock price on average has increased (respectively decreased) by 0.3% in 2003, 0.34% in 2004, 0.4% in 2005, 0.43% in 2006 and 0.76% in 2007. It is easy to find out a trend in the effect of corporate governance on stock price, *LnSP* becoming more and more sensitive to the changes of *LnIndexCGQ*. This is also consistent with our preliminary results on the changing values of CGQ and SP over the period 2003-2007, their high standard deviations, and their increasing relatedness over time.

The second important finding is that the best practice model increases the ups and downs in industry dynamics. Table 6 summarizes results concerning the regression between *LnSP* and *LnIndexCGQ* by industries. All results are significant, and the coefficients of *LnIndexCGQ* are all positive, but vary with industries.

TABLE 6

REGRESSION RESULTS BY INDUSTRY

	Intercept			Coefficient *LnIndexCGQ*		
	Value	Standard Error	Significant	Value	Standard Error	Significant
Automobile & Components	0,786	0,044	0,000	0,750	0,011	0,000
Food Beverage & Tobacco	2,521	0,026	0,000	0,540	0,006	0,000
Pharmaceutical & Biotechnology	1,942	0,043	0,000	0,536	0,011	0,000
Semiconductors & Equipment	-1,660	0,127	0,000	1,199	0,031	0,000
Technology Hardware & Equipment	0,877	0,036	0,000	0,735	0,009	0,000
Telecommunications Services	1,959	0,033	0,000	0,390	0,008	0,000

This means that there is a general positive relationship between the two variables corporate governance quotient and stock price. This result can be explained in the following manner: if *LnIndexCGQ* increases (respectively decreases) by 1%, *LnSP* will on average increase (respectively decrease) by 1.199% for Semiconductors & Equipment, 0.75% for Automobile & Components, 0.735% for Technology Hardware & Equipment, 0.54% for Food Beverage & Tobacco, 0.536% for Pharmaceutical & Biotechnology, and 0.39% for Telecommunications Services.

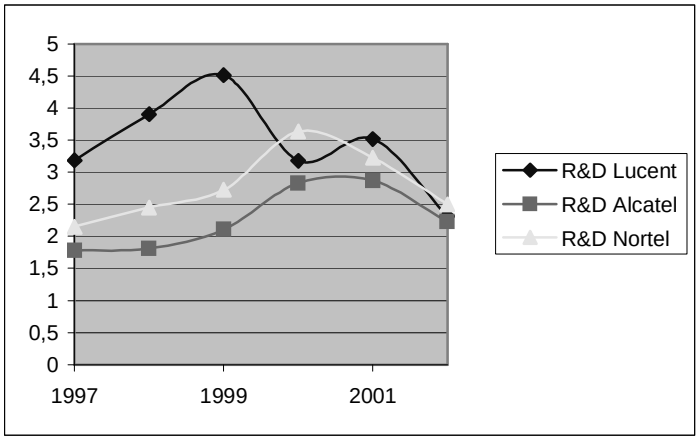
From descriptive statistics, it has turned out that all industries revealed positive correlations between corporate governance quotient and stock prices. It becomes now more evident that, depending on industries, firms' stock price performance may be more or less sensitive to changes in corporate governance quotient. The stock prices of the companies of Semiconductor & Equipment Industry are much more sensitive to changes in *LnIndexCGQ* comparing with other studied industries. It is followed by a group of two industries, Automobile & Components and Technology Hardware & Equipment which shared with Semiconductor & Equipment Industry the highest correlations between *LnIndexCGQ* and *LnSP*. In these industries, the impact of increasing or decreasing corporate governance quotient is significant in terms of varying stock price performance. The final group includes Food Beverage & Tobacco, Pharmaceutical & Biotechnology, and Telecommunications Services, where the impact is still important, though lower.

The third finding is that the variegated impact of corporate governance quotient on stock price reflect sector specificities, though it does not necessarily recoup the usual distinction between innovative versus traditional industries. What the data showed from Table 2 is that one innovative industry, the Semiconductor & Equipment Industry performed the best in terms of corporate governance quotient, but in the meantime had the lowest stock price mean value. Alternatively, Food Beverage & Tobacco, the traditional industry, exhibited lowest *LnIndexCGQ* and highest *LnSP*. From Table 6, we know that every changes in corporate governance quotient registered in Semiconductor & Equipment companies are amplified in terms of stock market performances. In the Food Beverage & Tobacco, the picture is very different, since changes in *LnSP* are not so dependent on *LnIndexCGQ* and may thus be explained by other variables. In any case, the study stresses that changes in corporate governance quotient results in important modifications at the level of stock market values, and even amplified modifications for some industries. This confirms then our idea that best practice models of corporate governance may amplify the ups and downs in firms' performance, though it does not only affect innovative industries but also more traditional ones.

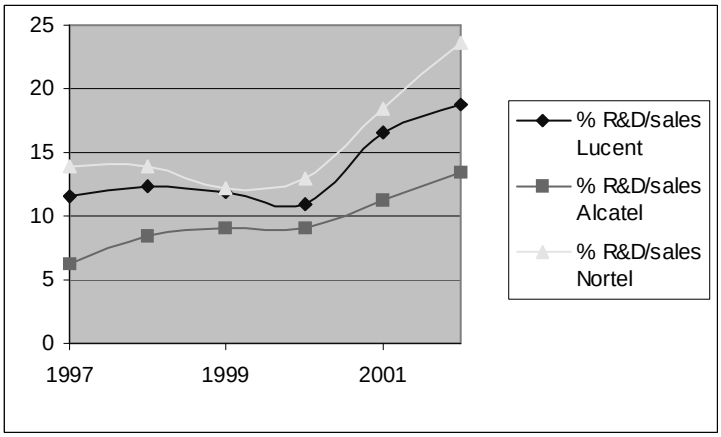
5. Conclusion

Our aim in this paper is to analyse the impact of applying the normative, best-practice model of corporate governance in a world where a large diversity of industry dynamics exists, and where stock prices are increasingly related to changes in corporate governance. The theoretical part of our work consists in presenting an integrated framework where firms governance and industry dynamics can be addressed jointly, and to elaborate on this some research perspectives for empirical work. The empirical part of our work is intended to develop these research perspectives, using both case studies and data set evidence. From our empirical investigations, it appears that the normative model tends to amplify the ups and downs shaping the industry dynamics. Our case studies show that, in the highly innovative telecommunications equipment industry during the period of financial crash (1998-2002), companies that have adopted the normative model generally performed worse than companies developing a model of corporate governance adapted to their specific industry dynamics. Our empirical evidence from the CGQ and DATASTREAM databases shows that the normative view tends to diffuse increasingly in the post financial crash era (2003-2007) in Europe, with however the important and potentially pervasive effect that some industries (like Semi-conductors & Equipment) are much more sensible in an increase/decrease in CGQ on their stock market performances. This confirms that the best practice model of corporate governance amplifies the ups and downs occurring in innovative industries – but not only there, since more traditional industries may also be affected.

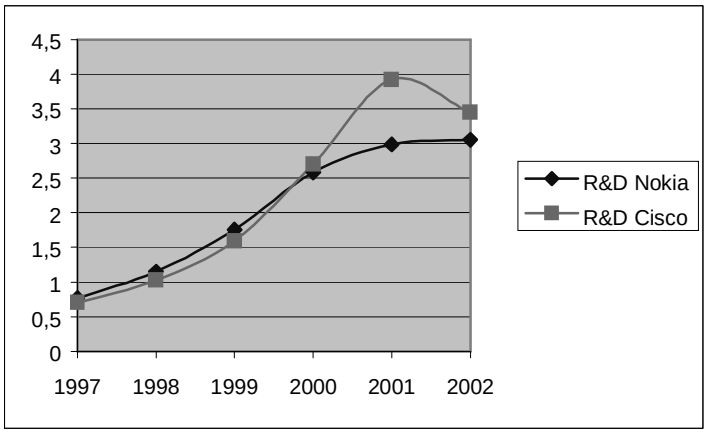
Annex 1: R&D in telecommunications equipment industry



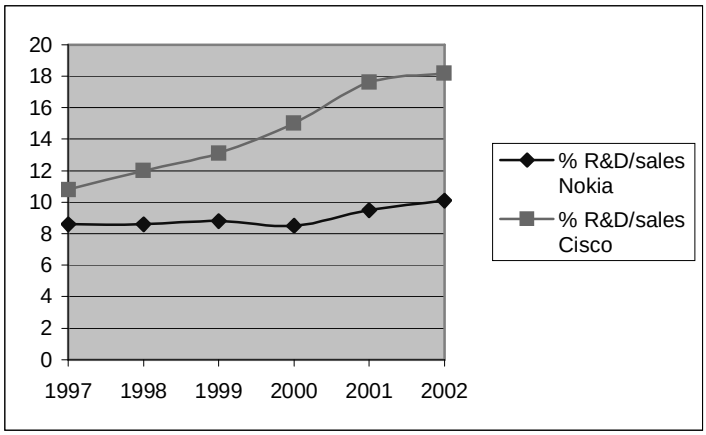
Annex 1a : R&D expenses in Lucent, Alcatel and Nortel
(in million $)
Source: Companies 20F forms



Annex 1b : R&D/sales in Lucent, Alcatel and Nortel
(in percentage)
Source: Companies 20F forms

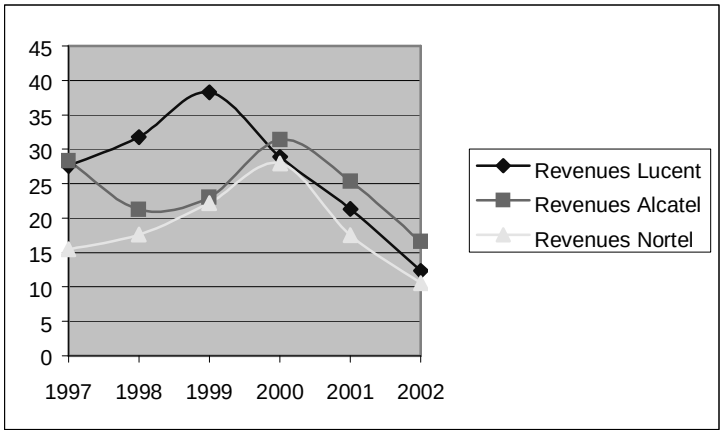


Annex 1c: R&D expenses in Nokia and Cisco
(in million $)
Source: Companies 20F forms

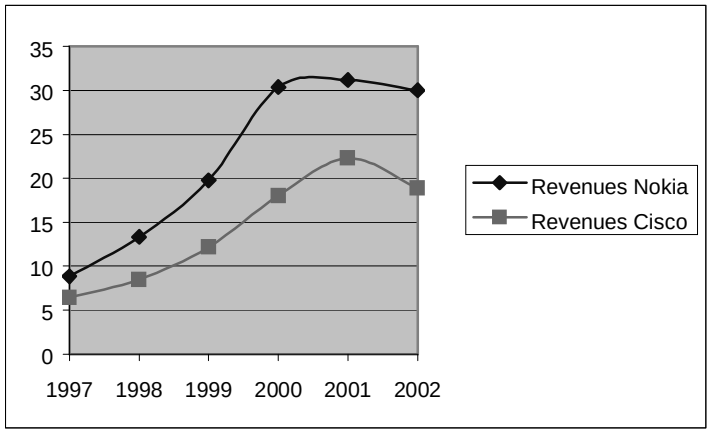


Annex 1d : R&D/sales in Nokia and Cisco
(in percentage)
Source: Companies 20F forms

Annex 2: Revenues and share price in telecommunications equipment industry



Annex 2a: Revenues of Lucent, Alcatel and Nortel (in million $)
Source: Companies 20F forms



Annex 2b: Revenues of Nokia and Cisco (in million $)
Source: Companies 20F forms

Annex 2c: Share price of Lucent (LU), Nortel (NT), Alcatel (ALA) (Basis 0 in 1997)
Source: http://www.quote.bloomberg.com

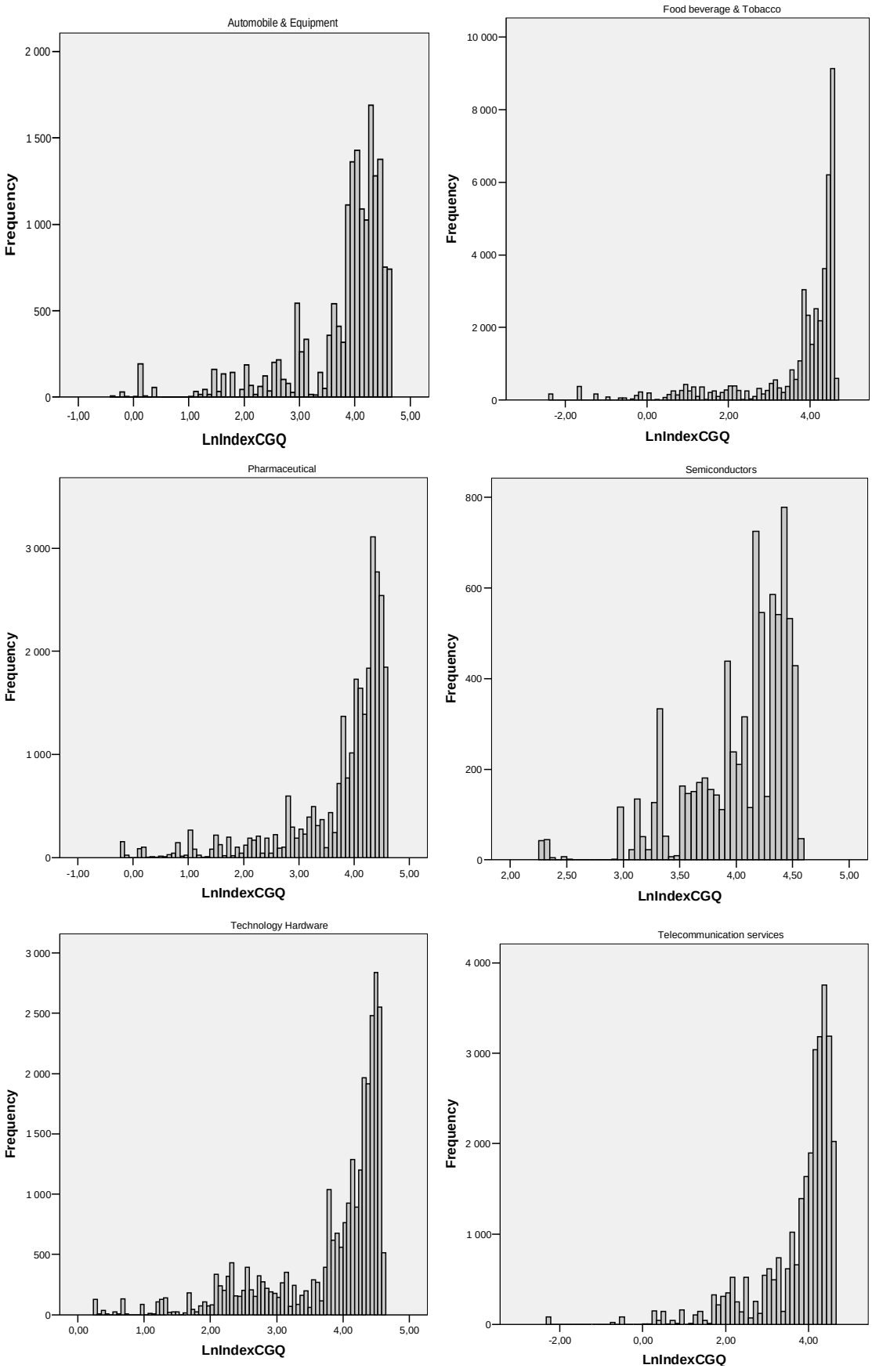
Annex 2d: Share price of Cisco (CSCO),and Nokia (NOK) (Basis 0 in 1997)
Source: http://www.quote.bloomberg.com

Annex 3: Downsizing in telecommunications equipment industry

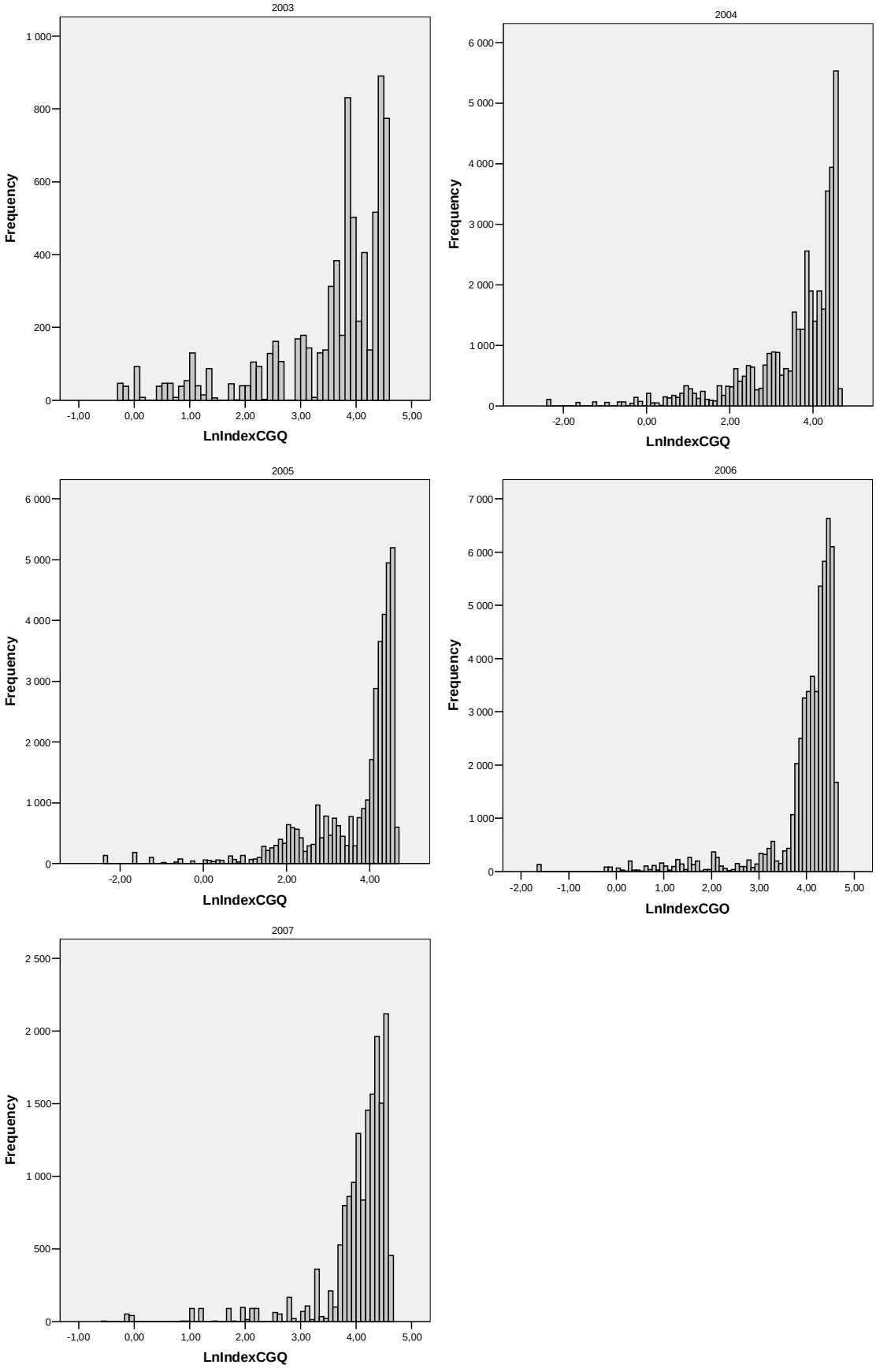
Companies	1998-2000	2000-2002
Lucent	126,000	35,000 (-72%)
Nortel	94,500	56,000 (- 40%)
Alcatel	113,000	60,000 (-53%)
Cisco	20,000	14,000 (-30%)
Nokia	58,000	52,000 (-10%)

Annex 3: Total number of employees in telecommunications equipment companies
Source: Companies 20F forms

Annex 4: Distribution of *LnIndexCGQ* by industries



Annex 5: Distribution of *LnIndexCGQ* by year



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