

Corporate Restructuring in the Face of the Korean Financial Crisis and Its Implications for Learning and Adaptation: An Evolutionary and Competence-based Perspective

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경제위기 국면에서의 대기업 재구조화와 이의 학습 및 적응에 대한 함의: 진화론적 및 역량기반 관점

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Abstract : This paper is concerned with unveiling the responsiveness of large Korean firms to external shock by examining corporate restructuring in terms of production and organization. Throughout empirical research, I speculate on how corporate restructuring influences and relates to corporate learning and adaptation. The main findings of this research are as follows. First, the restructuring of business structure was expected to strengthen core competencies and improve profitability and the restructuring of organizational structure to make it possible for responding more quickly to radical changes in its business environment. Second, both downsizing and employment adjustment have assisted the firm with unlearning obsolete practices, preconditions necessary for effectively accomplishing new learning practices. Third, both the spatial reorganization of production activities and process innovation require and involve learning processes. In conclusion, it claims that corporate restructuring can be seen as a powerful learning tool, particularly in the context of radical economic change.

Key Words : corporate restructuring, learning, adaptation, knowledge, innovation, the Korean financial crisis, LG Electronics Company.

요약 : 본 연구는 진화론적 및 역량기반 관점에 기초하여 외환위기 이후의 한국 대기업의 재구조화 과정을 생산과 조직을 중심으로 고찰함으로써 경제위기에 대한 기업의 반응성과 적응 특성을 밝힌다. 이와 함께, 기업 재구조화가 기업 학습 및 적응에 미치는 영향과 관련성을 규명한다. 사례연구는 한국의 대표적 기업가운데 하나인 LG전자를 대상으로 한 심층 인터뷰조사와 문헌고찰을 토대로 한 것이다. 주요 연구결과는 다음과 같다. 첫째, 사업구조와 조직구조의 재편은 기업 역량을 향상시키고, 경제환경변화에 대한 반응성을 높이는 데 있어 중요하다. 둘째, 다운사이징과 고용 조정은 기존의 루틴과 관행으로부터의 탈피뿐만 아니라 새로운 학습을 추구하는데 기여한다. 셋째, 생산조직의 공간 재편과 공정 변화 및 혁신은 다양한 수준에서의 조직적 학습 과정을 내포한다. 결론적으로, 본 연구는 기업 재구조화는 단기적 적응을 위해서일 뿐만 아니라 장기적 측면에서 학습과 적응 능력 향상을 위한 중요한 수단이 될 수 있다고 주장한다.

주요어 : 기업 재구조화, 학습, 적응, 지식, 혁신, 한국 경제 위기, LG전자.

1. Introduction

As we might aware, the Korean financial crisis, coupled with a rapidly increasing global competi-

tion in markets and technology, has posed a great challenge to Korean firms. They have come under a great deal of political pressure from the government and non-governmental civic organizations, suggest-

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ing that the corporate sectors should be at the heart of structural reforms. As Akaba, Budde and Choi (1998) concisely point out:

It is clear that the chaebol need to act, both to survive the present crunch and, in the longer term, to attract the investment funds they need to grow. They must learn to run their companies in an entirely new way, abandoning empire building to focus on creating value for shareholders.

In this context, the 1997 financial turmoil signifies that Korean firms can no longer secure their survival with their existing mode of adaptation. Whether or not they are able to sustain adaptation and evolution may rely on how they effectively restructure to adapt to the current situational context.

This paper aims at understanding the dynamics of how large Korean firms have responded to radical change. In theoretical context, this paper is to give some insights into the role of traditional corporate restructuring methods on learning and adaptation. From the evolutionary point of view, radical changes in environment imply that firms should seek radically different ways of doing things in order to sustain continuous adaptation. However, it may not be easy for firms to change and thereby fit to such a new environment. Theoretically, adaptation, especially in the face of radical change, means a change in routines, strategy or structure (Dosi and Malerba, 1996; Levinthal, 1996). This may involve more complex organizational processes than those involved in incremental change. In this paper, 'adaptation' is defined as organizational responses to environmental change. There are two different theoretical positions in explaining corporate adaptation: one that focuses on corporate restructuring, another that centers on corporate learning.

Until the 1980s, in geography, a restructuring perspective had dominated in explaining corporate success and adaptation. The task of restructuring seeks changes in existing routine and structure. In this perspective, the outcome does not always lead to a revolutionary change or successful adaptation. What is

emphasized instead is that corporate restructuring reflects the firm's complex, multifaceted processes of adaptation to environmental change.

More recently, especially since the 1990s, academic focus on corporate adaptation and evolution has shifted towards exploring the nature of learning that leads to the dynamic competitiveness. This perspective, drawing upon evolutionary and competence-based theories of the firm, emphasizes the influence of knowledge, learning and competence on corporate evolution and corporate success (Hodgson, 1998; Amin and Cohendet, 1999, 2000). However, an evolutionary learning perspective does not provide us with insights into the processes of learning and adaptation in response to radical change in business environments. In this paper, I will tease out how corporate restructuring influences and relates to corporate learning and adaptation and argue that corporate restructuring can be seen a powerful learning tool, particularly in the context of radical economic change.

This paper draws on the case study of the LG Electronics Company (hereafter, LGE). The reason for selecting the company is that LGE is one of the largest firms in Korea and is assumed to experience significant organizational changes since the economic crisis, implying that there have been radical restructuring and learning practices in production and organization. In fact, some statistical data show that LGE has overcome the difficult times.¹⁾ In doing this, the empirical material is based on in-depth, sometimes repetitive, interviews with managers of the management planning teams, the R&D teams and the production teams between June and October 2000 and secondary sources including corporate documents and a number of news articles.

In sections 3 to 5 that comprise empirical research dealing with corporate restructuring in LGE, I examine restructuring attempts, including downsizing, the rationalization of employment, the reform of organizational structure, the reorganization of production, and process innovation. I will show, throughout the examination of these dimensions of

corporate restructuring, that corporate restructuring can be as important as the dimensions of learning in order to adapt to the economic crisis as well as it offers the basis for unlearning obsolete practices and routines and for sustaining new learning.

2. Theoretical Framework

1) Defining corporate adaptation

The question of how firms adapt to respond to environmental change is one of the central themes in evolutionary and competence-based theories of the firm (Metcalfe and Calderini, 1997). Adaptation is considered to be crucial for the survival and evolution of the firm, as business environments surrounding the firm have become increasingly complex and turbulent. Definitions of the term 'adaptation' tend to be given with two contrasting perspectives. One view is interested in 'adaptation' in order to emphasize the path-dependent nature of organizational response to environmental change, while the second view recognizes 'adaptation' as a product of firm's strategic and non-strategic responses to environmental change.

Some writers, who are interested in the influence of learning on organizational evolution and change, refer to the way in which firms show path-dependent responses to environmental change (e.g. Foss, 1998; Levitt and March, 1996). In evolutionary and competence-based theories of the firm, the firm is seen as a changing, but relatively durable entity, implying the possibility of the firm to change tends to become increasingly low over time (Hodgson, 1998). This means that the state of the firm at a given point in time is path-dependent, signifying that present and past behaviors display a similar pattern (Foss, 1998; Nelson and Winter, 1982). The evolutionary path of the firm is embodied in organizational routines, which refer to regular and predictable behavioral patterns of firms.

For Levitt and March (1996: 517), the concept of 'routine' does not just include the forms, rules, procedures, conventions, strategies and technologies around which organizations are constructed and through which they operate. It also involves the structure of beliefs, frameworks, paradigms, codes, culture, and knowledge that support, elaborate and contract the formal routines. Specifically, routine is an executable capability for repeated performance in a context that an organization in response to selective pressures has been familiar with. Organizational routines are transmitted and reproduced incrementally through both the intentional and unintentional behaviors of an organization, although this does not mean that business behaviors always follow regular and predictable patterns. This is to emphasize that there are stochastic elements both in the determination and in the outcome of decisions (Nelson and Winter, 1982).

Organizational routines are created as the result of learning processes involving the construction of competences (Levinthal, 1996). In a relatively stable environment, such an attribute of routines therefore provides a source of organizational competences. It is, however, paradoxical that routine is likely to create an inertia that constrains organizational change. Inertia is often the product of successful adaptation to the past environment, as a firm develops ways of operating that appear well suited to its internal and external environment (Langlois and Robertson, 1995; Levinthal, 1991). There is the possibility that the path-dependent nature of organizational behavior based on routines restricts organizational change, even in the face of stimuli external to the activity and decision rule in question (Helfat, 1998). The reason is that the strategies deployed in order to adapt to an established environment are not necessarily suited to a transformed environment. This implies that incremental or evolutionary adaptation can be the cause of an organizational lock-in that restricts adaptability to a changing environment. In this view, the term adaptation refers to the response to

changes in environment.

However, this definition of adaptation is unnecessarily narrow. A firm's response to environmental change can be diverse. Firms attempt to adapt to environmental turbulence by drawing on various adaptation strategies, such as changes in organization, leadership, product and process. For Laitinen (2000: 805), the adaptation strategy is defined as a response strategy to the environment. In a similar vein, Sharfman and Dean (1997) define 'adaptation' as the series of a firm's strategic choices about how the organization should respond to perceived threats or opportunities. Dosi and Malerba (1996) argue that adaptation occurs when the firm changes its strategy, structure or some other core attribute to fit some new environmental contingency.

In a nutshell, adaptation represents organizational responses to environmental change. When we understand the concept of adaptation like this, not all the strategies that firms deploy may entail learning in a direct way (Levinthal, 1996). Some of the adaptation strategies may center on gaining new knowledge and competences and sustaining organizational and technological innovations, which will necessarily be accompanied by a learning process. Those may include inter-firm alliances and R&D activities. Meanwhile, other forms of firm strategy can concentrate on cost reduction through the dimensions of restructuring such as downsizing, employment adjustment and organizational change. It can be assumed that these two forms of adaptation strategies involve distinctive processes that have little to do with one another. However, I argue that both forms of adaptation strategies need to be understood as complementary or, in some sense, indivisible processes, as effective adaptation can be realized through complex organizational processes that bring together restructuring and learning.

2) Corporate restructuring as a means of adaptation

Since the 1950s, the radical increase in internation-

al competition in markets and technology has led to the decline of many large Western firms' monopolistic competitive positions. Many of them have responded by restructuring. According to Rock and Rock (1990), during the 1980s, in particular, nearly half of all large US firms undertook restructuring. In that period, the focus of corporate restructuring was on the reorganization of the business portfolio through downsizing or Mergers & Acquisitions (M&A). It is true that capitalist firms have restructured in response to the changing market and technology. However, the recent tendency in corporate restructuring differs from that of the past. Corporate restructuring has become more complex and multifaceted. This is because not only has inter-firm competition become increasingly intensified, but also the pace of change in market and technology has significantly accelerated.

In this context, defining 'corporate restructuring' is not easy. Usui and Colignon (1996) argue that whatever a firm does under pressure can be referred to as corporate restructuring. They summarize the dimensions of corporate restructuring as follows: the elimination of product lines, the combination of internal units, new stock offerings, early retirements, the sale of nonessential units, plant closure, the externalization of employment by taking regular employees out and relying more on contract or temporary workers, the replacement of top executives and board members, the reallocation of employees, and a change of decision-making location (centralization or decentralization) (p. 517). According to Hayter (1997), corporate restructuring involves corporate activities aimed at lowering costs, enhancing productivity and improving market position. It implies the search for flexibility in technology, production, organization, markets, location and labor. Each of these becomes the theme of corporate restructuring, and in many ways, they become interwoven in the process of restructuring. In management terms, Bowman and Singh (1990) define corporate restructuring more precisely as a change in

assets, financial portfolio or management. Asset restructuring consists of adjusting a business portfolio through downsizing, mergers, acquisitions and joint ventures. Financial restructuring involves changes in the capital structure of the firm. This means the infusion of high levels of debt to increase the leverage of the firm to reduce the likelihood of a takeover. Management restructuring involves significant changes in organizational structure to increase the efficiency of management.

It is assumed that the notion of restructuring involves a revolutionary change, a qualitative transformation from one state to another (see for example Lovering, 1989). However, it does not necessarily involve such a complete transition (Hoggart and Paniagua, 2001), nor do all processes of corporate restructuring lead to revolutionary change. Rather, it is better to view corporate restructuring as an ongoing process of qualitative change. Corporate restructuring can also be accomplished through incremental processes of organizational change. In addition, corporate restructuring is context-dependent, as its process depends on the nature of the industry in which firms are engaged, and their environment. For example, concerning the firms operating in a mature industry and stable market, the key to adaptation seems to be factors like cost, efficiency, and incremental innovation. On the other hand, the firms competing in an emerging industry and an unpredictable market need to make great efforts to develop new products and ways of doing things in order to adapt the market to a given environmental situation.

Therefore, corporate restructuring is, in many ways, the outcome of specific corporate strategies developed to adapt to a changing environment. However, it is difficult to see corporate restructuring as the result of an optimal reaction to or interpretation of a changing external environment (McGrath-Champ, 1999). As described above, corporate restructuring strategies are complex and multifaceted, reflecting the process of adaptation to environ-

mental change. This implies that a restructuring approach can provide useful insights into what is needed for corporate adaptation. This is a critical aspect that the learning perspective tends to overlook by focusing largely on the development of organizational knowledge and competence. In addition, some of corporate restructuring strategies involve learning either directly or indirectly.

3. Downsizing and Reorganizing the Internal Labor Market

One of the pressing questions that the Korean chaebol have faced in the wake of the Asian crisis is how to reduce excessive debt to equity ratio, eliminate cross-debt guarantees among affiliates, and improve corporate governance structure. It has been argued that unfavorable management practices result from excessive competition among chaebol and an obsession with corporate growth rather than profitability (Chang and Park, 2000; *The Economist*, 14 November 1998). Of these problems, reducing excessive debts has become one of the most critical questions to chaebol firms struggling to survive, as the Korean government has strongly urged them to lower their debt to equity ratio to less than 200 per cent by the end of 1999.

The LG group is no exception. LGE, the flagship company of the group, also attempted restructuring strategies to resolve the problem. Downsizing was the first choice of the company to cope with radical changes. Downsizing became central to the chaebol's corporate restructuring, because the IMF and the Korean government requested them to follow a guide to restructuring and keep global management standards, which American firms have established, in both implicit and explicit ways. Downsizing at the expense of labor has not just been conceived as the most conspicuous way in which American firms have taken to restructuring (Usui and Colignon, 1996), but is also, in many ways, treated as equal to

corporate restructuring (Froud et al., 2000).

As soon as the government announced the restructuring plan for the chaebol, LGE set out a series of plans to restructure its business portfolio. In undertaking business downsizing, LGE had two basic rules. The first was to abandon marginal businesses that had lost profitability or likely to lose growth potential in the future. The second was to outsource or spin off non-core operations and businesses. The majority of downsizing processes took place between 1998 and 1999, although the downsizing program is still active.

LGE withdrew completely from the printer business in 1998 and the hand-held personal computer business in 1999. Both were evaluated as businesses that showed low returns and expected to be of high-risk in the future. In addition, some businesses, including low profit telecommunication sectors, commercial motors and motor pumps, were sold off in 1998. However, means such as withdrawal and sell-off are one aspect. The most active way in which Korean firms have taken to downsizing after the crisis is the spin-off strategy, to outsource non-core or less competitive activities. It seems clear that the company also sought to remove the surplus workforce through restructuring the business structure.²⁾

The company, for instance, has separated non-core business sectors such as general affairs (1998), casting (1998), distribution (1998) and after-sales service (1999). Some of this produced completely independent firms in the form of EBO (Employees Buy-Out), while the rest produced spin-offs in the form of a subsidiary under LGE ownership. The separated companies still act as service providers or suppliers for LGE. In the course of this form of business restructuring, the number of employees was decreased. Although there are no official statistics to show the number of workers decreased by this process, it is known that more than four thousands employees of the company were made redundant (*Korea Daily Business*, 10 December 1998).

Prior to discussing the process of employment

adjustment, the reform to the labor law in the wake of the crisis needs to be noted. The financial crisis has, to a large extent, influenced the shifts in the labor market in Korea. The IMF pressed the Korean government to improve labor market flexibility, in exchange for financial support to the Korean government. Korea's labor law makes rapid restructuring of firms difficult in that it is illegal in Korea to lay off workers except under unusual circumstances, such as bankruptcy.³⁾ The IMF also ruled that the rigidity of the labor market might hinder radical corporate reform needed for Korea's economic rehabilitation. The IMF argued that a rigid labor market restricts the ability of firms to adapt flexibly to a turbulent socio-economic environment and, as a result, gives rise to disastrous outcomes, such as corporate bankruptcy and mass unemployment. The IMF wanted the Korean government to transform its labor law into American-style labor conventions for a flexible labor market.⁴⁾

In response, a committee composed of government representatives, corporate leaders and trade union leaders was convened. It agreed to revise the labor law on the basis of the following agreement (The Korean Ministry of Labor, 6 February 1998)⁵⁾:

Provided that there is inevitably the need for lay-offs in the process of corporate restructuring, despite attempts to avoid lay-offs (such as the reduction of working hours, ceasing from new recruitment and re-contracts with temporary workers), the employer is allowed to carry out lay-offs by the procedures and requirements stated clearly in the law.

With the help of the new labor law, firms began to accelerate employment adjustment. LGE attempted to induce an early retirement and a spontaneous retirement before undertaking massive job cuts. This was effective, because a large number of employees retired, with the offer of an additional monetary incentive. A manager of the manufacturing team explains in interview the situation at that time:

It was a painful and disgusting process. The date when the list of lay-offs would be come close, most

comrades felt terrible. I thought even I could be a target. Whenever I went out of my house in the morning, I used to consider seriously whether I should submit a letter of resignation today, then I could leave my workplace with more money. Otherwise, if I am selected to be made redundant, I have to go away without any incentive (31 August 2000).

This means that the program, from the viewpoint of the company, contributed to inducing spontaneous retirement, while minimizing conflict with the labor union. This kind of employment adjustment policy is not unusual in Korean firms.

As Figure 1 shows, the number of domestic employees decreased from 33,800 to 25,900 between 1997 and 1998, almost a quarter of the workforce. During the same period, R&D and engineering workers decreased by 13% (5,289 to 4,583), while production workers decreased by 35% compared to the previous year (21,654 to 14,149). Although the decrease continued in 1999, the rate became significantly slower and most of it was centered on production workers.

In fact, many production workers were laid off, due to production shifts of low value-added products to overseas branch plants (mostly in Southeast Asia and China). For example, since the crisis, the Kumi TV plant, which assembles a variety of TV models, has cut more than half of its production

workers by restructuring production lines. According to managers interviewed, employment adjustment undertaken by the company focused largely on production workers who received high wages, but had low skills.⁶⁾ As argued by a manager of the management team:

When it comes to the process of employment adjustment, the company tried to lay off workers who are considered less open-minded, less active and creative, or incompetent. I recognize that it does not mean all the people laid off by the employment adjustment are like this. Some comrades may be likely to be laid off for political reasons. Nevertheless, we would say that such an employment adjustment has made a contribution to unlearning old routines, and seeking new ways of doing things (23 July 2000).

This may, meanwhile, be viewed as a kind of 'crisis building process' (Kim, 1998), because remaining workers had a strong sense of crisis and recognized that there was no way to survive without change. In general, such a sense of crisis has played a positive role in shifting organizational culture, normally seen as resistant and insensitive to change, towards a flexible one.⁷⁾

Together with employment adjustment, followed by the increased flexibility of the national labor market, LGE has attempted to increase temporary labor contracts with a view to saving labor costs. It is true

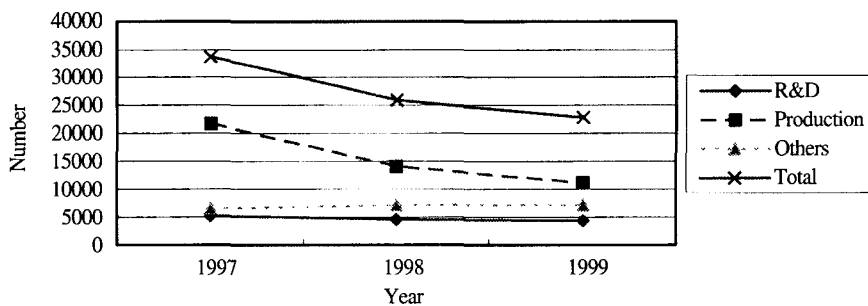


Figure 1. Changes in the number of domestic workforce

* As of December 31 of each year.

** The others are composed of marketing and business support jobs.

Source: LG Electronics Company Annual Reports.

that this strategy has been possible thanks to large-scale lay-offs; many of them production workers. This has been adopted at the company-wide level, but out of three business divisions, it is most notable in the Digital Appliance Division (DAD) producing home appliances, such as refrigerators and air conditioners.⁸⁾ The reasons that DAD decided to actively use this strategy are two-fold. On the one hand, consumer electronics goods that the business division produces are characterized by saturated markets and largely codified product & production technologies. Therefore, cost-saving is more critical than in any other business divisions producing high technology electronics goods. On the other hand, products such as refrigerators and air conditioners show a strong seasonal fluctuation in consumer demands, thus, the need to flexibly use labor. For instance, in the air conditioner production line, more than 60% of the workers are temporary workers who belong to labor service companies and many of them are married women.

4. Reform of Organizational Structure

This section draws attention to the changing features of organizational structure in LGE, in terms of the mobilization of competences and a decision-making structure that would influence adaptability. As of the end of 2000, LGE is a diversified firm with four distinctive business lines. The company merged LG Information & Communication Company (LGIC), one of the electronics affiliates, in the second half of 2000.⁹⁾ Since the financial crisis, one of prime criticisms of the chaebol is that the power of strategic decision-making is excessively concentrated on the founder family, and that this makes management practices less transparent. In this respect, LG also represents the typical characteristics of chaebol. At present, LG is still sticking to family-centered management, but there have been some tendencies in the direction of change; some attempts to give affiliates

extended autonomy in all levels of management.

Until 1998, LGE possessed distinctive business lines and adopted an explicitly multidivisional form of organization, whereas a substantial centre of power and strategic core functions remained under the control of the CEO and headquarters of the company. It was not a typical Chandlerian M-form at all (Chandler, 1962), even if it took an M-form. Under such a structure of organization, roles played by each leader of a business division were highly constrained. As claimed by manager of the management team:

In the past, there was very limited power in each business division. Actually, leaders of each production cluster composing a business division were respectively dedicated to aspects related to production (23 July 2000).

This kind of organizational structure and management system can pose serious difficulties of adaptation. First, it impedes effective local adaptation to changing markets. Second, it makes it difficult for the firm to build business-specific operating mechanisms in their own right. Third, since such a form of organization, from a Williamsonian perspective, is closer to a U-form rather than an M-form, it necessarily entails a heavy burden for corporate CEOs (Williamson, 1975). It may cause difficulties in managing effectively all the business divisions that have distinct organizational competences and markets.

These problems have already been raised in the company, and top management leaders have increasingly recognized the need for reforming the structure of organization relevant to pursuing economies of speed. However, they say that the group's leaders - implying the chairman, his family and relatives - are reluctant to let professional managers control the firms. There is an interesting example that illustrates such a suspicion. As described above, LGE, in the last half of 2000, absorbed LGIC, an affiliate of the LG group, producing mobile telecommunication equipment and providing wireless-telephone service. LG executives insist that:

The merger will be a win-win proposition for both companies. There will be plenty of cross-pollination of ideas in research and development as well as cost savings from joint marketing and distribution, especially in cracking foreign markets. And, it is predicted that the marriage will make the merged entity a major force in the global hi-tech industry, with sales of 30 trillion Korean won by 2003 (*Far Eastern Economic Review*, 3 August 2000).

In contrast, an electronics analyst argues that:

It is going against the global trend to specialize business along product lines [to maximize shareholder value] (*Far Eastern Economic Review*, 3 August 2000).

On the contrary, many specialists ipso facto suspect that the chairman's families would merge both companies with the objective to make control of their management easy. Even if the story mentioned above goes beyond the discussion of organizational structure, I think that it would be helpful to understand the process of reforming organizational structure in a wider context.

In December 1998, LGE announced a reform of organizational structure with the focus on the empowerment and independence of management and decision-making operating in each business division. It seems that this attempt reflects the need for change in the contexts of both overall business environment change and the political-economic conditions surrounding the firm. As said by the company¹⁰:

LGE has decided to reform organizational structure [in a substantial sense] in order to rapidly respond to a radically changing management environment.

The main points are summarized as follows: i) reducing coordination functions that staff organizations in headquarters and overseas subsidiaries are in charge of; ii) reinforcing the empowerment and authority of each business division at all management levels to improve speed of operating management; iii) placing a focus on improving competences

centered around production.

The company talked about 'companies within a company', allowing each business division to manage most management functions, including strategic planning and overseas subsidiaries. The company would provide the leader of each business division with autonomy and responsibility in management. In turn, the leader of a business division should manage each division. Together, individual business divisions are allowed to have the authority to manage human resources in their own way. This includes job promotion, recruitment and lay-off.

However, it does not mean that business divisions will become completely independent. If business performance worsens or if profitability goes down radically, central headquarters will intervene. The decentralization of decision-making proves to be critical if we recall that historically the company has geographically decentralized the structure of organization. Geographical distance might lessen both rapidity and accuracy of decision-making, owing to the absence of frequent face-to-face communications between various levels of staff in the firm. According to interviews, leaders of each business division have come to make more time to discuss with various managers and share ideas and opinions with one another.¹¹

Each business division has its own authority to control all functions, except the R&D function, which will remain under the control of the CTO (Chief Technology Officer).¹² This means that most functions, except for R&D, are consolidated in the heart of production organization. But, it is interesting that while the function of strategic decision-making is radically decentralized, the R&D function comes to be more under control of the corporate headquarters. The company views that it is better to incorporate R&D functions under the control of the CTO, as the location of R&D is geographically decentralized.¹³ Its aim is not only to coordinate effectively decentralized R&D functions but also to create synergies between R&D units. The reason is

that as the increase of technological convergence needs more interactions between R&D functions, it is increasingly important for R&D teams to maintain relational/organizational proximity (Lee, 2001).

In short, it can be seen that these tendencies towards the decentralization of organization have been sought as a way to respond to the economic crisis and a radically changing competition environment. It is expected that the changing structure of organization, referred to as 'companies within a company', may contribute to fostering more corporate restructuring as opposed to when the company had a centralized structure of organization, because leaders of individual business divisions are likely to try to do their best in order to improve managerial performance, notably in the short-term. What is clear is that the company, at a present, has a partially decentralized form of organization. It seems to me however that the company will continue to evolve towards a more decentralized form of organization.

5. Process Innovation

There are two basic principles on which modern capitalist industrial firms organize production: firms strive to optimize organization in order to maximize productivity, on the one hand, and to minimize costs on the other. In this regard, the organization of production is critical in determining the efficiency of production. The principle of mass production has long been central in the large global manufacturing firms since the Fordist production system emerged in the early 20th century. Although there have been sharp debates among social scientists on transition in the modes of capitalist production during the last two decades, it is believed that mass production remains dominant in the certain large manufacturing firms which seek both economies of scale and economies of scope (Hudson, 1997, 2001). However, it is also true that mass production itself assuming mass demand is no longer effective in unpredictable market situa-

tions. Global market conditions have recently been more turbulent and complex, and thus technological changes have been more dynamically accelerated. These sorts of changes have appeared in the globalizing process of corporate activities for many decades. Aspects of these changes have become critical in globalized electronics firms. Thus, these conditions have required them to adapt rapidly.

LGE, like other large electronics firms, shows significant changes in organizing the production process. First of all, the increasing fragmentation of customer demand and taste has led to a significant increase in the number of product models, even in the same product area (e.g. TVs). Concerning the product life cycle model (Abernathy and Utterback, 1978), many existing consumer electronics goods are characterized as having increased market saturation and technological standardization. It is thus not surprising that emphases are placed on improving product design, strengthening marketing and capturing niche markets. To do this, the need for introducing new manufacturing techniques has been observed, as the classic mass production method is no longer appropriate to sustain efficiency for multi-products, as well as to respond quickly to increasing fragmentation of customer demands and tastes. In a similar vein, the emergence of display device products, such as PDP TVs (Plasma Display Panel TVs), TFT-LCD TVs (Thin-film Transistor Liquid Crystal Display TVs), Projection TVs and large-size flat screen TVs, which do not yet have a large volume of production, has challenged the continual adaptation of traditional ways of mass production. As a senior manager of the manufacturing team in the Kumi TV plant notes:

Those display devices are competing with one another for the next generation digital display market. They all, however, have both strengths and weaknesses as new display commodities. Market demands of these display products are also not matured at present. Nothing shows reliable advantage at the moment. In light of profitability, it is fair to say that those must not be produced yet. Nevertheless, we are investing in all of them in order

to solidify a pre-occupation of an emerging display devices market. The result would depend entirely on the choice of customers and technological progress. In this regard, we have tried to construct new production system, such as cell production and modular production (29 August 2000).

One new production method that the company has recently tried to adopt is modular production. Introducing this production method is critical, as far as manufacturing competitiveness is concerned.¹⁴⁾

It is generally recognized that this production method contributes to improving productivity and product quality, as this method makes assembly procedures simple by reducing the number of parts/components needed for production. Thus, this method leads to reducing the error rate in the manufacturing process as well as assembly time.

It is not easy for firms to sustain this kind of process innovation, because firms need to complete the standardization of related parts/components prior to introducing this method. The parts/components standardization project was not easy to implement because it required comprehensive collaboration and coordination between cross-boundary teams and subcontracting firms supplying parts/components. Of the big three Korean electronics manufacturers (Samsung, LG, Daewoo), LGE has most actively pursued standardization of parts/components since 1998. LGE has most perceived the need to improve manufacturing productivity as a means of sustaining competitiveness. More importantly, LGE managers have thought that they possess enough both tacit and codified knowledge and learning competences to achieve such a process innovation.¹⁵⁾

The part/components standardization project has led to positive effects in terms of learning and innovation.¹⁶⁾ First, standardization leads to the shortening of lead-times in product development, which contributes to improving the time-to-market capability. Second, the project brings about a great deal of knowledge sharing and spill-over among teams,

business divisions or even firms as the result of interactive learning occurring through the project. As expressed by a manager of the management team:

We expect the project to play a role in constructing learning by breaking the sectionalism and conservatism characterizing LGE's corporate culture, through co-working between teams (23 July 2000).

The strategy seems to be working. For instance, LGE reported that since 1998 the VCR OBU reduced the number of parts and components needed for the production of VCR, from 995 to less than 22 and, as a result, it has obtained a cost saving effect of more than US \$ 40m a year (*Korea Electronics Times*, 3 March 1999). Encouraged by such performance, in early 1999, LGE established a committee for the standardization of parts/components by division, in order to implement the task of standardization from the initial stage of new product development. These activities have consequently led to the implementation of modular production methods in most of its domestic production lines.

The company has also been trying to introduce a cell production method, where one worker carries out most of assembly processes ranging from assembly to testing and even packing. It is recognized that this method may contribute to saving costs, by allowing the production of more than two models on a single assembly line. From the early 1990s, the company has sought to cope with the growing fragmentation of customer demand. The cell production method was first introduced in an LGE TV plant in 1995. Since 1997, it has been set up formally in all TV plants in order to produce new device-based TV models. The Digital Display Division (DDD) has adopted this method because the division produces a variety of device products and many of them can no longer depend on mass production. However, the adaptation of the cell production method in the TV plant is different from the original concept. In this plant, three or four workers become a team taking charge of the whole process of production instead of one worker doing it all. A manager of a

manufacturing team explains:

We tested a cell production method over two years. The aim was to optimize it into the system of production appropriate for a specific character of this plant, before being put into practice. As a result, we came to find that the method shows better efficiency when three or four workers become one team for the whole process of assembly than one worker doing it all (30 August 2000).

The TV OBU¹⁷⁾ reported that the combination of both mass production methods and flexible production methods in the manufacturing process allows the concomitant pursuit of economies of scale and scope possible and has led to the cost cutting effects. A manager of the manufacturing team said that:

Traditionally, we thought that productivity would only be improved by reorganizing labor. However, as we have been successful in setting up cell production, we have come to change our mind on the concept of productivity (31 August 2000).

According to him, by setting up a cell production method, the production line is reduced from 230m to 60m in length, while manufacturing productivity is improved by up to 20%. The cell production method, in addition, enables control the quantity of output. The cost of inventory management can be significantly decreased at the same time. In a nutshell, this means that productivity can, from the technological aspects, be improved by saving on all production costs, ranging from manufacturing costs to inventory management costs via the effective operation of the production system.

6. Spatial Reorganization of Production

Globally networked manufacturing firms attempt to cope with radical change by reorganizing both the products they produce and locations where they operate. Common types of restructuring strategies in production are two-fold: in-situ restructuring and relocation. Economic geographers have long focused

on spatial relocation or the closure of plants since these sorts of corporate behavior can influence regional economies (e.g. Massey, 1984; Hayter, 1997). However, these may not necessarily be the first choice, because locational change is often a politically sensitive issue with a direct impact on the local society and economy. Therefore, the implementation of corporate strategies such as locational change could be influenced by multi-faceted, complex factors. Above all, manufacturing firms facing a crisis in profit tend to seek in-situ restructuring in response to change. If the situation gets worse, firms may try to undertake an alternative strategy, such as plant closure or relocation. However, the ways in which firms restructure productive organizations across national and global scales cannot be reduced to a simple factor. In reality, this is the outcome of multiple aspects dependent upon contextual specificity and contingency.

Let us explore the case of LGE. After the Asian crisis, LGE did not take radical actions, like plant closure. Rather, the focus was on the restructuring of the spatial divisions of labor between production sites on a global scale. First, all domestic plants were considered to have played a critical role as core nodes of the company's global production network. They provided overseas branch plants with sources of manufacturing knowledge as well as periodically carrying out on-the-job training programs for local employees in overseas subsidiaries. A senior manager of the manufacturing department in the Kumi TV plant states:

Most of LGE's domestic plants are recognized, among business specialists, as reaching the world's best productivity level. How can that be? We have made great efforts to be the best over the last 25 years. I think it has been possible through reverse engineering, such as continuous benchmarking on best practices and ceaseless trial and error. Now the situation is reversed. We have come to possess many advantages over manufacturing technologies in which rivals may be difficult to imitate in light of tacit knowledge such as skills and know-how (29

August 2000).

Industry specialists I interviewed similarly expected that domestic manufacturing plants of Korea's top electronics manufacturers like LG and Samsung will continue to be competitive for at least the next decade, because their domestic plants have come to possess cutting-edge manufacturing technologies and know-how.¹⁸⁾ This knowledge may be hard for other companies to imitate, because such a largely tacit form of knowledge can be accumulated over many years from a mixture of both corporate-specific and national-specific institutional foundations, as illustrated by the literature on innovation systems (e.g. Edquist and Johnson, 1997; Gertler, 2000; 2001).

Thus, the company outlined a spatial restructuring strategy with two distinctive aspects. On the one hand, labor-intensive and low value-added production has been shifted to overseas plants, notably in China and Southeast Asian countries, operating to largely use cheap labor power and to penetrate local markets. Meanwhile, domestic factories concentrate on the products which are high value-added and high technology-based. This strategic move is clearly reflected in the following observation by the president of the DDD:

LG's domestic plants will play a central role in producing high-end products while factories in China and Southeast Asia will be set up as the strategic supply centre for the overseas market (*The Korea Times*, 31 January 2000).

Along with this, the company intends to set up lines for new products in overseas plants after mastering know-how to cope with unusual problems, which could potentially occur, by operating lines for new products in domestic plants.¹⁹⁾ This strategy is seen to take advantage of knowledge and competences accumulated in domestic factories. Domestic plants, as mentioned, usually outperform manufacturing practices elsewhere and retain well-educated human resources, as the source of skills and know-how. Second, only a few engineers and skilled work-

ers have enough expertise for trouble-shooting or problem-solving in overseas factories. This said, frequent, face-to-face interactions between multiple units, including the R&D team, the production engineering team and the manufacturing team, are required at the initial stage of setting up new production lines.²⁰⁾

If this is so, how do overseas plants solve ongoing problems? When overseas plants face some technological problem which is difficult to solve, they usually ask the engineering team in the domestic plant by email or telephone for a solution. A team in charge of advice on technological problems in overseas plants first tries to find an answer from members who have associated knowledge and know-how. If they fail to solve the problem, they may try to review document files drawn up in domestic plants over a period of time. The procedure for problem-solving is discovering recursively underlying problems through combining tacit knowledge embodied in Korea-based engineers and codified knowledge in the form of documents related to trial, error and experiences. A manager of the engineering team in charge of technological issues in the overseas plants says:

Every morning, my work usually begins by reading emails sent by overseas plants. If they reported to us that they are faced with technological problems not identifiable by themselves, what I do first is to find workers who may have the best knowledge related to the problem. Jointly, they can find the right way to solve the problem. It may be possible because, I believe, domestic plants have experienced a number of trials and errors as well as accumulated know-how and skills enough to solve problems even at a distance, because we have developed and tested in advance the same technology on production and product (11 August 2000).

It implies that this is a set of knowledge that combines the distanced tacit knowledge, which is difficult to transfer into overseas plants, and the codified knowledge, which is not easy to access by others in terms of manufacturing technology. This organiza-

tional frame has made it possible for the company to shift its product lines to overseas, even if overseas plants show relative lack of expertise, skills and know-how. In addition, the shift of production lines involves interactive learning between domestic plants and overseas plants because overseas plants should acquire skills and know-how necessary to operate new manufacturing lines. Such learning is realized mainly through frequent business travels, telemediated or face-to-face meetings between domestic workers and overseas workers and on-the-job training of overseas workers in domestic plants.²¹⁾

The Digital Display Division (DDD), for instance, completely shifted production lines for medium and small-sized TVs (less than 17 inches) and TVCR models to Indonesian branch plants in 1999. These models are considered to be relatively low value-added. Instead of shifting such sorts of production lines, domestic plants focus on high value-added cutting-edge products. In this context, the Kumi TV plant has been focusing on producing high-technological and high value-added product models such as large-size flat TVs, TFT-LCD TVs and PDP TVs, all of which adopt new concept devices replacing the CRT (Cathode Ray Tube).

The Digital Appliance Business Division in Changwon (DAD) has more actively sought to shift production overseas. There are two reasons for this. First, the products the division produces are known to be more sensitive to local market conditions than any other consumer electronics goods. Second, home appliances are by and large those products regarded as technologically more standardized in both product and manufacturing technologies. That means emphasis is placed both on how to improve manufacturing productivity and how to save more costs. According to interviews with managers of the division's strategic management team, lower manufacturing productivity in overseas plants in the short-term can be compensated by the effect of saving costs - mostly coming from labor cost saving.²²⁾ They believe that in the longer terms, obstacles such

as lack of manufacturing skills and know-how, which may lower manufacturing performance, will decrease in overseas plants. Particularly, overseas plants operating in Southeast Asian countries and China show a rising learning curve on manufacturing technology and knowledge. Considering this fact, the DAD decided that domestic production bases should focus more on brand-new, large-size and domestic market-specific products in order to utilize the advantages of high productivity. For example, the division shifted all the existing washing machine models produced in the Changwon plant to a Thai plant in 1999. Instead, the Changwon plant produces brand-new washing machine models with a digital network function.

In a nutshell, the latest tendency of production restructuring in LGE is that domestic plants concentrate on producing high-tech products, while products which reach at the mature stage in product life cycle are shifted to overseas production bases taking advantage of cheap labor costs. This would provide some critical insights into the future of regional economies where LGE's production activities are made such as Kumi and Changwon. The technological division of labor in LGE's productive organizations appears to be spatially distinctive, implying the spatial division of labor at a global scale. However, such a division seems to become increasingly obscure, partly owing to a rising learning curve in overseas plants in low cost countries. Together, it is becoming clear that R&D functions in LGE's focal plants tend to move into Seoul and its surrounding areas (see for more details Lee, 2002a, 2002b). These could be a major potential threat to industrial localities being specialized largely in production activities.

7. Conclusions

In this paper, I have speculated on some ways of corporate restructuring in the face of the Korean financial crisis and have showed that corporate

restructuring would act as a critical means to sustain new learning. In the wake of the financial crisis, the main point the Korean government made to the largest Korean firms was that they should restructure their operations. As far as the adaptation issue is concerned, the real signal did not come from change in market conditions, but from the political pressure from the government and international organizations. Being the flagship company of LG group, LGE has been one of the firms at the heart of the chaebol reform program. To adapt to extremely uncertain economic conditions, the core issue became that of streamlining operations and making decision-making more transparent. However, these were not just necessary to meet the government requirements in a short-term. The transformation of both business structure and organizational structure was also critical for both to effectively adapt to increasing market and technology competition in a longer-term. The restructuring of business structure was expected to strengthen core competencies and improve profitability and the restructuring of organizational structure to enable the company to respond more quickly to radical changes in its business environment.

In carrying out downsizing, the enactment of new labor laws legitimating labor market flexibility was of crucial importance because this made it possible for both to cut large numbers of jobs. As Beck (1998) argues, the labor market reforms were a vital step to facilitate restructuring which was, prior to 1998, virtually impossible for the chaebol to lay off workers. The majority of jobs cut affected employees in production lines and administrative offices, while the number of R&D employees in both companies has been significantly increased. The link with learning is clear. LGE managers believe that employment adjustment has assisted them with unlearning obsolete practices, preconditions necessary for effectively accomplishing new learning practices. In line with massive job cuts, LGE streamlined business lines, using downsizing to not only transform business

portfolio into more lucrative business lines but also to cut many jobs at a time with minimized troubles.

In addition, LGE has attempted to restructure organizational structure rightly after the crisis. It was critical for the company to not only adapt to a political pressure to require them to be more transparent and more efficient in the decision-making process, but also to be able to respond quickly to radical changes in the business environment.

All the restructuring paths by LGE clearly illustrate that ways of restructuring could play a critical role as a learning and adaptation device. Facing the need for discontinuous learning in response to radical change, such restructuring practices could become a precondition for firms to sustain continuous adaptation, as discontinuous learning requires to unlearn obsolete routines.

Acknowledgements

I would like to thank Ash Amin, Ray Hudson, Chul-Woo Lee and Michael Taylor for extremely helpful discussions along the way. I am also very grateful to an anonymous referee for valuable comments on an earlier draft.

Notes

1) The financial highlights of LGE are appeared in the following Table.

		1997	1998	1999	2000
Sales	Domestic	92,397	98,528	105,461	148,357
	Export	35,032	25,698	27,040	48,812
Ordinary profit		57,365	72,830	78,421	99,545
		1,159	1,671	25,879	7,285

* Source: LGE corporate release.

Unit: billion won.

2) Historically, the company had a bad experience in labor-management relations during the late 1980s. In 1987, a great wave of social democratization had been started by the social movement towards political democratization

(see Park, B. 1999 for more details on this issue). Although LGE workers, like those of other Korean firms, claimed to institutionalize workplace democratization within the firm, involving the legitimization of union activities, workers' participation in decision-making process, top managers did not listen carefully to their voices. Consequently, two labor disputes had been occurred in 1987 and 1989 respectively. These not only caused a great loss in the company but also resulted in many negative effects on managerial performance for a long period of time. However, such experiences gave top managers a valuable opportunity to rethink the importance of labor-management relations and to change their perspective on labor. Since that point in time, the company's top managers have made great efforts to restore and rebuild labor-management relations. The company has consequently been recognized as a successful model that maintains proactive labor-management relation. Therefore, in the face of employment adjustment, management leaders wanted to solve redundancies while minimizing the potential of negative effects and conflicts with the union.

- 3) See *The Economist* (24 January 1998).
- 4) The prime concerns that The IMF urged the Korean government to reform labor market flexibility were: i) to amend legislation to clarify the circumstances and procedures for layoffs, in the context of the Tripartite Accord (involving the government-capital-labor); ii) to relax restrictive legal provisions relating to private job placement and manpower leasing services (*Korea Economic Weekly*, 2 March 1998).
- 5) That agreement is called as "the great compromise between labor, management and the government".
- 6) Interviews with a team leader of Super A team, DDD (22 July 2000), a manager of the development support team, DDD (19 August 2000) and a manager of the DND Super A team, DDD (26 July 2000).
- 7) Interviews with a manager of the management team, DAD (14 July 2000), a team leader of Super A team, DDD (22 July 2000), a manager of the manufacturing team (31 August 2000) and a manager of the DND Super A team, DDD (26 July 2000).
- 8) Interviews with managers of the management team, DAD (14 July 2000; 20 July 2000).
- 9) Thus, LGE came to add another business division, named Information & Communication Business Division (former organizations of LGIC except for marketing and management support departments). Accordingly, there are four business divisions with production functions within LGE.
- 10) LG Electronics Company corporate release (10 December 1998).
- 11) Interviews with a manager of DND Super A team, DDD (26 July 2000) and a manager of the Development support team, DDD (19 August 2000).
- 12) Interviews with a manager of DND Super A team, DDD (26 July 2000) and a manager of the Development support team, DDD (19 August 2000).
- 13) Interviews with a general manager of New display product lab, DDD (06 August 2000) and a manager of the Development support team, DDD (19 August 2000).
- 14) In fact, all of the largest Korean electronics manufacturers (LG, Samsung and Daewoo) have already noticed that Japanese electronics makers have gained their competitiveness through long-term efforts to standardize parts/components. Interestingly, these companies are planning to make a collaborative consortium for the standardization of some parts/components.
- 15) Interviews with a manager of the manufacturing team (31 August 2000), a senior manager of the manufacturing team (29 August 2000) and a manager of the DND Super A team, DDD (22 August 2000).
- 16) Interviews with a team leader of Super A team, DDD (12 August 2000) and a manager of the production engineering team, DDD (30 August 2000).
- 17) LGE calls 'sub-units' of each business division an OBU (Operating Business Unit).
- 18) Interviews with a director of the Kumi Chamber of Commerce (05 July 2000) and a professor of Electronic engineering at Kyungpook National University (29 June 2000).
- 19) Interviews with a manager of the management team, DAD (20 July 2000) and a senior engineer of the DND engineering department (11 August 2000).
- 20) Interviews with an engineer of the DND engineering team (1 September 2000) and a team leader of Super A team, DDD (12 August 2000), and the author's direct observation.
- 21) Interviews with a manager of the development support team, DDD (3 September 2000) and a senior engineer of DND engineering department, DDD (11 August 2000).
- 22) Interviews with managers of the management team, DAD (14 July 2000; 20 July 2000).

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(Received October 23, 2002)