

Equity Markets and Firm Innovation in Interaction

-A Study of a Telecommunications
Firm in Radical Industry Transformation



Johanna Vesterinen

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- A Study of a Telecommunications Firm in
Radical Industry Transformation

HELSINKI SCHOOL OF ECONOMICS

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To my family-

Honoring a paternal tradition passed on to the fourth generation

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ABSTRACT

The aim of this doctoral thesis is to advance understanding of the interrelationships between equity markets and firm innovation in their institutional context. The principal theoretical issue addressed in this thesis is reflected by the main research question, “*How and why do equity markets and firm innovation interact?*” Herein, the aim is to identify generative mechanisms that underlie social processes in the complex interaction between equity markets and firm innovation. In this respect, the study aims to enhance the understanding of distinct social actors’ behavior. In particular, it aims to elucidate how this behavior guides the expectations and actions of the social actors, and how these expectations and actions impact the firm innovation process and subsequent institutional change. Prior research has examined the interplay between institutional investors and firm innovation from the management perspective (Carpenter et al. 2003; Lazonick & Prencipe 2005; Tainio 2001a; Tainio 2002; Tainio 2003a,b; Tainio et al 2003). This research examines the relationship between equity markets and firm innovation from the perspective of diverse stakeholders. The research underscores the regulative, normative, and cognitive embeddedness of the organization within its transforming institutional context. Herein, the research takes into consideration the properties of the organization’s history and internal dynamics, coined as ‘interests, values, power dependencies, and capacity for action’ by Greenwood & Hinings (1996), and their interplay with external dynamics.

The research objective is achieved by employing an in-depth single case study as a research strategy, capturing micro-level social dynamics of the relationship between equity markets and firm innovation in its particular institutional context. The aim of the research is further achieved by drawing on rich primary data complemented by secondary data sources. Through the processual approach, the research specifies how firm innovation changes over time through a sequence of events. The empirical analysis presented in this research points to a need for a broader conceptual landscape within which to enhance understanding of the interaction between firm innovation and institutional investors embedded in global equity markets. This thesis contributes to new insights on the role of investors and management coupled with the interrelated role of other central stakeholders, in producing firm innovation outcomes. The thesis firstly contributes to the development of a theory of innovative enterprise by analyzing the role of changing firm ownership, and its relation to firm innovation, complementing the conceptualizations proposed by Carpenter et al (2003) and Lazonick & Prencipe (2005) by discussing how and why strategic control may influence the outcomes of firm innovation. The thesis gauges the influence of changes in state ownership of a firm and the influence of equity markets governance on enabling or constraining firm innovation. The thesis argues that the configuration of firm ownership and the identity of institutional investors as a dimension of ownership influence its set of strategic decisions on firm innovation. Secondly, the thesis underscores the role and interpretations of innovations by distinct stakeholders of the firm. The research suggests that the interplay between equity markets and firm innovation is determined by market expectations projected on the firm by its stakeholders, and their reciprocal action in the social construction of reality. The thesis argues that the diverging views on innovation held by a firm’s stakeholders derive from differing cognitive and normative perspectives on time horizons and incentive mechanisms required for firm innovation to emerge. Moreover, the thesis maintains that the diverging views on innovation held by a firm’s stakeholders are owed to differences in stakeholders’ social position inside the firm, which implies the salient role of power as a determinant of firm innovation outcomes. The thesis thus extends the conceptualization proposed by Tainio (2003a) and Tainio et al (2003) on the multifaceted relationship between investors, managers and corporate restructuring by illuminating the distinct

and potentially conflicting stakeholders' views which reverberate on managerial latitude of action and subsequently firm innovation. In essence, the thesis suggests that firm innovation cannot be accounted for by the actions of any single actor, but that innovation is an outcome of a multidimensional process. This complex process is framed by the institutional order in which it is embedded. The thesis also suggests that a distinction should not be drawn between theorizing on external and internal forces influencing firm innovation outcomes because institutional change and social processes of firm innovation are interrelated, reflecting and constituting one another.

Keywords: Equity Markets, Firm Innovation, Institutional Change, Telecommunications

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1 INTRODUCTION

1.1 Background

[...] it's the romance that produces the finance that makes the business worth pursuing. The romantic journey ends here. For stories of economies have usually proved to be about ownership and this story was no exception. (Thrift 2001:427)

Firm innovations - they were but a manifestation of [institutional] transformation! (former representative of Sonera's top management)

The quotes above reflect interpretations of the social dynamics witnessed during the technology bubble era at the turn of the millennium. The purpose of this study is to continue prior process research on firm innovation by illuminating the interplay between disparate forces in a complex nexus of social processes that produce firm innovation outcomes. The complex process that generated discordant outcomes in a Finnish telecommunications firm has inspired both academics and practitioners alike in recent years (Tainio et al 1999; Tainio 2003b; Tainio et al 2003; Laaksonen 2007).

This research examines innovations in relationship to globally operating equity markets. The objective of the study is to analyze the processes and their underlying mechanisms that produce firm innovation outcomes from the perspective of diverse stakeholders. In this endeavor, the study aims to unfold a complex web of social processes reflecting and constituting institutional change, and to highlight the historical and contingent properties of these processes. This research also aims to elucidate how intended actions can produce unintended consequences in the process of institutional change.

The rhythm of the world of finance has captured the attention of nearly all levels of contemporary society as financial markets represent one of the most forceful dimensions of globalization. Since the last quarter of the 20th century, financial markets have increased their roles in the shaping of firm destinies. This period in history has witnessed the financial markets' power, moving like a wave that irrevocably gained momentum in the restructuring of firm strategies in North America. Consequently, this restructuring wave splashed forcefully over the shores of other modern societies. During this era, deregulation of financial markets and the

digitization of information technology have contributed to the proliferation of financial actors, instruments, and the increased speed of financial transactions globally (Knorr Cetina & Preda 2005; Krippner 2005; Tainio 1997 - 2004; Zorn et al 2005).

Relative to other dimensions of economic globalization, the composite of the conditions mentioned above has facilitated the salient role of globally connected financial markets. Two distinctive attributes have been specified in the literature on the social study of finance, the first related to “orders of magnitude”¹ and the second to the “spatial organization of finance”^{2,3}. Indicators for the first attribute are “the actual monetary values involved and, though more difficult to measure, the growing weight of financial criteria in economic transactions,” also referred to as the ‘financialization’ of the economy (Sassen 2005:19; Fligstein 1990, 2001; Davis & Stout 1992; Davis & Thompson 1994; Useem 1996; Tainio 1997 - 2004; Zorn 2004; Zorn et al 2005; Krippner 2005).

It is widely recognized that innovation is the engine of economic growth and thus central to the performance of dynamic economies (Schumpeter 1934; Hamel 2000; O’Sullivan 2000a). Transforming a novel idea into an implemented reality implies a journey into the unknown, following an inherently uncertain and dynamic process from the outset to the final outcome, be it

¹Since 1980, the total stock of financial assets has increased three times faster than the aggregate gross domestic product (GDP) of the twenty-three highly developed countries that formed the Organization for Economic Cooperation and Development (OECD) for much of this period; and the volume of trading in currencies, bonds, and equities has increased about five times faster and now surpasses it by far. This aggregate GDP stood at USD 30 trillion in 2000 while the worldwide value of internationally traded derivatives reached over USD 65 trillion in the late 1990s, a figure that rose to over USD 80 trillion by 2000, USD 168 trillion by late 2001, and USD 192 trillion in 2002. To put this in perspective, we can make a comparison with the value of other major high-growth components of the global economy, such as the value of cross-border trade (ca. USD 8 trillion in 2000), and global foreign direct investment stock (USD 6 trillion in 2000) (Bank for International Settlements 2002). Foreign exchange transactions were ten times as large as world trade in 1983, but seventy times larger in 1999, even though world trade also grew sharply over this period. The foreign exchange market was the first one to globalize, in the mid-1970s. Today it is the biggest and in many ways the only truly global market. It has gone from a daily turnover rate of about USD 15 billion in the 1970s, to USD 60 billion in the early 1980s, and an estimated USD 1.3 trillion in 2005. In contrast, the total foreign currency reserves of the rich industrial countries amounted to about 1 trillion in 2000 (Sassen 2005: 19-20, 34).

²In theory, regulation has operated as one of the key locational constraints keeping the industry, its firms and markets, from spreading to every corner of the world. The wave of deregulations that began in the mid-1980s has lifted this set of major constraints to geographic spread. Further, since today it is a highly digitized industry, its dematerialized outputs can circulate instantaneously worldwide, financial transactions can be executed digitally, and both, circulation and transactions, can cut across conventional borders (Sassen 2005: 20).

³ In the context of the Finnish business system, the deregulation of the financial markets started progressively during the latter half of the 1980s, and continued by the release of regulatory constraints on foreign ownership in 1993, parallel to the harmonization of legislation in European Union membership countries (Tainio et al 2003).

implementation or termination (Kanter 1988, Jelinek & Schoonhoven 1990; Van de Ven et al 1999). Innovation research has largely concentrated on the diffusion of innovations (Rogers 2003). In addition, the organizational and management literature has focused on two approaches to examining the emergence of novelty (Van de Ven et al 1999). According to the first view, the innovation process develops sequentially through a series of predictable phases exemplified by stage-wise models where the process progresses from invention to development, moving on to testing, and ending in commercialization. In this sequential approach, stability of activities and behavior is assumed during the process stages, and progress is evaluated according to the stage in question (Gordon & Greenspan 1988; Van de Ven et al 1999). Stability in the model emerges through a learning process manifested through trial and error and sense-making where the relationship between action and outcome might be impacted by actions and decisions of the group pursuing innovation as well as by external forces emerging from the environment (March & Olsen 1975; Cohen & Sproull 1991; Weick 1979, 1993; Brunsson 1982, 1985; Van de Ven et al 1999). The conceptual appeal of this predictable sequential process approach is in its articulation of how intellectual progress can be made by persons embarking on an innovation journey where uncertainties are scaled down between action and outcome in every stage of the process (Van de Ven et al 1999).

However, evidence from innovation journeys in the empirical world has informed scholarly research of the inherently uncertain and complex processes that innovation entails. From the outset, innovation may be uncertain as to its properties, and activities in the innovation process might not achieve stability. Hence, endeavors to explain the innovation process through a theoretical lens that assumes predictable stages of innovation development may not be fruitful. The ambiguous nature of the innovation process has inspired scholars to approach innovation from a random process perspective⁴ (Cohen et al 1972; Hannan & Freeman 1989; Tushman & Anderson 1986; Van de Ven et al 1999). Empirical findings pointing to the innovation journey's reflection of a nonlinear dynamic system have challenged researchers to reevaluate knowledge on innovation management (Van de Ven et al 1999).

Until recently there has been limited empirical research on the relationship between corporate

⁴ Process randomness implies the following underlying assumptions. First, it is assumed that the innovation source is disembedded from the system under examination. Hence, from this assumption it follows that all innovation targeted activities have equal probability for emergence from possible events. The second assumption points out to the impossible task of isolating causalities due to a legion of ambiguous endogenous elements that may influence the development of innovation. (Cohen et al 1972; Hannan & Freeman 1989; Tushman & Anderson 1986; Van de Ven et al 1999)

governance and the innovation process. This is largely due to the fact that the mainstream perspectives on corporate governance, namely shareholder and stakeholder theories, rest on concepts of resource allocation which emerge from the premises of neoclassical economics (Jensen & Mecklin 1976; Daily et al 2003; Ghoshal 2005). By relying on the analysis of the economics of market equilibrium, the shareholder and stakeholder theories largely neglect the analysis of *institutional* conditions that are central to the innovation process (O’Sullivan 2000a).

1.2 Research Motivation

In literature addressing the relationship between corporate governance⁵ and firm innovation there have been calls for further research in order to uncover the underlying mechanisms of radical organizational change by the specification of processes that influence firm innovation outcomes (O’Sullivan 2000; Tainio 2001a). I respond to these calls by describing processes and capturing hidden mechanisms underlying the interaction between equity markets and firm innovation in a micro-level empirical account. Prior research has examined the relationship between institutional investors and firm innovation from the management perspective (Carpenter et al. 2003; Lazonick & Prencipe 2005; Tainio 2001a; Tainio 2002; Tainio 2003a,b; Tainio et al 2003). This study examines the interplay between equity markets and firm innovation from the perspective of diverse stakeholders. Hence, my attempt is to enhance the understanding of an organization’s stakeholders’ interpretations of, and responses to, contextual pressures, reflected on firm innovation outcomes. I address this task by underscoring the regulative, normative, and cognitive embeddedness of the organization within its transforming institutional context. Herein, I take into consideration the properties of the organization’s history and internal dynamics, coined as “*interests, values, power dependencies, and capacity for action*” by Greenwood & Hinings (1996: 1023), and their interplay with external dynamics in its institutional context.

The micro-level analysis casts light on individual and organizational level social processes from the perspectives of a firm’s stakeholders, and the embeddedness of these processes in the institutional order (Hall & Biersteker 2002; Sassen 1996, 2001, 2005) of financial markets and in the distinct properties of state ownership. Consequently, understanding of an organization’s interpretations of contextual pressures followed by purposive action may be enhanced through the identification of hidden mechanisms underlying institutional change.

⁵ This research approach diverges from the neoclassical perspective elaborating corporate governance, and recognizes that the analysis of institutional conditions is central to the innovation process, as will be discussed in Section 2.1 of this study.

This dissertation thus aims at contributing new insights on investors' and management's role, coupled with other central stakeholders' interrelated role, in producing firm innovation outcomes. This aim is achieved through an in-depth empirical analysis of the interplay between the institution of global equity markets and firm innovation, cast at two micro levels, the organizational and the individual. Additionally, the aim is achieved by data triangulation, by drawing on rich primary data complemented by secondary data sources, as will be elaborated in Chapter 3 of this thesis. The emerging explanations are grounded in the case study.

The aim is furthermore achieved by building on multi-theoretical perspectives relevant to understanding the interaction between firm innovation and institutional investors in equity markets. These conceptual frameworks are used as guidance, to aid sense-making of the case. The selected prior theoretical lenses thus provide conceptual foundations for this dissertation. Table 1 depicts the focus of the study.

<i>Conceptual Frames of Reference</i>	<i>Level of Analysis</i>	<i>Empirical Focus</i>
<ul style="list-style-type: none"> • The Relationship between Corporate Governance and Innovation • The Neo-Institutional Approach, Institutional Change 	Micro-level, i.e. Organizational and Individual	Social Processes Producing Firm Innovation Outcomes

TABLE 1 Focus of the Study

1.3 Research Questions

The research problem is induced from the study's empirical context, and it addresses the processes and underlying mechanisms of firm innovation: to what extent innovations are induced by institutional investors embedded in the institutional order of equity markets or to what extent institutional investors' expectations and actions are driven by firm innovation.

The research problem can be defined as a main question:

How and why do equity markets and firm innovation interact?

Acknowledging that the relationship between equity markets and firm innovation is a multifaceted and context-dependent phenomenon, the main research question is divided into the following sub-questions to allow for a closer empirical analysis.

- (i) *How is ownership interrelated with firm innovation?*
- (ii) *How do a firm's stakeholders account for and influence firm innovation?*

1.4 Key Concepts

In the next section the key concepts referenced to in this thesis are defined.

Financial and Equity Markets

The concept of a financial market, in which equity markets are embedded, is defined to cast light on the emergence of equity markets in this research.

Seen from an institutional perspective, financial markets provide a forum for the raising of capital. Grinblatt & Titman (1998) define financial markets as an arena where companies and other institutions requiring funds to finance their operations meet with individuals and institutions that have the funds to invest. For a period of over 30 years, financial markets have grown in size, importance and complexity, providing a growing variety of financial instruments to the banking industry as well as to corporations. Financial markets have also become increasingly global, with thousands of securities traded throughout the world, 24 hours a day.

A number of trends in the financial markets have had, and continue to have, influence on the way corporations raise capital. These trends comprise the globalization and deregulation phenomena, where nation states have increasingly opened up their domestic markets to movements of foreign capital. As economies have been deregulated by their nation states, financial centers have subsequently become increasingly globally integrated since the late 1980s (Sassen 2005). Large

corporations, operating in a global marketplace, take advantage of the differences in taxes and regulations across countries, and are thus able to raise funds at the most attractive cost level available in the financial markets. The latest information technology, enabling an efficient platform for timely and accurate pricing, issuance and trading of securities across the globe, serves as an important prerequisite for the recent trends to take place. Hall & Biersteker (2002) and Sassen (1996, 2001, 2005) constitute the financial market as a 'distinct institutional order' not involved in the production of goods or their channelling to consumers, e.g. global trade, but concerned with the circulation of contracts specified as currencies, equities, bonds, and derivatives (Knorr Cetina & Preda 2005).

Following Grinblatt & Titman (1998), when internal cash flows are insufficient to meet the total capital needs of a corporation, or when the financial strategy of a firm calls for the raising of external capital for cost optimizing reasons, there are two major sources of financing available in the financial markets. These financing sources comprise both debt and equity financing. In this research financial markets are mainly considered from an institutional investors' viewpoint as both the debt and equity markets are largely dominated by institutional investors throughout the world. Financing in this study is considered to happen through financial intermediaries, such as commercial and investment banks, insurance companies, and pension and mutual funds. Debt financing comprises transactions completed in the public (open) market in terms of bank loans, bonds, commercial paper, and leases. In the equity market context, an Initial Public Offering (IPO) refers to an offer where the shares of a firm start trading in the public market for the first time (Lilja 1997; Sassen 2005). An IPO can constitute a sale of new shares by a firm or of already outstanding shares by a third party. IPOs are categorized as either corporate transactions where the vendor is a private entity or as privatizations. Some jurisdictions refer to IPOs as flotations (Lilja 1997).

Financialization

In the social study of finance, the concept of financialization has been used in numerous ways as scholars have deployed the term in the exploration of the distinctive perspectives epitomizing the salience of finance in modern society. Following the outline provided by Krippner (2005), for some researchers, the concept references the rise of the notion of 'shareholder value' in corporate governance (Froud et al 2000; Lazonick & O'Sullivan 2000a; Tainio 1997 – 2004; Williams 2000). The concept has also been used to reflect the increase of financial trading in relation to

the proliferation of an array of financial instruments (Phillips 1996). An additional view in the literature views financialization as pointing to the economic and political power of the rentier class (Greider 1997; Duménil & Lévy 2002). Some scholars have used the concept as referring to the decline of finance through the bank system in favor of the capital (financial) market (Phillips 2002). In this thesis, the concept of financialization follows the reference to the rise of the notion of 'shareholder value' setting the stage for firm innovation processes and outcomes.

Innovations

In modern society where fast change in competition, technologies and customer base represents the only certain phenomenon, literature has established that firm competences have to be continuously reviewed and renewed in order to survive and prosper (Cooper & Smith 1992). Since Schumpeter's classic work in which the concept of creative destruction was developed (1934), the need for organizational innovation has been acknowledged, not only to persevere in the 'gales of creative destruction', but also to intentionally create them (Danneels 2002). Management research confirms that organizations that are able to differentiate their products or services or improve their processes, win their competitors in terms of market share, profitability, growth or market capitalization (Tidd 2000). Kogut and Zander (1996) argue that innovations should be defined as the products of a firm's combinative capabilities for generating new applications from existing knowledge.

In addition to what is changed by innovations (products, services or processes), another dimension of innovation established in the literature is the perceived extent of change, i.e. whether it is incremental, radical or a complete transformation. Incremental innovation is also referred to as continuous innovation, and takes place within existing infrastructures, building on existing knowledge and existing markets without change in underlying strategies (Miller & Morris 1999). Radical innovation translating into complete transformation of not only products and services but also the infrastructures essential to their use is additionally referred to by scholars as discontinuous innovation. Successful discontinuous innovation redefines and extends the market, expanding into new avenues of possibilities by the discovery of new knowledge in relation to market need and technological competences (ibid.)

Furthermore, a definition stemming from a critique of the ‘black and white’ distinction between incremental and radical technological change is coined architectural innovation, a new analytical dimension added between incremental and radical change by Henderson and Clark (1990). The authors make a distinction between technologies embedded in components and in the overall architecture of an innovation; i.e. the way in which technologies are linked together rather than in the technologies themselves. According to the definition, architectural innovation has the potential to overturn a dominant design. Tidd et al (2005) conceptualize innovations by dividing them into four categories as follows. First, product / service innovation, second, process innovation, third, position innovation referring to the changes in the context in which the product / service is introduced, and fourth, paradigm innovation meaning changes in the underlying mental models which frame the organization’s actions.

As literature has established, innovation is defined in relation to the competitive environment in which it arises (O’Sullivan 2000a). Moreover, varying definitions emerged from the primary data of this research for the innovations that constituted the dominant outcomes as will be elucidated in Chapter 5 of this thesis. I follow the characterization of innovation as a collective, cumulative, and uncertain process (ibid: 19 - 20) implying:

[...] that resources are allocated to innovation through a process that is, at once, (1) developmental – resources must be committed to irreversible investments with uncertain returns; (2) organizational – returns are generated through the integration of human and physical resources; and (3) strategic – resources are allocated to overcome market and technological conditions that other firms take as given.

Stakeholders

In this research I will employ the concept of stakeholder as defined broadly by Freeman (1984: 46):

A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization’s objectives. In line with Mitchell et al (1997: 853 – 854), stakeholders are identified as primary or secondary stakeholders; as owners and nonowners of the firm; as owners of capital or owners of less tangible assets; as actors or those acted upon; [...] as risk-takers or influencers; [...]

The stakeholders of a firm referred to in this research are the following. In 1998-2002, as a formerly 100% state-owned firm underwent gradual privatization, the major owner was the State of Finland, until Sonera’s merger to Telia, the Swedish national telecommunications operator.

The Finnish State thus continued to act as a substantial institutional investor and stakeholder of the firm, joined in 2002 with the majority owner, the Swedish State.⁶ Other stakeholders of the firm relevant to this research comprised the firm's board, the top management, middle management and specialists in technology, marketing, and finance. Moreover, the key investment banks with close contacts to domestic and international institutional investors, including insurance companies, pension and mutual funds comprised key stakeholders of the firm⁷. Furthermore, retail investors, although small-scaled in terms of investor volume, played a politically significant stakeholder role, as will be shown in Section 5.7 of the empirical description in this thesis.

1.5 Key Findings

This qualitative, longitudinal and comparative single case study reveals that there can be a multitude of disparate influences giving rise to patterns of events that generate firm innovation outcomes. It is not the intention here to point out the existence of unambiguous causalities between the divergent contingencies in a telecommunications firm's innovation journey. Rather, from the perspective of a firm's stakeholders, I aim to amplify the reflective and constitutive nature of the interplay between equity markets and firm innovation.

The key findings emerging from the confrontation of empirical material in this study are:

- (i) *Firm innovation is contingent on ownership structure as follows.*
Ownership can be an enabling condition for firm innovation when a firm is 100% owned by the state. Ownership can be a constraining condition for firm innovation when a publicly listed firm is exposed to the governing law infrastructure of a U.S. marketplace, as it is simultaneously embedded in the institutional order of a state. Ownership can further manifest itself as a constraint for firm innovation when the firm is exposed to the diverging institutional logics of two states.

⁶ Appendix 1 summarizes Sonera's history of state ownership and name changes.

⁷ The shareholder distribution of Sonera (1998 - 2002) is presented in Appendices 3 - 7.

- (ii) *Stakeholders influence firm innovation outcomes through a complex social process in a publicly listed and state-owned firm. It is difficult to distinguish individual stakeholders' influence. Yet, some stakeholders seem to have a direct influence on firm innovation, such as management through its agency role. Other stakeholders have a more indirect influence on firm innovation through their social position, manifested in the stakeholders' political power.*
- (iii) *Firm innovation and equity markets are interrelated as follows. Firm innovation develops as an artifact of institutional change, as it is driven by the convergence of the structural and ideational dimensions of the institution of the equity markets. This convergence is manifested in the expectations set on firm innovation by the public market.*

The analysis presented in this research points to the need for a broader conceptual landscape within which to enhance understanding of the interaction between firm innovation and institutional investors embedded in global equity markets. The key findings emerging from the empirical analysis will be discussed further in Chapter 6 of the thesis, and will be integrated into a conceptual framework elaborated in the concluding chapter of the dissertation. The theoretical insights emerging from the confrontation of the empirical analysis are summarized below.

Drawing on the findings of the empirically grounded study, the research contributes to the development of a theory of innovative enterprise by analyzing the role of changing firm ownership, and its relationship to firm innovation, complementing the conceptualization described by Carpenter et al (2003) and Lazonick & Prencipe (2005) by discussing how and why strategic control may influence the outcomes of firm innovation. The research examines the influence of changes in state ownership of a firm and governance of the influence of equity markets on enabling or constraining firm innovation. Empirical evidence indicates that the (in)compatibility of divergent owners' cognitive frames influences firm innovation outcomes. The research hence argues that the configuration of firm ownership and the identity of institutional investors as a dimension of ownership influence a firm's set of strategic decisions by either enabling or constraining firm innovation.

The findings also emphasize the role and interpretations of innovations by distinct stakeholders of the firm. Hence, the present research suggests that the interplay between equity markets and firm innovation is determined by market expectations that are projected on the firm by its stakeholders, and their reciprocal action in the social construction of reality. The research argues that the diverging views of a firm's stakeholders on innovation derive from differing cognitive and normative perspectives on time horizons and incentive mechanisms required for firm innovation to emerge. Moreover, the research maintains that stakeholders' diverging views on innovation are owed to differences in stakeholders' social positions inside the firm which implies that the salient role of power is a determinant of firm innovation outcomes. The study thus extends the conceptualization proposed by Tainio (2003a) and Tainio et al (2003) regarding the multifaceted relationship between investors, managers and corporate restructuring by illuminating the distinct and potentially conflicting views of a firm's stakeholders which reverberate on managerial latitude of action and subsequently firm innovation.

Furthermore, the research suggests that firm innovation cannot be accounted for by the actions of any single actor, but that innovation is an outcome of a multidimensional process. This complex process is constituted by a multitude of interrelated external and internal forces, framed by the institutional order in which it is embedded. The research also suggests that there should not be a need for a dividing line between theorizing on internal and external forces that influence firm innovation since institutional change and social processes of firm innovation may reflect and constitute one another.

1.6 Structure of the Thesis

This thesis is organized in seven chapters as follows. After the Introduction of the study, Chapter 2 reviews prior research addressing the relationship between the financial system and innovation. Chapter 2 continues with a review of the central notions of the neo-institutional approach and institutional change, linking intra-organizational social dynamics and their interplay with contextual dynamics in the process of institutional change. Chapter 2 concludes by pointing to the relevance of prior literature to the present research. Chapter 3 discusses the research design and methods selected for the study. In Chapter 4, I describe the properties of a telecommunication firm's institutional environment as a frame of action. In Chapter 5 I proceed to illustrate the social processes of the dominant innovation outcomes emerging in a

telecommunications firm in the context of radical industry transformation. In Chapter 6, I draw together the findings of the study, elaborating the interaction between equity markets and firm innovation in more detail. Chapter 7 presents the theoretical contribution of the study, followed by managerial and policy implications. The concluding chapter also discusses the limitations of the study, and suggests avenues for further research. The structure of the thesis is depicted in Figure 1 below.

1	Introduction
2	Prior Research on Equity Markets and Firm Innovation, and Institutionalization
3	Research Design and Methods
4	The Institutional Environment of a Telecommunications Firm as a Frame of Action
5	Social Processes of Firm Innovation in the Context of Radical Industry Transformation
6	The Interaction between Equity Markets and Firm Innovation
7	Conclusion: Theoretical Contribution; Managerial and Policy Implications; Limitations; Suggested Avenues for Further Research.

FIGURE 1 Structure of the Thesis

2 PRIOR RESEARCH ON EQUITY MARKETS AND FIRM INNOVATION, AND INSTITUTIONALIZATION

Although this study is empirically inspired, prior theoretical understanding, more precisely, certain conceptual lenses, have served as guidance in the empirical interpretation of the research. Stemming from an extensive body of literature, this section of the thesis depicts the distinct properties of particular conceptualizations that informed this thesis, and points out their relevance for this study. In essence, this thesis builds on literature elaborating corporate governance and innovation, and literature embracing the notion of the embeddedness of organizational action in institutional schemes (Djelic & Quack 2003; Tainio 1997 – 2004; Tainio et al 1999, 2001a, 2003).

2.1 Research Addressing the Relationship between Corporate Governance and Innovation

Following Tylecote (1999), the body of theoretical literature elaborating corporate governance and innovation falls mainly into two camps. First, it falls into the ‘market control’ perspective as labeled by Lazonick & O’Sullivan (1998) and the neoclassical approach. Second, it follows the ‘organizational control’ view. According to Tylecote & Conesa (1999) corporate governance is broadly defined as the financial system by which firms are directly or indirectly controlled, in other words, through shareholders and other stakeholders.

The mainstream scholarly literature on corporate governance rests on neoclassical assumptions of the maximization of firms’ profit, premising on the principal / agent paradigm. According to this paradigm, the focus is set on the relationship between shareholders and management of the firm (Jensen & Meckling 1976; Fama 1980; Eisenhardt 1989a). In line with the principal / agent paradigm, the information asymmetry (Greenwald & Stiglitz 1992) that arises between management and shareholders of the firm, implying that managers are better informed of the state of affairs of the firm than its shareholders, is treated as follows. The incentives of shareholders and managers are sought to be aligned through distinctive mechanisms such as options so as to motivate managers to enhance the market value of the firm through measures to raise the firm’s share price (Tylecote 1999). In contrast to the neoclassical approach, and as an alternative to the shareholder and stakeholder perspectives, stands the ‘organizational control’

perspective introduced by Lazonick & O'Sullivan (1998). Here, the attention is focused on issues of technological change and innovation which will also be elaborated further in this section of my thesis. I position my research along the conceptual lines of the 'organizational control' perspective.

2.1.1 Comparative Studies on National Systems of Corporate Governance and the Pattern of Technological Advantage

Tylecote & Conesa (1999) have in their research on corporate governance, innovation systems and industrial performance compared divergent national systems of corporate governance. This comparative analysis has been conducted in an attempt to explain national patterns of sectoral specialization through empirical examples from the United States and major economies in Europe, such as France, Germany and the United Kingdom. The framework developed in Tylecote (1999) and Tylecote & Conesa (1999) contributes to the literature on corporate governance and innovation by explaining the links appearing *"to exist between national corporate governance systems and the pattern of technological advantage"* (Tylecote 1999: 1). Accordingly, Tylecote (1999) outlines the requirements of product innovation concerning different industries that stem from corporate governance and the financial system. In other words, the properties of innovation are examined in this work from the perspective of corporate governance and vice versa, in the countries covered by their study. In the framework, three factors are distinguished which determine innovation's requirements from corporate governance and the financial system as follows (Tylecote & Conesa 1999: 25-26).

The visibility of innovation. How easy is it for someone who is not closely involved in managing the development of a new product or process, to judge what resources are being devoted to it and how well they are being spent?

The novelty of innovation. To what extent does an innovation require radically new means of development or production, and / or radically new markets or selling methods?

The appropriability of innovation. Can the firm ensure straightforwardly (e.g. by patents) that most of the returns accrue to shareholders; or does innovation in the industry naturally tend to involve large spillovers to other stakeholders?

In other words, Tylecote & Conesa (1999) argue that effective corporate governance of innovating firms needs to be able to address three challenges, labeled visibility, novelty, and appropriability in this literature. These three factors have been shown to vary depending on business sector. The authors have further maintained that the required capacity for addressing

visibility and novelty stems from ‘firm-specific perceptiveness’ and ‘industry-specific expertise’ embedded in a national system of corporate governance.

2.1.2 Ownership Categories and Managerial Discretion in Strategic Decisions on Innovations

Theoretical perspectives in a growing body of literature seek to explain the impact of owners’ different categories on firms’ strategic decision-making, reflecting on managerial discretion regarding firm innovation. Thomsen & Pedersen’s (2000) research covering the largest firms in thirteen European countries establishes that the identity of the largest owner influences firms’ performance. The argument holds that a causal arrow points from the owners’ identity to the owners’ divergent financial and non-financial objectives. Moreover, the research (ibid.) points to government owners’ greater focus on employment issues and prices of outputs and less focus on the profit maximization objective. In studies concerning institutional investors, Hoskisson et al (2002) have distinguished between different categories of ownership, based on diverging investment horizons and appetite for risk.

Moreover, institutional investors have been segmented and labeled in the literature as follows: First, the myopic investor theory, advanced by researchers Loeschner (1984); Drucker (1986); Mitroff (1987); Graves (1988); Hill et al (1988); Schleifer & Vishny (1990); Hansen & Hill (1991); Kochar & David (1996); and Bushee (1998) among others, suggests that institutional investors are primarily seeking short-term gains from their equity investments, thus leading to firm’s short-term horizon in strategic decision-making. Second, the efficient market theory, also referred to as the superior investors’ viewpoint, has been addressed by researchers Jarrell et al (1985); Jensen (1988); and Allen (1993a, 1993b), who suggest that institutional investors have the capacity to search for and invest in inherently innovative firms. Third, Jensen (1991, 1993); Kochar & David (1996) and David et al (2001) have elaborated the viewpoint of active investors according to which investors with substantial holdings of a firm’s shares gives incentive to influence firm strategy in its innovation policy.

Similar to the segmentation of institutional investors described above, Bushee (1998) categorizes institutional investors as transient, quasi-indexer, and dedicated institutions. Hoskisson et al (2002) and Tihanyi et al (2003) in their studies of institutional investors have identified professional funds as short-term oriented and pension funds as long-term oriented with regard to their investment horizon, deriving from the fund managers’ compensation base structure.

Particularly during the past decade, a growing concern has been shared in academic research regarding the tendency of management to focus on short-term earnings by sacrificing firm innovation in the long-term horizon (Laverty 1996; Bhojraj & Libby 2005; Brown & Caylor 2005; Graham et al 2005; Bauman & Shaw 2006; among others). This development has been seen to stem from the increasing pressure of the financial market on the latitude of managerial action (Tylecote 1999; Tainio 2001a,b; Tainio 2002; Tainio 2003a,b; Tainio et al 2003; Aspara et al 2008).

2.1.3 The Organizational Control Perspective and the Processual Approach on Firm Innovation

In the literature, advances have been made in the analysis of the relationship between corporate governance and innovation by Lazonick & O'Sullivan (1998); O'Sullivan (2000a,b); Carpenter et al (2003); Lazonick (2003); and Lazonick & Prencipe (2005). All of these authors have criticized the leading analytical frameworks underlying corporate governance, namely shareholder and stakeholder theories, for their neglect of incorporating a rigorous analysis of the process through which a firm's resources are developed and utilized over time. This neglect can be traced back to the underpinnings of shareholder and stakeholder theories resting on neoclassical theory. The said theoretical frameworks have been trapped by their concern for the allocation of resources, by the analysis of market equilibrium, and hence failing to set a focus on the implications of innovation for corporate governance (O'Sullivan 2000a).

Lazonick (2003: 38) continues in this line by stating:

In ignoring an analysis of the innovation process and economic development, theories of corporate governance based on the theory of the market economy cannot address the difficult organizational and institutional questions concerning the governance of innovative enterprise.

He also maintains that innovation followed by economic development are change processes which largely depend on the specific institutional, organizational, and industrial frame within which they emerge, and that the integration of theory and history are prerequisites for the understanding of these change processes (Lazonick 1994, 2002b, 2003).

O'Sullivan (2000a) has emphasized that since the innovation process is characterized in aggregate by scholars as comprising inherently 'cumulative, collective, and uncertain' dimensions, this leads to the notion of the 'innovative enterprise' as a 'social organization'. Lying at the heart of innovation is the collective learning process which implies the need for both

collaboration and time, as Penrose (1959) argued in her seminal work, “The Theory of the Growth of the Firm” which has furthered knowledge of the collective foundations required for innovation to take place. The learning process is still confined within the boundaries of three dimensions of uncertainty as formulated by Freeman (1974), namely technological, market, and competitive uncertainty (Lazonick 2003). Lazonick (2003: 24) characterizes the collective, cumulative, and uncertain dimensions of the innovation process as follows.

The innovation process is collective because the transformation of technological and market conditions to generate higher quality, lower cost products requires the organizational integration of the specialized knowledge, skills and efforts of large numbers of people with different functional capabilities and hierarchical responsibilities. When the innovation process is collective, there is a need for organizational, rather than market, control over resource allocation. The innovation process is cumulative because the possibilities for transforming technological and market conditions in the future depend on the development of those conditions in the past. When innovation is cumulative, some or all of the collectivity that engages in learning must remain intact over time. The innovation process is uncertain because the collective and cumulative processes that can transform technological, market and competitive conditions to generate higher quality, lower cost products are unknown at the time at which commitments of resources to these processes are made. Given uncertainty, an innovative enterprise must be strategic in how it engages in collective and cumulative learning. When innovation is uncertain, investment in organization that is both collective and cumulative can enable an innovative enterprise to transform technological and market conditions that other, less powerful, enterprises might have to accept as binding constraints.

Following O’Sullivan (2000a, 2000b), the market control view perceives resource allocation in terms of ‘individual, reversible and optimal’. The implication of individual resource allocation is decision-making that is distanced from others, while reversible resource allocation points to no causal arrow between previous and future decisions. Optimal resource allocation in turn refers to individuals’ changing of their allocation decisions by accepting all of the economic system’s constraints. It follows that according to the market control view, there is no possibility for strategic change in the face of the technological and market conditions imposed on actors in the economy (Lazonick 2003).

In essence, innovation is but of strategic change in technological and market conditions, and the foundation for competition of firms based in the same industry sector, as Schumpeter (1952) has previously noted. Following O’Sullivan (2000b) and Lazonick (2003), organizations may engage in allocation of resources conceptualized as *organizational, developmental, and strategic* when setting out an innovation process that is characterized as collective, cumulative and uncertain.

Following Lazonick (2003), an analysis on the way firms transform inputs in a collective, cumulative and uncertain process into outputs that may generate economic return, an identification of the “social conditions of innovative enterprise” is required. Lazonick (1991, 1992); Lazonick & O’Sullivan (1996, 1997a, 1997b, 1997c) have developed an analytical framework where three ‘social conditions of innovative enterprise’ are identified: ‘*organizational integration, financial commitment, and strategic control*’. Cf. O’Sullivan (2000a) who has conceptualized the third ‘social condition’ as ‘*internal control*’. Lazonick (2003: 27) states:

The form and content of these social conditions of innovative enterprise depend on the relation between prevailing institutional (financial, employment and governance) conditions and organizational (cognitive, behavioral and strategic) conditions in the economy.

This conceptual framework is depicted in Figure 3. Lazonick (2003: 27) continues, “*These three social conditions of innovative enterprise all reflect the importance of organizational control rather than market control over the allocation of resources in the economy.*”

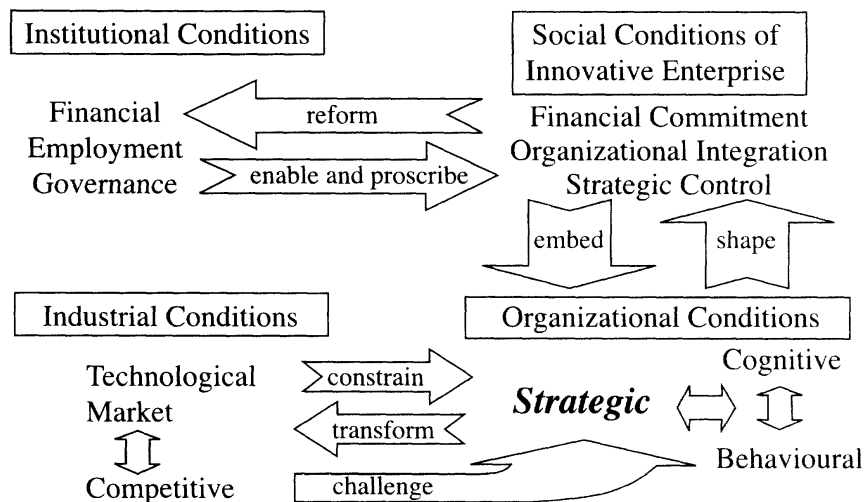


FIGURE 2 Industrial, Organizational and Institutional Conditions in the Innovation Process

(adopted from Lazonick 2003: 28)

According to O’Sullivan (2000a), Carpenter et al (2003) and Lazonick (2003), it is assumed that the transformation process of productive resources into outputs generating innovation is strategic, organizational and developmental. It follows that to enable this change process the firm

should be engaged in the generic activities of strategizing, organizing and financing. Strategizing implies the allocation of resources to strategic investments concerning human and physical resources. Organizing implies the development and exploitation of the resources' capabilities for value-creation. Financing points to the means with which the firm may sustain the innovation process from the outset to the generation of financial returns. Carpenter et al (2003: 972) ask the question: "*Under what conditions do a firm's strategy, organization and finance result in innovation?*" Answering this question requires conceptualizing a corporate governance system as supporting the emergence of innovation by introducing three 'social conditions' – strategic control (formulated as insider control in O'Sullivan 2000a), organizational integration and financial commitment. In aggregate, the three '*social conditions of innovative enterprise*' promote organizational control as opposed to the market control view over the monetary resources and knowledge assets that are prerequisite to the process of innovation (O'Sullivan 2000a).

Lazonick (2003: 28-34) defines the three 'social conditions of innovative enterprise' as follows:

Strategic control is the social condition that enables people within an enterprise who have access to financial commitment and who influence organizational integration to allocate resources in ways that can transform technologies and markets to generate innovation. As a social condition of innovative enterprise, the need for strategic control derives directly from the uncertain character of the innovation process. Hence, a theory of innovative enterprise must show how, given the uncertain character of the transformation of technology and markets in particular industrial activities, control over financial commitment and organizational integration rests with those people within the enterprise who, as strategic decision-makers, have the incentives and abilities to use that control to attempt innovative transformations of technologies and markets. (Lazonick 2003: 33)

Strategic control is 'insider' control – the exercise of control over resource allocation by those within the organization – as distinct from 'outsider' control – the exercise of control over resource allocation by those (such as public shareholders) with whom the enterprise has market relations. The innovation process is always uncertain, and hence, other than leaving the outcome of resource allocation to pure luck, the only basis for making investments that might result in innovation is to vest control over the allocation of resources and returns with people who are both able and willing to invest in collective, cumulative and uncertain learning processes. They will be able to do so when they have a broad and deep understanding of the industries and organizations in which they are investing. They will be willing to do so when their own individual success is bound up with the success of the organization as a whole. Put differently, investments in innovation that can confront the inherent uncertainty of the innovation process require the organizational integration of strategic decision-makers with the processes of collective and cumulative learning. (Lazonick 2003: 33-34)

Organizational integration is the social condition that creates incentives for participants in the hierarchical and functional division of labour to apply their skills and efforts to engage in interactive learning in pursuit of organizational goals. As a social condition of innovative enterprise, the need for organizational integration derives directly from the collective character of the innovation process. Hence, a theory of innovative enterprise must show how, given the collective character of the transformation of technology and markets in particular industrial

activities, institutions and organizations combine to create the necessary incentives for those who are expected to engage in interactive learning. (Lazonick 2003: 28)

Financial commitment is the social condition that allocates financial resources to sustain the process that develops and utilizes productive resources until the resultant products can generate financial returns. As a social condition of innovative enterprise, the need for financial commitment derives directly from the cumulative character of the innovation process – that is from the need for learning. For an enterprise or economy that has accumulated capabilities, financial claims can take on an existence that, for a time at least, are independent of the need to reproduce or augment those capabilities. In effect, financial returns to groups such as employees, creditors and shareholders may be based on the revenues generated by productive capabilities accumulated in the past without a commitment of financial resources for the regeneration of these returns in the future. But, for innovation to occur within an enterprise or economy, a basic social condition is financial commitment from some source for a sufficient period of time to generate returns. A theory of innovative enterprise must show how, given the financial requirements of the transformation of technology and markets in particular industrial activities, institutions and organizations combine to provide the requisite financial commitment. (Lazonick 2003: 29-30)

Carpenter et al (2003: 973) maintain that:

These conditions of innovative enterprise are ‘social’ because, in a particular time and place, the characteristics of strategy, organization, and finance depend on the decisions and actions of economic actors who have different abilities and incentives.

The authors (ibid.: 2003: 973) continue:

The innovation process, moreover, often requires the interaction of people who are employed by different companies that have relations with one another. By focusing on strategic control, organizational integration, and financial commitment as ‘social conditions of innovative enterprise’, we ask how the incentives and abilities of large numbers of people with different hierarchical responsibilities and functional specialties interact to generate products that are higher quality, lower cost than those that had previously been available.

Furthermore, the perspective put forward by Carpenter et al (2003) enables the examination of national institutions’ influence on firms in a process of industrial change. The authors (ibid. 2003: 974) “[...] posit that, at a point in time, the governance, employment, and financial institutions that characterize a national economy enable and / or proscribe strategic control, organizational integration, and financial commitment in business enterprises that operate in that national environment.” These authors’ analytical interest pertains to the way in which a specific financial institution, the stock market in the United States, affected the optical networking industry’s innovation process at the turn of the millennium. The analysis required from the authors the development of a conceptual framework specifying four functions which the equity market is able to fulfill in the industrial firm, and the specification of the relationship of the four functions to the three ‘social conditions of innovative enterprise’.

Carpenter et al (2003: 974 - 975) identify the four functions of the equity market, classified as:

[...] control, combination, compensation, and cash, that the equity market can perform in the industrial firm. In its control function, the equity market can affect the relation between asset ownership and managerial control in the industrial corporation, and thus affects what types of people occupy positions of strategic control. In its combination function, the equity market can provide the industrial corporation with a currency for merging with or acquiring another company, and thus can extend strategic control from one company to a larger strategic entity. In its compensation function, the equity market can provide the industrial corporation with a currency for recruiting, retaining, and motivating personnel, and thus can serve as an incentive mechanism for organizational integration. Finally, in its cash function, the equity market can provide the industrial corporation with financial commitment.

By applying and leveraging the said framework the authors (ibid.) examine the relationship between the four different functions of the equity market and the accumulation of innovative ability, in the context of industrial transformation in high-technology central to the so called New Economy boom in the late 1990s. The authors have hence epitomized how, in the United States, that boom turned into an abrupt decline starting in late 2000, and continued into 2002 in the United States. Moreover, they have shown how the so called Old Economy firms exploited their shares as means for strategic acquisitions and compensation of key personnel with the aim of generating innovative capability in the New Economy boom years of 1998 – 2000. The research indicates that the firms were subsequently affected by the dramatic equity market downturn followed by decline in the optical networking industry in 2001 – 2003 (Carpenter et al 2003).

Lazonick (2003: 34) argues that a theory of innovative enterprise:

[...] requires an understanding of the dynamic interactions among financial commitment, organizational integration and strategic control in the governance of enterprise allocation decisions.

2.1.4 Research on Global Investors and Managerial Discretion in the Finnish Context

In the context of the Finnish business system, Tainio (1997 - 2004), Huolman et al (1999), and Tainio et al (1999, 2001a,b, 2003a,b) have examined the effects of foreign ownership on the management and structure of major firms across industries. Interestingly, the influence of foreign ownership has produced a variety of outcomes in the creation of firms' new knowledge.⁸ This phenomenon has been linked to the transition of the Finnish business system from 'insider-dominated' (Tylecote 1999), bank-based structures towards 'outsider dominated'

⁸ In this research context, the creation of new knowledge refers to the strategic, organizational and developmental transformation process of productive resources into outputs generating innovation, cf. O'Sullivan (2000a); Carpenter et al (2003); Lazonick (2003).

(Tylecote 1999), equity market based structures which originated from the globalization of capital markets, fuelled by mechanisms of capital markets' liberalization and digitization of information technology during the last few decades, as elaborated by Tainio (1997 - 2004); Huolman et al (1999); and Tainio et al (1999, 2001a, 2003).

The studies mentioned above establish that:

[...] the financial agents, especially foreign institutional investors together with local financiers, have played a distinct role in the recent transformations of Finnish companies (Tainio 2001a: 5; Tainio et al 2003).

More specifically, our evidence demonstrates that remote, dispersed, and faceless foreign portfolio investors have had a capacity to act and influence. They have had power, channels, and motives to restructure Finnish companies they have been interested in (Tainio et al 1999 in Tainio 2001a: 5).

Tainio (2001a) has elaborated on the actual realization of investors' influence on Finnish firms' divergent outcomes by specifying the processes that seem to have led to the observed outcomes. The research has focused on the analysis of sector specific factors and processes of firms to identify the determinants of sector specialization in the creation of new knowledge (ibid).

The phenomenon underlying the extensive restructuring of Finnish firms across business sectors since the 1990s has been conceptualized by Tainio (2003: 1) as "... *'financialization', when it has happened mainly due to the growth of shareholder activism and investors' pursuit for shareholder value.*" This conceptualization, 'financialization' (Tainio 2003: 2), references to:

[...] restructurings, acquisitions, and divestments made mainly in response to the demands of investors for shareholder value (cf. Williams 2000). It is the search for shareholder value during the 1990s that has widely propelled management towards major changes in the companies (Sturdy & Morgan 2001).

Tainio (2003: 2) points out that:

It is, however, obvious that simple, unidirectional causal relationships between investors, managers, and corporate restructuring do not exist. Instead, there seem to be complex and changing interdependencies between investors and managers, which are related to restructuring in subtle and scarcely understood ways.

The studies reported by Tainio and his research collaborators, referred to in this section of my thesis, have analyzed the interactions between institutional investors and managers, and the ramifications of these interactions at micro-level (firm-level) and at macro-level (nation-state).

The said studies have focused on the patterns by which faceless, dispersed, and distant international institutional investors have exercised their influence in Finnish firms. Following Hirschman (1970) the main patterns of influence of international institutional investors, operating at arm's length from the investment target, are through equity market actions and personal influence. These channels of influence can be labeled by the terms 'exit' and 'voice' (Tainio et al 2003).

As Tainio et al (2003) establish in their empirical studies across 16 major Finnish firms during their evolution in the 1990s, the voice channel of influence is not often used by international institutional investors. However, the research establishes that frequent and regular informal meetings and social gatherings between institutional investors and firm management for the exchange of information, is a significant, informal channel of voice, depicted as 'relational investing'. The studies (ibid.) point to the fact that for 'relational investing' to take place, firm management needs a catchy story to attract the interest and attention of investors. However, the stories are not only prepared for and diffused in the investor sphere. As Tainio et al (2003: 43) put it:

It is often also a guideline for top management and the entire personnel. As the story is repeated several times in front of investors it gradually becomes a promise. The words that may have been originally intended and told only to investors start turning into action and become part of organizational reality (Tainio 1997).

This implies the social construction of organizational reality (Berger & Luckmann 1967; Scott 1995).

Following Tainio et al (2003) the informal channel of influence through voice by international institutional investors, particularly US based financial institutions, has also reached out to board composition matters in the governance of Finnish firms. Boards of Finnish firms have been claimed "*to lack demographic and intellectual diversity*" (Tainio et al 2003: 43). From the international institutional investors' viewpoint, "[...] *an effective board has the following features – independence, shareholder accountability and expertise*" (Lorsch 1995; Hirvonen et al 1997) in Tainio et al (2003: 43).

Moreover, the studies on global institutional investors meeting Finnish firm management have painted a picture of the conflicts and tensions arising between local actors and international institutional investors (Tainio et al 2003). Listing of firms' shares either on less demanding local

or transnational equity markets or on the world's most demanding equity markets, such as Nasdaq or the New York Stock Exchange, imply the embeddedness of the listed firm in the 'rules of the game' or institutional logic (Friedland & Alford 1991; Lawrence 1999; Thornton 2004) of global capital markets. The 'rules of the game' rest on the principle of shareholder value maximization⁹ (Williams 2000 in Tainio et al 2003).

Tainio et al (2003) have coined market exigencies imposed on Finnish firms as 'structural' influence, and its manifestation through the influence of powerful actors as 'actors' influence'. In this conceptualization, actors' influence is the outcome of the interaction between investors and firm management. The present research extends these authors' conceptualization by examining the relationship between equity markets and firm innovation from the perspective of diverse stakeholders.

2.2 Conceptual Approaches Addressing the Relationship between Organizational Context and Organizational Action

2.2.1 The Rise of New Institutionalism

As organizations as a field of study emerged in the first half of the 1950s, the structure and behavior of organizations were approached through institutional arguments. The new institutionalism perspective, also labeled neo-institutionalism, started to rise in the mid-1970s in the social sciences, producing accounts for the most significant developments contributing to the understanding of organizations (DiMaggio 1991 & Powell; Scott 1995; Greenwood & Hinings 1996; Beckert 1999):

As we move from the new institutionalism in economics and public choice to the new institutionalism in regime theory and organization theory, the term institution takes on a different meaning. In the former approaches, institutions are the products of human design, the outcomes of purposive actions by instrumentally oriented individuals. But in the latter, while institutions are certainly the result of human activity, they are not necessarily the products of conscious design. (DiMaggio & Powell 1991: 8)

In their account of the development of institutional theory, DiMaggio and Powell (1991) made a distinction between the properties of old and new institutionalism. Points of convergence in comprised the following aspects. Both approaches shared a rejection for the rational-actor conceptualization of organizations, underscore the linkage of organizations to their environment,

⁹ In Section 4.3 of this thesis I present an account of the origins of the shareholder value maximization principle.

emphasize culture's role in the construction of organizational reality, hold a state-dependent processual view where organizations' options are limited, and set out to unfold organizations' reality diverging from their formal accounts (ibid.) The old institutionalism stressed, and hence addressed, matters of power, influence, contradictory values, informal structures, and alliances (Clark 1960, 1972; Selznick 1949, 1957; DiMaggio & Powell 1991; Greenwood & Hinings 1996). On the other hand, new institutionalism in sociology has set its focus on cognitive rather than normative frameworks as its major distinguishing property (DiMaggio 1991 & Powell; Scott 1995), emphasizing issues of "*legitimacy, the embeddedness of organizational fields, and the centrality of classification, routines, scripts, and schema* (DiMaggio & Powell 1983; Meyer & Rowan 1977)" in Greenwood & Hinings (1996: 1023).

DiMaggio & Powell (1991:2) define the task of new institutionalism as "*an attempt to provide fresh answers to old questions about how social choices are shaped, mediated, and channeled by institutional arrangements.*" Scott (1995: 33) defines institutions, encompassing largely contemporary views, as follows:

Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers – cultures, structures, and routines – and they operate at multiple levels of jurisdiction.

These three dimensions of institutions, regulative, normative, and cognitive, are labeled as contrasting 'pillars' of institutions by Scott (1995), and taken together, these three pillars constitute the way in which issues of importance are comprehended, and relevant actions are hence developed (Fligstein 1992; Hoffman 1999).

	<i>Regulative</i>	<i>Normative</i>	<i>Cognitive</i>
Basis of compliance	Expedience	Social obligation	Taken for granted
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Prevalence, isomorphism
Basis of legitimacy	Legally sanctioned	Morally governed	Culturally supported, conceptually correct

TABLE 2 Institutional Pillars and Carriers

(adopted from Scott 1995: 52)

As depicted in table 2, the three ‘pillars’ constituting the columns, make up or support institutions, while the rows of the table depict the main aspects of divergence in assumptions and arguments among scholars (Scott 1995; Hoffman 1999). The *regulative* dimension of institutions is most often manifested through regulative processes guiding organizational behavior as a coercive mechanism (Powell & DiMaggio 1991; Scott 1995; Hoffman 1999). The *normative* dimension of institutions pertains to normative systems comprising values and norms that guide organizational behavior. These normative systems, stemming from a moral or ethical obligation, define not only the objectives of action but also the ways in which they can be achieved. In other words, normative systems structure actors’ choices (Scott 1995; Hoffman 1999). The *cognitive* dimension of institutions encompasses cultural “*rules that constitute the nature of reality and the frames through which meaning is made*” (Scott 1995: 40). The cognitive dimension of institutions constitutes a “*culturally supported and conceptually correct basis of legitimacy that becomes unquestioned*” (Hoffman 1999: 353).

Scholars vary in their emphasis of the three different pillars of institutions conceptualized by Scott (1995). The sources for divergence in emphasizing one element over the other can be traced back to substantive differences in the underlying assumptions of the nature of reality, followed by the logic guiding social actors. Scholars emphasizing the regulative pillar tend to rest their conception on a social realist ontology, and assume a logic of rational choice guiding social actors. Scholars focusing on the cognitive pillar on institutions, on the other hand, tend to rely on a set of assumptions stemming from a social constructionist ontology. Scholars in favor of the normative pillar tend to fall closer to the cognitive than the regulative camp but reside along the interface of the cognitive and regulative dimensions of institutions (Scott 1995).

There is a lack of consensus in the literature as to how the three dimensions of institutions evolve and subsequently change. According to Scott’s (1995) perspective, the regulative, normative, and cognitive pillars of institutions would not, due to their analytical distinctiveness, co-evolve or interact with each other. In contrast, Hirsch (1997) has argued that the three pillars of institutions are not analytically independent, rather, they are confluent, and influence the development of one another in time (Hoffman 1999). In line with Hirsch’s (1997) argument, Djelic & Quack (2003: 18) contend that:

In our view, institutions have both a structural dimension, including formal and informal rules and systems and an ideational dimension, including normative and cognitive patterns. Whereas these two dimensions have always been treated and approached separately and by different streams of the institutional argument, we believe that in order to understand processes of

institutional change and emergence both dimensions should be brought together and investigated simultaneously [...]

The rise of new institutional theory has been widely accepted as one of the major milestones in the understanding of organizations among sociologists in contrast to rational-actor views represented by transaction-cost economics (Coase 1990; Williamson 1985). This progress is due to institutionalists' unfolding of the relationship between "*organizational structures and the wider social environment in which organizations are situated*" (Beckert 1999: 777). Institutional theory has largely focused on explaining the homogeneity of organizations, 'isomorphism' as organizations strive for legitimacy and social conformity due to powerful institutional pressures (DiMaggio & Powell 1983; Orrù et al 1991). Therefore, institutional organization theory has been frequently critiqued for its inadequacy to explain the role of power, interest-driven behavior, agency, and institutional change (DiMaggio 1988; Ledford et al 1989; Brint & Karabel 1991; Hirsch 1997; Hirsch & Lounsbury 1997; Dacin et al 2002). As Beckert (1999: 778) pointed out: "*If organizational structures and strategies are shaped by institutional environments, what is the role of 'strategic choice' (Child 1972) in organizations?*"

This issue has not gone unnoticed by more recent institutionalist studies starting in the late 1980s, but has encouraged scholars to pave the way for an institutional organization theory that sets its focus on the heterogeneity of organizations and change (DiMaggio 1988; DiMaggio & Powell 1991; Fligstein 1997; Fligstein & McAdam 1995; Goodrick & Salancik 1996; Hirsch & Lounsbury 1997; Kondra & Hinings 1998; Oliver 1992; Powell 1991; Scott 1991, 1994, 1995). Greenwood & Hinings (1996) have, in line with Dougherty (1994), argued that institutional theory serves as a sound basis for an analysis of change for two reasons. First, it offers a plausible definition of radical change, in contrast to convergent change. Second, it points to the contextual dynamics which "*precipitate the need for organizational adaptation (Leblebici et al 1991; Oliver 1991)*" in Greenwood & Hinings (1996: 1023). DiMaggio & Powell (1991) wrote that in the transition from the old institutionalism to the new institutionalism some issues have been neglected, and that the theory should not rest only upon the cognitive basis.

The authors (ibid.) also propose that issues such as interests and power have been neglected in new institutional theory. The weakness of neo-institutional theory relates to its lack of focus on the internal dynamics in the explanation of organizational change (Greenwood & Hinings 1996). Consequently, the theory has not provided explanations on the reasons for divergence of

organizations adopting radical change, in the face of institutional pressures (ibid.) There have been calls in the literature (Hrebiniak & Joyce 1985; Van de Ven & Poole 1988; Astley & Van de Ven 1983; Pettigrew 1987; and Wilson 1994) for theoretical understanding of the way in which organizational actors interpret and act upon contextual pressures (Greenwood & Hinings 1996).

Following Greenwood & Hinings (1996: 1032), by combining all of the elements of old and new institutionalism, by focusing on “*four aspects of an organization’s internal dynamics – interests, values, power dependencies, and capacity for action*”, it is possible to explain how the properties of an organizational field interact with an organization’s internal characteristics. In other words, it is possible to link intra-organizational dynamics and organizational context in a model of change. It is the integration of the old and new institutionalism that Greenwood & Hinings (1996) have labeled *neo-institutionalism*. This conceptualization is depicted in Figure 4.

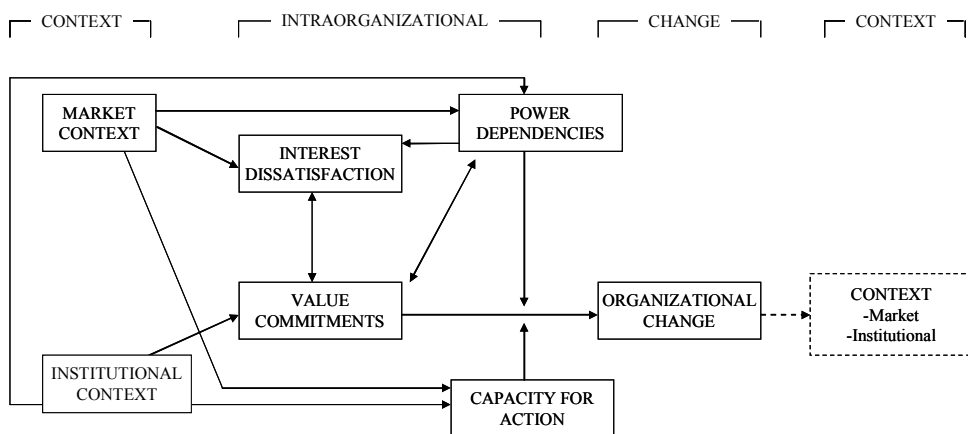


FIGURE 3 Model for Understanding Organizational Change

(adopted from Greenwood & Hinings 1996: 1034)

2.2.2 Institutional Change and Its Enabling Conditions

When analyzing organizational change, for the sake of conceptual clarity, it is important to elaborate on two dimensions of change. First, it is important to draw a distinction between radical and convergent change (Greenwood & Hinings 1988; Miller & Friesen 1984; Mohrman

et al 1989; Nadler & Tushman 1989; Nadler et al 1995; Tushman & Romanelli 1985), and second, between evolutionary and revolutionary change. Convergent change refers to “*fine tuning the existing orientation*” (Greenwood & Hinings 1996: 1024), whereas radical change, ‘frame bending’ implies the breaking out of an existing ‘orientation’ (Johnson 1987; Miller 1982, 1990), and organizational transformation (Greenwood & Hinings 1996). In this research, I focus attention on radical rather than convergent change.

The determinants of evolutionary and revolutionary change in the literature comprise the pace and scale of disruption and subsequent adjustment. While evolutionary change happens gradually, at a slow pace, revolutionary change occurs fast, having an impact on the whole organization almost at once (Greenwood & Hinings 1996). The model of continuity and change introduced by Pettigrew (1985, 1987) depicts the process in evolutionary change. The punctuated equilibrium model proposed by Tushman & Romanelli (1985) reflects revolutionary change (Greenwood & Hinings 1996).

Institutional change can develop on several analytical levels:

Institutional change can proceed from the most micro interpersonal and suborganizational levels to the most macro societal and global levels. It can take place in relatively brief and concentrated periods or over time measured in decades or centuries. And it can take place incrementally, so that observers and participants are hardly aware of any change, or abruptly, in dramatic episodes that present large discontinuities with former patterns. (Dacin et al 2002: 48)

The single case study research reported in this thesis focuses largely on micro levels, emphasizing a relatively short time period of four years in a firm’s life, wherein radical change processes are witnessed.

DiMaggio & Powell (1991: 29) posed the question: “*If institutions exert such a powerful influence over the ways in which people can formulate their desires and work to attain them, then how does institutional change occur?*”

Scholars have made attempts to identify “*the locus and processes of institutional change*” (Greenwood & Suddaby 2006: 28). Exogenous ‘jolts’ (Meyer 1982) in the form of regulatory change, competitive discontinuities, technological disruptions, and even social upheaval (Davis et al 1994; Fox-Wolfgramm et al 1998; Garud et al 2002; Kraatz & Moore 2002; Lounsbury 2002; Ruef & Scott 1998; Zucker 1988, among others) have three main implications. The forms

of exogenous jolts described above have a precipitating effect on the emergence of new actors in an organizational field¹⁰ (Thornton 2002; Thornton & Ocasio 1999). The events mentioned above also give support to existing actors' ascendance (Scott et al 2000), and transform the 'intellectual climate of ideas' (Davis et al 1994; Greenwood & Suddaby 2006).

Relying on the institutionalist tradition underscoring the embeddedness of organizational structures and strategies in their institutional environments, the role of 'strategic choice' (Child 1972) in the face of institutional forces has remained an issue intriguing scholars to further clarify this complex relation. Addressing a persistent problem in institutional organization theory, the question of institutional change and interest-driven behavior, Beckert (1999) has developed a framework which has brought together the notion of an entrepreneur implying strategic agency¹¹ and the concept of institutions as enacted rules and scripts. The main premise in this framework is that of acknowledging uncertainty as a important variable in an explanation of institutional change, the relation of strategic agency and institutionalization is interdependent. The conceptualization emphasizes the active input of strategic agents, entrepreneurs, pursuing change in institutionalized scripts and rules, and paves the way to incorporate power and strategic agency into institutional organization theory (ibid.)

To analyze the role that organizations and/or individuals play as endogenous sources (Greenwood & Suddaby 2006) in constituting institutional change, many neo-institutional scholars (DiMaggio 1988; Fligstein & McAdam 1995; Fligstein 1997; Kondra & Hinings 1998; Beckert 1999; Battilana 2006; Garud et al 2007; Leca et al 2008, among others) have built on the notion of institutional entrepreneurship, a concept incorporating the role of interests and agency, introduced by DiMaggio (1988). Institutional entrepreneurship has been introduced as a promising approach to account for endogenous institutional change, although the notion contains an inherent source of controversy among neo-institutional organization scholars (Battilana 2006). This source of controversy points out the institutionally embedded actors' ability to set themselves apart from the imposed institutional pressures, and to their capacity for strategic action (ibid., Greenwood & Suddaby 2006; Seo & Creed 2002). In other words, accounts of institutional entrepreneurship face the theoretical 'paradox of embedded agency' (Clemens &

¹⁰ Scott (1995:56) defines fields as *"a community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside of the field."*

¹¹ Strategic agency can be defined as the systematic attempt to reach conceived ends through the planned and purposeful application of means (Beckert 1999: 782).

Cook 1999; Seo & Creed 2002; Sewell 1992; Battilana 2006; Greenwood & Suddaby 2006; Garud et al 2007; Leca et al 2008).

To unfold the paradox of embedded agency, the dialectical nature of the relation between human agency and institutions needs to be understood (Battilana 2006). As DiMaggio & Powell (1991) argued, institutions are in essence the product of human agency, not only constraints to it. Battilana (2006) argued that the paradox of embedded agency rises from the following fact. Neo-institutional theorists have mostly neglected to touch upon the issue of human agency, disregarding the individual level of analysis. Scholars have instead set their focus on the organizational and societal levels of analysis. Battilana's (2006) solution to overcome the paradox, and build the theory of institutional entrepreneurship, is to link the individual level of analysis to the organizational and societal levels of analysis, and to explain the conditions under which individuals may act as institutional entrepreneurs.

Moreover, other propositions to overcome the paradox of institutional entrepreneurship have been introduced by neo-institutional scholars. Accounts have been made that propose enabling conditions (Strang & Sine 2002) as drivers for the emergence of institutional entrepreneurs. Attention has been focused on macro and micro-level enabling conditions, namely market conditions, institutional conditions, and organizational properties (Battilana 2006).

Scholarly work has also focused on analyzing the embeddedness of institutional entrepreneurs in their environmental context (Greenwood & Hinings 1996; Lawrence 1999; Seo & Creed 2002; Dorado 2005; among others). In this line of inquiry, explanations have been given on why, and what way institutional conditions, are likely to enhance action in a specific organizational field (Battilana 2006). Research has established that both the degree of institutionalization of an organizational field (Tolbert & Zucker 1996; Battilana 2006) and its degree of heterogeneity (Sewell 1992; Whittington 1992; Clemens & Cook 1999; D'Aunno et al 2000; Seo & Creed 2002) may impact the agency of actors, and subsequently institutional entrepreneurship (Battilana 2006). Moreover, attempts have been made to analyze the influence of organizational properties on an organization's tendency to pursue institutional entrepreneurship. An example of such a property is the specific organization's position in its respective organizational field (ibid.)

Although research has established that specific organizational properties, and a specific organizational field, may promote the emergence of institutional entrepreneurship, as Clemens &

Cook (1999) found, even embeddedness in a similar environment does not lead all individuals to engage in institutional entrepreneurship. As Battilana (2006: 659) put it, the tendency of individuals to become institutional entrepreneurs “*is a function of their willingness to act as such and of their ability to do so*”, based on DiMaggio’s (1988) definition of institutional entrepreneurship. Greenwood & Hinings (1996) conceptualized the degree of commitment of distinctive groups in an organization to extant organizational arrangements as ‘pattern of value commitments’ of an organization (Battilana 2006). The ‘pattern of value commitments’ has implications on the smoothness or difficulty of pursuing diverging changes in an organization. In other words, when all groups in an organization are in favor of extant institutional arrangements, diverging change is no easy matter to pursue, whereas if there is opposition toward extant institutional arrangements, diverging change is a less tedious task to set forth (ibid.)

In addition to Battilana’s (2006) research on individual’s social position as major determinants in identifying how institutional entrepreneurs are enabled to act as they are embedded in institutional arrangements and faced with institutional pressures, Dorado (2005), among other scholars, has investigated the influence of an organization’s or individual’s social position on the emergence of institutional entrepreneurship. According to Dorado (2005), the social position of actors in a social network’s structure, reflecting the network of individuals to whom they are in contact (Aldrich 1999), influences the actors’ views on the organizational field they are embedded in, and their tendency to pursue institutional entrepreneurship (Battilana 2006).

Battilana (2006: 660) defines the social position of individuals in a specific organizational field as follows:

Individuals are embedded in organizations and social groups, both of which are embedded in organizational fields. Social groups transcend organizational boundaries.[...] Individual’s social position in a given organizational field is determined by their position in this organizational field, on the one hand, and by their position in their organization, on the other hand.

Following Brint & Karabel (1991), who contend that organizational fields are political arenas, Battilana (2006: 660) continues by arguing that:

In a given organizational field, any dominant institution and the set of templates, rules and practices with which it is associated imply different access to, and control over, key resources and decision processes within this organizational field (i.e. within the organizations and social groups that are embedded in this organizational field). For this reason one can argue that existing institutional arrangements are a source of power for some people and not for others in a

given organizational field, depending on the organization and social group(s) to which they belong.

In a call for studies of institutional theory and institutional change, Dacin et al (2002: 53) perceptively noted that the challenge for institutional scholars ahead lies in exploring and exploiting the *“diversity of viewpoints within the domain of institutional theory as well as outside of its boundaries.”*

To summarize, as described in this chapter of the thesis, the interaction between equity markets and firm innovation has been previously studied from the management perspective (Carpenter et al 2003; Lazonick & Prencipe 2005; Tainio 2001a; Tainio 2002; Tainio 2003a,b; Tainio et al 2003). It is important to study distinct stakeholders' behavior to enhance the understanding of how this behavior guides the expectations and actions of social actors. In this respect, empirical research could reveal how these expectations and actions impact the social process of firm innovation. The interplay between social actors mentioned above manifests itself not as a separate phenomenon, but as an important issue to be studied in its institutional context.

Figure 4 below depicts the conceptual framework of this research guiding the empirical analysis. The interaction presented in prior literature developed by Carpenter et al (2003), Lazonick & Prencipe (2005), Tainio (2001a), Tainio (2002), Tainio (2003a,b), & Tainio et al (2003) is illustrated on the left of the figure, where the focus is on the management perspective. In the present research I augment the original framework by adding the perspective of other stakeholders in this study in addition to the management perspective. I also add the transforming institutional context to the figure as it is essential for understanding the research phenomenon, the interaction between equity markets and firm innovation. The framework serves as guide for the empirical analysis. The arrows point out the processes to be described, and the mechanisms to be identified, in this study. Building on conceptual frames of reference in prior literature, it is acknowledged that they hold attributes at different levels of analysis. However, as the research phenomenon is context-dependent and multifaceted, it is appropriate to conduct the study as guided by the conceptualizations mentioned above.

In Chapter 4 I describe the changing institutional context, and specifically underscore the salient attributes influencing the interaction between equity markets and firm innovation from the perspective of diverse stakeholders. In Chapter 5, I proceed to describe the complex social

process of firm innovation as depicted in the innermost box of Figure 4, approaching the interplay between equity markets and firm innovation, likewise from the stakeholder perspective. In Chapters 4 and 5 of the thesis I examine the interrelationships of institutional change and social processes of firm innovation by building on central notions of institutional theory, the regulative, normative, and cognitive embeddedness of an organization and individuals within their institutional context, reflecting and constituting institutional change (Hirsch 1997; Hoffman 1999; Djelic & Quack 2003; Battilana 2006; Garud et al 2007).

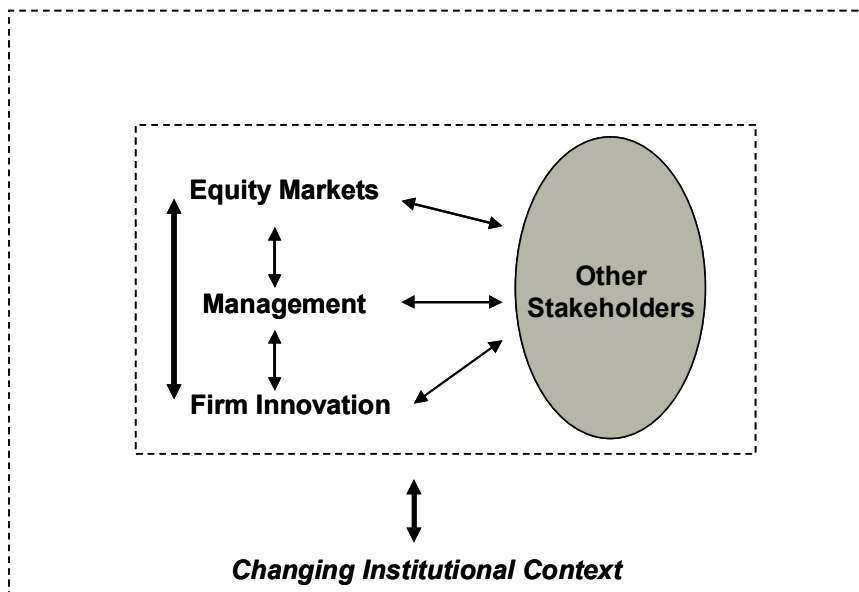


FIGURE 4 Conceptual Framework

In Chapter 3, I elaborate the research design and methods I have chosen for conducting the empirical analysis of the specified research phenomenon.

3 RESEARCH DESIGN AND METHODS

In this chapter I present the rationale for the research design and methods selected for conducting this study. The chapter starts with a description of the research strategy and research setting chosen for the study, followed by a presentation of data collection procedures and methods guiding data analysis. The chapter proceeds by considering adherence to criteria for judging the quality of the research design, and concludes by discussing the philosophical underpinnings that have guided the study.

3.1 Research Strategy

Single Case Study

I employ an in-depth single case study as a research strategy. Eisenhardt (1989b: 534) justifies a case study as a “*research strategy which focuses on understanding the dynamics present within single settings.*” According to Dyer & Wilkins (1991: 615) the aim of the case study is “*to provide a rich description of the social scene, to describe the context in which events occur, and to reveal [...] the deep structure of social behavior.*” These statements apply directly to my research since contextual conditions, defined as historical contingencies and cultural properties, are highly relevant in unfolding the interaction of equity markets and firm innovation of this study. Yin (2003: 6) views case study as an advantageous strategy when ‘how’ or ‘why’ research questions are being posed, implying an explanatory nature of “*questions dealing with operational links needing to be traced over time.*” Case studies also allow the viewing of evidence from multiple perspectives. The case study’s forte lies in its ability to deal with a multitude of evidence, including observations, interviews, artifacts, and documents (ibid.).

Case studies may be employed for distinctive purposes: descriptive, theory testing, or theory generating purposes (Eisenhardt 1989b). Siggelkow (2007) stated that case studies can be used to achieve three aims. The first is theoretical or, alternatively, empirically grounded motivation where the case serves as a plausible demonstration of an important phenomenon. Second, case studies can be used for inspiration by pointing out theoretical gaps, and subsequently sharpening theory by starting to fill the gaps. Third, case studies may be valuable for illustration when the aim is to make a conceptual contribution.

The purpose in this study is to develop theory, therefore, theoretical sampling in the words of Eisenhardt & Graebner (2007: 27), is applied:

Theoretical sampling simply means that cases are selected because they are particularly suitable for illuminating and extending relationships and logic among constructs. [...]Theoretical sampling of single cases is straightforward. They are chosen because they are unusually revelatory, extreme exemplars, or opportunities for unusual research access [...]single-case research typically exploits opportunities to explore a significant phenomenon under rare or extreme circumstances. (cf. Yin 2003).

In a similar vein, Siggelkow (2007: 20) views the advantage of a single case as *“a very powerful example[...], [...] allowing one to gain certain insights that other organizations would not be able to provide.”*

Dyer & Wilkins (1991: 614) view the essence of a single case study by stating that *“the careful study of a single case [...] leads researchers to see new theoretical relationships and question old ones.”* Following the authors (ibid.: 614), by gaining *“deep understanding of a particular social setting”* the researcher may *“create and highlight theoretical constructs”* by focusing on *“the context of the constructs and the role these constructs play in a particular setting.”* While single-case research is concerned with idiosyncratic detail, as Eisenhardt & Graebner (2007: 30) argue: *“[...] single cases can enable the creation of more complicated theories than multiple cases, because single-case researchers can fit their theory exactly to the many details of a particular case.”*

The authors (ibid.) contrast multiple-case research as retaining only relationships replicated across cases, thus leading to more generalizable theory due to the existence of fewer relationships compared to the rich detail in a single case study.

This single-case research is grounded in a specific organizational and institutional context which allows for a particular story to be told. By showing complex social dynamics in intricate detail, the research generates rich insights through the single case approach, unfolding hidden mechanisms of the processes that produced the outcomes of specific innovation.

This single case study employs an embedded design (Eisenhardt 1989b; Yin 2003) where the research is cast at two levels of analysis: firm and individual level. The study aims to capture both firm-level and individual-level social dynamics of the relationship between equity markets and firm innovation in its particular institutional context.

Yin (2003) offers another justification for a single case study: the longitudinal case study where the same case is investigated at distinct points of time. Yin (2003: 42) states:

The theory of interest would likely specify how certain conditions change over time, and the desired time intervals to be selected would reflect the presumed stages at which the changes should reveal themselves.

Siggelkow (2007: 22) states that:

The ability to get closer to theoretical constructs is particularly important in the context of longitudinal research that tries to unravel the underlying dynamics of phenomena that play out over time. As scholars have increasingly begun to appreciate the role of dynamic processes (e.g. path dependency or evolutionary processes), rich longitudinal research is needed to provide the details of how these processes actually play out.

3.2 Research Setting

The research setting is the rapid development and convergence of mobile telephony, digital technology, and the internet in the telecommunications services industry combined with the interaction of the global institutional investment community, manifested through equity markets. The single case research is focused on “Sonera” (Telecom Finland 1994 - 1998, Sonera Ltd, Sonera Corporation 1998 - 2002, TeliaSonera Finland 2002-), an organization operating in a rapidly changing industry and competing in a global marketplace while exposed to the dynamics of the global institutional investment community. The longitudinal, comparative case study 1998 - 2002 spans from the year the 100% state-owned company Sonera was established and entered the equity markets through its IPO, until the end of its independent path by a merger with its Swedish counterparty, the national Swedish telecommunications operator Telia in 2002. The years 1998 - 2002 cover a most significant period in the firm’s history in terms of exposure to international capital markets, a period of aggressive growth and abrupt decline, leading to a merger in the Nordic telecommunications operator industry. A summary of Sonera’s state ownership history is provided in Appendix 1, which also highlights the firm’s name changes through to merger in 2002.

By grounding the research in a longitudinal, comparative analysis of a real-life situation, in the upswing and dramatic downturn of a telecommunications services firm, Sonera, the mechanisms, the underlying social dynamics played out over time can be unveiled through the interaction of the stakeholders of the firm (1998 - 2002) exposed to the demands of global equity markets. Thus the seemingly ambiguous process, leading to specific innovation outcomes and a merger in

the Nordic telecommunications industry, may become more understandable in an analysis of the interplay between ownership and innovation.

The story of Sonera makes a most compelling case for research on the interaction of institutionalized forces for several reasons. First, Sonera was backed by its innovative reputation as a forerunner of telecommunications technology both domestically and internationally at the turn of the millennium (Laaksonen 2007). Second, the firm was embraced by the convergence of high technology related to the telecommunications industry development. Third, it was exposed to the release of regulative constraints in the telecommunications industry on transnational and national levels. Fourth, the developments mentioned above were coupled with the rapid expansion of the international capital markets. The dynamics of ownership and firm innovation were played out powerfully over a short period of time around the turn of the millennium.¹² Above all, the intensity of the phenomena in high technology development and concomitant capital markets' reactions reflected on Sonera's dramatic path in 1998 - 2002 *"make it an extreme case, in which the usually lengthy and hidden processes of institutionalization may be unfolding more rapidly and more evidently"* (Yin 1994 in Zilber 2006: 284).

3.3 Data Collection

I immersed myself into the social processes to be examined by combining various sources of evidence. This implied collecting evidence through primary and secondary sources. Due to previous personal work experience in Sonera's finance department from 1997 as well as prior work experience in the banking industry, I had personal ties and thus access to many informants and data bases relevant to the study. I had, during my employment at Sonera 1997 – 2003, been assigned to conduct academic research on the interaction between capital markets and corporate knowledge creation just before the turn of the millennium. Hence, I had received permission from the management to conduct the study which subsequently evolved to the examination of the multifaceted interplay between equity markets and firm innovation.

¹² See Section 4 for an illustration of institutional change and its micro-level implications, and Section 5 for a description of social processes that influenced Sonera's innovations referred to in this research.

Two sets of data provide empirical material for the study.

1. Primary data in the form of semi-structured interviews of actors in the focal organization, investment banks with close ties to key investors, representative of the State of Finland, and consultancy firm representatives. The number of interviews conducted totaled 25 interviews with 22 informants. Primary data also consisted of participant observation and informal discussions with respondents.
2. Secondary data comprised of annual reports, offering memorandums, stock exchange releases, internal strategic planning documents, business press articles, and investment banks' analyses of Sonera

The sources of empirical material, converging as evidence for the research, are depicted in Figure 5.

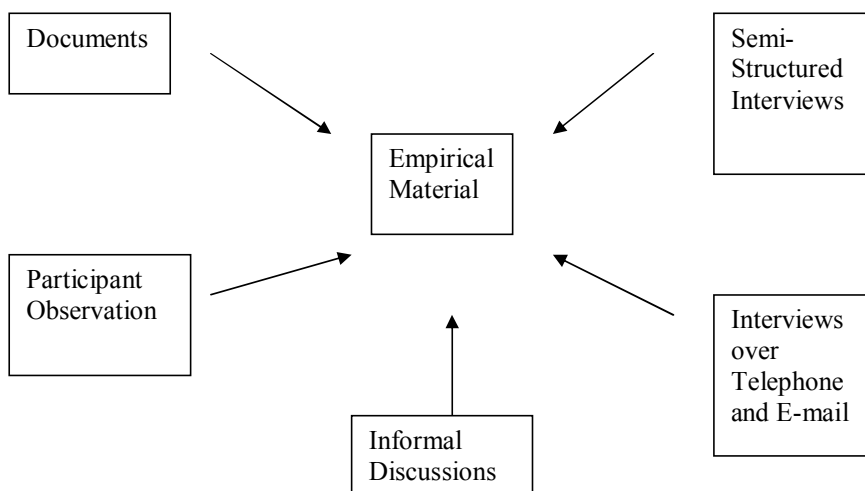


FIGURE 5 Convergence of Evidence

(adopted from Yin 2003)

The primary sources of data obtained were semi-structured interviews conducted face-to-face and over the telephone and e-mail, informal discussions and participant observation which were used in conjunction with secondary data sources specified above. Participant observation during my employment and informal discussions conducted with employees of Sonera at various organizational levels, both during my (and their) employment, and afterwards, helped to deepen

the understanding of various stakeholders' perspectives on the investigated phenomenon. These two primary data sources also aided in the probing of initial ideas, and, as the research evolved, informal discussions gave rise to subsequent ideas for formulating the research questions. The interviews provided fine-grained qualitative data while more coarsely grained data was generated through reading and analysis of documents. The secondary data sources nevertheless provided valuable complementary data on Sonera's history and on the driving forces of change in its institutional environment.

The triangulation of various data sources, coupled with the identification and selection of numerous informants who viewed the phenomenon of equity markets and innovation in interaction from distinctive perspectives, provided a means for eliciting evidence on the social processes under investigation. This approach limited informant bias (cf. Suddaby 2006; Eisenhardt & Graebner 2007). In carrying out data collection, I followed the 'category saturation' principle proposed by Strauss & Corbin (1998) as a primary means of verification. In other words, I continued to collect data through interviews until no new evidence appeared.

The time frame of the semi-structured interviews extended from November 2005 to December 2006. Although I had previously collaborated, due to prior work experience, with several of the informants, practical arrangements for interviews had to be adjusted to key informants' schedules and locations. Some key informants had moved abroad after their resignation from Sonera, and therefore, arrangements had to be made to set up the interviews in addition to Helsinki, Finland, were also carried out in London, U.K. Moreover, the key investment banks' main offices in Europe are situated in the City (of London), U.K. Some informants who worked for Sonera SmartTrust and Sonera Zed, the dominant foci of Sonera at the turn of the millennium, would thus have been valuable for the research, could not be reached for an interview, despite the efforts of the researcher. Some could not be located, and some failed to respond to telephone calls and messages. In addition to the dramatic, short histories of both business units of Sonera, and possible non-disclosure agreements binding former employees, a reason for declining the interview could lie in the temporal context of the conducted interviews. Court proceedings related to Sonera were still ongoing or in the fresh memory of potential interviewees in 2005 - 2006. Nevertheless, the informants available for interviews comprised a highly knowledgeable group of people from different organizational levels and distinct stakeholders of the firm.

The categories of interviewees comprised the following: Sonera's top management; the board; middle management; specialists in the fields of technology, business development, and finance; key investment banks close to the company; personnel and trade union representatives; representatives of the State of Finland; and a consultancy firm representative. The interviews were conducted in Finnish, Swedish, and English. All interviews were digitally recorded and transcribed with the exception of some interviews in the fields of technology and finance that were not recorded due to the sensitive nature of the topic. Where recording was not in place, the researcher relied on filed notes written at the interviews which were immediately transcribed. The interviews lasted an average of 75 minutes and generated 202 pages of transcripts.

By using numerous, highly knowledgeable interviewees, I attempt to bring out the different voices of stakeholders as they discern, each from their own cognitive frame, the interplay between equity markets and firm innovation in the context of radical industry transformation. The distinct stakeholders' views provide a rich description for analysis on the underlying dynamics of firm innovation. Although the interview questions were organized under themes emerging from prior literature relevant to the interaction between equity markets and firm innovation, the informants had the opportunity to either keep their responses to the questions asked or discuss freely their experiences and insights based on prior theoretical concepts. The Interview Guide used in this research is presented in Appendix 2.

Most often the interviews resulted in obtaining the informants' own insights of Sonera's events during 1998 - 2002 as well as the antecedents and consequences. In this research, my view on the nature of data is in line with that of Alvesson & Kärreman (2007) who look upon empirical material as representation of data since data is constructed in the interaction between the researcher and the informants. I received multifaceted answers and responses to the interview questions posed, and in presenting the data I relied heavily on the informants' own statements, thus allowing the data, the empirical material, to tell the story. I present primary data verbatim so as to distinguish my interpretation as researcher from the interviewees' statements. The data thus shows how the informants framed their discourses and actions through their individual world views. I follow Astley's observation (1985) on the interpretations of events by stakeholders and researcher regarding the phenomenon under investigation: Nothing can be perceived but through the specific structure of knowledge in which individual perception is embedded. Applying this view to my research, the stakeholders' knowledge of 'objective' reality is hence the result of

subjective construction. Table 3 depicts the collection of primary data through semi-structured interviews.

Person Interviewed	Date	Duration (min.)
Manager NCS ¹³	21 / 11 / 2005	90
Manager R&D	24 / 02 / 2006	20
Group Level Manager, Technology Ventures	28 / 02 / 2006	105
Top Management	28 / 02 / 2006	90
Top Management	02 / 03 / 2006	N/A (e-mail interview)
Group Level Manager, M&A	02 / 03 / 2006	90
Top Management	03 / 03 / 2006	35
Manager Corp. Finance	03 / 03 / 2006	60
Technology Specialist	08 / 03 / 2006	60
Corporate Venture Manager	09 / 03 / 2006	75
Top Management	14 / 03 / 2006	105
Technology Specialist	15 / 03 / 2006	60
Investment Banker	29 / 03 / 2006	105
Technology Specialist	31 / 03 / 2006	75
Top Management	03 / 04 / 2006	120
Top Management	21 / 04 / 2006	40
Top Management	25 / 04 / 2006	120
Investment Banker	26 / 04 / 2006	75
Consultant	15 / 05 / 2006	80
Technology Specialist	05 / 06 / 2006	75
Board Member	14 / 09 / 2006	80
State Official	27 / 09 / 2006	65
Top Management	01 / 11 / 2006	90
Personnel Representative	27 / 11 / 2006	90
Top Management	19 / 12 / 2006	60

TABLE 3 Semi-Structured Interviews

¹³ The abbreviation NCS points to Sonera's New Communications Services division

3.4 Methodological Background Guiding Data Analysis

Using History to Reshape Theory on the Social Conditions of Innovation

Lazonick (2002b: 3 - 4) states that as innovation lies at the heart of economic development, and as the:

[...] social conditions affecting innovation change over time and vary across productive activities; hence theoretical analysis of the innovative enterprise must be integrated with historical study. A theory of innovative enterprise requires an understanding of the historical process that is sufficiently broad and deep so that the assumptions and relations that form the substance of the theory capture the essential reality to which the theory purports to be relevant. The development of relevant theory requires an iterative intellectual approach in which theoretical postulates are derived from the study of the historical record and the resultant theory is used to analyze history as an ongoing and unfolding process.

Lazonick (2002b: 16 -17) calls his analytical approach a 'historical - transformation methodology' and elaborates on the methodology integrating history and theory:

'History' is not just a set of facts. Rather, it is a complex process of change from which, if we can learn both to understand it and abstract from it, can be drawn a theoretical perspective that can help us comprehend the problems of the present and the possibilities of the future. To make use of history to understand the process of economic development, it is not enough to say, as have proponents of 'path dependency,' that 'history matters.' Depending on the configuration of industrial, organizational, and institutional conditions, path dependency can either promote or constrain the innovation process, and for the analysis of economic development it is of central importance to identify what social conditions have which impact.

I subscribe to the view that history is an important influence on social process in Lazonick's (2002b) analytical approach which implies that history is needed to reshape existing theory. For this reason, the historical contingencies, and the wider social context in which Sonera was embedded, are illuminated in Chapters 4 and 5 of this thesis.

Addressing Dynamics of Innovation and Institutional Change through a Processual Approach

With a sense-making objective (Weick 1979; Langley 1999) guiding an account of revolutionary organizational transformation in its changing institutional context, I adopt a processual approach to address the dynamics of institutional change reflected on and constituted by firm innovation outcomes. In line with Eisenhardt (1989b) and Patton (2002), the process approach incorporated within a case study is considered appropriate since case studies provide a holistic view of

complex, dynamic research phenomena such as the interaction between equity markets and firm innovation. Van de Ven & Huber (1990: 215) state that:

[...] theoretically sound and practically useful research on change should explore the contexts, content, and process of change together with their interconnectedness through time. Just as change is only perceptible relative to a state of constancy, an appreciation of a temporal sequence of events requires understanding the starting (input) conditions and ending (outcome) results.

This entails both examining the process of change as well as casting light on the inputs and outputs of change. In short, process research focuses on how and why things evolve over time (Langley 1999).

In this research, I follow Van de Ven's (1992: 170) definition of process stating that the;

[...] meaning of process is a sequence of events or activities that describes how things change over time, or that represents an underlying pattern of cognitive transitions by an entity in dealing with an issue. [...] definition of process takes a historical developmental perspective, and focuses on the sequences of incidents, activities, and stages that unfold over the duration of a central subject's existence (ibid.:170).

As my research aims to provide rich explanations of emerging social processes, it aligns with Van de Ven's (1992: 178 - 179) categorization of dialectic process theory which is defined:

[...] dialectics, begins with the assumption that the developing entity exists in a pluralistic world of colliding events, forces, or contradictory values which compete with each other for domination and control. [...] Stability and change with a dialectical process theory are explained by the relative balance of power between opposing forces [...] Change occurs when these opposing values, forces, or events go out of balance. The relative strength, power, or legitimacy of an antithesis may emerge or mobilize to a sufficient degree of force to overthrow the current thesis or state of affairs and produce a synthesis, which then becomes the new thesis as the dialectical process recycles and continues.

In the classic work on organization theory described by Mohr (1982), 'variance' and 'process' theories are distinguished. Variance theories explain phenomena through the causal relationships between independent and dependent variables while process theories offer explanations through the temporal ordering of events producing outcomes (Langley 1999). Although Mohr (1982) has advocated the separation of variance and process theories, this insistence of separation is challenging to satisfy in practice since phenomena are often intertwined in the context of a firm and in firm strategy related to innovation, as Langley (1999) has also noted.

Complex phenomena present a challenge to the sense-making objective and process in research since *"Process phenomena have a fluid character that spreads out over both space and time"* (Pettigrew 1992 in Langley 1999: 692). As the context of phenomena is taken into account, the

levels of analysis must be considered in the confrontation of process data. As Langley (1999) notes, it is not always an easy task to separate the levels of analysis by distinct classification in front of eclectic process data. Although descriptions of temporal phenomena are one of the distinguishing properties of process data, process data may also include other types of qualitative information, such as the evolution of human relationships and individual cognitions and emotions in the interpretation of events. Hence, the complexity of process data manifests the multifaceted phenomena that research attempts to shed light on (ibid.). As Langley (1999: 694) puts it well:

[...] this is where the central challenge lies: moving from a shapeless data spaghetti toward some kind of theoretical understanding that does not betray the richness, dynamism, and complexity of the data but that is understandable and potentially useful to others.

To address this challenge, I present the data analysis procedures I have followed in this study.

Temporal Bracketing Strategy

Building on Scott (1995) and Barley & Tolbert (1997) a diachronic approach, i.e. a sequential analysis is employed in this research to examine the chain of events leading to the observed outcomes. This approach allows an analytical distinction to be made between actors' actions and institutional change. I attempt to show how the external processes of Sonera's institutional context together with the internal dynamics of innovation gave rise to patterns of events that subsequently generated the dominant innovation outcomes in the firm. To address this task, I identify explicit stages describing the changes that occurred, and indicate the way in which the changes occurred; in other words, by what actions or mechanisms the changes witnessed were brought about. This strategy is called 'temporal bracketing' after Langley (1999)¹⁴. By identifying temporal breakpoints to define specific phases, this strategy serves as a means of structuring the description of events. "*The decomposition of data into successive adjacent periods enables the explicit examination of how actions of one period lead to changes in the context that will affect action in subsequent periods*" (ibid: 703). I inferred the key anchor points, three distinct phases from secondary data as follows. The first phase, 1998 – 2000, encompassed the upswing since the IPO of 1998 to the first quarter of 2000. Following that, the second phase marked the juncture starting in April 2000. Lastly, the third phase pertained to the decline of

¹⁴ As referenced to Giddens's (1984) perspective of mutual shaping in structuration theory. "*At the heart of structuration theory is the idea that actions of individuals are constrained by structures (including formal and informal rules and norms) but that these actions may also serve to reconstitute those structures over time. Because mutual influences are difficult to capture simultaneously, it is easier to analyze the two processes in a sequential fashion by temporarily "bracketing" one of them*" (Giddens 1984, in Langley 1999:703).

financial resources and innovative capability commencing in the last quarter of 2000 which precipitated in the first quarter of 2001, and ended in the merger to Telia in 2002¹⁵.

In addition to structuring the description of events, the temporal bracketing strategy allows the forming of comparative units of analysis through the specific temporal phases; thus permitting the replication of emerging theory (Langley 1999). In this study, I outline a process with different phases and layers where the distinct phases constitute the units of analysis. By comparative analysis of phases and emerging themes, some of them loosely while others tightly coupled, the aim is to reveal the process drivers, and underlying mechanisms,.

For the purpose of ordering the raw mass of data, I coded the interview data into initial categories. The event categories were coded along the conceptual tracks of the 'social conditions of innovation', following Carpenter et al (2003). I set out to analyze the event categories that emerged from the data, not necessarily always in temporal order. Ongoing iterations between data, prior theoretical frameworks, and emerging themes continued as a non-linear process where inductive and deductive modes of theorizing were combined. This approach has been referenced to in the literature as 'systematic combining' (Dubois & Gadde 2002); based on abduction (Peirce 1978) where novel theoretical concepts are viewed to be the result of combining deductive and inductive approaches. Constant iteration between different conceptual approaches helped me to order the mass of raw data in my empirical research material, thus deepening my understanding of this data. Through this approach possible contradictions and loose ends could be found in the data (cf. Ahrens & Dent 1998; Glaser & Strauss 1967). I combined empirical material, my observations of it, into emerging themes and searched for patterns, as illustrated in Chapters 4 and 5 of this thesis. This pattern-making attempt was guided by prior theoretical constructs and juxtaposing the distinct perspectives of a firm's stakeholders on the examined phenomenon in a sequential account.

As the interview data was rich in detail, I focused on the emerging conceptual arguments in order to guide which details to exclude as mere noise, and which detail to rely on in the construction of conceptual arguments (Siggelkow 2007). In line with Suddaby (2006), saturation was reached when information was repeated and conceptual categories were confirmed by the collected empirical evidence. The aim was to move from observations of empirical data through patterning to generate theoretical conclusions. The ultimate goal was to learn about the interrelationships of

¹⁵ Section 4.3 of this research illustrates the three distinct phases in more detail.

equity markets and firm innovation in its institutional context in a wider sense, to detect the forest from the intricate detail of trees (cf. Ahrens & Dent 1998).

Innovations provide the empirical context for my investigation through which I examine their drivers, mechanisms in the particular stages of an organization's life. Innovation is thus an organizational and institutional phenomenon, "*embedded in a social system*" (Ahrens & Dent 1998: 3). Hence, the emphasis here is on the role of innovations and their interpretations by stakeholders in Sonera's journey at the turn of the millennium; a time of radical industry transformation. I thus bring the organizational and individual dimensions to the forefront of analysis in the context of institutional change. I focus on the linkages between equity markets and firm innovation through social processes between divergent stakeholders of the firm. In an attempt to present a holistic account, I aim to explain how the expectations and actions of stakeholders relate to one another, and produce the outcomes observed in firm innovation. This implies drawing out the tensions between distinct stakeholders' discourses and actions. The challenge here lies in not being partial, as researcher, to any single viewpoint observed in the empirical data. The aim is thus to capture the complexity of the views of the different stakeholders, to look beyond their accounts, and to shed light on their motivations and actions. By data presentation, showing informants' interpretations I let the data speak for itself, and weave together the empirical material, the researcher's interpretations of it, and prior literature into a new conceptual framework.

Yet, not only did the informants interpret the social reality in which innovations were embedded along Sonera's journey in radical industry transformation. It should be noted here that the researcher is also a prisoner of her own cognition and emotions. As Suddaby (2006) points out, the researcher should be aware of her own personal world views and assumptions as well as personal biases when conducting research in a social setting. This might be easier said than done. In other words, ongoing self-reflection (ibid.) can be easier to advocate than to actually conduct, but serves as a useful reminder throughout the research process when interpreting informants' interpretations of events. As Denzin (1994: 500) well puts it, "*A key assumption is that in the social sciences there is only interpretation. Nothing speaks for itself.*" Alvesson & Kärreman (2007: 1268) continue in this line by stating, "*The framework, the researcher, the social reality – inescapably represented through potentially contested representations – are thus always interrelated [...]*"

3.5 Issues of Validity and Reliability

In judging how the research design of this study conforms to the criteria used to establish the quality of empirical social studies which case study research represents, the research design tests comprising *construct validity*, *internal validity*, *external validity*, and *reliability* (Yin 2003) can be considered in this research context as follows.

Various sources of empirical evidence, as illustrated in sub-section 3.3, were utilized in the data collection phase of the study, to complement and aid in establishing a chain of evidence needed for analysis. The use of knowledgeable individuals from multiple organization levels and stakeholders beyond the boundaries of the firm enabled the mitigation of informant bias. The informants of the study were provided with a draft of the manuscript for the purpose of having the informants input in validating the evidence gathered. Thus, the research achieves construct validity. As this was the story of distinct stakeholders' views on the multifaceted interaction between equity markets and firm innovation in a particular institutional context, fairness was manifested as "*a quality of balance*" in bringing out diverse stakeholders' voices and perspectives in the crafted text (Lincoln & Guba 2000: 180).

In data analysis, internal validity applicable to explanatory studies was achieved through the implementation of the temporal bracketing strategy. Patterns of events were compared in the distinct phases identified, through the viewpoints of the distinct stakeholders. The rich descriptions of events provided an empirical platform for explaining underlying generative mechanisms leading to observed innovation outcomes.

The external validity requirement typically presents a contested problem for single case study research. This problem stems most often from contrasting single case studies to survey research that are inherently disparate since in survey research a properly selected sample can constitute the basis for generalization to a wider universe, whereas analytical generalization applies to case studies. This implies that in single case studies the attempt is to generalize the researcher's findings to encompass broader theoretical issues (Yin 2003). In the case of this study, it points to ownership and firm innovation implications.

Chapter 2 of the thesis presents the prior theoretical frameworks that are drawn upon as guidance and inspiration in the cyclical, iterative research process. In the third chapter of this thesis, I have

described the research strategy and research process adopted by making transparent to the reader the various steps taken. The rationale of the research design, research setting, data collection and methods for analysis is made explicit. In Chapters 4 and 5 of the thesis, data is lifted as it is interpreted, to present the authenticity of the empirical material serving as basis for eventual conceptualization. These measures account for the reliability of the conducted research.

3.6 Underlying Ontological and Epistemological Assumptions

Social inquiry is a distinctive praxis, a kind of activity [...] that in the doing transforms the very theory that guides it. In other words, as one engages in the 'practical activities' of generating and interpreting data to answer questions about the meaning of what others are doing and saying and then transforming that understanding into public knowledge, one inevitably takes up 'theoretical' concerns about what constitutes knowledge and how it is to be justified, about the nature and aim of social theorizing, and so forth. In sum, acting and thinking, practice and theory, are linked in a continuous process of critical reflection and transformation. (Schwandt 2000: 190)

In the course of the present research, I have sought to steer a middle course between the ontologies of critical realism, historical realism, and social constructionism (Lincoln & Guba 2000; Reed 2005). Critical realism draws on representational epistemologies which presuppose objectivist, probably true findings while historical realism and social constructivism draw epistemologically on postmodernism, presupposing findings as transactional and subjectivist (Lincoln & Guba 2000).

Where social constructionism emphasizes a social reality which is discursively constituted (ibid.), critical realism acknowledges that there are *"already existing, real world material conditions and social relations that constrain and shape the discursive construction of organizational reality in any particular socio-historical situation"* (Reed 2005: 1629). Steering a middle ground between the ontologies guiding this social inquiry is reflected in the words of Searle (1995: 190 in Reed 2005: 1629):

[...] the ontological subjectivity of the socially constructed reality requires an ontologically objective reality out of which it is constructed [...] a socially constructed reality presupposes a non-socially constructed reality.

As previously stated, the aim in this study is to identify generative mechanisms underlying social processes in the complex interaction between equity markets and firm innovation that are manifested through the interplay between a firm's stakeholders, structural conditions, and

historical contingencies. Moreover, the study aims at enhancing the understanding of social actors' behavior that draws on individual cognitive frames and values serving as guide to subsequent discourses and actions. Thus, the explanations emerging for conceptualization “*draw on, but cannot be reduced to, the discursive practices and form – [...] through which social actors come to understand and interpret the underlying structures and mechanisms that produce the events in which they are engaged*” (Reed 2005: 1631 - 1632). I therefore focus on both the ‘real’ and ‘virtual’ realms that shape the trajectories for institutional change. In other words, I embrace a moderately social constructionist view as I study the meaning-making of social actors involved in the creation of firm innovations in the context of a radically transforming industry. In this process, I furthermore take stock of the institutionalized structures of the world ‘out there’ shaping the social construction of reality.

Next, in Chapter 4 of this thesis, I will depict the paradoxical property of Sonera’s institutional environment as a frame of action.

4 THE INSTITUTIONAL ENVIRONMENT OF A TELECOMMUNICATIONS FIRM AS A FRAME OF ACTION

This chapter of the thesis illustrates how Sonera was both empowered and constrained by its institutional environment as the complex interaction between equity markets and firm innovation was manifested in 1998 - 2002. Moreover, the chapter casts light upon how firm innovation is embedded in its transnational context, in addition to its national and organizational contexts. The chapter begins by describing the change forces in Sonera's institutional environment and their ramifications at a firm and individual level. The chapter continues by portraying the antecedents of the technology bubble in historical perspective, and concludes by presenting Sonera's stakeholders' accounts of the transforming institutional environment that gave impetus to the stakeholders' subsequent expectations and actions, reflected on firm outcomes.

4.1 Steps Toward the Liberalization of Telecommunications Markets on a Transnational Scale

In the 1990s the Finnish telecommunications market represented one of the most liberalized in Europe. The telecommunications service industry was gradually deregulated from 1987 as markets for data communications and business networks were partially opened up for competition. In 1994, more than three years in advance of most European countries, the Finnish telecommunications market was fully liberalized. Moreover, starting in 1996, the regulatory landscape of the telecommunications industry changed radically in the majority of OECD countries. The regulatory reform started by the adoption of new legislation in the United States under the 1996 Telecommunications Act, followed by the Telecommunications Directive of 1997 in the European Union. The aim of change in the regulatory landscape was to open telecommunications markets to competition, and thus enhance customer choice through competitive price and increased quality of services (Sonera 1998, 2000; OECD 2003a).

Another step toward the liberalization of telecommunications markets constituted the privatization process of incumbent national telecommunications operators by opening of the sector to foreign ownership. The privatization process in the telecommunications industry began in the United Kingdom when British Telecom started its privatization in 1984, followed by a wave of privatization plans by telecommunications operators in other OECD countries (OECD 2003a).

4.2 Technological Change in Information and Communication Technology

A major force changing the dynamics of the telecommunications market in the 1990s was the emergence of a variety of technological innovations. The transmission capacity of fiber-optic cables was able to be multiplied through new optical technologies, and further advances were made in switching technologies. This, together with innovation in computers and software, raised the speed at which computers could send and receive data as well as access the Internet. High-speed access (broadband) was offered through asymmetric digital subscriber line (ADSL), helping to upgrade traditional copper wires. The construction of second generation networks by cellular mobile operators ensured a rapid growth of customer base in many OECD countries (OECD 2003a).

Finland boasted leadership in cellular and Internet penetration rates during the late 1990s in the world. Close to the launch of Sonera's IPO, Finland's mobile penetration rate reached 58% at the end of 1998 (Sonera 1998). Simultaneously, Internet penetration stood at 107 Internet-connected hosts per 1000 inhabitants in Finland (Ministry of Transport and Communications Finland 1999). In accordance with the extensive growth of the mobile telecommunications market nationally and on a global scale, Sonera continued to focus its efforts on developing services built on mobile communications. Significantly, market development for the third generation mobile services based on UMTS¹⁶ technology, promised to become a breakthrough in mobile access to the Internet the telecommunications market, enticed substantial investments in the telecommunications industry. However, the time scale for UMTS technology development and deployment in the telecommunications industry was overestimated (Sonera Prospectus 2001). Growth estimates for mobile services built on UMTS were made based on earlier success rates in the second generation mobile telephony (OECD 2003a).

Information technology spending increased in the world in the late 1990s. Information technology budgets were driven due to the pervasive problem ensued by many applications designed to handle only 20th century dates; i.e. dates beginning with '19'. This created worries about potential problems if older computers should not be able to recognize the year 2000. The year 2000 problem was referred to as the 'Y2K' problem or the 'millennium bug'. This problem was feared to affect a vast amount of software, particularly accounting and database systems. To prevent the year 2000 problem from materializing, 'Y2K' compliant computer systems were extensively invested in ahead of schedule around the world (Needle 2006).

¹⁶ UMTS is the abbreviation for Universal Mobile Telecommunications Systems.

4.3 Changing Rules of the Game

The changing institutional environment, manifested through the new liberalized regulatory environment, rapid technological innovation offering potential for new service development, and accelerated information technology spending, engendered two immediate ramifications. First, it set the stage for a transition of the telecommunications industry structure, creating a multitude of new and different roles for it. This development led to a subsequent disaggregation of the industry with new competitive players and rules entering the game, such as telecommunications equipment providers, and suppliers of applications, customer and network management, switching, routing, transport, and access (McKinsey 1998). Second, the transforming institutional environment increased the appetite of the international investment community, leading to substantial equity issuance, debt flotation, and bank credit of telecommunications operators in Europe and the United States.

The genesis of the technology bubble can be traced back to August 9, 1995 when the Internet browser firm Netscape's initial public offering was launched (van Hamel Platerink & Andersen 1999; Thrift 2001). The share closed up 108% on the first day of trading, setting off Internet fever in the financial and telecommunications markets. The high expectations for future revenues and earnings led research analysts of global investment banks to encourage investors to buy shares and bonds issued by telecommunications companies. This process boosted share prices, and a bright future was predicted for the industry. For example, in May 1997 President of the Multi Media Telecommunications Association, William Moroney, claimed that, "*the road signs all indicate that, basically, the sky is the limit for communication companies*". (OECD 2003a) Some telecommunications industry analysts predicted double-digit growth in revenues for services and equipment and a doubling of Internet traffic every 90 days (TIA 1997). Institutional change forces in the telecommunications industry in the 1990s are summarized in Figure 6.

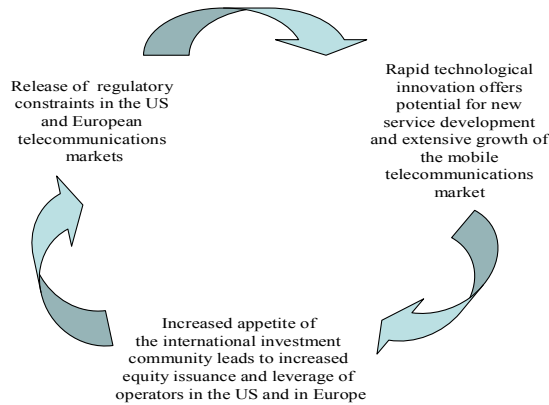


FIGURE 6 Institutional Change Forces in the Telecommunications Industry in the 1990s
(adopted from OECD 2003a; Sonera Prospectus 2001; TIA 1997)

In 1998, the year Sonera was established from the previous Telecom Finland Ltd, the firm expanded its international investor base through syndicated loan facilities in the public debt market. An international credit rating was received enabling the issuance of a comprehensive debt program. This measure allowed flexible entrance to the debt market where Sonera's borrowings could be geographically diversified between different investors in a wide range of financial debt instruments and currencies within a short time frame. A short time frame implied hours or days of preparation in entry to the financial market rather than weeks of administrative work needed for a traditional loan facility on the firm's balance sheet. Sonera received corporate credit ratings by Standard & Poor's Ratings Group and Moody's Investor Services, Inc. in January 1999 for this purpose, and launched a long-term Euro Medium Term Note Program in March 1999. Shortly thereafter, in May 1999, Sonera additionally agreed to an international Euro Commercial Paper Program to address the firm's short-term financing needs respectively (Sonera 1998, 1999).

In tune with Sonera's strategy of 1998 - 2000, to increase its markets globally, the firm needed to further expand its capital base and to gain name recognition among the international investor community. Sonera was listed on the domestic equity market in November 1998, followed by a

Nasdaq listing in October 1999. The motivation for listing lay in facilitating Sonera with the means for the consolidation game foreseeable in the rapidly moving telecommunications market (Sonera 1998, 1999).

A recursive interplay of the mutually reinforcing drivers took place, thus gathering momentum for the virtuous cycle as summarized in Figure 7.

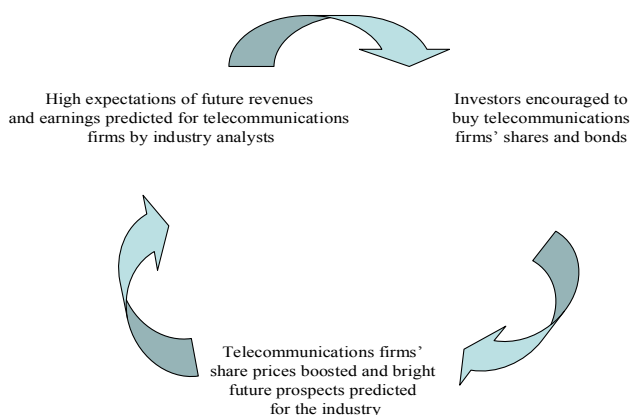


FIGURE 7 The Rise of Investor Confidence in the Telecommunications Industry

(adopted from OECD 2003a; Sonera Prospectus 2001; TIA 1997)

However, the optimistic predictions never materialized. Double-digit increases in telecommunications revenue never became reality. Between 1996-2001 telecommunications revenue in the OECD grew by an average of 7.2 % annually, but declined to 1.6 % in 2001 due to an economic downturn. Nevertheless, the growth of communication traffic reflects the divergence across market segments where wireless and Internet access continue growing strongly as fixed line telephony tends to stagnate or decline (OECD 2003a).

As of mid-year 2000, the telecommunications industry in Europe was exposed to increased turbulence, continuing into 2003. The high prices paid for the licenses in the third generation of mobile communications technology, UMTS, contributed significantly to the turbulence in the industry. The UMTS licenses were issued by the largest European countries, namely the United Kingdom, Germany and Italy, during the year 2000. Sonera, among other European

telecommunications operators, took on significant debt in the acquisition of UMTS licenses. Additionally, operators needed substantial investments to build third generation networks and to develop products and services related to the technology. Furthermore, the commercial launch of third generation networks and related services was delayed in Europe due to the unavailability of relevant infrastructure equipment and handsets (Sonera 2001).

Moreover, an unexpected obstacle emerged as economic growth slowed down in the United States and in the European Union since the beginning of 2001, decreasing the growth of customer demand for telecommunications services as a whole. As real revenues increased less rapidly than expected, the market sentiment changed swiftly. Consequently, investor confidence in the European telecommunications sector fell since mid-year 2000, and resulted in significant decline of share prices among several telecommunications operators, including Sonera (Sonera Prospectus 2001).

The investor sentiment was further undermined by the need for the significant write-down of acquired assets by take-over companies after a wave of highly priced European mergers and acquisitions in the telecommunications industry. In June 2002, Worldcom, a major US telecommunications long-distance operator issued a financial restatement of USD 3.8 billion, and defaulted on its debt payments. This caused the drop of telecommunications market share prices, most sharply in Europe and Japan which had earlier recorded a most spectacular rise (OECD 2003a).

Origins of the fall of investor confidence in the European telecommunications operator industry are summarized in Figure 8.

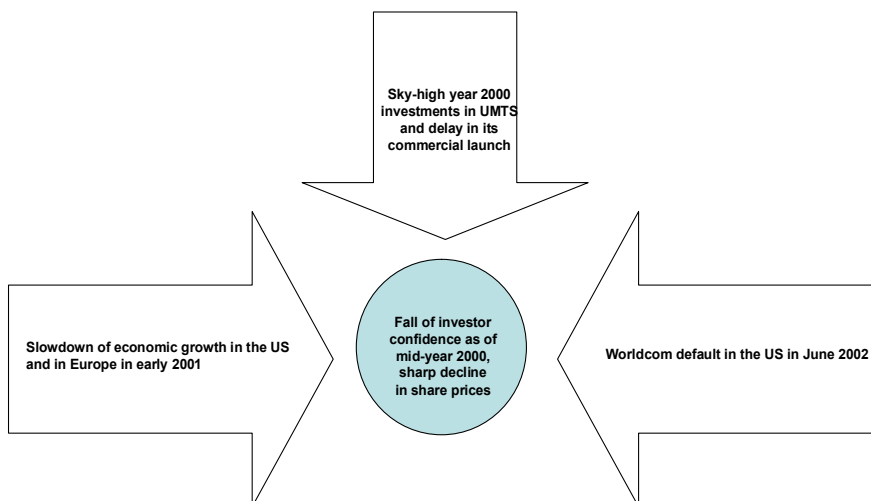


FIGURE 8 The Decline of Investor Confidence in the European Telecommunications Operator Industry
(adopted from OECD 2003a; Sonera Prospectus 2001; TIA 1997)

Implications of the Telecommunications Market Downturn for Sonera

The cost of ‘sky-high’ investments in UMTS as well as the economic downturn led to significant restructuring demands in Sonera in 2001 in order to re-build company performance. Top management changed, an international rights offering was arranged to overcome financial crisis, and a new ‘back to basics’ strategy was introduced, focusing on domestic, Baltic and Eurasian business.

According to the ‘rescue’ strategy, particularly new service businesses created during 1998 – 2001 were scaled down. The development escalated into the announcement of a merger between the Swedish state-owned telecommunications operator, Telia, and Sonera in March 2002: effected in December 2002. At the time of the merger, the Swedish state ownership of TeliaSonera amounted to 46.0 percent while the Finnish state ownership stood at 19.4 percent

respectively. TeliaSonera focused on improving profitability; e.g. through Sonera's write-down of its UMTS investments in Germany, Italy and Spain during 2002. The firm also continued to streamline its business by freeing up capital in the form of divestitures starting from 2001 and continuing through 2002 onwards. Sonera was delisted from Nasdaq in December 2002. (TeliaSonera 2002, 2003). Sonera's dramatic share price development is depicted in Figure 9 below.

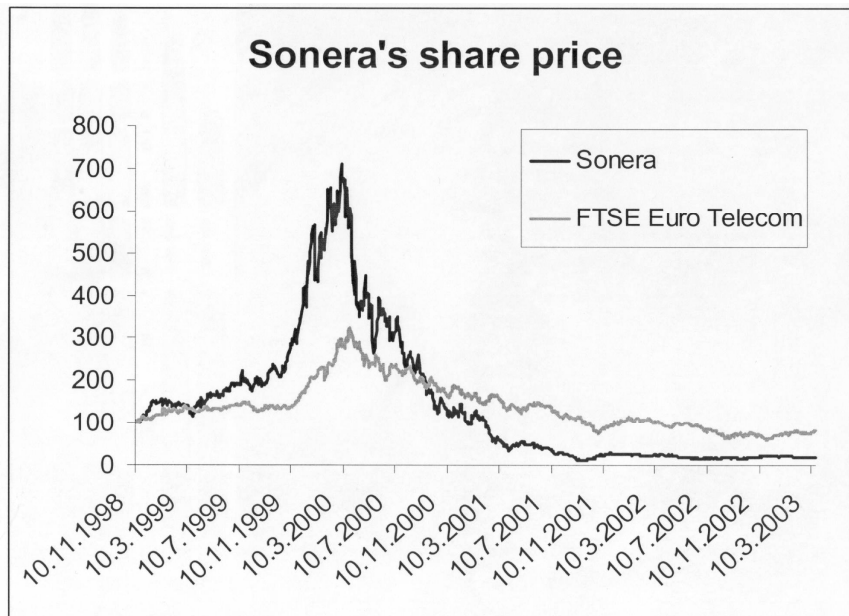


FIGURE 9 Sonera's Share Price between November 10, 1998 and March 10, 2003

(adopted from Thomson Datastream)¹⁷

¹⁷ The graph depicts Sonera's share price performance in relation to the FTSE Euro Telecom index (European telecommunications index). The figures on the graph do not show the actual share prices. For the sake of comparison, the share price and the index have been recalculated so that both start at 100 at the outset.

Antecedents of the Technology Bubble

After the burst of the technology bubble, both academics and practitioners alike have widely given thought to the origins of the crash, and have consequently questioned the legitimacy of the underlying theoretical assumptions guiding management practices during the two decades before the new millennium (Mintzberg et al 2002; Donaldson 2005; Ghoshal 2005; Hambrick 2005; Kanter 2005; Pfeffer 2005). As in previous financial collapses in world economic history, the origins of the technology bubble and its subsequent burst can be found through the contextual factors of the boom years and their antecedents (Galbraith 1993; Kindleberger 2000; Kanter 2005).

The notion of the ‘new economy’ captured the attention of media, business practitioners, academia, and sovereigns in the 1990s. Thrift (2001), in his analysis of the origins of the so called ‘new economy’, identified stakeholders that set out a novel set of rules and commensurabilities guiding market action to be crucial actors. Features associated with the ‘new economy’ notion are non-inflationary growth derived from the information and communications technology’s increased influence on economic restructuring. The author’s (ibid.) argument is that the idea of a new economy was in fact a rhetorical fabrication, created mutually by distinct stakeholders comprising business schools, management consultants, economists, sovereigns, managers, and the information and communication technology. Moreover, the author (ibid.: 412) contends that the main beneficiary of the rhetorical fabrication was the financial industry “[...] which was able to use the new economy rhetoric to engineer a financial bubble.”

The Concept and Origins of Shareholder Value Maximization

Corporate governance in the United States and Britain has been anchored on the concept of shareholder value for close to three decades (Lazonick & O’Sullivan 2000a). Why did the ideology of shareholder value capture the minds of scholars, business practitioners, consultants, and governmental policy makers alike since the 1980s in the United States, and rapidly promulgate and diffuse into management practices in modern economies of the world (ibid., Kanter 2005)? Focusing on shareholder interests derived from the quest to understand ways of enhancing the firms’ competitiveness in the United States after a period of malaise that started in the 1970s. The vast expansion of American firms in the 1960s had produced a poor performance outcome in the 1970s which was further amplified by macroeconomic instability and the emergence of international competition (Lazonick & O’Sullivan 2000a). Particularly Japanese

competition in automobiles, consumer electronics, machinery and electronic industries had largely affected the American economy (ibid.; Kanter 2005).

In the 1970s, during the industry's struggle in the United States, American financial economists introduced a new approach to corporate governance, agency theory which underlies the concept of shareholder value maximization (Jensen & Mecklin 1976; Fama & Jensen 1983; Jensen 1986; Daily et al 2003; Ghoshal 2005).

Agency theory and emphasis on increasing shareholder value was meant as a counterattack, a mechanism for change from the earlier American managerialism that had received criticism for power-clinging and empire-building at the cost of customers and employees, and ultimately firm performance (Kanter 2005). Lazonick & O'Sullivan (2000a: 15,16) elaborated on the emergence of agency theory in the United States:

Trained, as virtually all American economists are, to believe that the market is always superior to organizations in the efficient allocation of resources, these economists were ideologically predisposed against corporate – that is, managerial – control over the allocation of resources and returns in the economy. Agency theorists posited that, in the governance of corporations, shareholders were the principals and managers were their agents. Agency theorists argued that, because corporate managers were undisciplined by the market mechanism, they would opportunistically use their control over the allocation of corporate resources and returns to line their own pockets, or at least to pursue objectives that were contrary to the interests of shareholders. Given the entrenchment of incumbent corporate managers and the relatively poor performance of their companies in the 1970s, agency theorists argued that there was a need for a takeover market that, functioning as a market for corporate control, could discipline managers whose companies performed poorly. The rate of return on corporate stock was their measure of superior performance, and the maximization of shareholder value became their creed.

Furthermore, the concept of shareholder value maximization was promoted in the United States in the 1970s by financial deregulation which supported the growth of equity-based institutional investment (ibid.). In addition, the demand for agency theories by audiences was derived from the development of the world political climate. Communism collapsed in Eastern Europe at the end of the 1980s, and the Soviet Union in the early 1990s. An ideological sea change took place in Europe where the United States driven market based global competition gained momentum. It was promoted by the Reagan administration in the United States, and by Margaret Thatcher in the United Kingdom (Kanter 2005). In contemporary societies, universities provided the new business system actors, such as investment banks and consulting firms, with students educated through MBA programs to advocate for financial incentives based on 'shareholders first' theories (Ghoshal 2005; Kanter 2005).

4.4 Stakeholders' Accounts of the Transforming Institutional Environment

In the following sub-sections of the thesis, I present Sonera's stakeholders' accounts of the transforming institutional environment and its ramifications on an organizational and individual level. Social dynamics of the technology bubble era, the multiple dimensions of institutional change, and governance issues related to state ownership and equity markets are reflected through the stakeholders' accounts.

4.4.1 Social Dynamics of the Technology Bubble Era 1998 - 2000

A group level manager described the recursive interplay of the mutually reinforcing factors of equity markets analysts and firms in the midst of the technology bubble. The manager stated how the predictions of market growth in telecommunications services business, imposed by telecommunications industry research firms and investment banks' telecommunications sector analysts, influenced market perceptions of Sonera's future prospects:

When the markets, and analysts -as spearheads of the markets- cannot really explain what the huge growth depends on, the analysts rely on the firm. If the firm appears as a plausible actor, states that 'here we exhibit a platform for strong growth: this will become a new Microsoft or Cisco Systems', the markets believe that the firm could actually be able to achieve this [goal]. [The markets] began to hope for press releases. Each and every press release increased the share price. Many growth driven firms were greatly tempted to do pure press release business, to enhance the growth of the bubble. [...] When you play the positioning game, these two forces accelerate one another, and that's how the greatest momentum was built. [...] When you had a high market value, it was hard currency. If the firm went public at that point [the firm was listed], the hype was transformed into currency[...]

Top management representative (D) stated how Sonera could not oppose the market perceptions of the bubble era as a single actor in the telecommunications industry:

I believe many investors were fooled by inflated reports that lacked intellectual honesty. The management gave guidance to calm down the markets, but that guidance was not heard in the heat of the capital market bubble.

Top management representative (D) described how the bubbled share of Sonera developed as an outcome of several overlapping forces in the firm's institutional environment:

There was the third [investor] group [in addition to the State and other institutional investors], which was the general public. [...] The main owner saw it as imperative that the public wins. It would be a political catastrophe if the public should lose. [...] We had both long-term holders and then these opportunists, and here comes the innovation link: The more this innovation frenzy gave momentum to the share [price], the more speculants emerged [...] Nokia's success story had an impact, and it was seen that this Nokia phenomenon moves on to the service front.

Our thought was that by acting in the right manner, some portion of the added value constructed from this mobility could be transferred to the operator. [...] The phenomena behind this [bubble] were the deregulation of the telecom markets, [...] the U.S. Telecom Act 1996 when the markets were deregulated in the U.S., the disintegration of AT&T¹⁸ [...] the spark-over in Sonera was a part of this global phenomenon. But as there was a large political component built in, it was assumed that this happened only in Finland. A great passion was born among the general public because it was all about a state-owned firm, it would not have been so interesting otherwise. [...] Y2K had led to the strong growth of technology spending [...] It led to a peak in demand, and when all these elements happen at the same point of time, it leads to an explosion [...]

A consultant elaborated on the management challenges in the technology bubble era, implying that the equity market institution's ideational dimension, consisting of normative and cognitive patterns, influenced the development of one another (cf. Hirsch 1997; Hoffmann 1999; Djelic & Quack 2003):

[...] how as an executive, how as a manager do you manage in a circumstance where the market expectations or hype are complete variants with reality so if you feel or reality is totally different than the variants of the market, how do you manage that? I think the difficulty we all have is that we as individuals tend to underestimate the extent to which we are guided and either reassured or worried based on the assessments that others around us are making. We're all swept along – we're all a part of the social fabric. We're all swept along with where the current hype is. Now we agree with it or we disagree with it but the extent to which we then evaluate our own decisions is always formed by what's going on around us. So even if we tend to discount the popular opinion of the time, we may not discount it enough – we'll think, oh, maybe that's 10% higher than it should be. Most of us, we don't have the resilience or the mental capacity to say, the rest of the world is entirely wrong – and again, Sonera was and is a tiny entity.

Top management representative (A) illuminated how the market sentiment pushed the growth expectations of Sonera, irrespective of management's rhetoric and action:

The last, even theoretical link to cash flow had completely disappeared during the last half of 1999. If we had taken into account the wildest estimates of all projects, we would have had businesses with which we could have broken both Intel's and Microsoft's records [...] we would have had three, Zed, SmartTrust and the Internet banking exercise plus all other ventures, UMTS, and all others [...] With these ventures we could have explained 43% of the share price through cash flow. Usually only one venture out of five survives, and even that materializes only as a fraction, so everyone realized that reality had escaped from the chain of events already long ago. [...] The whole period was very exceptional [...] you had the whole industry there, the whole technology sector, not only telecommunications but starting from semiconductors. The expectations of the whole sector had been totally disintegrated from anything that could be imagined as cash-flow based. The predictions of market research firms influenced the virtuous cycle immensely. Sonera tried to act in a smart manner, meaning that first we did not say anything about [business development] issues, and when we did, we spoke with caution, and most of the time we tried to calm down the [market] expectations: it would take years before the new businesses will become productive.

¹⁸ AT & T Inc., the major telecommunications services provider in the United States

Top management representative (A) continued by presenting an analysis on the role of distinct actors as a mutual force in setting forth the technology bubble:

In spring 2003 I took part in a seminar at Harvard where the issue was, who was to blame for the acceleration of the virtuous cycle. Auditors, boards, firm management, brokers were scanned. The end result was that no one was a villain nor even stupid but that some kind of a collective indiscretion took place. All actors, supervisory authorities, firms, brokers, investment advisors, auditors - which all formed a tightly knit web - caused a total disintegration from reality. The thesis was that all actors started to do things they should not have done. They stepped out of their mandates and things became a mess, everything exploded. The conclusion was that there is no single evil will that set forth the cycle but that abnormal issues started to look normal because people, like auditors, started to evaluate technology [...] A system error took place where everyone started to act in a manner in which they should not have acted. No single actor can cause such a total mess. [...] The further along the hype period you moved, the greater a role greed started to play. [...] I would argue that at the outset of the period, sound business development dominated. Great opportunities were seen which were related to technological discontinuity. And when they did not begin to materialize, classic, harsh greed started to dominate at the end of the period. Greed emerged in 1999, in 1999 - 2000 there was a juncture when we saw that this situation is starting to escape from our hands - this cannot end in anything else than a complete catastrophe regardless of what we set out to do.

Top management representative (A) described how heated market expectations during the bubble era gave impetus to a new set of commensurabilities and rules of conduct in the equity markets (cf. Thrift 2001):

The market expectations reflected on [Sonera] tremendously. 'Where is the first billion?' [...] five businesses per year should have been produced in two years, we should have beaten Microsoft and Intel in growth and success. That would have meant a 30% cash flow increase with 25 year perpetuity. The investors did not want to hear that this was impossible. Investors noted that this was now the Internet age where old calculations, cash flow based, do not apply anymore. The commonly and globally accepted argument of the time was that positive cash flow is no more an essential element of a growth firm. Nor is profit. Nowadays people would laugh if a firm were to be listed without turnover. At the time [of the hype] it was normal practice. It has been argued that ultimately share prices always recur to cash flow. At that time it was argued that such conformities to law do not apply. The link between cash flow and prosperity disappeared: the core of the bubble. It was widely and globally acknowledged that it does not exist anymore - nor does it have to exist. Sonera tried to communicate that the link still exists.

Top management representative (B) reflected on the market exigencies of the bubble era in a similar vein as (A), and described how the rules of the 'new economy' (Thrift 2001) constituted a common frame around the rhetoric and actions of equity markets:

At the time market fundamentals acted in an exceptional manner, and an investor resting on very traditional modes of operation would be treaded on by investors acting upon market sentiment. Investors acting upon market sentiment were ready to increase growth expectations as share price increased. The old economy's cash flow based valuations represented only a few per cent of growth expectations. A new concept, the new economy, was in use as an explanation to

embarrassing questions on [the non-existence of] cash flow based business valuations. The explanation was that old cash flow based laws do not apply in the new economy.

Top management representative (B) continued by describing the equity markets' proactive measures in the valuation of Sonera:

Valuations: Sonera's peak market value stood at more than EUR 70 billion during the first quarter of 2000 [...] Deutsche Bank did a 'blue skies' valuation at EUR 150 billion at the same time, strong 'buy' recommendation to the equity markets. Sonera's services business had been valued with high expectations, completely disintegrated from the firm's expectations. Sonera did not quantify its turnover or profitability potential of its services businesses at any point. The first indicative figures of Sonera's services businesses were given out only in fall 2000 when the technology bubble had already started to burst, and the publicized figures melted Sonera's share price respectively. [...] The markets were very disappointed at the first quantifications that Sonera publicized on the development of its services businesses in fall 2000. [...] the management emphasized to the analysts that if a services firm does not even have a publicized turnover, how can a valuation of FIM 108 billion be reached? It does not rest on the data the firm has given out [...]

Retrospectively it is easy to say that a realm for global mobile portals did not emerge in the way the investment banks estimated at the time. Very strongly they started to produce grounds for the high values that had emerged through demand and supply in the equity markets. There was a lot of demand and many [investors] found Sonera a safer investment than an Internet firm due to the existence of Sonera's genuine business. Sonera had a successful, established business, fixed and mobile networks with healthy cash flows, and it also had promising services concepts with which to build new businesses. As Sonera did not quantify the future of its new businesses, the markets did the quantification on Sonera's behalf. [...] During the most exuberant time the majority of the market share was based purely on growth expectations.

Investment bankers (A and B) described how distinct actors reinforced one another's behavior in the heat of the hype:

N.N.¹⁹ and the whole team were embraced by investors, investment bankers, and consultants who were very good at [...] spurring one on to believe that life was really fantastic and that [Sonera] really was 'at the leading edge.' [...] N.N. held presentations at investor conferences and was there where everyone talked about next year [...] Everyone was really enamored by Sonera. Retrospectively, then, one could say that [Sonera] was a bit too early in the market [with all the ambitions], but there was a lot of enthusiasm – it was a hype – everyone was in it – Nokia was in it [...] and I think this created enormous expectations. It must have been a vicious cycle. It was such a positive atmosphere, and there was demand, which led everyone to want more of this [...] everyone played along in this vicious cycle. In a way one was somewhat intoxicated with the success. (A)

I would say that due diligence in firm valuation - how well an investor really understands his investment target – that was quite superficial [at the time]. [...] Did investors in the public markets understand what they were investing in? No, they were offered stories of what would be accomplished at Sonera, saying, 'trust me', if you exaggerate a bit. [...] A larger market rupture was looked at by investors and one started to slip from verifying the chances of future return, one was ready to take on large risks. (B)

¹⁹ To maintain confidentiality this informant has been anonymized. For identification purposes in this thesis the interviewee is labeled as N.N.

Investment banker (B) elaborated on the way in which transformation in the institutional environment influenced decision-making structures of the institution of the equity market, leading to convergence between the structural and the ideational dimensions of an institution (Djelic & Quack 2003):

[...] analysts and investors value firms according to valuation models that back up their decision-making, but the end result is explained by confidence, a belief in something. [...] In a way the rules of the game changed. It was a question of what was accepted at the time. Six months earlier one accepted and wanted to accept a certain level of debt. One felt that the risk was lower so confidence was high. What does lower risk mean? It means that the cost of equity capital decreases in the valuation model...the value increases. [...] If you believe that the risk is lower, it influences the cost of capital, right? It influences also the capital structure – you accept more debt, it may happen that the cost of debt is low. It follows that the issue valued in the firm is in high priority of own decision-making. Six months later the whole business has collapsed. What has changed? It is the environment. The model in itself has not changed. That's why I think one could say that finance is a social science although many finance professionals would resent this argument.

[...] And I do believe, although I act more as a 'technician' in the world of finance, that in Sonera's case it was also a question of psychology. What has really changed, is my desire and confidence...That is the issue that has changed. So how do I explain it? Well, with a model I can explain that this is not worth x or y because my discount rate is 10. But why was it 8 yesterday? Well, you could say that the risk premium has gone up. And what is that risk premium? Well, the risk premium is the risk premium required by the market. It is but nothing else than what you and I collectively believe in or are ready to accept. [...] But what is it? It is social behavior, although there are demand and supply questions involved, but by far it is a social phenomenon, I think. After the crash I experience the risk as higher and then I price it accordingly. [...] We explain this by saying that the risk premium has gone up, that's how it is, but the truth is that my willingness to take risk has changed. That's what it's all about.

Investment banker (B) reflected on how the equity market fostered the bubble by attempts to precipitate the time scale of firm innovations in valuation models:

The market was ready, in a way, to believe in a faster breakthrough of 3G, and was ready, due to high confidence, to discount revenues. [...] During the bubble it was common to think that one is ready to value [a firm] based on operating profit, and then on the net sales figure, since 'I believe that if the firm is backed by this kind of an innovation, and it gets these products sold, the only thing I value is sales growth. If sales grow and costs can be kept at this level, some day there will be money generated, and I'm ready to discount the future and to take value based on the future.' During the craziest time you did not care if the firm had no sales, if it was just established. Valuations were based on beliefs of the firm's idea. [...] 1998 - 2003 is almost phenomenal in a century as reality totally escaped. In the background you had the development of digital technology, mobile phone, and the Internet – yes, this was a time of radical change. Radical technological change was in itself no bubble, it was real all right. The combination of globalization and technology development was quite a revolution. It changed and changes business models totally. But what happened was that the time scale required for repayment of investments in innovations, was reduced, one was ready to discount expectations. [...] during the bubble the market accepted a firm's good story although the firm lacked turnover, and the market went along with it, and it was all about pure psychology. It was a particularly vicious circle.

Investment banker (B) elaborated further on investors' motivations for the herd-like behavior in the bubble era as emanating from the following sources:

I know that people [...]who followed this chain of events, said that they do not believe in this level of market growth, the predictions, but they did believe in two issues: 1) The gap will be filled in some period of time, i.e. as time elapses, valuations do not increase but the actual business of a firm will start up, and reality thus catches up with the estimates. 2) There was also a venture way of thinking so that as you invest in these undertakings, one of them will grow and survive, and then there will be consolidation although we do not yet know in what way - now we talk about the whole technology sector, not only telecommunications. And if I've invested in it, I know I'm 'in there'. [...] so as an investor I move on to the next level. [...] Then there's the other feature why investors act like a herd of sheep, the pressure emanating from investors: [...] market psychology is great, you have to remember that everyone has his / her own stakeholder that he / she aims to please. If you talk about a public fund, the sources of the funds like a pension fund...or individuals,...] the fund manager has the explicit mandate to take care of the fund with the best possible profit. Then (fund managers') personal opinions do not matter greatly at all if they are against the market sentiment. A vicious circle.

Investment banker (B) reflected on the ramifications of the technology bubble on an individual level as implying a constraint for firm innovation:

I saw in Sonera, although not only specifically in Sonera, that everyone had a need to strike rich in zero time. And then I say, that if this is the case, then the development of innovations is not first priority anymore, but that it is greed which drives action.

Investment banker (B) also reflected on the ramifications of the technology bubble on a firm level as deriving from market expectations:

The truth is that so much money was spent on both SmartTrust and Zed that they never payed back. That was the consequence of markets' excess due to e.g. markets' valuation of Zed, so Zed's marketing costs stood at an unbelievable level. Had the markets not accepted such a level, those costs at such levels would never have emerged.

A board member saw Sonera's agility as a determinant for its success in the equity market during the hype, compared to larger sized incumbents in the telecommunications markets on a transnational scale:

All prominent analysts and consultants [...] praised Sonera for its agility regardless of its size as a small player – that it would be the one to bring these services first to the market. That's how the bubble emerged [...]

After the Downturn

Investment banker (B) described the conformity of institutional investor behavior applying also in the downturn in his statement:

When the downturn appeared, they [institutional investors] all ran away [...] Even different types of investors did not act in a distinctive way.

4.4.2 Multiple Dimensions of Institutional Change in Sonera

A consultant elaborated on the magnitude of the simultaneous challenges Sonera faced in the late 1990s:

Centrally what we said was we believed the biggest challenge the firm faced was a massive increase in complexity of what it was taking on. It was a complexity that derived from pushing out on a number of fronts. One was geographic coverage but also the nature of the competitive environment the firm was going into, the nature of technologies, and so and so and so, [...] you could take multiple dimensions of change – it just became a very complex management challenge.

The consultant reflected on the firm management's multiple challenges. The challenges lay in changing the culture of the firm while facing the multitude of change in the institutional environment. Simultaneously the firm was competing for differentiation in the telecommunications industry:

[...] another model that suggests that firms, enterprises essentially go through three phases of competition. Now I know I'm not comparing like with like here. The first stage here in building a firm is the notion of, forgive the jargon, competing for intellectual leadership, so essentially defining what's the game, what's the new game around here, so it's to find the game. So this is imagined as starting through scratch. We then accumulate the assets. What we end up doing, is essentially that we refine, improve, optimize the business model which means, there are other competitors in here, you see yourself competing for market share, searching for differentiation and so. [...] you start out with some strategic concept for which you accumulate some resources, you go through that phase, you then optimize your capabilities – which is fine – we call this strategic life cycle. That's what investors invest in.

Now the problem arises when there's a new game in town, somebody plays a new game. The interesting challenge when you take this model further is what is your new strategic life cycle, you are starting with organizational capabilities that are optimized through the previous cycle, and often this is expressed as a cultural problem. We have to change the culture. [...] if you inherit an enterprise that has been optimized for something else, so your starting position is actually here, you have to deal with the inherited assets, culture, capabilities, that's what they've got. But, mentally, they're starting over here, they say, 'we need more entrepreneurs.' That's the problem that N.N. had.

Top management representative (D) described the managerial challenges in changing the culture of a state-owned entity, listed on a demanding stock exchange, referencing to the inherent time scale problem:

[...] the more you have intellectual property components in carrier business, the more valuable the business should be since you have capacity for differentiation. [...] in practice, the problem was that the organization was not mature for this – you should have worked with the

organization for 10 years before it would have understood what it was all about. If you have a telecommunications operator, a civil service entity, and you turn it around, list it on the stock exchange in America in five years' time, it is like trying to win the Olympic marathon just like that [...] The time scale was quite unrealistic.

Top management representative (D) elaborated on the complex process of managing a turnaround of a gradually privatized state-owned firm, pointing out the risks emerging from conflicting interests of stakeholders. (D) described how intended processes aimed at fostering firm innovation can lead to unintended consequences, echoed from unexpected arenas:

[...] if you take the development from calculating the number of telephone poles of the firm to listing on Nasdaq in five years, and then you add the Y2K phenomenon and privatization processes so suddenly you realize that you are confronted with a multidimensional problem. [...] you are managing one phenomenon, and in fact, simultaneously something else takes place on the sidelines, but no one else sees it happening. And what you do in this process actually strengthens all along the dangerous phenomenon on the sidelines. That's how catastrophes emerge. [...] I managed a process where we tried to keep people in the firm, they had to have options [...] well, behind it was a process where actually the management had to be put to the side due to [the thought] that if the firm were totally sold out on international markets, the labor unions would be history here [...] The amplitude or the pendulum motion was not noticed because we did not have N.N. anymore [...]

A personnel representative reflected on the magnitude of the institutional change process in Sonera from the personnel's experience, in terms of employee reductions:

So from the personnel's view, the greatest rupture was evolving into a state-owned enterprise – moving along so the personnel did not oppose to it, that was tough. And in practice, second toughest from the personnel's perspective were the personnel reductions following the incorporation, and after that, the reductions in 2001. So these events have touched the personnel hardest. And they [reductions] are of course an issue which does not disappear without leaving traces. So these incentive systems for example, they are of course good and large issues, but when you touch personnel's employment, it is always the issue that creates the atmosphere where you either work or you don't. Every year since 2001 several layoff waves have occurred.

4.4.3 State Ownership and Governance Issues

1998 - 2000

A consultant elaborated on the political issues which reverberated to dissension in governance of the firm:

We observed as outsiders an enormous amount of dysfunctionality. [...] What was plainly problematic was that the board was due to meet every twice a month or something like that. Something ridiculous like that. Beyond anything in my experience. So to go back to the

challenge over there, if you look at the number of meetings that were taking place, and if you've got access to the agendas, what it was that was being talked about, and you then ask yourself, how challenging or complex was the management task, you layer on this board situation, and you face something that is absolutely impossible. Clearly there was a massive divide on massive issues that were not going to be resolved quickly. I assume, as an outsider, that they were essentially political in nature. Because on straightforward business terms you don't need a board meeting that often because if there is no confidence for the senior management, you get rid of the senior management. But if there's confidence in managing, and if the firm has some big decisions to make, big decisions are then made, but there was a constant lack of clarity – it was pretty unclear as to who was leading the firm. So the dysfunctionality at the time was pretty obvious.

Top management representative (A) viewed the action of the largest owner, the State of Finland, as successful in the financial operation of privatizing Sonera:

[...] everything that was done, was acknowledged either loudly or silently by the main owner. The main owner could have at any point changed the direction of the firm, but I think that the main owner behaved in a smart manner: it was not in the main owner's interest to grow an international telecommunications business. The State of Finland behaved in an exceptionally smart manner and succeeded tremendously well in its operations. [...] If some [party] in this whole exercise has thought sharply, it is the State of Finland when you think of Finnish taxpayers, if you talk about a financial operation. [...] All other state-owned firms have not yielded cumulatively as much as Sonera's share sales did during those five years.

Top management representative (B) described the complexity of the incentive policy issue in a state-owned firm, compared to the incentive policies in privately owned firms'. (B) viewed the complexity of the issue as deriving from the public opinion, fostered by the media and politicians:

Then there was the political decision-making on top of everything and publicity over becoming rich by hundreds of thousands through one's work in a state owned firm. It is wrong according to rules of the game in a political arena regardless of whether the firm has made profit or not. This has been seen also in the case of Fortum's option discussion. It is a different issue than grand profits of millions generated by Nokia, the profits being much larger than ever seen in state-owned firms, and they [Nokia's incentives] have been accepted in the media without a murmur. I think one should rather think about organizing the governance and control of the state's shareholding so as to avoid purely political processes which affect the state's property. It is an eternal question to which it is very hard to find a good model. 100% of state ownership is a good thing where the guidelines of action are quite clear, but everything between 0 and 100% is difficult because there you find the often contradictory interests of owners taking place. Very complex. State ownership can also mark a positive issue for a firm, for instance, in the price of firm debt.

Top management representative (D) elaborated on the variances of governance in a state-owned firm and governance of capital markets under the ruling of SEC²⁰ in the United States. In (D's)

²⁰ SEC points to the U.S. Securities and Exchange Commission

view, managerial challenges derived from the distinct stakeholders' divergent interests gearing action:

[...] actually state ownership and the [governance] model of American capital markets just do not fit together. And it's an irreconcilable equation, and if you step into the middle of it, make compromises and whatever you do, you do something wrong against some stakeholder. [...] the biggest mistake made was listing Sonera on Nasdaq. That was a mistake. It followed that firm management had to act in conformance to the laws of that environment, and actually the firm's governance was not even close to being mature enough for such an environment. The main motivation for the Nasdaq listing was to gain liquidity for the State. [...] listing on a stock exchange is a form of funding where you have to encourage the investors. The firm was not ready for that in a governance sense. So you cannot list a firm on Nasdaq and write in the prospectus that our intentions are such and such as a firm, and the State's way of behaving is such and such, and then the next day the State can make quite contradictory decisions, and no one else is responsible for the prospectus except the firm's management who again has no impact on what is going on within the State. The 'seize the moment' notion which is one of the central principles of the corporate world – that should be implemented fully in the Nasdaq world.

[...] The State does not act in the wrong way as such, it acts as the State acts, but there are just irreconcilable differences between the State and the firm – it is not a question of the 'good and the bad'. [...] people represent different institutions, and according to Lutheran ethics one is supposed to do one's job as well as possible [...] the state officials try to do their job as well as possible, politicians try to do their job as well as possible, so does firm management, and so you are driven into a situation where you have irreconcilable differences that are understood only retrospectively when these issues are analyzed [...] what is the management's responsibility to the shareholders who have been promised something else in the prospectus than what actually takes place, concerning owner's behavior? [...] management finds itself always in a give and take situation.

(D) continued:

I thought that given that the business prospects are good enough, the main owner's interest is in enhancing the firm's liquidity and not only its own – where this [enhancing the firm's liquidity] was the official statement submitted to the capital markets [through the prospectus]. [...] yes, there was the truth stated in the prospectus and then there was truth. And when you have read the main theses of the Securities and Exchange Commission, you usually think that the truth in the prospectus would constitute the real truth - and that [belief] was a mistake.

Top management representative (D) discerned the distinct stakeholders' behavior in an exuberant era as deriving from the stakeholders' divergent sets of values and cognitive frames guiding action;

Governance in state-owned [firms] and capital markets [...] the larger the delta you have at such a period of time, the more the [irreconcilable interests] are accentuated because [...] every party has to set its own values – what happened there was that management set its own values, so did the board [...] which had no idea what could happen in a period like this because no one on the board had ever experienced anything like this [...], the State [...] authorities were privatizing for the first time, and the beginning went so well.... And the labor union thought that [...] if Sonera is merged to Vodafone, the story will be over for them [...] and politicians were thinking of the next elections, so everyone in their own boxes acts quite rationally according to the rules of these boxes.

Top management representative (D) underscored the governance of capital markets under the ruling of SEC in the United States as accentuating managerial challenges of a state-owned firm under privatization:

[...] under which capital market control are you? [...] the fact is that your agency role's harshness is determined by the financial governing institution's experience curve[...] a tremendously important question in the capital markets is the governing law infrastructure [of a marketplace, stock exchange]. And a good example of this is that there are not many IPOs in Nasdaq. It is due to the harsh listing demands of the Sarbanes Oxley Act 2002 for firms, following that no one wants to get listed in America, but instead resorts to AIM²¹ in London where the regulation is close to non-existent.

Top management representative (D) further described the distinct stakeholders' conflicts of interests in a state-owned firm:

[...] since N.N. has responsibility for innovation development, he wants to obtain the tools for it. He wants different incentive tools and then the labor union objects to them because they create inequality. The agency problem of management lies in having to favor innovations [...] this is your agency problem.

Top management representative (C) reflected on the Finnish State's commitments to the equity markets in Sonera's prospectus and on roadshows promoting listing, and on the realization of the commitments given in the following account:

It was interesting as such that the State betrayed clearly all its commitments given to the markets. [...] already in the initial prospectus the State was committed to dilute its majority [ownership] at a very quick pace [...] the pace at which the State was going to dilute its ownership was a salient issue in the U.S. since there were a great many institutional investors that were restricted by investment regulations concerning state owned firms. Since the State of Finland had committed to dilute its majority ownership, the investors interpreted this so that Sonera does not resemble a state owned firm but a privately owned firm of which the State has decided to dilute its majority ownership. This question was always posed by the investors, and the representatives of the State answered the question by stating that the State has decided to dilute its majority ownership, and to sell shares as quickly as the markets can take them on [...] The other question was about the incentive system, to which they also answered, and which was stated in the prospectus, that as soon as the share will be quoted, and the share price stabilizes, incentive systems based on the share price will be established, which most likely will be option systems. And the third question was usually about management's share ownership in Sonera. [...] and it was exciting because it actually meant that an incentive system based on share ownership was established for the management [...]

The inherent and incommensurable conflict between the values of politics and the corporate world were echoed in top management representative (C's) account:

²¹ AIM is the abbreviation for the London Stock Exchange

The authorization to sell down to 0 was obtained only when Sonera became such a hot issue for politicians that everyone just wanted to get rid of it. It had become a political burden to everyone [...] The problem with state-owned firms is that a political discussion starts around them and politicians begin to fear that they will lose in the next elections as they have, in a way, failed with that firm, so you have to get rid of it quickly. And you want to get rid of it when it is in worst possible shape, and that's when you should definitely not start selling it. [...] In corporate life, risk taking is inherent in innovations. You invest money not knowing for certain, whether or not the investment will yield monetary value in the future. It is then a question of firm management know-how, not to invest in risky ventures to the extent that you jeopardize the entire future of the firm.

[...] The problem with politics is that every issue is reflected on as how it will influence future elections since that is the salient question for politicians and parties, that you have to succeed in the next elections. Decisions made today that yield something good in the next 10 years do not help in the next elections – you have to back your own personal interests first as a politician. Every party as an organization, plays a survival game [...] I think that is understandable and should not be condemned. It is the task of the party and of parliament members to ensure that the next election will be successful, and therefore they [politicians] should not be endowed with decision-making concerning matters of potential conflict. Such decisions should be made somewhere else than in politics.

A board member elaborated on the governance responsibility of the majority owner of Sonera, the State of Finland, regarding the planning of a professional board:

The state's role in Sonera: a mistake the State made when Sonera was listed, was that it was not really planned, what kind of a board a firm like that would need. [...] many times the greatest reasons behind firms' failure or mistakes can be found in the board. [...] The cooperation between the board and top management never became natural. [...] and when analysts, working for investors, described the sector as almost as limitless, and when the firm had money, almost everyone was let to run free. And the board had no grip on this [...] since there were no persons from the [telecommunications] sector involved. It was not the fault of the people in question, but it was the fault of those who selected the people to their office.

A State official perceived the role and responsibility of the State of Finland as majority owner in Sonera as one of a professional institutional investor:

[...] the State is an institutional investor as any other professional international institutional investor [...] that acts as a responsible owner – acts on the forum according to the Companies Act, i.e through the Annual General Meeting, is present there to select the board [...] The State wanted in its ownership policy to [...] hold on to a clear corporate governance principle, that the State acts like any other international investor in a firm according to the Companies Act. The State does not interfere on an operative level, but gives latitude [to the firm] through the decisions made in the Annual General Meeting [...]

After the Juncture of 2000

A State official accounted for the deviation from the State's ownership policy concerning Sonera's incentive system, pointing out the pressure which emerged from politics, the media, and the public opinion:

I would say that the only deviation from the State's ownership policy guideline was before the Annual General Meeting in spring 2001 when the State pulled back its support from the options, so there was a deviation from the policy because of the kind of media publicity and pressure derived from it, and this led to the government meeting that gave instructions to the minister of transportation for the Annual General Meeting [...] so this was a deviation from the pragmatic policy and of the view the State had communicated to the firm, and I think it does change the credibility of the firm in the markets [...] So there was the paradox that publicity accounted for the problem[...] Sonera's history of publicity, state ownership, and linking it into politics because politicians saw they could play with it, yes, it did feed the kind of intractable, negative tone that surely constrained the firm's business development and value creation [...]

A State official reflected on the State's ways of support to Sonera in a time of crisis:

[...] we gave our support in many ways by negotiating[...] even I went to London to communicate the substance of the State's ownership policy, that we will participate in these share issues if they are needed to strengthen the firm's financial base[...] on the request of the firm I helped by informing of the majority owner's view. [...] the most critical phase was in September 2001. [...] We were naturally concerned about our shareholding but even at that point I would say that strategy and innovations were left for the firm [to decide] but we told [rating firms] to what kind of a firm we were ready to target additional investments[...] I would say that the only issue where we had to decline was the option issue on a political level[...]

Top management representative (E) viewed the role of the State, the majority owner of Sonera, as pragmatic:

[...] a very important part of corporate development was not to speak against the State owner, but it was understood that the State is an owner, in a way a silent owner, who let us manage the firm on the basis of strategy. The State authorities did not in any way intervene in the management of the firm during my time. In contrast, the State respected the firm's strategy, we informed [the State] of the strategy.

A board member compared the Finnish State and Swedish State as majority owners of Sonera, finding some major deviations in their role and actions:

Well, the State of course learned from the hassle in the beginning of the 2000s, and then the dramatic change of the board took place - but after that the State of Finland was very, very pragmatic. It did not interfere in any way. [...] but after 2001 you could not find fault in the State of Finland as owner in any way. [...] The board represents the owners - whether it does the right or wrong things, is to the Annual General Meeting to decide[...] It is advisable to discuss with the owners, to keep them informed, but to specifically understand that the board does not act upon the will of any single owner, but looks after the interests of the firm and thus looks after the interests of the owner. And that's where I say that the Finnish State learned its lessons in the beginning of the 2000s [...] and you cannot complain about the cooperation with the State. In Sweden it is clearly so that the State wants to interfere in firm management, and in the guiding of a firm with its large ownership share [...]

A State official accounted for the way in which ownership change influenced strategy implementation, reflecting on firm innovation policy. The official compared Finnish and Swedish implementation of agreements, finding in them ideational differences.

[...] the firm did not implement the strategy that had been documented in the merger agreement and the shareholders' agreement [...] the requirements of clear corporate governance with latitude to firm business development and value creation had emanated largely from the Finnish State's agenda[...] But they were not implemented. [...] the Swedish way of implementing the agreements influenced the firm's business development - innovation knowledge started to flow out. So that is the basic starting point – in Sweden agreeing does not mean the same [as in Finland], it is only after agreements are made that you start acting and twisting and turning - And it reflects on everything. [...] the operation models are different. They are so dissimilar. That's where the contradictions stem from.

Interestingly, the stakeholders' accounts reflect the convergence of the structural and ideational dimensions (Scott 1995; Djelic & Quack 2003) of the institution of the equity markets during the technology bubble era of 1998-2000, and the reciprocal action of the firm and its constituencies in the rhetorical social construction of reality (Berger & Luckmann 1967; Aldrich & Fiol 1994). The stakeholders' accounts also point to the cultural challenges of institutional change on a firm level within a brief period of time, starting in the mid-1990s, which culminated in the privatization process of Sonera in 1998. Moreover, the accounts illuminate the distinct properties of governance in a publicly listed, state-owned firm, and its conflicts with the institutional logic (Friedland & Alford 1991; Lawrence 1999; Thornton 2004) of governance imposed by global equity markets. The accounts also point to firm management challenges emerging from discrepancies in ownership policies of two states. In summary, the accounts portray the multiple dimensions of ownership change encompassing a state-owned, gradually privatized firm, and their reflection on firm innovation outcomes.

The next chapter of the research, Chapter 5, casts light upon the way in which a nexus of social processes produced firm outcomes in the context of radical industry transformation.

5 SOCIAL PROCESSES OF FIRM INNOVATION IN THE CONTEXT OF RADICAL INDUSTRY TRANSFORMATION

The following chapter of the thesis illustrates how the distinct stakeholders of a telecommunications firm, Sonera, accounted for the development of innovativeness at a firm level, and for innovations in telecommunications services. The accounts reflect both the upswing and downturn eras, 1998 - 2002, of Sonera's journey as an independent actor before the merger to the Swedish firm Telia. The chapter starts with a description of the antecedents of SmartTrust's and Zed's innovations that emerged as dominant outcomes at the turn of the millennium in Sonera, followed by an illustration of strategic renewal of the firm. The chapter proceeds with a description and reflection of the determinants of Sonera SmartTrust's and Sonera Zed's ascendance, and the intended input process which generated the innovations. Next, the enabling and constraining conditions of telecommunications industry innovations are illustrated and reflected upon. Moreover, this chapter highlights how the distinct stakeholders of the firm discerned the time scale required for innovations to emerge, and how they accounted for the multifaceted relationship between equity markets and firm innovation.

5.1 Antecedents of Firm Innovation

"Everything goes mobile, everything goes digital" (group level manager)

While it is not part of the focus of this study to offer an exhaustive account of the technological antecedents of firm innovations in the telecommunications industry, I briefly illustrate the role of technology development as antecedent to Sonera's telecommunications services development in 1998 - 2002. This is informed by the interviewees. It is worth noting that a thorough historical, longitudinal case study on the managerial activities that consequently produced Zed's innovation in Sonera is offered by Laaksonen (2007).

Technology specialist (A) assessed that the competition of two branches in the Finnish economy played a crucial part in the development of the Finnish Information and Communication (ICT) core:

In 1970s - 1990s the Information and Communication Technology core was developed in Finland. Two branches in the Finnish economy competed by introducing new services – the banking and telecommunications industries. The banking industry competed with services, by expanding its branch network, and by networking its systems. Digital modems, 'Mikromikko',

and Netnet were developed for these purposes. The telecommunications industry competed by introducing new services as well. These services comprised value added services, mobile phone services, router networks – Datanet, and GSM²², SMS²³, and WAP²⁴. Both of the industries used a part of their net profits to the development of new services.

According to the technology specialist (A), a closed industry contributed to the profitability used for R&D, and facilitated for its part the emergence of content and services innovations in telecommunications:

New technology was implemented when competing in a closed industry. The net profits were used for R&D activities and productization of innovations. Profitability compensated for the small size of industries. Some of the best products could be internationalized before the opening up of industries [through deregulation] cut profits. Public finance acted as catalyst [of innovations]. In this interconnection, the telecommunications industry changed completely. Since 1985, the focus of the telecommunications industry in terms of turnover has shifted from the traditional infrastructure to services and content businesses. The focus on services and content businesses has grown dramatically since 1995 while infrastructure has decreased its growth simultaneously.

Technology specialist (A) painted a picture of the temporal waves of technology development in the telecommunications industry that consequently reflect on firm innovation:

In the first wave, 1994-2000, telecommunications firms act as network operators and service providers, focusing on mobile and value added growth, and Internet becomes the middleware. In the second wave, 2000 - 2006, broadband access technology is solved, telecommunications firms act as service and content providers, and third generation mobile technology is commercialized. In the third wave, 2006 -?, service and content controlled switching takes place, and a new structure of telecommunications will be witnessed. In the third wave, horizontal development will continue, meaning, everything will be transferred to IP, Internet Protocol. Radical technological change will continue manifested by super broadband radio, miniaturization, 'networks without networks', OLED²⁵ screens, absorbed intelligence, and 'terminals without terminals'. The development of information society will continue by the ICT's diffusion to all industries, in the digitization of operations and profitability growth. The development enabled by diffusion will correlate with the capability to adopt new ways of action, and to create innovations. We are moving from a national innovation system to an innovation system of international firms. Local competence in organizing innovations in cooperation between firms and universities will be crucial.

Technology specialist (A) perceived the antecedents of firm innovation in Sonera as emerging from industry level competition:

²² GSM (Global System for Mobile Communications) A mobile communications system based on digital transmission and cellular network architecture (Sonera 1998: 66).

²³ SMS (Short Message Service) A system which allows users to send alpha-numeric messages from one mobile handset to another either directly or via a message center (Sonera 1999:81)

²⁴ WAP (Wireless Application Protocol) WAP is a global open standard protocol for service applications provided over wireless networks. WAP provides a technical interface for the delivery of basic Internet services through mobile phones and other wireless devices (Sonera 1999:81).

²⁵ OLED stands for Organic Light Emitting Diode

[...] we had competition in Finnish telecommunications in the 80s which started actually already in 86 as HPY, The Helsinki Telephone Association, launched Datanet and took part in this value added competition so all players in the 80s and 90s competed by investing in services, thus building an enormous amount of knowledge in the industry.

In the account provided by top management representative (A), the technological development cycles were perceived as crucial antecedents of firm innovation:

Development cycles of the industry and innovation activity. There has risen a belief that technological development sets the pace for industry structure when talking about industries such as telecommunications which exploits a lot of technology. Another point: the structure and character of the industry, the inherent profitability theme, are paced by radical technological change, and so I would be inclined to argue that the basic driver stems ultimately from the firm, innovations, and first and foremost from technological cycles[...] my view is that since the beginning or mid-1990s we have lived an exceptional era in telecommunications. The same era, the last 10 years, has been hit by a whole new technology generation or emergence of technological business which is called mobile communications which didn't even exist in practice ten or so years ago. After that has emerged the Internet which technologically existed but [did] not [exist] as a business yet 10 years ago. From here we are well on our way, and so both will emerge in IP technology which will once more revolutionize everything. These are the phenomena that drive these issues in the end, and there are firms that innovate them, and those that exploit them, and there are firms that decide not to take part in this and mostly thus disappear.

Top management representative (C) viewed the antecedents of firm innovation as deriving from technological change and the release of locational constraints, thus leading to the subsequent strategy formation in Sonera:

Well, technology development, electronics' development, the contraction of equipment, resulting in price decrease changed it dramatically which was the other factor in the survival game of Tele and Sonera, meaning that mobile telephony emerged and in addition to that it was contemplated, what could be done as competition opened up, so as to maintain the competitiveness of long distance and international calls, and these were the strongest motors that drove innovations, drove the development of the organization, drove the reorganization, and pushed first through the state owned enterprise motion, then the incorporation, followed by listing on the stock exchange. Actually, investor participation and the change in ownership base and listing was a consequence of these two first [issues] or actually of the growth in mobile telephony.

A corporate venture manager viewed the antecedents of firm innovation as stemming from locational and cultural aspects:

The Finnish telecommunications market had been opened up [for competition] which enabled mobile access business that generated a lot of cash flow. Know-how, knowledge, ideas that had been tested on the home market gave rise to an idea of generating this knowledge to international markets. The following factors were interconnected simultaneously: the Internet hype in the U.S. capital markets, the background of Sonera's [top] management in technology start-ups and venture capital activity – a competitive edge and resource.

Similarly, group level manager (A) accounted for the locational and cultural antecedents of firm innovation in Sonera:

In 1997 I came to Tele and was positively surprised. My first impression was a positive one. I saw the kind of strength, a most powerful innovation culture. I wondered, how could this be possible? As the tele association, later the Finnish Tele [it] had enjoyed the best features of its monopoly status. As other teleoperators were local operators, Tele had recruited the best brains from TKK, The University of Technology. The only non-cooperative that had extremely strong financials, a strong balance sheet, and a strong culture supporting inventiveness. The flip side was that the innovation process was badly managed so all flowers could bloom. If someone wanted to invent something, he was allowed to invent it.

Top management representative (A) discerned the corporate culture as an important antecedent of firm innovation:

If you try to glue on to this context the events around here, there had long prevailed a culture in this firm where people had been encouraged to tinker and invent and think about the most amazing issues. They were technologically clever and commercially fully torsi undertakings. When this kind of culture is linked to an exceptional era, the rupture of mobile communications, and the rupture and the formation of the Internet into mainstream business in about five years, it is no wonder that some sort of crazy events take place. [...] At the time of the monopoly business, it was typical in Western Europe, at least in Finland that the university world, equipment suppliers [vendors] and operators worked in a close symbiosis. Out of these actors only one was commercial, the other two were state owned entities. You had the experimental and research orientated actor, the largest 'teletechnology recreation club' – someone once playfully put it this way – the Finnish Tele. Lousy salaries, but all kinds of technology experiments could be performed in peace, and money was sufficient for such experiments. That is an environment which generates an enormous amount of innovations typically. I view this as natural, since in [the scope of] world history, unforeseen intersections emerged between mobile communications, the Internet and digital technology [...]

Top management member (C) elaborated on the cultural antecedents of firm innovation from the dimension of group ties in collaboration on innovations:

Traditionally, the best brains from TKK, The University of Technology, moved to Tele, as they did to Nokia, too. These people had studied at the same time and had gone to work for equipment suppliers or operators, and the personal ties were very close and good which naturally influenced the cooperation. Partly the pattern of the central agency of the time had influenced the matter, so that since central agencies were budget linked, and there was not so much funding allocated to product or technology development so it was even natural at the time to go to Nokia or Eriksson and say that 'We need this and this feature, so why don't you produce it?' since equipment suppliers had the funds with which to produce such things. Of course, with the financial independence the situation changed, and the operators themselves could invest in R&D, and as a result, contemplate on commercial exploitation of these innovations.

A consultant regarded the locational and cultural aspects as crucial antecedents of firm innovation:

The success in mobile telephony in the Nordic region, I'm sure, has had an influence on the educational system in Finland. The educational society gives expectations and so forth. I think that in turn that it was fuelled by the early success of by both Eriksson and Nokia in the old days. My impression as an outsider is that this has created a demand for engineers of certain types, you know, not tractor engineers but telecoms engineers. [...] Also, my impression as an outsider, is the network of people, they could go and find people, at Nokia and in some cases at Ericsson, that they went to school with. You know, these people know each other. It's a small circle. So, in that sense, I think the environment is extraordinarily important.

A firm board member also regarded the cultural and locational antecedents of innovations salient through social collaboration processes:

For almost a century the mentality in practice was such that hunting for costs was no salient issue. [...] These sandboxes were allowed within the firm - you could develop technology and this was the starting point for a successful firm without external pressure. [...] Due to the history there were a lot of sprouts growing. One could keep this kind of good thing going, e.g. in the form of university cooperation[...] There was a lot of [technological] knowledge which was a little ahead of its time versus the traditional wired telephones. They had started to do research...on radiophones, partly together with Nokia because it was the same type of activity for Nokia, too – the wireless network, radiophones – they were but hobbies. There were a few persons who could do what they wanted in a large firm since this didn't incur so much costs, and they were determined people, and positioned high enough in the organization so they could have these hobbies there. [...] The innovativeness had been planted there over time. [...] so they had the certain technology, certain customer needs, and then in close proximity they had a firm which could manufacture the needed devices, Nokia. So this type of tripartite – university, Sonera, Nokia.

Technology specialist (C) perceived the locational antecedents and unintended input process as a consequential platform for firm innovation:

In the history of Tele there were innovations produced for oneself but it didn't occur to anyone's mind that innovations could be patented or exploited in international markets.

[...] During the years 1995-2000 Finland was a forerunner in the world in terms of Internet servers and Internet users. In Finland competition was opened up being second in Europe after England. So we were the leading country in the world as to the Internet and mobile [phone usage]. This was due to the whole national ecosystem. The corporate culture: TKK, The University of Technology and Tele[com Finland] worked in close cooperation. Research in novel ideas was pursued. Tele[com Finland] had a permissive leadership culture. Top management perceived the growth of new ideas as important. Fresh, new 'blood' was recruited for Tele[com Finland]'s research. Then in the mid-90's it was seen that investments must be made for the future. It was seen that technology develops, and new weak signals emerging in the world were attempted to be exploited.

[...] Already during the days of Tele, there has been a capacity to exploit radical technological change, there has been an ability to quickly adapt to the new. During the decade 1990-2000 Tele's / Sonera's personnel was perceived as a really smart bunch of people. Tele possessed a strong innovative image.

Technology specialist (D) viewed the cultural antecedents of firm innovation as a crucial platform for commercialized innovations elsewhere in the high technology industry, as follows:

During Tele's time one could innovate in peace but there was no competence in taking care of technology property when cooperating with manufacturers like Nokia, and so on. Internet technology, router technology was invested in around the mid-1990s; technology was nice to play with but Tele did not know how to commercialize technology, to transform it to IPRs²⁶. Cisco was the one to exploit IP²⁷ router technology in a clever way.

Table 4 depicts in summary the stakeholders' distinct views on technological, locational and cultural antecedents of firm innovation. As the table shows, technology specialists recounted in depth on the antecedents of Sonera's innovations. The accounts of Management and a board member, as well as a consultant were largely in conformity with the technology specialists' views. The blank spaces in the table concerning the responses of investment bankers, a personnel representatives, and a state official represent no specific view on the subject matter.

²⁶ IPR is the abbreviation for Intellectual Property Right.

²⁷ IP (Internet Protocol) Protocol used in the Internet for communicating among multiple networks (Sonera 2000:89).

Antecedents of Firm Innovation	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
Closed industry generating profits used for R&D		•						
Services development in banking and telecommunications		•						
Industry level competition (telecommunications)		•						
Technological development cycles		•	•					
Deregulation of the telecommunications market			•	•				
Accumulated technological know-how		•	•	•	•			
Management expertise in technology start-ups and venture capital since mid-1990s		•	•					
Group ties : operators, equipment suppliers, and university		•		•	•		•	
Educational system					•		•	
Permissive leadership		•	•	•	•		•	
Individual and firm-level agility		•						

TABLE 4 Summary of Stakeholders' Accounts on Antecedents of Firm Innovation

5.2 Strategic Renewal of the Firm and Its Implications for Firm Innovation

The strategic renewal of Sonera started in the mid-1990s as a response to the changes in the firm's institutional environment, as illustrated in Chapter 4 of this research. This sub-section starts by illustrating the publicly announced antecedents and outcomes of Sonera's innovations. It is followed by the distinct stakeholders' accounts on renewed firm strategy, reflected on innovations.

Publicly announced views on Sonera's strategic renewal at the turn of the millennium were portrayed as follows.

A telecommunications services business operates in an industry which is constantly subject to swift technological advances and therefore its success is based upon its ability of timely development and introduction of new services and attractive solutions to its relevant marketplace. From the start, Sonera's commitment was to allocate substantial resources to new service development in order to address this challenge. However, new service development decisions are made significantly before sales, and also often well before the technology for a service in question is available for commercialization. Hence, decisions on new service development are subject to mere anticipation of future demand and technology. The risks to bear are therefore the following. There is no assurance that the service development commitments made, based on anticipated technological advances and market expectations, have been correct or would not be affected by new product or service innovations introduced by competitors (Sonera Offering Memorandum 1998).

Sonera had held an advanced position in research and development and technological innovation in its industry in Europe since the 1980s as state-owned national telecommunications operator. Since the late 1980s up to the early 1990s the corporate market drove Sonera's strategy. Due to the rapid growth of mobile communications and the Internet driven by the consumer market in Finland, with one of the world's highest mobile penetration rates by the year 2000, at approximately 70 %, personal communications began to drive Sonera's strategy as well. Sonera was the leading telecommunications services provider with mobile communications as focus area up to the first years of the new millennium with a vision to become a global telecommunications operator and provider of transaction and content services, uniting mobile communications and Internet services. In order to turn this vision into reality, Sonera started adopting a strategy involving two parallel and mutually complementary paths: developing new international telecommunications services businesses and expanding its market area in order to increase its services distribution (Sonera 2000).

In addition to pursuing continuous innovation, services development was promoted through acquisitions in the field of wireless Internet and through partnership forming in content production. Sonera gained a reputation as a pioneer introducing wireless data and transaction based services comprising information and entertainment to customers: on-demand information services, such as weather forecasting and travel information, telebanking involving Finnish banking partners, GSM e-mail, person to person SMS, logos, ringing tones, and games via the mobile phone added by the possibility to use and pay for services such as car wash and drink vending machine over the mobile phone. Based on its reputation as an innovative developer of

mobile communications, Sonera decided to also develop and offer new services to other operators and service providers. Target markets for services businesses were defined to be located in Europe, the US, and Asia (Sonera 2000).

In the following accounts, the firm's stakeholders elaborated on the renewed firm strategy in light of the technological, locational, and cultural antecedents of innovation.

Technology specialist (B) described how the change in Sonera's strategy was considered as a change in the firm's carrier role. He regarded the change as having started in the late 1990s, in a national and transnational context:

The firm's [market] value development was considered from two perspectives[...] The aim was to move from bulk carrier to the role of market maker. Market value logic was studied through a combination of technology innovations and an innovative business model. Finland was one of the leading countries of the telecom cluster – there was a lot of innovation knowledge.

Technology specialists (B and D) perceived shareholder value as the driver of firm strategy after the IPO, with emphasis put on managing the market value of the firm:

90% of Sonera's innovations were incremental, 10% radical in nature. One pondered, how technologies close to the mobile phone could be utilized for innovative business. Value creation of business was the salient issue considered. (B)

Starting from 1998 there was a search for value increase, the owner wanted value increase. Finland's success in mobile telephony gave a lot of buoyancy. Then came the Internet bubble. Sonera's market value was at its peak in March 2000 at EUR 70 bn, the target level set at EUR 100 bn. Innovativeness was not managed starting from 1998, the market value of the firm was [managed] instead. [...] rapid moves were more important than persistent development work. (D)

Group level manager (B) reflected on the shareholder value based strategy with a global reach, where a focus area comprised the development of value added content services. The account highlights the uncertainties of market development for the envisioned services:

At that time there was discussion on who has the best market value: the one who brings in the best added [value] services, content services into the mobile environment, that was the core. Then there was another area of transition when one saw that the world explodes suddenly into an enormously large market where one must create services yet unknown. [They were] SMS based services, the first ideas of exploiting location so that one could tell where the consumers of a certain content service are situated. [Also] media services, commercials, etc. [The idea was] that one could get them [the services] into a mobile environment. And then there was the global mobility, global reach theory, that it would be possible to contact all people all the time everywhere. These were visions. There was no evidence of any of these business models, no one knew how they really worked. The same [phenomenon] was present on the wired side, the Internet side so you wanted to force the same services when there was a worldwide web

available so people started to use it and the mobile Internet was seen as the culmination of it all so you had this WAP protocol which drove issues in that direction. The vision was quite strong.

Group level manager (B) viewed the importance of industry level consolidation development as a determinant of firm innovation translated through strategy:

Early stage consolidation had happened somewhat by the year 2000. At that time Vodafone grew and it was regarded a success story in consolidation, and at this stage in 1998 it was not yet strongly present but starting in 2000, business decisions were made according to consolidation game rules. Businesses were developed out of which one saw that Sonera's position - other operators thought like this as well - would be as good as possible in this consolidation game. At that time the discourse was about games and players. It was perceived a game where you strike the other out, that for example KPN²⁸ and Telia and the ones that kept to network operating and represented the old economy, you perceived them not as leading the development of markets, and the leaders were perceived to be Sonera, Europolitan, Vodafone and Colt on the Internet side.

Top management representative (D) stated that firm innovation is naturally derived from shareholders' expectations:

Obviously any firm activity is equity market induced because of the expectations set by shareholders. If the point of view here is that was there something specific about the Sonera innovation investments that were made because the market ended up liking them way beyond rational return on equity calculations, then the answer is no. The emphasis on innovation at Sonera had its roots in a very basic microeconomic principle: the need to retain more of the rents within the economic boundaries of the firm to the benefits of all the stakeholders. The telecommunication industry changed and grew due to advances in technology and liberalization. Much of the technological innovation fuelling the growth had its roots in the carrier domain, was often financed by the carriers, look at what role the national carriers played in getting Ericsson and Nokia to happen, but the rents were transferred to the vendors in form of intellectual property mostly in form of software. There was a strong feeling, that encouraging and managing innovation to benefit more the firm itself and less other ecosystem players was the right thing to do particularly when there was clear evidence that the firm had been a source of products and services that were commercialized by the vendors.

When this as such simple truth was communicated to the market, it initially faced skepticism, but later was received by the overheated market in an irrationally optimistic way.

Top management representative (D) informed about the way in which ownership derived strategy was reflected on the firm's innovation processes since the IPO of 1998:

It was encouraged by the market, we made a deliberate decision to seek market approval for the strategy and if that approval was received we would try to grow the company through acquisitions. This was the only way forward in a setting where the main owner, the government, had informed that it wanted all of the liquidity from the market for its secondary offerings, and that the company should not raise primary funding through the issuance of new shares. This is a very important point.

²⁸ KPN is the major telecommunications services provider in the Netherlands.

Top management representative (D) described firm innovations aimed at Sonera's differentiation and subsequent ascendance in the industry value chain:

And here we aimed at, as I said, we aimed to transform in the value chain and sought to obtain additional know-how[...] content was somewhat incremental, but the next question arises: 'Who will develop the business process to the stage where he can really offer differentiated services? Since differentiation is the largest problem of this industry. And that's what the innovations [in Sonera] aimed at. [...] And with help of the innovations you aimed to differentiate – by differentiation you pursued better margins [...]

Top management representative (D) described the way in which institutional investors may discern and judge innovations. This discernment was translated into Sonera's strategy in the late 1990s by moving into adjacent spaces by exploiting accumulated, existing knowledge:

[...] institutional money in high risk places - there the best results have been obtained by having an experienced team from some firm that has learned a specific issue – then they move into an adjacent area – not completely new, but to an adjacent area from which new markets are opened up where the most of what they've learned – the conformities to law, pattern recognition and else, they can actually take advantage of that, adjacent spaces is the term – so the best firms in this asset class have emerged from that. And then there are these breakthrough innovations, so if you do something really radical, for instance a new battery or something of the like which come about really seldom, and they are very risky, so that only one, two out of a hundred radical (innovations) will develop into anything competent.

In probing Sonera's routes to growth, the central questions asked were, as a consultant of the firm in the 1990s put it: *"What more could we do with our know-how? Can we get more value from our know-how? What could we do to expand our footprint? That leads to: What's the innovation pipeline?"*

A consultant elaborated on the model through which differentiation was sought also in Sonera:

[...] the realization is another model that suggests that firms, enterprises essentially go through three phases of competition. Now I know I'm not comparing like with like here. The first stage here in building a firm is the notion of, forgive the jargon, competing for intellectual leadership, so essentially defining what's the game, what's the new game around here, so it's to find the game. So this is imagined as starting through scratch. We then accumulate the assets. What we end up doing, is essentially that we refine, improve, optimize the business model which means, there are other competitors in here, you see yourself competing for market share, searching for differentiation and so. What you find, I think, in most large enterprises, is that most managers spend most of their time and possibly most of their careers in this phase – all they're worried about is polishing the economic engine they've got, they've been recruited into this and they've spent all of their lives here – which is OK if you're in an industry probably like oil or paper. What came out of this, putting these two things together, was the notion that they saw it as a useful way of thinking about strategy or strategic life cycle. [...] That's what investors invest in.

Top management representative (E) stated how investor constraints reflected on strategy since the latter half of 2001. (E) pointed out subsequent favorable investor reactions to firm strategy:

The time scale was derived from firm strategy – I had a certain schedule. I knew though that I do not have more time, if I do not establish evidence then the investors will soon get tired of me, so I had to show them. I knew I had about a 100 days time, a honeymoon, and a year is the maximum period within which you have to show results. That is one driving force of management – you have to show the direction you are headed for, and we were able to get the firm to turn around. [...] if you looked at the actual operations, people trusted the firm because the management communicated one issue, and the management also implemented the same issue. The operation was systematic, and we communicated about it very directly to investors, and the investors said that these operations seem well advised, and they saw the results, and other investors bought more of Sonera as they saw that this was the right strategy. [...] This happened because of our good, credible [...] it wasn't really a story, I wouldn't call it a story since it was really a strategy with which the firm was taken further, and there were concrete operations for strategy implementation.

Table 5 summarizes stakeholders' views on strategic renewal of Sonera starting in the mid-1990s, related to firm innovation in 1998 - 2000 and 2001 - 2002. The table shows that management accounted for the principal moves in strategic renewal at all observed phases, whereas technology specialists and a consultant firm representative expressed similar opinions as management concerning 1998 - 2000. The blank spaces on the table indicate no specific opinion by respondents on the subject matter.

1998-2000 Aim to increase market value by moving from bulk carrier to market maker by	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
differentiation, transformation in the value chain		•	•	•			•	
combination of technological innovations and innovative business model		•	•	•			•	
moving into adjacent spaces, exploiting accumulated knowledge				•				

2000 Aim to increase market value by moving from bulk carrier to market maker, and preparing for industry level consolidation by	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
growth through acquisitions			•	•				

2001-2002 Aim to increase market value by	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
perceiving the importance of delivering a credible story (strategy) to investors				•				
tightening the focus to just a few spearheads in innovation activity				•				

TABLE 5 Summary of Stakeholders' Views on Strategic Renewal of the Firm

5.3 Outcomes of Firm Innovation – The Emergence of Sonera SmartTrust and Sonera Zed as Dominant Foci of the Firm

In this sub-section, an illustration is provided of the two main services business areas of Sonera that emerged at the turn of the millennium. The portrayal reflects both the firm's public view as well as stakeholders' views of the determinants and defining features of the firm's business foci. In the firm's public announcements at the turn of the millennium, Sonera SmartTrust and Sonera Zed were depicted as follows.

SmartTrust specialized in developing and offering security technologies and services enabling secure wireless electronic commerce. SmartTrust introduced a digital signature technology developed for secure wireless communications. The digital signature technology was based on Public Key Infrastructure (PKI), encryption and a digital signature situated in a mobile phone's protected SIM card (SIM, Subscriber Identity Module, an electronic card inserted into a mobile phone identifying the subscriber to the network in question). The competitive advantage of SmartTrust's solutions based on PKI was its openness: independence of wireless terminal device manufacturers, mobile communications operators, SIM cards, and service providers. The technology was compatible with WAP, the GSM standard of the turn of the millennium, and upcoming newer generation mobile communication networks and compliant mobile phones (Sonera 1999, 2000, 2001).

A positive growth outlook was given for wireless electronic commerce by research institutes such as Gartner Group and Forrester Research, based on three major future trends: the rapid growth in the number of users of mobile phones, increased electronic trading, and the arrival of new technologies creating opportunities for new services and business models. In tune with the rapid growth estimates of the market for secure wireless Internet solutions in 1999, and continuing in 2000, SmartTrust formed research and development contacts with leading international technology firms, equipment manufacturers, and software suppliers, and entered into joint ventures and strategic cooperation with financial institutions in order to offer digital certification services. In the beginning of 2000, SmartTrust was incorporated, becoming a wholly-owned subsidiary of Sonera, to enable independence and latitude of action in a rapidly changing operating environment (Sonera 1999, 2000).

In line with its strategy to strengthen its position on the global arena in its services business, in April 2000 Sonera acquired Across Wireless, the leading provider of service and device management software. Through the acquisition, SmartTrust gained a global foothold as the leading e-service security and management software provider targeted at mobile communications operators. In June 2000, Sonera acquired iD2 Technologies, a leading provider of smartcard-based security solutions for Internet transaction through which SmartTrust could position itself as leading provider of integrated solution aimed for secure e-services. These acquisitions complemented the competence and product base of SmartTrust in a way that it could create and manage a wireless delivery platform, and issue, manage and use digital certificates and

signatures in the electronic services market which continued to converge. Sonera SmartTrust had a global scale of operations, with over half of the revenue generated from Europe, Middle East and Africa, the rest from Asia-Pacific and the Americas. With the weakening market demand in 2001, SmartTrust was forced to streamline its corporate structure by consolidating SmartTrust's operations to one firm, and reduced its work force in the first quarter of 2002. In July 2002 SmartTrust was sold to private equity investment firms, the Carlyle Group, GE Equity, and Eqvitec Partners, Sonera remaining as 39.3% owner in SmartTrust (Eqvitec Partners; Sonera 2001, 2000, 1999).

Sonera Zed

The development of Sonera's services business moved briskly ahead in October 1999 by bringing Sonera Zed out on the market, a global wireless portal business. Sonera Zed, a mobile portal, linked a mobile phone with Internet services. In August 1999, Sonera was the first telecommunications operator in the world to introduce information services for WAP. Sonera Zed's services were targeted at customers using a mobile handset both at work and leisure time. Sonera Zed offered customers access to a variety of wireless Internet-based services, such as news, text message information services to air travelers, account balance information, searches of a telephone directory, entertainment services, such as ringing tones, icons, and games. The services of Sonera Zed could be accessed both via a mobile phone and the Internet. Sonera acted as a packager of services in the mobile portal business and invested in systems enabling increased provision of services. The business concept behind a mobile portal operation was to extend the offering of mobile communications services beyond Sonera's own mobile communications network. Sonera Zed was incorporated as a wholly-owned Sonera subsidiary in February 2000. The incorporation enabled Sonera Zed to offer its services independently of Sonera's mobile communications operations in order to react swiftly to the changes in a fastly converging ICT industry (Sonera 2000, 1999). As the world economy faced a downturn, and the market situation deteriorated in the ICT industry, Sonera responded in 2001 by reducing expenditure in the services business segment by cutting operating costs in all of Sonera Zed's operations. Sonera expected the scaling down of service offerings to have a negative influence on the commercial development of Zed's services, as stated in Sonera's annual report of 2001.

Stakeholders' Definitions of SmartTrust and Zed

Variations in the definitions on the nature of innovations manifested by SmartTrust and Zed were presented in stakeholders' accounts as follows.

On the nature of SmartTrust's and Zed's innovations, technology specialist (C) viewed SmartTrust as radical in its technology, and Zed as radical in its business model:

There were radical innovations in SmartTrust through which global business was pursued. SmartTrust would have required the exporting of a complex value chain and this could not be accomplished. When no markets for mobile encryption emerged, there was no need for mobile certification.

Zed was a radical innovation as a business model, its idea was to act as an independent global service operator layer. The idea was to detach the mobile portal and try to scale it on international markets. Zed's total market did not emerge in Europe, it is emerging only now. Zed was delayed because the 3 G technology did not become a success story, network and services technology did not mature.

Top management representative (A) defined the innovations of SmartTrust as architectural (Henderson & Clark 1990) and the innovation of Zed as a radical, commercial innovation:

SmartTrust comprised an architectural innovation - you combine old pieces in a new way, the PKI architecture existed already, 21 competing technological applications to the same issue as counted from patent files. Zed, again, was a radical, commercial innovation so that it combined mobile communications and the Internet. Mobile Internet was a commercial innovation, it enabled a new way to do business. Technologically, there was nothing new in it. From a process perspective it was an innovation, a commercial innovation. In that respect it was quite radical.

Top management representative (D) defined SmartTrust's innovations as radical in technology, and Zed's innovations as incremental, comprising a business model innovation:

Aim to be both radical [SmartTrust] in capturing new parts of the business value chain, control security, and incremental [Zed] move to the content business as a new way of increasing ARPU²⁹ and grow to new markets with services as capital was not available to acquire physical assets; majority of networks as would be traditional.

Zed was a business model innovation and SmartTrust was a technology innovation. And the idea was that a carrier had not really done either of them before, that is, never, since everything had been just incremental. And now the question was about looking for completely new things, for the first time under the scrutiny of the public market.[...] Zed was incremental in the way that, the question was actually about...when you have earlier offered only a transport layer, so do you now commit to the content or not? And our perception was about moving upwards the value chain, you should get a hold of the content. And SmartTrust was a lot more aggressive

²⁹ ARPU, average revenue per user (also referred to as average revenue per unit) points to a measure used mostly by consumer communications and networking firms, marking the total revenue divided by the number of subscribers.

since the thought behind it was that if I [the firm] can offer the client a safe transaction, my [the firm's] value added grows.

In the following account, technology specialist (A) elaborated on the importance of Sonera's distinct property among European operators, the ownership of network technology as a defining feature discerned by firm management. The ownership of network technology was perceived to comprise a crucial building block for developing a 'vertical link'. Technology specialist (A) viewed the determinants of SmartTrust's and Zed's emergence as dominant business areas of the firm as deriving from management's understanding of the monetary worth of patenting and the vertical link provided by the SIM card:

[...] why SmartTrust and Zed became dominant business areas in Sonera was based on N.N.³⁰ buying these patents. N.N. saw quite correctly that the development of GSM is based on two issues why GSM has remained so strong: the other is the so called ETSI, European Telecommunications Standard Institution, patents i.e. GSM is fully blocked with patents and for example over 20% of Nokia's profit comes from GSM patents' license fees.[...] ETSI patenting was a very strict EU requirement. Nokia very soon understood the impact of patenting and has accomplished a very strong position in mobile so no manufacturer nor operator competition has developed because GSM is a totally vertically tied technical architecture based on SIM card. And this SIM card ties the user interface, telephone, network, services, and all network databases together, and you cannot use any services in GSM without a SIM card, and it is a total vertical tie which cannot be demerged due to this architecture, and this is also defined in these ETSI patents. And that is why the so called horizontal development has not attacked GSM because it has this vertical tie of the SIM card. It seems that for instance imaging mobile phones could not be used as a camera or as music players without having a SIM card in place. Both of these aspects have not been really recognized they are anyway the most relevant issues in the whole success of GSM and in operators' success, i.e. horizontal competition and GSM manufacturer competition are prevented.

The 'vertical link', as described by technology specialist (A), was detected by Sonera's management as the firm's essential differentiation mechanism among operators, and a determinant of the ascendance of SmartTrust and Zed:

[...] SmartTrust's and Zed's ascendance as dominant business areas in Sonera: You see, there are two issues at hand, SmartTrust was based on the usage of the SIM card also for other services in the industry so NN understood that the patents were linked to it so a service development environment, to which software could be done, was developed to the SIM card. So it was essential that services software could be produced to the [mobile] phones since the services are blocked in the SIM card. So it is this vertical link so it is critical to make parts to the services that are sufficient also to the SIM card. N.N. acted in quite a smart way. He is a really sharp guy. He recognized that we are the only operator in Europe who possesses these and these features while Sonera's increase in value was not just based on emptiness since it was the only operator in Europe that owned the network technology.[...] Sonera's increase in value was not at all without reason, there existed the right [technological] competences. It was the

³⁰ To maintain confidentiality this informant has been anonymized. For identification purposes in this thesis the interviewee is labeled as N.N.

only operator internationally that had the software competences, all protocols, and these services worked and even Nokia would have wanted to buy them and Cisco as well [...]

Technology specialist (C) viewed the internal corporate venturing features and strong individuals also as determinants of the emergence of SmartTrust and Zed:

Simultaneously with NCS grand initiatives were taken – top management decided that a few robust issues would be pursued – hence, SmartTrust and Zed emerged. SmartTrust was clearly an entrepreneurship driven undertaking, based on internal corporate venturing, and the inventions and strong vision of one person, N.N. SmartTrust was not rendered as a strategic decision but it was based on N.N.'s fairly large patent portfolio. Zed, on the other hand, emerged from clear top management strategy. Zed's core competence was in the mobile data / Internet world.

SmartTrust's business idea was based on SIM card usage. In 92 N.N. got the first patent while working for Tele, in totally different tasks. It would seem that SmartTrust's business would fly only now. The vision was good in SmartTrust but the timing was wrong. The investments were premature, markets were not yet mature to take on SmartTrust's services.

Plaza and Zed had the same types of features in them. WAP technology flopped...The functionality of [WAP] technology was nevertheless lousy from an end-user's point of view. WAP was too complex nor could it take advantage of content in the Internet.

Zed and SmartTrust: EUR 100-200 were invested into marketing and R&D per annum, thinking it would accelerate the innovation process. Greed stepped into the picture - there were only bubbled shares.

Technology specialist (B) also pointed out the persistence of strong individuals as determinants through which the innovations could be defined through Zed:

An internal power struggle between innovators had preceded the emergence of Zed where the original idea or project underlying the concept of Zed had been taken on by the leader of Zed, and developed further as Zed's business concept. Zed chose the interfaces on which to implement. Zed's innovation happened in the way that it exploited the existing technologies and sold them out through Zed's brand, being the first in Finland – the business model was a radical innovation.

Technology specialist (B) continued by pointing to the pursuits of institutional entrepreneurship (DiMaggio 1988; Fligstein & McAdam 1995; Fligstein 1997; Kondra & Hinings 1998; Beckett 1999; Battilana 2006) in the firm:

The logic of SmartTrust was not to await the development of standardization requirements but to produce their own implementation of PKI.

Technology specialist (B) discerned shareholder value as the driver of services businesses:

SmartTrust's and Zed's ascendance as new business foci were derived by the strong personalities of the said business units' leaders, and by the support given to them by top management. Top management let Darwinism prevail in the new business areas by the 'survival

of the fittest' principle. There would have been other promising services business start-ups. Zed and SmartTrust were loaded with endless funds after the IPO. These days boards and owners of firms follow much closer the activities of respective firms than during the [technology] hype. But it was believed at that time that market value increase is greater than investments made. The main driver was the increase in shareholder value... [That] in the long run you create value only through shareholder value.

A representative of finance viewed SmartTrust's and Zed's ascendance as stemming from shareholder value maximization:

The reason for the incorporation of SmartTrust and Zed was to commit the management through share ownership and option arrangements. The increase of Sonera's share price was the objective.

Technology specialist (D) perceived SmartTrust's and Zed's emergence as dominant firm innovations as deriving from the passions of strong individuals:

SmartTrust and Zed ascended as dominant services businesses because their start-ups were managed by strong persons, and the timing was right as to the aspirations of the capital markets. [...] Zed's manager had read the success story of Yahoo! and wanted to build something at least comparable out of Zed.

Zed, SmartTrust and SoneraPlaza were capital market stories without cash flow thinking. I regarded SmartTrust as infrastructure business and Zed as services business. The managers of Zed and SmartTrust had only personal motives of getting rich.

A corporate venture manager discerned the emergence of SmartTrust and Zed as stemming largely from strong individual aspirations:

SmartTrust and Zed were about different stories. In SmartTrust everything was based on N.N.'s [its manager's] own innovativeness and entrepreneurial spirit which was, in its own way, close to paranoia, but N.N. was a really intelligent fellow.[...] Why did SmartTrust become what it became and why was it invested in? The reason was that there was belief in mobile payment. Sonera never possessed so-called 'essential patents'. The firm had SmartTrust's patents linked to public key-private key authentications, and transaction linked, SIM technology linked patents, some in N.N.'s name and some in the firm's name. [...] N.N. was a really entrepreneur-spirited, exciting guy. [...] SmartTrust was based on its really strong technological innovation. This was linked to N.N.'s entrepreneurship driver. And, in top management there was a person, N.N., who recognized that if a separate entity will be driven which can generate internationalization potential, and N.N. always recognized the opportunity offered by capital markets to fund growth like this through it. And it was because Sonera's internal undertakings were scanned, and there were a lot of issues related to mobile payment. The view was that there has to be some potential here. This was the explanation for SmartTrust's ascendance. There was a consensus on the potential of mobile payment and N.N.'s innovation was based on a technology that enabled it and there was service potential to be seen in it.

Zed was based on the simple idea that service on the Internet had risen to an enormous fame as well as hyped services in the U.S. and elsewhere, and [the thought went that] the same services could be on your cell phone, and the first wave of SMS that happened in Finland then – you remember ringing tones, text chat, certain games, simple weather forecast services, balances, all

of that was innovated already earlier in the mid-90s. There was a small team of people [inventing these services] starting from N.N. We could make some mobile value added services operator out of this which acts independent of operators on a certain services platform, on certain services domains...Zed emerged from this. N.N., the manager of Zed, was a smart man, in the right place at the right time, had the nerve and the drive, a strong personality. There was a lot of controversy on the management level, you had to play rough.

Group level managers (A and B) agreed on the importance of individuals with an entrepreneurial spirit in the ascendance of SmartTrust and Zed:

Why did SmartTrust and Zed ascend? They had strong-willed leaders and both start-up undertakings were very fashionable in the eyes of investors, and both had the scalability which was attractive for the private equity market. It was easy to see that both could have been scalable in volume. If Zed had materialized, its market volume would have scaled up. So, if you succeed as concept you can scale up to a global level. SmartTrust was a technology undertaking – the aim was to obtain a winning technology out of it, and in that sense there would have been scalability benefits. (A)

SmartTrust and Zed ascended as number ones of services businesses because they had strong persons as leaders. They were meant to be venture capital models. This can be understood since NN's background was in venture capital so it encouraged entrepreneurial spirit so that pioneers would emerge from the organization. There were side-effects to distribute even to others at SmartTrust but if you only look at the business model, N.N. was anyhow a person who strongly started to develop SmartTrust's business and fought for it. There was a spirit of Darwinism there which it has been condemned for. The model could be compared to Nokia Ventures which sought for internal entrepreneurship – why excesses happened in Sonera, that was due partly to Sonera being a state- owned firm. (B)

In a similar vein, group level manager (B) continued reflecting on the individual aspirations as drivers of the two dominant firm innovations:

The innovations were based on strong individuals who had decided that this will be rendered a business. They got good resources from Sonera. As a prize for entrepreneurship it was also perceived that they will be developed into such businesses – Zed and SmartTrust were supposed to be listed separately of which the management, that saw themselves as entrepreneurs, could have received a moderate equity stake for themselves, and the link was through internal entrepreneurship and corporate venture capital.[...] It was at least internal corporate venturing in 98-00.

Top management representative (A) reflected on the determinants for the emergence of Zed and SmartTrust as dominant outcomes of firm innovation as deriving from both an individual level and firm level in the pursuit of shareholder value maximization:

If you accept the starting point of the pursuit to build good businesses, they [Zed and SmartTrust] were the two billets of several billets that seemed the most promising. You cannot dismiss the issue, as in all new business development, that a few key persons have a tremendous importance in the whole exercise. Zed and SmartTrust had brilliant and determined individuals that were able to arrange the playing field and resources, money, latitude, contracts, to sell their ideas. Retrospectively you can endlessly argue if someone else could have had an even better

idea or technology but if you don't have the competence to win the battle in that environment, then that is a theoretical question. People always matter.

What did the capital markets think about this, what was the impact of equity markets in this? The incorporation of Zed and SmartTrust. A problem related to business development and a problem related to share price development which is that typically in any large firm you have one or some dominant businesses that happened to be called mobile communication, and the share price typically is defined according to the dominant business. The dominant business has a worldwide and human inclination, even against its own will, to very quickly kill troublemaker businesses. [...] by differentiating them as their own firms and by giving them some transparency, a theoretical value could be defined for them which reflected directly on Sonera's share price. If they had not been incorporated, [their] value would not have been shown in Sonera's share [price]. Retrospectively, it could have done some good but at that time it was what was wanted. It was wanted by the owners, it was wanted by the capital markets, and because the machine had been tuned up in a way that it was in the personal interest of persons acting inside the firm – that the value was high and was quoted – it was in everyone's interests.

Likewise, investment banker (A), viewed the emergence of Zed and SmartTrust as dominant start-ups derived from individual level properties:

[...] why Zed and SmartTrust ascended as dominant start-ups, you come to this question of individual characters, and the psychological effect of the persons behind these start-ups, both inside the firm and toward the capital markets. Strong persons. Who sells his case well both internally and externally? That was the question. In that sense finance as well is based on social sciences.

Investment banker (A) pointed to the significance of rhetorical social construction of reality (Berger & Luckmann 1967; Aldrich & Fiol 1994) in the firm's dominant businesses:

In a way Sonera created a 'can do' sentiment in the environment, there was the underlying technological expertise and experience, the old innovative corporate culture which suddenly opened up the gates to the future, 'we can do it in 3G, too'. That creates ever such a positive drive. But I did see that people at Sonera fell into the same spiral as everyone else – it was visible during the roadshow [...] I'm quite sure that Zed was actually born during the roadshow. One invented that, hey, we have that project, that plan, and investors were addressed on this more freely, and hey, the investors got excited, 'but this is the future, the mobile device goes Internet, you're the first, you're innovative, wow!'

Table 6 depicts, in summary, the views of stakeholders on the emergence of Sonera SmartTrust and Sonera Zed as dominant foci of Sonera at the turn of the millennium. The table indicates that technology specialists expressed most widely their opinions on the emergence of SmartTrust and Zed as dominant foci of the firm in 1999 - 2000, while middle management was next elaborate about the issue. Top management emphasized the opportunity value of SmartTrust and Zed in enhancing the rise of Sonera's share price as major determinant for said innovations to have become the foci of the firm. Investment bankers, technology specialists and management all agreed on the importance of strong individuals leading SmartTrust and Zed into dominance of

firm innovation in the firm. The blank spaces on the table indicated no opinion on the subject matter by respondents.

1999-2000	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
management's understanding of monetary worth to be generated from patenting and vertical link provided by the SIM card		•						
the previous properties combined with the firm's ownership of network technology		•						
internal corporate venturing model preferred by equity markets			•					
institutional entrepreneurship		•	•					
Sonera's share price (increase) to be derived from dominant business(es)		•	•	•				
exciting story delivered well by management to equity markets	•	•						
transnational scalability potential determined by management			•					
aim to become venture capital models			•					
determined, strong individuals as leaders of emergent business foci	•	•	•	•				

TABLE 6 Summary of Stakeholders' Views on the Emergence of Sonera SmartTrust and Sonera Zed as Dominant Foci of the Firm at the Turn of the Millennium

5.4 Intended Input Processes. Innovation Management.

Following the strategic renewal of Sonera, starting in the late 1990s, intended input processes were implemented as a strategy tool in pursuit of firm innovation. This following sub-section presents stakeholders' accounts on innovation management pursued, and its implications for Sonera's innovativeness and innovations.

1998 - 2000

Top management representative (C) reflected on the initial stages of innovation management in Sonera. (C) perceived the process to derive from changes in the firm's institutional environment, as the release of telecommunications industry regulation implied increased competition. In this account, the urge to change the course of product and service development from vendors, equipment suppliers, to Sonera drove innovation management from its initial stages, the beginning of the 1990s:

Managing innovation processes: I came across it for the first time when Tele's organization was streamlined in the beginning of the 90s when it was started to be implemented. It was derived of the need - when it was estimated that competition opens up in the market for long distance and international calls that prices will fall by 50% or more. The conclusion was that costs should be lowered and the organization renewed[...] In that connection, when the new organization was built, it was contemplated on, how much resources should be allocated into innovation activity, product development, technology development, and then I came across it for the first time,[...] that it is an unbearable situation in the future – which had prevailed so far – that the whole product and service development was actually in the hands of equipment suppliers [vendors].

Additionally, top management representative (C) described the earlier dependence of the telecommunications operator on its vendors, and the engineer-driven product, equipment, and technology development, as antecedents of innovation management:

Operators only took what came from Nokia, Eriksson, and Siemens, practical, rough product and services development. Until then it had been so that telecom operators weren't the ones to ponder on some call transfer service or something else but it was the equipment supplier whose engineers thought and pondered on that, and then they came to the operator saying, 'Listen, we have this exchange onto which you could manufacture this call transfer system, are you interested?' Which in practice meant that the product development, equipment and technology development was terribly engineer driven, and not at all customer driven because the operators had the customer interface – the operators heard of customer desires from customers. Equipment supplier engineers only thought of 'what more could be done with this gadget, what the new features to be put into this could be'. Then they came to ask the operators for this and the operators tested the issue. We found at Tele[...] that we wanted to decrease this dependence on equipment suppliers which the equipment suppliers had advisedly built that once you purchase e.g. Eriksson's exchange you are married to Eriksson until eternity. As this dependence was sought to be decreased, measures were taken to build [Tele's] own product and technology development unit.

Top management representative (C) elaborated on the rise of intellectual property protection of Sonera as a counterforce to former spillovers of innovation to vendors (cf. Tylecote & Conesa 1999):

[...] These IPRs and others came only after that, I think it was NN and his team who raised discussion on having to protect what we have produced. Until then everything related to product development in Tele had been done but out of a sheer enthusiasm to invent something new. [...] Dependence on equipment suppliers [vendors] was wished to be decreased, and on the other hand it was foreseen quite correctly that future product and service development, it should be geared from the customer interface, not engineering knowledge. [...] There had been a lot of mutual projects, especially in mobile communications, both with Nokia and Eriksson where something completely novel was developed. Only in the mid-90s it was recognized that all the fruit of that labor had passed on to Nokia and Eriksson. They were their IPRs and they made money around the world with the systems they had developed together with us and the Swedish Televerket in the Nordic countries, and the operators just watched with envy as the equipment manufacturers [vendors] made money on mutual projects.

Top management representative (C) further reflected on the drivers of innovation management as stemming from the need to speed up the innovation process in order to reach ultimate commercialization:

It was quite quickly recognized that although a lot of innovative work had been done, as the time came to transfer these issues elsewhere, these products / services had not been productized. [...] They should be documented properly – this was the reality after the mid-90s. It was then that these issues began to be pursued and N.N. was active with these issues, and although I don't know how much was accomplished, but the first assignment was to document and productize issues so that they actually existed, and then you had to protect the IPRs and think if there was something to be patented, etc. and turn it into goods of monetary value.

Technology specialist (B) also viewed the intentional input process, through which innovations would be generated, to derive from the pursuit to protect intellectual property of the firm, followed by exploitation of technology for monetary value:

New ideas, pre-stage innovations, emerged during 1998 - 2002, quite a lot. The innovation process started to be managed at that time. The process comprised observation and screening of ideas, refinement of screened innovations and their triggering into commercialized innovations. In quantitative terms, 1000 business plans went through this process so there were a lot of ideas around. The 'Sonera Ventures' model was built where technology was outsourced from elsewhere in the world for innovation development. In other words, the search for innovations was fueled through venture capital activity. [...] Innovation processes changed substantially since 1998; in Sonera where innovation management had not existed in business management. Earlier engineering sciences and business had been two distinct parts in Tele[com Finland] – a link between money and innovations had not been distinguished. IPR matters had not been considered earlier in Tele[com Finland] and there was a 'fear of god' toward Nokia. A substantial part of the innovation process is that technology should be protected. Manufacturers like Nokia, operators and semiconductor producers form a triangle which comprises a minefield. Each of these three builds its own mines, IPRs. The mines can be used as means of exchange. [...] Starting in 1998 technology portfolios and the IPR process were built. A management model comprising a part of technology management was implemented, where IPRs are to be indisputable[...] The thinking was linked to having software and services knowledge accessible at Sonera.

A corporate venture manager accounted for the implementation of the intended input process of firm innovation in 1998 - 2000, with internationalization potential of innovations 'to-be' driving the building of innovation processes. Benchmarks for valuation of potential businesses were derived from US and European telecommunications and equity markets:

Processes were aimed to be built for innovation activity in 1998 - 2000. Before that time the firm had been led by technology expertise. An exciting corporate culture- if you were a good expert in some area you could do what you pleased. Then innovation activity was aspired to be structured in a way that a process of its own was built in the research and development unit of the time which was S3, a unit providing technology development resources, and then processes were built for business so that there were the NBA³¹ and NCS units whose role was to search for ideas from certain domains in-house or beyond, and to develop businesses out of them. This was an imitative model of technology start-up activity where there was a large pipeline of ideas, and some people had the task of conceptualizing them, and it was attempted, in a funnel-like manner, to evaluate them by certain criteria, if they could be funded, if they could become a business.

[...] Yes, the process shaped up, and partly parameters were tried to be built especially through internationalization potential, and value increase was an implicit consequence of that. Yes, benchmarks were taken from the IPO market, benchmarks were taken from the private equity side or the venture capital side[...] It was typical at that time that benchmarks were searched even slightly from the wrong starting points. These benchmarks were searched both from the U.S. and somewhat from Europe. A parallel growth happened between a strong growth in [telecommunications] markets and equity markets. Benchmarks were searched from all of these markets.

The corporate venture manager continued to portray the innovation management processes, defined by capital markets.

Zed and SmartTrust crystallized as concepts when a new business related strategy process...was implemented in 98 - 99 as strategy tool through which even firmer belief was derived that these are the issues that should be invested in.[...] Innovation management, how innovations are identified, how they are to be structured, how innovations are fostered inside the firm, how the greatest value can be extracted from them, how they act as strategy tools.[...] These tenets were implemented: it clarified the administrative process of innovations, of service development inside NCS. NCS was like Nokia Ventures, one unit within which new ideas were gathered and scanned, a funnel-like thinking: there were certain domains which were believed to be concentrated on, and there were start-ups in different phases there which were backed up by certain type of R&D activity, mobile media lab in the mobile telephone business area, etc. They were managed by a venturing type of process. When the undertaking was at a certain stage, a manager was searched for it so it could be spun out or it could be sold somewhere or it could be internationalized or it can be integrated into some business unit or merged with some other entity. Yes, capital markets surely defined the innovation management process, so very different types of exit alternatives were seen for these undertakings, everything was possible at that time.

³¹ NBA points to New Business Areas in Sonera.

The corporate venture manager illustrated the external and internal venturing processes as crucial parts of the innovation management process:

[...] External venturing: it was scanned what kind of technology could be invested in, venture capital type of activity, small technology firms were scanned. A part of them were accessed through the private equity mechanism, we were investors in private equity funds or we did private placements ourselves. The thought was to aim at finding collaborators or investment targets or technology suppliers for Sonera at the time. Internal venturing meant that new business was pursued to be innovated around certain domains – be their origin in technology innovation or service innovation.[...] The pursuit was to find potential start-ups through mobile and Internet business units and their R&D. Mechanism: When the undertakings reached a certain point, as they were studied, they were formed as a certain concept and moved forward by producing a pilot after which the commercialization of undertakings was thought about, and about who would manage the undertaking, etc. Basic venturing.

Technology specialist (C) described the intended input process of firm innovation as stemming from plans for growth on a transnational level:

The growth of the Internet and mobile telephony was strong at the end of the millennium [in Finland], two-figured per annum. Elsewhere in the world it was a few years late. The thought occurred on how international markets could be exploited. Then it was contemplated on the way to systematize the emergence of innovation concepts. A clear step was taken, the NCS unit was founded in 98 - 99 which held 800 people. NCS's task was to administrate funds and to facilitate the screening of ideas and their refinement to innovations.

Technology specialist (B) illuminated the striving for institutional entrepreneurship (DiMaggio 1988) on a firm level in Sonera:

Background for realizing innovations: The European ETSI³² Association, founder of telecom standards, a consortium of operators, aspires at considering global standards. In the U.S.A. there is an open world, an IP world. The best innovations do not emerge from standards but from an open world which lives to the pulse of the markets. Markets may induce innovations that are passed on to standards and run over the regulative standardizing world. In Sonera, since 1998, there was the urge to pursue the innovation process by looking for the answer from the market instead of ETSI. What are the minimum requirements for survival in competition? An operator should be market orientated, and search for technologies applicable for the parallel.

Technology specialist (B) viewed that external forces guided the innovation process in building conceptual thinking, hence reflecting on firm innovation:

Contemplating on core competences is related to the innovation process. At the end of the 1990s for example Gary Hamel and his consultants visited Sonera frequently. A competence-based strategy was pondered on; an effort would be made to reach out to the world through Sonera's core competences.

³² ETSI, abbreviation for The European Telecommunications Standards Institute

A board member also perceived that external forces accounted for the gearing of innovation processes in the late 1990s:

[...] when your own resources are limited, holding a good idea, you hire outsiders to do the work so you externalize in that sense, but in Sonera it meant that there were very many consultants around. [...] a part of it was specifically product development consulting...At Sonera the opponents were engineers or developers themselves, they had no management skills toward the consultants, but the consultants started to take the issues further.

Group level manager (B) perceived that innovation processes were guided by chaos theory:

Innovation processes: one believed in controlled chaos. When there was a complete technological and services rupture going on, there was nothing old and familiar on which to build so everywhere in-house you were spurred to innovativeness and [it] was pursued to be bound into processes. There was rather more fear of some process becoming a constraint to innovation. It was seen that there was a sufficient funnel of ideas of which a few per cent might materialize, and in those few per cent could lie the sought killer app[lication]. If it were found somewhere, it would pave the way for a business in billions.[...] The corporate venture model began to develop in Sonera at that time[...] innovation was pursued with it – first you invested in funds, e.g. in Germany [...] It came in stages: first you take part, someone from Sonera sitting there [board membership], you captured deal flow, saw innovations that move and with help of that [we] started to do our own venture capital program. [...] Internal corporate venturing, internal innovations, according to the corporate venture capital model they were explored outside [the firm]. [...] Sonera's management was given venturing seminars in 98-00 by American professors.

Top management representative (B) reflected on firm innovation processes since the IPO of 1998 to 2000 as epitomizing a lack of control over expenditures in services businesses:

How were Sonera's innovation processes affected since the 1998 IPO? In the way that the services businesses, Zed and SmartTrust in the lead, received immensely more of financial resources. There was no control or measurement over the financial expenditures.

Technology specialist (D) viewed that the focus was not on the intended input process of firm innovation but only on a socially construed fabrication:

In 1998 - 2000 top management did not focus on innovation processes but on the story instead. Innovation is much more than a story. Speed rather than control was typical for innovation process management. [...] There was an abundance of ideas during the hype but no innovations. Finland was a great laboratory for telecommunications technology and Internet technology at the end of the 1990s.

Technology specialist (C) viewed that as shareholder value maximization geared innovation management, it implied a constraint to firm innovation:

Since 1998 effort was put on old innovations, trying to make them fly. Innovation activity changed to emphasize quick exploitation – it changed its direction into quick 'collection of

fares'. There was not sufficient time for the analysis of innovations. The innovation process had moved toward the increasing of market valuation – it was not the model that had generated innovations in the past.

After the Juncture of 2000

Top management representative (B) reflected on the unrealistic time scales required for innovations to emerge, and perceived the sudden stringent cash flow requirements as destructive for innovation processes in the firm:

How did the innovation processes change 2001 - 2002? The most explicit change here was the most violent round of qualifying trials. Criteria were found for the results but the problem in the 2001 excessive action was that innovation results were required at too fast a schedule. Innovations are, on the whole, long processes. Probably a lot of good and useful innovations were killed because they could not show a sufficiently fast return on investment nor were the requirements for an innovation process understood as a whole. First a backhanded favor was done by pouring too much money into the new business units, led by Zed and SmartTrust, and in the second stage the criteria were emphasized according to the firm's cash flow needs, not necessary resources for business development nor business needs.

Group level manager (A) discerned the impact of the downturn era on innovation as leading to a pattern of atrophy, as evidenced in the following account:

The year 2000 was a divide and everything after that was a pattern of atrophy. [...] When N.N. went under the trigger – there was a hard draught between the mobile business and N.N.'s group – when N.N. faced a rough time, the whole group had a rough time. You choose the best potential that fits the agenda. When there were problems on the agenda, no other start-ups could fit on it anymore. When other start-ups did not show on the agenda, nothing was heard of these other start-ups. It was thought that as nothing is heard of the start-ups, probably they will not lead to anything either – let's not give them funding either. A spiral of death. ...The service businesses withered away due to the bill from the UMTS adventure. Zed and SmartTrust killed all other services business start-ups around them. [...] NCS had a lot of promising start-ups which were receiving terminal care at the turn of 2000 - 2001. All of them weren't even terminated but they withered away. The atmosphere was totally spoiled. People fought over their jobs and were afraid when all the spin should be the opposite way for innovations to be generated. This type of atmosphere is the most destructive you can ever imagine for dynamic innovation processes. More destructive than the lack of money. The most dangerous atmosphere is the one where no challenging is allowed. What new innovations, multidisciplinary, applied solutions, can be born in such an environment where constructive challenging is not allowed?[...] Liquidation of starts is easy, write-offs are not needed. Development costs, personnel costs are easy to trim away. Tomorrow is thus also easily streamlined away, simultaneously.

Top management representative (A) stated that the downturn implied crude measures in scaling down resources required for innovation processes:

[...] Since the year 2000 when it was noticed where the world is headed due to the UMTS adventures, you had to cut down resources in innovation activity.

Top management representative (E) elaborated on the change in the innovation process after the burst of the technology bubble, and the discordant outcomes on a firm and individual level as the innovation process faced streamlining:

It changed in the way that concrete plans were done based on where the money lies, where the divergent customer needs lie. Then a few spearheads were built to address those needs, not power point presentations embracing the whole world, but real, functioning solutions that could be quickly turned into business. So a very tight focus was given to people on what we can achieve and why these people are important. We made the people trust and believe in themselves and I think it is the biggest core of change, that we made the people trust in themselves. Consultants were thrown out, [...] we threw all consultants out. [...] If people start believing that we really listen to them, this thing will work out. [...] We were able to make the team work more. We tried to realize what the team told us, not in the way that 'let's take again a third opinion and work according to this third opinion'. [...] One could say now that there was a tough reduction when the bubble of 2000 arrived – after the bubble burst, the innovations were taken down quite brutally, that is, maybe the kind that should not have been killed, were killed, in panic. This is a good example of not having a good strategy that is in line with customer strategy - that you end up in conflict.

Management - has to manage the firm and let people come to you with their ideas, and you do your manager's job, you choose out of those ideas. This was a big thing: as you have professional people who have the power to render matters [...] this set forth a huge groundswell of energy, [...] there was a lot of progress – people saw they actually have to implement the thoughts set in strategy – people were very motivated – they knew that management tried to help within the budget frame. It was a time of tight budgets but the work was still fun – it was challenging, but fun. [...] we got management a bit closer to people. [...] an important part of the work was that people heard the message directly from the firm's management.

Technology specialist (B) discerned the downturn era from a locational political angle and from a transnational angle:

The development of Finland's telecom cluster got tangled up in a political mess where Sonera's business development got blurred. [...] Europe's telecom cluster was in a consolidation scenario at the end of the 1990s where Sonera's horror scenario was the one that finally materialized, the merger with Telia. [...] After the crash in 2001 the readjustment of innovation processes was entangled in the settling of internal disputes around e.g. telecommunications prying, etc. Sonera was transformed into a depleted trotter. A pity for the former grand reputation of Finland as innovative forerunner in high-technology.

Technology specialist (C) commented on the focus of the firm as shifting to conform to balance sheet constraints after the burst of the bubble era:

[...] During 98 - 00 and 01 - 02 the firm's focus was not on innovation activity. In 02 stagnation appeared, efforts were made solely on patching up the balance sheet.

Group level manager (B) reflected on the downturn era's influence on firms' outcomes from a national and transnational level:

When the market collapsed and when you looked at who survived, they were the ones who leaned on the old economy and didn't take part in the strong consolidation game, they fell best on their feet.

Group level manager (B) continued by assessing the collapse of the market and its impact on innovation processes. He pointed out the detrimental effect of the consequent streamlining of businesses from the human relationship dimension:

The collapse of the markets. Innovation processes. Knowledgeable, innovative people had been recruited during the growth period and after the collapse the expansive [policy] transformed into profitability search. The organization had swollen so largely, the streamlining of functions began which [development] has continued to this day. I would not see it as related to business but the organization always has its human features. There were a lot of break-ups. People did not get along with each other. No substantial rupture can be dissolved by any organization without personal ties having to suffer. SmartTrust: N.N. left. N.N. committed suicide. The streamlining could not have helped but have an impact – human tolerance was exceeded.

Top management representative (E) underscored the termination of development issues after the merger:

The merger with Telia congealed everything. That is where Sonera's innovation career ended, I think. All development issues were terminated systematically, everyone was left just to wait, and that's how it's been ever since. I haven't seen the same kind of enthusiasm to develop issues there after that [...]

A board member perceived the change of the main owner as implying a negative impact on innovation in Finnish Sonera:

[After the merger was announced] this integration plan had been pulled through [...] as a very efficient implementation [...] And after that there was no strategy team anymore - and after that only cash flow was calculated in Sweden. A large amount of development operations were cut down in Finland. [...] The strategy changed due to the influence of the main owner.

A Finnish State representative viewed the change of ownership after the merger with Telia as pointing to the negative implications for firm innovation:

[...] the firm did not implement the strategy that had been mutually written both in the merger agreement and this shareholder agreement...and which was written in the prospectus for the market. [...] innovation know-how started to flow out [...]

A representative of personnel found the change of ownership after the merger as constraining innovativeness in the firm:

[...] innovativeness has not been taken care of in this firm, after the merger, in the best possible way.

Table 7 summarizes the stakeholders' views on intended input processes related to firm innovation in 1998 - 2000, 2000, and 2001 - 2002. The blank spaces on the table indicate that respondents had no opinion on the subject in question. In 1998 - 2000 technology specialists and middle management viewed that innovations 'to be' were largely selected by their transnational scalability potential. Technology specialists also saw that answers for R&D were mainly sought from the market, and not from telecommunications standardization authorities, and that speed rather than control was emphasized in innovation processes. Management viewed that a 'controlled chaos' prevailed in the firm in 1998 - 2000, reverberating as a lack of control over expenditures in the dominant potential services businesses. A board member and technology specialists pointed out the heavy reliance on consultants during this period in the firm. In 2000 as the firm's cash flow needs were emphasized due to the UMTS investment, management agreed that innovation was required to materialize at too fast a schedule. Simultaneously the firm began to decline funding of its start-ups, and prioritized the funding of SmartTrust and Zed. In 2001 - 2002, due to balance sheet constraints and the tight monitoring by international institutional investors, top management emphasized that the period was marked by the termination of start-ups. A tight focus was set on innovation activity geared at only a few spearheads which were expected to translate into business on a speeded time scale. Respondents widely agreed that after the merger with Telia innovation knowledge began to flow out of the firm, and ended Sonera's innovation career.

1998-2000	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
decreasing dependence on equipment suppliers				•				
taking measures to protect IPRs		•		•				
speeding the innovation process				•				
selecting innovations 'to be' by their transnational scalability potential		•	•					
capital markets defined external and internal venturing			•					
searching for answers for R&D from the market instead of ETSI		•						
reliance on consultants		•			•			
controlled chaos, lack of control over expenditures in services businesses			•	•				
speed rather than control emphasized in innovation processes		•						

2000: firm's cash flow needs emphasized due to UMTS investment	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
innovation required at too fast a schedule				•				
declining to fund start-ups, prioritizing funding of SmartTrust and Zed			•					

2001-2002	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
terminating start-ups				•				
tight focus of innovation activity geared at a few spearheads, to be translated into business on a speeded time scale				•				
consultants excluded from innovation processes, management closer to firm's operations				•				
weakened balance sheet stagnating firm innovation processes		•						
deterioration of human relationships inside the firm			•					
after the merger with Telia innovation know-how flows out of the firm, ending Sonera's innovation career		•		•	•	•		•

TABLE 7 Summary of Stakeholders' Views on Intended Input Processes Related to Firm Innovation

5.5 Enabling and Constraining Conditions of Firm Innovation

In this sub-section, the enabling and constraining conditions of firm innovation are reflected upon through stakeholders' perceptions of the distinctive requirements that innovation entails.

1998 - 2000

Technology specialists (C and D) presented their critical views on innovation management as a management tool:

Innovation cannot be managed in my view. Innovations need space in order to emerge. Innovativeness can be allowed, it can be encouraged but it cannot be forced. (C)

Can innovations be managed? There cannot be a command / control system that forces the firm to innovate. [...] I would say that innovations are not managed but enabled; you have to open up the firm's silos with skillful management. (D)

Top management representative (A) perceived the enabling and constraining conditions of firm innovation as deriving from a managerial competence view:

How should a firm act so that it could generate innovations from within? It was not by chance that something suddenly happened here, it was a result of long-term activity. [...] After the IPO, innovativeness was attempted to be boosted and new stuff was pursued. [...] Resource inputs grew in innovation activity, innovation processes were attempted to be institutionalized and managed according to western management philosophy. [...] Innovation activity withered away, progressively.

Top management representative (A) elaborated on the western financially and efficiency orientated management style and its impact on innovations, contrasting the equity market listed firm and non-equity market listed firms as platforms for innovation in the following account.

[...] The better you manage a firm, the more unlikely it is for radical new innovations to emerge. [...] The argument goes that the more professionally you manage a firm, if you talk about western management theory that is very financially orientated, efficiency orientated, profitability orientated, with a meticulous balance sheet, examining closely the amount of personnel, these are all phenomena that solely and especially together terminate all innovation activity. The argument goes also that the more efficiently you manage a firm, the more definite it is that there will never arise one single innovation. The emergence of innovations requires that there are people slacking off, there is money and gear and some corner of a garage where you can fiddle and tinker with something without anyone coming to ask, what the heck you're doing. The argument goes that the more loosely you manage a firm, the more definitely do innovations come about. When Sonera was trained to become equity market listed, the whole training progressively deteriorated the emergence of innovations because business was aimed to be managed all the more professionally. [...] Not a single innovation has emerged in TeliaSonera during the last four years. The emergence of innovations requires perseverance in the organization. The management of the firm cannot evoke innovations. [...] The only thing management can do is to arrange the circumstances in a way that maybe something happens [in innovation activity].

Investment banker (A) reflected on the enabling and constraining conditions framed by capital markets. In this account, the emergence of firm innovation was assessed from the incentive angle:

Capital markets cannot influence an actual innovation, the actual innovation emerges from the firm, capital markets can only create a better frame for the emergence of an innovation. If you look at, for instance, the Silicon Valley phenomenon, innovation happens but in a cluster where

university, venture capitalists and innovators collaborate. Venture capitalists provide, in addition to money, belief in the venture as well.[...] Solely a favorable capital market environment is not sufficient in enabling innovation, moreover, you need the academic environment, the university environment linked to the existence of long-term venture capital which does not emanate from the public capital market but from private equity. That is the first and foremost for innovations. Sonera had a lot of good features, state ownership as background, the 'can do' atmosphere emerged, and by the extensive participation of capital markets, people could be paid for good work through incentive programs. You break the hierarchies where rewards are not based on years of service but [are based on] input, and that way options, correctly used, may create the frame and the motivation to create something new.

But at some stage, when I look at the period 1998 - 2000, one went too far, where one [party] feeds the other all the time, no one is interested in developing anything persistently but the firm is only interested in getting from point A to point B as soon as possible, trying to speed up the time scale. [...] You could say that if you wish to make some kind of thesis [out of this], at some stage the need to become rich on a personal level can even kill the innovation because the only [issue] it leads to is that 'I' and 'my interest' becomes first priority, as opposed to prioritizing the kind of culture where you genuinely create something new, innovate genuinely.

Innovations require a certain operational environment to have the chance of materializing. I think it is dangerous if only the capital market gets to lead a firm's operations too extensively. Can capital markets [...] can it be a positive factor for an innovation environment? Absolutely. By granting incentives the right way, it is but one component in the emergence of innovations. But can capital markets produce innovations solely by inducing, no way, and when you go overboard, a most evil spiral is enforced [...]

1998 - 2000, 2001 - 2002

A representative of the Finnish State viewed State ownership as an enabling condition for firm innovation through its responsibility in searching for a good quality investor base:

The State did not in any way act as investor, as shareholder, in a way as to constrain [innovation] but if anything, encouraged it with its [the State's] operations. [...] Maybe you could say that if you search for a good quality, versatile owner base, then maybe it is part of the responsibility where the firm has space also for innovations all the time.

The State representative continued, reflecting on the State's behavior and expectations concerning firm innovation from a pragmatic owner's perspective. This implied allowing latitude for innovations to emerge:

[...] as the state, [...] as it appreciated the firm and acted in a pragmatic manner also in market operations, you see, brought also new, demanding investors there that communicated in different connections, for instance in investor meetings and such [...] so it created facilities and the space for the development of innovations and the exploitation of innovations. [...] Innovation is internal to the firm, it is given space and a return is expected from it, value creation is expected of it, business development, growth, etc. are expected of it, but you do not set out to master it [...]

2001 - 2002

Top management representative (E) elaborated on the constraints and enabling conditions of firm innovation set by the firm's stakeholders. In (E's) account, the transition in the dynamics of the partnering network presented a challenge to firm innovation in terms of the emerging time lag. In contrast, the State as constituency presented an enabling condition as the firm was perceived to manifest a part of the State's innovation system. (E) viewed the most salient enabling conditions of firm innovation to comprise individuals of an innovating firm, and their relationships to academia, the innovation network of the firm. In (E's) account, the firm's network is viewed as an imperative innovation platform:

This was something that constrained the emergence of innovations: we had to make the partnering network function, and these quarters did not really trust [...] that if you cooperate with Sonera, then the day after tomorrow Sonera is a competitor in the industry. So you had to hammer into them that - we are a services operator - in this and this area I need a partner, and it was a clear drag that we had to use a lot of time in communicating about what we are and what we are not.

How did State ownership impact innovations? I think it was only positive. [...] To us the State was a good owner, the State was a patient owner, and on the other hand it made it easier having the State as part of the university world – we had a close cooperation with universities. [...] we worked really hard to get the university world and the firm closer to each other. Innovations are generated in places where you study, I think. [...] we were in a way a part of the State's innovation mechanism and technology development platform.

The most important issue in innovation processes is the structure of the organization, the persons who work in the organization, their relationships to the research world, i.e. universities, the network. I talk a lot about the network, about what our network is - it is a favorable innovation platform when we have access to the newest knowledge, and preferably sooner than others, that is a salient issue – so you have to have access to knowledge before that knowledge is in public distribution –that's when development of innovations emerge.

Table 8 summarizes stakeholders' views on enabling and constraining conditions of firm innovation in 1998 - 2000 and 2001 - 2002. Concerning the period 1998 - 2000, an investment banker and a state official viewed state ownership as an enabling condition for firm innovation. State ownership was seen as problematic by top management as the governance principles of the state collided with the stringent governance requirements of a U.S. listed firm. The cluster of university, venture capitalists and firm innovators, coupled with a moderate incentive system were viewed as an enabling condition by an investment banker. Innovation management concomitant with the lack of temporal latitude was viewed as a constraint for firm innovation by technology specialists and firm management. In addition, investment bankers and top management viewed equity market listing as a constraint for firm innovation as the listing led to the speeding of the innovation time scale, and to the setting of personal, material ambitions

ahead of the quest for genuine innovation in priority. In 2001 - 2002 state ownership was viewed as an enabling condition for firm innovation by top management and a state official due to the financial support of the state, materialized in the rights issue of 2001. Top management also viewed the network of university and the firm as an enabling condition for firm innovation, whereas top management viewed the firm's previously established network of actors as a constraint for firm innovation.

1998-2000	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
cluster of university, venture capitalists and innovators an enabling condition	•							
moderate incentive system an enabling condition	•							
state ownership an enabling condition	•							•
innovation management a constraint: lack of temporal latitude		•		•				
western financially orientated management a constraint				•				
equity market listing a constraint when leading to speeding up the time scale and when personal, material ambitions overrun genuine innovation	•			•				

2001-2002	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
state ownership an enabling condition				•				•
network of universities and the firm an enabling condition				•				
previously established partnering network a constraint				•				

TABLE 8 Summary of Stakeholders' Views on Enabling and Constraining Conditions of Firm Innovation

5.6 Reflections on Firm Innovation Time Scales

In the following sub-section, stakeholders' accounts are presented on time scales required for telecommunications industry based innovations.

Technology specialist (B) reflected on the required time frame for innovations based on telecommunications technology:

In telecom technology, it takes about 5 years for an innovation to develop to a commercialized innovation on average [maturity cycle]. Pilot cases can emerge on a time scale of less than one year. As an example the location based services analyzed at Sonera in the beginning of the 2000s. The terminal devices [mobile phones] were not at the level where they could have produced customer friendly services to end users. So you cannot launch a service to mass markets unless the usability of the service is applicable to the end user. The 3G networks were not used for many years after the license purchases. The repayment period for 3G licenses was calculated through a variance of 2003 - 2008. The ability of innovations to create cash flow was at the extreme of the thinking during the hype era.

Technology specialist (C) elaborated on the time frames needed for innovations to develop which reverberated to Sonera's innovations:

Through the IPO a strong need for value increase developed. [...] There is only a theoretical chance to generate innovations in two years. According to research and practical experience it takes about 7 years from the birth of a new idea to its market scalability. Capital markets demanded too much in too little time. This was in strong conflict with market adaptation.[...] The innovation portfolio remained untested because the international endeavors, Zed and SmartTrust, did not succeed, nor did the management have the patience to wait.[...] Innovation processes demand time. In retrospect there should have been the patience and competence to produce business through generic growth. It takes 7 - 12 years before an idea produces profitable business, as I mentioned earlier. Risk management was bad. The illusion: Assets were targeted to entering markets, one moved beyond the competence curve where risks are great and competences lesser instead of having moderately developed issues that were perceived as small, and which are salient and substantial today.

Top management representative (D) reflected on the challenges of estimating the time scale required for establishing a new services business:

[...] the issue was about not having any content knowledge - there was no content knowledge [in-house]. It was just created there so here we face the following question: 'What is the realistic cycle to obtain such substance knowledge in areas we are aiming for so it can succeed, and that time is usually distressingly long. [...] here you had a business model innovation [Zed] and then you had a kind of a small innovation in value chain seizure which was related to technological know-how - and then the question follows, 'Well, who's going to commercialize this really thoroughly? To whom does it actually belong, who will seize it?

Investment banker (A) commented on innovation time scales:

[...] It has been established in innovation research that deployment takes longer than expected but once it happens, the pace accelerates.

Table 9 summarizes stakeholders' views on firm innovation time scales in the telecommunications industry.

	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
deployment longer than expected, 7-12 years from initial idea to producing returns as innovation	•	•						
distressingly long time scale required for firm innovation, e.g. by obtaining content knowledge				•				

TABLE 9 Stakeholders' Summarized Views on Firm Innovation Time Scales in the Telecommunications Industry

5.7 Equity Markets and Firm Innovation in Interaction

In the following sub-section, distinct aspects of the complex and dynamic relationship between equity markets and firm innovation are reflected through stakeholders' accounts.

5.7.1 The Relationship between Equity Markets and Firm Innovation in Sonera

Following Carpenter et al (2003) and Lazonick & Prencipe (2005) the equity market can influence innovative capability in a firm, through four distinct functions, as discussed in Chapter 2 of this study.

First, it (the equity market) can structure the relation between owners and managers in exercising strategic **control** over corporate allocation decisions. Second, it can provide the corporation with **cash** that can be used to restructure the corporate balance sheet, fund operations (including R&D), invest in plant and equipment, or acquire existing physical and intangible assets. Third, it can provide the corporation with its own **combination** currency that can be used instead of or in addition to cash in mergers and acquisitions. Fourth, it can provide the corporation with its own **compensation** currency that it can use, instead of or in addition to cash, to reward employees and other stakeholders. (Lazonick & Prencipe 2005: 522)

The following account casts light upon the way in which the equity market influenced strategic decision-making and the allocation of resources reflected on firm innovation in Sonera in 1998 – 2002.

Ownership and Control

Until the Initial Public Offering (IPO) of 1998, all Sonera's shares were owned by the Finnish State. In the IPO of 1998, 158.000.000 Sonera's shares priced at FIM 45 (EUR 7.57) per share were sold to institutional and Finnish retail investors. Simultaneously, 2.000.000 Sonera's shares were issued, priced at FIM 40.5 (EUR 6.81) per share in an employee offering. The shares were

listed on the Helsinki Exchanges. The listing of the firm on the equity market meant a wide distribution of share ownership.³³ In October 1999 the Finnish State held 57.9 % of Sonera's shares after having sold 143.950.000 shares priced at EUR 23.75 per share, and Sonera was listed on Nasdaq. In October 2000, investors participating in the October 1999 bonus offering received approximately one million shares from the Finnish State. In March 2000, the Finnish State sold 22 million shares priced at EUR 92 per share to institutional investors. By mid-2002 the Finnish State owned 52.8 % of Sonera's shares, and by December 2002, after the merger with Telia had been effected, the Finnish State ownership was reduced to 19.36% while the Swedish State held 46 % of TeliaSonera. (Sonera 2001; TeliaSonera 2002).

Managerial Control of Sonera in 1998 - 2002

In 1998, as Sonera entered the equity market and was listed on the Helsinki Stock Exchange, through to 2000, the firm was managed by the Board of Directors, and the President and Chief Executive Officer (CEO) under the oversight of the Supervisory Board. The Supervisory Board, a political administrative body, comprised 15-24 members, and had the principal task to supervise Sonera's management aimed at assuring that "Sonera's affairs be carried out with sound business principles, maintaining profitability, and in compliance with the Articles of Association, observing the resolutions of meetings of shareholders" (Sonera 1998: 62). The Supervisory Board was also entitled to advise the Board of Directors on Sonera's long-term strategic matters. The main task of the Board of Directors was to manage Sonera's operations in accordance with the law and the firm's Articles of Association. In 2001, Sonera's administrative bodies constituted the Board of Directors and the President and CEO while the old corporate governance model comprising the Supervisory Board was regarded as obsolete in a dynamically developing telecommunications firm exposed to a rapidly changing institutional environment, and hence discharged (Sonera 1998, 2000, 2001).

The President and CEO's responsibility included Sonera's operational management in addition to duties prescribed in the Companies Act. These duties comprised the preparation of matters dealt with the Board of Directors, the implementation of decisions made by the Board of Directors, and instructing the firm's administration on its organization. By the end of 2001, the Board of Directors and the President and CEO held a total of 5527 or 0.0005 % of the Sonera's share capital and voting rights. Top management was equipped with a fraction of firm shares and

³³ The shareholder distribution of Sonera (1998 – 2002) is presented in Appendices 3 – 7.

a stock option program that extended also to other employees in the firm, as illustrated in Compensation of the present section of this study (Sonera 2001; TeliaSonera 2002).

Cash

In 1998 – 2000 Sonera was not in the position to utilize the cash function of equity markets. However, in 2001 the equity market proved to be an important source of cash since the downgraded long-term ratings of Sonera made it difficult for the firm to issue long-term debt. In December 2001, a rights offering was completed resulting in EUR 982 million after expenses and taxes. The proceeds were used to reduce debt accumulated mostly due to the UMTS licence purchases (Sonera 2001).

Combination

The combination function of equity markets was only utilized in 2000 in Sonera's case. In April 2000 as Sonera acquired Across Wireless and subsequently iD2 in June 2000 as illustrated in Section 4.3 of this thesis, Sonera was able to exploit the technology industry 'hype' reflected on the firm's favorable share price although the 'all-time high' share price had been witnessed in March 2000. Sonera used its shares as a mode of payment for the two acquisitions. In April 2000 Sonera paid for the purchase of the entire share capital of Across Holding AB by issuing 16.732.055 of its own shares. Likewise, in June 2000 Sonera paid for the entire share capital of iD2 Holding AB by issuing 4.802.431 new shares. The shares of both acquired firms were transferred to the Sonera SmartTrust subgroup.

Compensation

Aiming at increasing employee motivation and performance in line with an ambitious growth strategy, Sonera introduced a stock option program covering the entire personnel in summer 1999. All employees were offered 1000 stock options, and certain key personnel and members of the management were allocated amounts greater than this. In spring 2000 an additional stock option program was introduced to the entire personnel. In November 2000 Sonera's subsidiaries Sonera Zed, Sonera SmartTrust and the Internet service provider Sonera Plaza decided to establish their own stock option schemes (Sonera 1999, 2000). After Sonera's merger with Telia

in late 2002, TeliaSonera applied its employee stock option program of 2001 where all employees were rendered 1000 options. In exchange for their Sonera warrants, the deputy CEO and two Finnish corporate officers were granted TeliaSonera warrants due to the merger (TeliaSonera 2002, 2003).

5.7.2 The Meeting of Equity Market Investors and Firm Management

(i) Selection Process of Sonera's Investors in the Equity Markets

1998 - 2000

Investment banker (A) commented on the investor types of Sonera:

Those who invested in Sonera were sophisticated, large institutional investors.

[...] Those who invested in Sonera were long-term investors.

A representative of the State of Finland acknowledged the State's responsibility in providing a high quality, diversified investor base for Sonera:

Yes, they were long-term investors. We had explicit criteria together with the investment banks on [...] who were so called first class investors, who were second class, third class, according to which criteria the allocation [of shares] happened. [...] The amount of international investors was relatively large [...] we acknowledged that the price would be determined by international markets but it was perceived as important to have domestic investors in the investor base as well. [...] And the amount allocated to retail investment was large in comparison to retail investment allocations historically in Finland. [...] it was a conscious decision [to allocate] around a billion FIM in the first issue, and about 1.8 billion FIM in the second issue to retail investors.

Top management representative (C) described the investor selection process as one where the owner decided to whom the shares were sold as the demand of shares exceeded supply:

[...] as bids came in, the State played a fundamental part when it decided together with the arrangers [investment banks] - to whom it will sell [the shares] since demand exceeded supply of shares. The owner, i.e. the State decided ultimately to whom the shares were sold.

In a similar vein, top management representative (D) elaborated on the selection process of investors:

In practice we decided who would own the shares, during the roadshows. [...] We [the management and the State] had exactly the same opinion – we want like-minded investors who like this story who are [...] high quality institutions with good questions, and who proved to

have intellectual curiosity about the industry [...] blue chip investors with an appetite for a differentiated story. [...] as long as you have a secondary sale, the sellers decide which investors you want there. After that the market begins to shuffle the pack - and you don't know who the investors are - but first you do. [...] since Sonera's share was in great demand, we could choose the investors. [...] we aimed at having a very high quality investor base, and since we had the best possible bankers - they could advise us.

Top management representative (B) described the investor selection criteria, and accounted for the outcome of the investor selection process as a consensus between the arranger of the offering, the investment bank, the firm management, and the firm's main owner, the State of Finland:

It came down to a discussion process between the lead arranger [investment bank], the firm and the main owner. The lead arranger presented and argued for its criteria on investor choice. In most cases the firm and the owner agreed on the selection criteria. The aim was to have so called quality investors who were typically longer term investors with strong research [resources], in Sonera's investor base. Quality investors were emphasized while the fast traders were practically cut back on almost completely. This is always a subjective question since the relationship between investment banks and investors has a great impact on which investor the investment bank regards as quality investor. [...] The criteria comprised strong internal research knowledge, investor's sector-specific knowledge, mainly long-term investors although there was a marginal amount of investors with a different profile. Investors who met less well the criteria, had their investment allocation cut down. Generally one could say that the Finnish public [retail investors] were favored but only due to political reasons. [...] Finnish institutions were treated somewhat better than foreign institutions which derived of the desire to build an institution base also in Finland that starts following the firm, and acts as a good owner in the future.

Top management representative (D) described the differentiation of investors as representing a clear dichotomy:

The most substantial distinction was drawn between institutions that read the prospectus and the government. Those were the two [investor types of Sonera].

Top management representative (B) elaborated on the way in which Sonera analyzed its investor base later, after the IPO, in an effort to construct its investor strategy:

[...] we aimed at understanding the composition of Sonera's investor base so that we could focus correctly on investor relations and the required resources for it. Through the nominee registration you cannot detect the details of foreign ownership. Through the reporting requirements of institutional investors, the portfolio managers who most likely held Sonera's shares, we strove to track down the ownership amount so we could discern the whole ownership structure[...] both geographically and by investor type. Sonera monitored largely the tripartition of growth investors, growth-at-a-reasonable-price investors, and value investors: to what extent did investors emphasizing aggressive growth appear in the owner base since their actions on the market are much faster than those of value investors. Geographic division was also of significance. When you compare the actions of an American and a European institution, the differences are great. This way we strove to understand, to what kind of geographical area or

investor type the firm should pay attention to. [...] Quality investor criteria comprise of investors not trading a share back and forth on a daily basis. Other criteria for quality investors: investment horizon relatively long, sector specific knowledge, ability to see through short-term disorders, and the criteria comprise also resources, the possibilities to grow along with the firm.

2001 - 2002

Top management representative (E) accounted for investor selection criteria through the conformity of investors' expectations and goals with the firm's respective expectations and goals:

Then it is also good to look at investors' goals and to see that the investors' operations models fit as well as possible to the firm, and that the expectations and goals are as parallel as possible between the investors and the firm so that the firm can develop in the desired way.

The shareholder distribution of Sonera from 1998 to 2002 is presented in Appendices 3 -7.

(ii) Ways of Interaction between Firm Management and Equity Market Investors

1998 - 2000

Top management representative (A) reflected on the frequency of meetings between investors and firm management, and on the rhetorics concerning growth during the technology bubble era:

Investor activity during Sonera's craziest period was at its largest, i.e. one-to-one-meetings. The meetings between investment analysts and firm management are of course commonplace. The tone with which issues were discussed in those days was perhaps a bit absurd. The growth expectations were absurd.

Top management representative (B) accounted for the ways of interaction between the equity market and firm management, and viewed the interaction as emanating mainly from the equity markets:

There was no single procedure by which the interaction took place. [...] the equity market was very interested in telecommunications and in Sonera's services business, and the equity markets representatives visited Sonera frequently. The main interaction happened through equity markets and firm management cooperation and discussions. There was no single way of interaction. The initiator was almost always the equity market. The equity market wished to gain a better understanding of what Sonera was developing in its fine new services businesses. The firm strove to serve its shareholders but held tightly to the principle linked to normal market requirements regarding equality of information and information release requirements.

The meetings with equity markets representatives were more like background discussions where you talked mostly about the development of the operating environment. Direct information of the firm could not be disclosed since it could have been detrimental to the development of services businesses as the development of these services businesses had not been quantified in Sonera. This information would have been price sensitive, and so it could not be provided. In one-to-one-meetings we could disclose conceptual information on the way in which the value chain of the business is developed, like the kind of services ideas that are feasible through the mobile portal, its impact, and the different sectors to which those ideas can be developed. In reality, the actions of the firm and the reporting of the business came out in form of interim reports. The interaction was such that investors were satisfied with conceptual discussions.

Top management representative (D) elaborated on a salient question management juggled with in its communication to the equity markets:

Capital markets are the playing field of various types of investors, and the management of a firm acts as agent of this playing field. To what extent does the top management elaborate on firm innovation to the equity markets, so as not to induce either positive or negative overheated reactions manifested through the firm's market value development? [...] I use the symbol beta to depict the risk associated with share value development. It seems that the so called blended beta comprising the firm's internal ventures [in the innovation pipeline] cannot be greater than the market's perception, expectation, and tolerance of the ventures in question is. A central task of top management is managing the blended beta.

2001 - 2002

Top management representative (E) provided a description of the ways of interaction between management and investors. (E) underscored the significance of firm management's frequent communication to investors as a powerful measure to enhance investors' trust in the firm:

One-to-one meetings were but routines between the management and investors of the firm. The interaction between the firm and investors happened for example in the way that we made webcastings, we produced our own program on the web [...] We had customer meetings, we went to introduce ourselves to private investors in Tampere and in different parts of Finland. So we had programs for industrial investors and for retail investors, and then we had one-to-one targeted roadshows. So after each quarter we had a one-to-one roadshow but also a common large presentation, and in addition to that we went to shareholder events in Finland where we went to elaborate on the firm's strategy. We had a wide communication program as long I was employed by the firm. I have always believed that if the management of the firm communicates efficiently, it is one of the most efficient ways to make profit. People know what the firm is doing, the strategy is easily communicated, and it can be unfolded to everybody. If the strategy is good, you don't have to be ashamed of it and hide it. You do not have to unfold everything, but people have to know the main issues since they have to be able to believe and trust in something. If the investors do not trust the firm's management, you do not have a chance of success.

(E) continued by describing the impact of the new streamlined strategy on the increase of investor appetite in Sonera's share, and equity market investors' interest in increased communication with the firm:

The most important feedback before the merger was that when we had told about our intentions in Sonera, the investors measured what we had executed, the speed of execution and its impact on [firm] profit. As investors saw that this was the way it worked, there was no fear that firm management would suddenly focus on something else than what had been promised in the process. We had large funds, pension and mutual funds from the United States, [...] portfolio managers who managed the funds, told us explicitly of their style and of their expectations about us. They posed very detailed questions on issues, [disclosed] their expectations, and their reactions, should the issues we had promised not materialize. [...] Especially Italian investors were very overt, they told us, 'you are brilliant, where can we buy more of this paper?' US investors were also very explicit, British investors were very rigorous on details. We were treated very well by investors, everyone wanted to meet us, and were eager to meet us more often than through normal investor rounds. They visited us in Finland, and the communication was very active and continuous.

5.7.3 Incentive Systems as a Manifestation of the Interaction between Equity Markets and Firm Innovation

1998 - 2000

Discerning the interaction between equity markets and firm innovation through the aspect of incentive systems, technology specialist (C) viewed the incentive system as a mechanism creating inequality in the firm:

Incentive systems: The incentive system was set to underpin the driver of capital markets value creation whereas it was not set to create a genuine market [...] The incentive system created inequality in the firm. Innovations had emerged on a low organizational level. The option models were based on greed. Nokia served as an example [also in the incentive issue].

Group level manager (B) viewed incentives as gearing action toward personal benefit:

A venture capital model was conceived, buy and build, that we start from here, finance the growth, the firm starts to live. You cannot ignore the fact that simultaneously management's ownership of the firm became customary. Everyone had the incentive to make personal millions like so many others had done.[...] Stock options had a large impact when value increases with the pace it did in Sonera, I would not even set any value laden aspects on this issue. The significance of options dried out because when they could be redeemed, the market had already fallen underneath them. As to the IPO, those who got large pots of shares, profited from them. [...] The option model was built during the growth period because internal corporate venturers had the opportunity to make tens of millions personally. Sonera's pay policy, as state owned firm, was moderate. According to the internal corporate venturing idea the one who could develop an innovation was to receive a prize for his efforts. Did other innovators get anything good [out of this]? Options were distributed according to organizational position.

Top management representatives (A and D) perceived firm compensation measures (Carpenter et al 2003) as deriving from the need to recruit talent:

[...] I see the options and why the businesses [Zed and SmartTrust] were structured as their own firms, I would see the primary driver as the only way to recruit talent, a common manner at that time. That is also the reason for having set the centers of activity in London for Zed and SmartTrust. You have to go almost to the individual level when you think, which was more important, to do good business or to get filthy rich personally and disappear? Surely there are examples for both categories. (A)

The role of the options was to get and retain the best people. Innovation, efficiency, customer satisfaction and many other objectives of a company were all important. The reason innovation has been looked at so widely is because it was a new tool in the toolbox and overvalued by the market during a period. (D)

Top management representative (B) reflected on the discordant influence of incentives as compensation (Carpenter et al 2003):

By compensation, strong mobility was accomplished for key personnel. The compensation requests of software developers soared into the sky during the hype. Sonera tried to address this challenge with its reward and incentive system which was very hard to implement in the firm since personnel experienced it as increasing inequality. On the other hand, those who were the target of abundant giving felt that the incentives were nothing compared to what could be offered to them in a pure Internet firm like e.g. Yahoo!.

Top management representative (B) elaborated the discordant influence of incentives on organizational integration (Carpenter et al 2003):

A caste system emerged since 1998. There was the future business, new services businesses and the traditional business. Sonera's personnel that had done good business on the network side felt that the new services businesses were about intelligent business, distinguished from the basic traditional business. A really hard situation. There were no internal rules of the game in recruiting, in my view. Good people from the mobile business were snatched quite ruthlessly to new focus businesses. When there existed a better compensation policy in the services businesses, naturally people moved over there willingly. [...] Of course it was important that the good in-house resources were utilized where they could best produce added value but such a black and white setting impeded the overall exploitation of resources.

Top management representative (B) pointed out the significance of share options in gearing managerial action toward innovation, and to the constraints on innovation set by equity markets:

Yes, the options did gear the focus and the aim to make resources work better in services businesses where key persons were invested. Both resources and compensation through incentives were met by a problem that we have referred to in this conversation before – that clear goals were not set for innovation activity, and then you don't focus the activity sufficiently: you try to accomplish too many issues at once. 'Time to market' was a chant at the time, meaning that the one who enters the market first, reaps the benefits which has often been proved wrong from a historical perspective. Often the innovator is not the one to reap the benefits but the one who can apply innovations in a flexible, smart manner, and with the right

resources. Only the second or third [actor] entering the market makes the best profit on innovations. The pressure / expectations set by equity markets geared Sonera's thinking to entering the market first: 'winner takes it all' thinking. A black-and-white truth.

Investment banker (B) reflected on the interaction between incentives and firm innovation, and the incentives' negative impact on organizational integration (Carpenter et al 2003) as follows:

Individual motives pulled [people] in different directions instead of pulling them toward the same direction [...]

A personnel representative elaborated on the incentive systems implemented at the end of the 1990s and their discordant implications for organizational integration (Carpenter et al 2003):

[...] from the perspective of the personnel the biggest change was that incentive systems were discussed with the employer. [...] we had an option system created, overarching the whole personnel. [...] And even if the management option system was created, regardless of that, the personnel did not find that as an injustice done so much since an option system had been built to cover the entire personnel. And also, as it was possible to purchase shares according to a so called personnel price, then this was experienced more equal than if the options had only been [given] to the management. [...] The greatest disputes were in the management group, and then there were of course very big disputes between management and the board – due to incentive systems and the direction to which the business was led...and anyway it was reflected on the personnel in a way that 'the pen dropped from the personnel's hand' as you did not know the direction to which you were going.

5.7.4 Who Drove Whom? Perceptions of Equity Markets and Firm Innovation as Drivers of Actors' Expectations and Behavior

1998 - 2000

A corporate venture manager discerned the interaction between equity markets and firm innovation from a temporal perspective, making a distinction between the time before and after the IPO. This manager perceived that the firm's ambitions towards internationalization and growth mainly drove firm innovation before the IPO, while the equity markets driven value creation motive drove firm innovation after the time of the IPO:

Capital markets did not drive innovation activity in the early stages, but it did later – [later] equity markets were a substantial driver of decision-making. Only growth expectations were of significance [...] Business to business, business to consumer sectors' growth expectations were great. It was thought that Sonera's services business would scale up on international markets due to the explosive growth of the Internet that would generate business. This, however, happened slower than was thought. Both operators and terminal manufacturers wanted to believe in this phenomenon. It was an illusion – it was thought that the mobile market enabled by GSM technology would grow at least in a linear fashion if not exponentially through next generation technologies.

What was the difference before and after the IPO? The difference was that before the actual IPO the innovation process was largely guided by internationalization and growth targets. Also, the strongly growing capital market had an impact. After Sonera's IPO - It had an impact in the way that innovation and service development and technology innovation were evaluated on the basis of 'What could be spun out of this next?' Yes, it did have an impact in the way that it was given a lot more importance. All undertakings that were done and launched were built from the perspective of the indicators that capital markets followed, so if we do this service and launch it like this, and to so and so many markets, and have n potential users, so then the value increase component the capital markets valued was thought of instead of thinking how much this and that service generates money. Yes, it [equity markets] did accelerate services development and technology innovation although they had always been there, since they had been built in the genes of Finnish Tele which was an outcome of the domestic mobile market.

Group level manager (B) reflected on the relationship between equity markets and firm innovation processes from a shareholder value driven perspective, and the transnational industry consolidation pattern:

Looking at the phrasing of your question, how equity markets and innovation processes were linked, if you ask, whether or not shareholder value was planned as a component, how the creation of some services business influences that, I would almost say it does through opportunity value. [...] even more it meant in Sonera's case that you aim to get away from the Finnish 'we do it all' operator to an operator in international narrow sector mobile media, maybe not because the business would be profitable as such but if you start marketing with such an equity story it means that you can then merge with some large operator, and thus the valuation for a mobile media house is much higher than if we had a fixed network all around the Finnish peninsula or so and so many decaying telephone poles around Lapland.

Group level manager (B) elaborated further on the twofold direction of equity markets and firm innovation:

[...] Both in interaction: equity markets and firm innovation. [There was] opportunity value and you also talked about scarcity value. You wanted to make a unique operating model so that the share value commensurate with the consolidation game would have been maximized. Thus it was perceived that content services and added value services are the [determinants] through which the share value can be increased, but if innovation was the driver, one could say that although hopes were high, one saw that one should produce services that really work and are actually useful.

Top management representative (C) discerned an implicit link between investor influence and the development of firm innovation activity:

It is naturally clear that an investor buys future opportunities. Then the investor is interested in future opportunities from a growth perspective, not so much in the amount of investment in product development but rather in what results and how much of these results can be expected. It became quite clear to all of us that the secret of Sonera's success on the equity market is dependent on the way these new service concepts, etc. start up. [...] The interesting part of Sonera was the data and mobile telephone side with their future prospects, and all the questions embraced these issues [...]

Top management representative (A) reflected on management's intentions to build prevailing businesses through the interaction between management and equity markets:

I would like to argue that the intention was to build a good firm. To build good, prevailing businesses, not to build a product to be quickly cashed. One could throw as a counter-argument, 'What were the options and the special listings and incorporations needed for?' [...] The primary interest of management was to be a part of building something unparalleled.

Investment banker (A) pointed out the power of reciprocal action in the social construction of reality (Berger & Luckmann 1967; Aldrich & Fiol 1994), as displayed in the interplay between capital markets and firm innovation:

[...] I believe that in Sonera's case as well it was about psychology. Did the capital market lead to innovations or innovations to capital market reactions? Vicious circle – one thing leads to the other, one actor makes the other to believe in the same issue – everyone believed in the radical change of technology in 99 – 00 but its development into innovations generating return took much longer than was thought. It is only now that 3G starts to be reality. The capital market saw the radical change correctly, often trends are seen correctly but when it comes to innovations, it is often so that their speed [of emergence] is misjudged. [...] And then when the consumer market is mature enough to accept the innovation, it emerges faster than was thought.

A representative of Sonera's finance department discerned the interaction between equity markets and the firm innovation as reflecting on uncontrolled marketing expenditures:

Sonera's share price influenced the marketing of innovations. The high share price enabled enormous marketing budgets. No one controlled the marketing budgets of service businesses in Sonera during the hype.

2001 - 2002

Top management representative (E) reflected on the significance of the rhetorical social construction of reality (Berger & Luckmann 1967; Aldrich & Fiol 1994) as partly producing a platform for firm innovation through the rise of investor confidence in the firm:

There was a direct link to the equity markets in the way that you have to have a credible story for investment [to occur]. And the credible story was our growth strategy that we communicated and which could be established, and this increased the desirability of the firm to the capital markets, and we got the capability to invest in these issues [of the story].

Top management representative (E) elaborated on the rigorous cost-cutting strategy approach, and its implications for the development of Sonera's share price:

In 2001 investors breathed down our necks for the first two to three months – that year was universally a tough year in the capital markets due to the recession – investors wanted to see concrete measures of cost-cutting but as we were able to show concrete measures – that the cost-cutting program was executed in advance of the program – the breathing down our necks ceased. [...] The investors got the impression that this management executes already in advance what it talks about [...] We received a very good credibility and trust from the investment community – we were referred to as the management that lives up to its promises. The investors' style toward Sonera changed. In the beginning nothing happened from the investors' side but in three to four months, as results could be seen, in the beginning of 2002, Sonera was a very much desired share. Sonera's share turnover was great at the time.

Table 10 summarizes stakeholders' views on aspects of the relationship between equity markets and firm innovation between 1998 - 2000 and between 2001 - 2002. The blank spaces on the table indicate no opinion expressed by respondents on the issues in question. Concerning the period 1998 - 2000, investment bankers, technology specialists, and management agreed that incentives fostered inequality among personnel in the firm. Management also agreed that the incentives geared managerial action toward the pursuit of personal benefit. Middle management and investment bankers viewed that the reciprocal action of the equity markets and firm innovation in the social construction of reality generated a vicious cycle. Technology specialists and top management agreed that incentives were used mainly for recruiting talent, and to enhance shareholder value. Middle management and a state official viewed that the growth expectation set, and the value increase, required by the equity market were the focus of management, not the generating of future revenues for the firm. The years 2001 - 2002 were also

marked by the reciprocal action of the firm and equity markets in the social construction of reality in top management's accounts. In this period a credible story of streamlined innovation strategy renewed the international institutional investment community's appetite.

This section illuminated how a web of social processes produced firm outcomes. These outcomes, manifested by dominant firm innovations, were produced either through intended or unintended actions, in an interplay between stakeholders.

Next, I draw together the findings of the research in Chapter 6.

1998-2000	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
growth expectation and value increase required by equity market in focus of consideration instead of future revenues			•					•
reciprocal action of equity markets and firm innovation in the social construction of reality turned into vicious cycle	•		•					
incentives used for recruiting talent and for shareholder value maximization		•		•				
incentives fostered inequality in the firm	•	•	•	•				
incentives geared managerial action toward the pursuit of personal benefit			•	•				

2001-2002	Investment Banker	Technology Specialist	Middle Management	Top Management	Board Member	Personnel Representative	Consultant Firm	State Official
credible story of streamlined strategy and its implementation renewed investment appetite, reciprocal action in social construction of reality				•				

TABLE 10 Summary of Stakeholders' Views on the Relation between Equity Markets and Firm Innovation

6 THE INTERACTION BETWEEN EQUITY MARKETS AND FIRM INNOVATION

In this chapter of the thesis, I draw together the findings that have emerged from the confrontation of the empirically grounded, longitudinal and comparative analysis of the interaction between globally embedded equity markets and firm innovation. The principal theoretical issue addressed in this study is reflected in the main research question:

“How and why do equity markets and firm innovation interact?”

The sub-questions addressed were:

(i) “How is ownership interrelated with firm innovation?”

(ii) “How do a firm’s stakeholders account for and influence firm innovation?”

To paraphrase Lazonick & Prencipe (2005), by analyzing Sonera’s evolving historical process from a state-owned firm to a gradually privatized actor, it is possible to consider how and why this specific firm and its history mattered in terms of the relationship between equity markets and firm innovation. Following Lazonick (2003), innovation is a change process, contingent on the specific institutional, organizational, and industrial conditions in which it is embedded.

Depicted below is the conceptual framework of the thesis. As discussed in Chapters 1, 2 and 3 of the dissertation, the conceptual framework is the outcome of iterative cycles between the empirical material and prior literature.

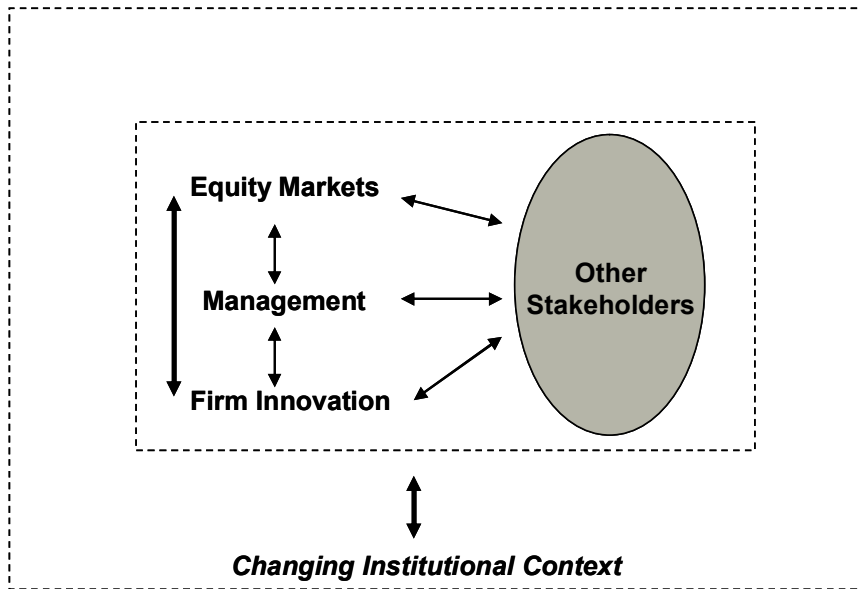


FIGURE 10 Conceptual Framework

To address the intertwined research questions, I first examine the relationship between the equity market and firm innovation through the specific roles the equity market played in Sonera in the identified distinct phases. I link the findings of this specific case study to empirical studies on the relation between equity markets and firm innovation from an ‘organizational control’ perspective (Carpenter et al 2003; Lazonick 2003; Lazonick & Prencipe 2005). Second, I discuss the findings of the study drawing on research addressing investor influence on firm innovation (Jensen 1991, 1993; Kochar & David 1996; David et al 2001). Third, I draw together the dynamics of the relation between Sonera and its transforming institutional context in a sequential account, building on neo-institutional theory that explains the links between intra-organizational social dynamics and contextual dynamics in a framework of institutional change (Greenwood & Hinings 1996; Beckert 1999; Battilana 2006).

Emerging Key Findings

The key findings that emerged from the confrontation of empirical material in a longitudinal and comparative analysis of the interaction between equity markets and firm innovation in this study are:

- (i) *Firm innovation is contingent on ownership structure as follows. Ownership can be an enabling condition for firm innovation when a firm is 100% owned by the state. Ownership can be a constraining condition for firm innovation when a publicly listed firm is exposed to the governing law infrastructure of a U.S. marketplace, as it is simultaneously embedded in the institutional order of a state. Ownership can further manifest itself as a constraint for firm innovation when the firm is exposed to the diverging institutional logics of two states.*
- (ii) *Stakeholders influence firm innovation outcomes through a complex social process in a publicly listed and state-owned firm. It is difficult to distinguish individual stakeholders' influence. Yet, some stakeholders seem to have a direct influence on firm innovation, such as management through their agency role. Other stakeholders have a more indirect influence on firm innovation through their social position, manifested in their political power.*
- (iii) *Firm innovation and equity markets are interrelated as follows. Firm innovation emerges as an artifact of institutional change, as it is derived from the expectations set on firm innovation by the public market.*

In the following, I elaborate the findings.

Finding (i): Governance in a State-Owned, Publicly Listed Firm

Research has established that the equity market influences innovative capability in a firm through four distinct functions, the four 'c's', control, cash, combination, and compensation (Carpenter et al 2003; Lazonick & Prencipe 2005). Complementing the framework mentioned above, the empirical material of this study points to the way in which firm innovation is contingent on ownership structure as follows.

In 1998 – 2000, and continuing into 2001, in the light of primary evidence it appears that cognitive dissonance among the firm's stakeholders derived from the governance structure of a state-owned firm under privatization. Simultaneously the firm was not only under the scrutiny of public markets but also under the divergent governance issues imposed by major ownership of the State of Finland. It appears the discrepancies in governance issues were ascribed to their political dimension. The major shareholder's opinion was voiced through the Ministry of Transport and Communication. Moreover, primary data presented in Section 4.4.3 of this thesis indicates that the firm's supervisory board comprised members elected on a political basis, not on the basis of knowledge of the industry domain. The firm's board members had political ties but not necessarily knowledge of the industry domain nor of equity markets' constraints imposed on a publicly quoted firm. The dissension in corporate governance of a gradually privatized firm, manifested through disputes between the board and top management, was voiced in the accounts of consultancy, board members, and top management representatives. The accounts echoed the inherent and incommensurable conflict between divergent sets of values and cognitive frames guiding action in politics and in the corporate world.

After the listing on Nasdaq in October 1999, Sonera was subject to the stringent rules and regulations protecting shareholder interests, governed by the Securities and Exchange Commission, the SEC, in the United States. In retrospect, the listing on Nasdaq imposed a greater discipline on the company in terms of transparency and urgency in increasing market value than a listing on e.g. AIM in London, U.K. would have caused, according to a top management representative's account presented in Section 4.4.3. In other words, it seems that the governance of capital markets under the ruling of SEC in the United States accentuated further the managerial challenges of a gradually privatized state-owned firm.

After 2001 the Finnish State was perceived as a pragmatic, silent owner by not intervening in

strategic control of the firm in top management's and board member accounts presented in Section 4.4.3. After the merger with Telia, empirical accounts from top management, the board, and the State of Finland also presented in Section 5.4 of this study point out the discrepancies in the ownership policies of the two major owners, the States of Sweden and Finland. Major deviations in the States' role and actions in strategic control of the firm were seen to emanate from ideational differences in implementation of the merger agreement and the shareholders' agreement. In these accounts, the change of ownership pointed to negative implications for firm innovation.

Cash

Sonera's IPO of November 1998 played out in a favorable market sentiment when telecommunications industry forecasts faced an upward trend as illustrated in Section 4.3 of this thesis. According to a top management representative's account presented in Section 5.2 of this thesis, the State had indicated that Sonera should not raise the primary funding through the issuance of new shares after the IPO. It seems this policy emanated from the State's preference for reserving the liquidity of the market for its secondary offerings. According to an account of a representative of the State, presented in Section 4.4.3 of this study, the State's support reflected the role of a professional institutional investor and responsible owner.

Combination

The acquisitions illustrated in Sections 5.3 and 5.7.1 were thought to complement the product and competence base of SmartTrust, and to boost firm innovation (Sonera 2000). After the downturn in market sentiment, reflected strongly on Sonera's share price, as illustrated in Section 4.3 of this thesis, the combination function of equity markets no longer served as an appropriate tool in firm strategy.

Compensation

The empirical evidence presented in Sections 5.7.3, 4.4.2 and 4.4.3 of this thesis suggests the following. Equity market exigencies geared managerial action toward the increasing of market value, manifested furthermore through incentive schemes designed for key persons in top and middle management as well as software specialists. These incentive schemes played a significant role in attracting mobile human resources to the firm in the upswing period of 1998 - 2000. Organizational behavior thus reflected the shared cognitive frame of the institutional

context of the time (Scott 1995; Cooper et al 2001; Thrift 2001; Zuckerman & Rao 2004; Greenwood & Suddaby 2006).

Drawing on primary data in Section 5.7.3, 4.4.2 and 4.4.3 of this research, the role of incentive schemes caused a controversial alignment of incentives on an individual and organizational level in 1998 - 2000. The incentive schemes were manifested in Sonera's share allocations among top management, and a stock option program targeted at different organizational levels. In the technology specialist and top management representative accounts, the incentives were used for recruiting talent in a competitive environment, and to pursue shareholder value maximization. According to accounts from an investment bank, technology specialists, middle and top management, personal interests of management in some cases may have started gearing actions toward the increasing of market value, not necessarily firm innovation. In top management and investment bank's accounts, it seems that greed may have started dominating the social scene in Sonera, replacing genuine innovation. Hence, it appears the incentive schemes unintentionally led to undermining firm innovation. After the downturn, the incentive schemes lost their attractiveness as a recruitment tool due to the Sonera's unfavorable share price which continued in 2002.

Strategic Control as a Social Condition of an Innovative Firm

As a 'social condition' of an innovative firm, strategic control is an imperative that derives from the inherent uncertainty of the innovation process. Strategic control implies insider control by vesting control over the allocation of resources and returns with individuals who have the ability and willingness to invest in organizational integration. Strategic control as insider control is distinct from the exercise of control by public shareholders over resource allocation. This is consistent with Lazonick (2003:34) who contends that:

But public shareholders, the major institutional investors included, generally have neither the ability nor the incentive to participate in the process of strategic control that allocates corporate resources to innovative investments.

Empirical evidence presented in Sections 4.4.2 and 4.4.3 of this study suggests that in the upswing era, 1998 – 2000, when Sonera’s valuation soared, the firm attracted great interest in the political sphere on a national level in Finland. Drawing on primary data from representatives of top management and the State, it seems that the major institutional investor of the firm, the State of Finland, had an incentive to participate in the process of strategic control of the firm. This incentive derived from the burgeoning political pressure, at a national level, to amend Sonera’s incentive scheme. The political pressure was further augmented by normative expectations of socially acceptable incentive mechanisms in a state-owned firm, transmitted to the public by the constitutive role of the media. After the abrupt decline in market conditions, the primary evidence, generated from representatives of the board and top management, suggests that the State of Finland did not interfere with the firm’s strategic control after the politically turbulence on Sonera in 2001.

Finding (ii): Stakeholders’ Influence on Firm Innovation through a Complex Social Process

Sonera’s institutional context changed rapidly in the 1990s, as illustrated earlier in Chapters 1, 4, and 5 of the thesis, hence giving impetus for the firm to move onwards through a process of change.³⁴ Figure 11 depicts the change forces around Sonera’s institutional environment. In other words, it summarizes how firm innovation is embedded in its transnational context, in addition to its national and organizational contexts.

³⁴ The firm’s transformation began as Sonera became an unincorporated state-owned firm in January 1990. Incorporation took place in January 1994, followed by the gradual privatization process which commenced through the IPO in November 1998 (Appendix 1).

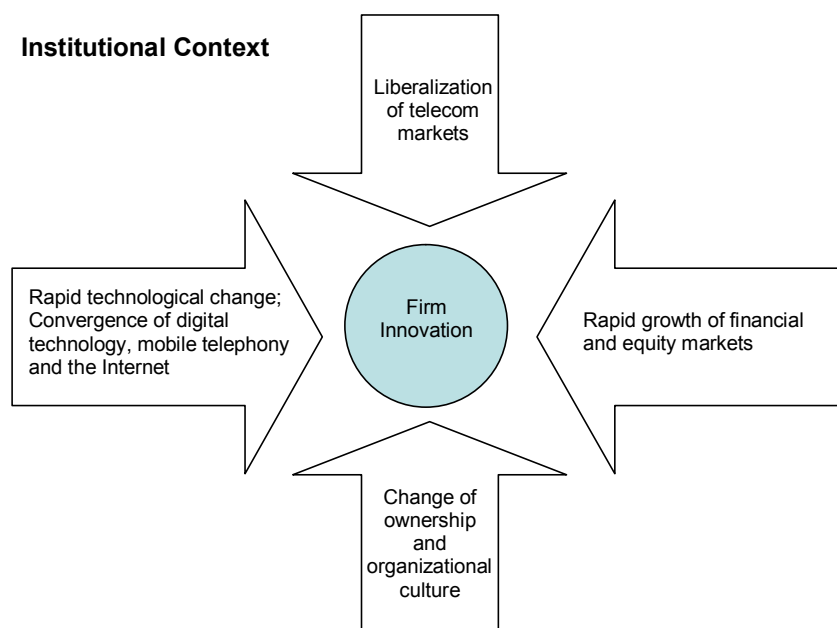


FIGURE 11 The Institutional Context of Firm Innovation

The late 1990s marked an interesting position, a juncture for Sonera. The firm underwent a process of change through the following processes. Sonera started to build its own product and technology development unit in an attempt to decrease dependence on telecommunications vendors due to the notion that the customer interface ‘belongs’ to the operator. Previously, the product and service development had remained in the hands of vendors in the telecommunications industry. Sonera’s management foresaw that future product and services development would be directed through the customer interface, rather than only engineering skills and know-how, as in the firm’s earlier dominant view, which was built on its strong engineering culture.

During the mid-1990s Sonera’s management realized that fruits of in-house product development had involved spillovers to other counterparties such as vendors. The spillovers were owed to the fact that the vendors had established IPRs, Intellectual Property Rights, linked to products and / or services. In line with Sonera’s new strategy, a management system connected with technology management was implemented. According to the reasoning underlying the new management system, IPRs would not be disputed. The insight was that software and services knowledge should be at the disposal of business development in Sonera. The first step into this direction was to document and productize the services already existing in the firm, and to protect the IPRs, as

well as to look into patenting possibilities, through which to generate revenue. In other words, extracting value from the firm's intellectual assets was the central issue to be explored in Sonera's strategy from the mid-1990s, an issue that had been neglected during the previous state bureaucracy period of the firm.

Considering the small asset size of the firm Sonera had to contend with the larger, in an international context, European industry counterparts. Therefore, in the race to ensure survival, management's idea was to move to adjacent spaces by exploiting accumulated know-how, and by placing it in the right context. The insight was to 'do things differently' (Brown 1997) compared to purposive action in the firm's prior institutional context. This was achieved through the identification of the firm's core competences and their refinement, either in-house or by recruiting talent beyond the boundaries of the firm.

At the end of the 1990s a knowledge-based strategy was under scrutiny, based on the idea of expanding the firm's footprint through its core competences. The route to growth was analyzed sequentially, through a strategic life cycle model introduced to the firm by a consultancy firm, as illustrated in Section 5.2 of this thesis. Primary evidence shows that the strategic life cycle model, through which differentiation was sought, was derived from investors' interests.

As Sonera started with organizational capabilities that were optimized through a 'previous cycle', a cultural problem followed. Management viewed that the culture of the firm had to undergo a transformation. This implied attracting hungry, entrepreneur-type talent with either an engineering or business school background to carry on the new value creation strategy in the firm. Following the conceptualization proposed by Lawrence & Lorsch (1967) of 'high structural differentiation', the distinctive groups of specialists originating from institutional sectors other than the prevailing engineering sector, adhered to diverging institutional norms and were thus likely to produce conflicts of interest among the human resources of the firm. Changing the culture of a state-owned firm toward a market driven direction turned out to be a cumbersome task from the perspective of the management. The time frame for organizational change was less than five years before the IPO, followed by the firm's exposure to the exigencies of global equity markets. The challenge for management lay in evaluating a 'realistic' time scale to obtain and build core competences of the firm with the mission to extend business into new areas, and with the ambition to move rapidly from a national actor to a transnational level.

In the quest to transform Sonera from its previous bureaucratic state entity culture, where abundant temporal space and financial resources had been granted for fostering innovative ideas, to a proactive market maker framed by equity market driven constraints, a new innovation management system was implemented. Innovation management was a new tool in the firm's toolbox. The evaluation of core competences was linked to the innovation management process. Innovation processes changed substantially from 1998 as innovation management had not existed earlier in the firm's management system. The aim was to systematically increase the emergence of new products or services, to set the scene for their commercialization and global scaling. The process involved internal and external venturing, the development and evaluation of ideas up to commercialization through the establishment of a separate corporate unit which acted as a funnel for innovations in potential services businesses. In line with the development, human resource input into research and development, geared at the generation of innovations, grew substantially in the late 1990s. Sonera's research and development costs (R&D) accounted for 3.2% of total revenues in 1998. The respective figure in 1999 stood at 3.4%, and at 3.4% in 2000 (Sonera 1998, 1999, 2000).

To summarize, strategic renewal by Sonera was accounted for by stakeholders as follows. In 1998 – 2000 a consensus prevailed among stakeholders from top management, middle management to technology specialists and consultancy regarding two main issues. The first was the aim to increase Sonera's market value by transforming in the value chain from bulk carrier to market maker through differentiation. Second, the aim to increase market value was sought by a combination of the firm's technological innovations generated over time, as illustrated in Section 5.1 of this thesis, and an innovative business model of the late 1990s, as depicted in stakeholders' accounts in Section 5.2. According to top management this pursuit implied moving into 'adjacent spaces' by exploiting accumulated knowledge of the firm. In 2000 the aim to increase market value was also pursued by growth through acquisitions by exploiting Sonera's market value during the technology hype as illustrated in the 'combination' function of the equity market in this section. In 2001 – 2002 Sonera's strategic renewal was sought by underscoring the importance of a credible story delivered by management to investors, comprising a tightening of firm's focus to a few spearheads in innovation activity, as illustrated in Section 5.2 of the thesis.

In summary, stakeholders accounted for the intended input processes related to firm innovation as follows. In 1998 – 2000 top management underscored the need for innovation management to derive from changes in Sonera's institutional environment. The release of telecommunications industry regulation in the 1990s implied increased competition for players in the industry.

Representatives from the board and technology pointed out that Sonera relied heavily on consultants at this stage of the firm's development. According to middle management, capital markets defined internal and external venturing of Sonera, and representatives of both middle management and technology viewed that potential innovations to be invested in were selected on their transnational scalability potential. Top and middle management representatives reflected on a 'controlled chaos' depicting innovation management, and a lack of control over expenditure marking the firm's services businesses at the time. A representative of technology emphasized that Sonera's innovation process was pursued by searching for answers for R & D from the market, rather than regulatory authorities (ETSI) in the telecommunications industry. As innovation processes were attempted to be institutionalized by innovation management, primary evidence from technology specialists, middle and top management suggests that innovation activity faded away progressively after the IPO in the firm. Some technology specialists viewed that it was the firm's market value was managed, not firm innovation.

In light of primary empirical evidence presented in Sections 5.3 and 5.4 of this thesis, it appears that the decisions to take part in the UMTS license auctions were driven by pattern recognition. The earlier great commercial success in the second generation mobile telecommunications business boosted expectations for a similar pattern to result in the third generation phase. However, the third generation mobile phone technology was not found to be in place in consumer markets for close to 5 years. Since the State of Finland neglected to dilute further its ownership in Sonera at the time of the UMTS purchases, as the combination function of the equity markets (Carpenter et al 2003; Lazonick 2003) could not be utilized, the firm was forced to be leveraged to an extent, EUR 6.5 bn exceeding the capacity of its balance sheet (Sonera 2001). In terms of financial commitment (*ibid.*) this chain of events undermined Sonera's access to financial means of developing innovation processes to the point where they could generate returns.

The overinvestment in UMTS licenses led to radical cost-cutting, and to the loss of professionals and radically decreasing budgets, as illustrated in Sections 5.4 and 4.3 of the research, affecting innovative capability across the firm. As the primary evidence shows, when the link between cash flow and firm performance ceased to exist, Sonera's market value continued to fall, concomitant with the general technology market development. Following that, the allocation of cost-cutting measures caused cognitive dissonance in the firm. This engendered arcane internal power plays with a deleterious effect on innovation activity in the firm. Cutting across primary data, it appears that the merger with Telia set Sonera's innovation career in 2002. In 2001, Sonera's R & D costs still stood at 3.7% of total revenues. In 2002, after the merger with Telia, the firm's R & D costs declined to 2% of net sales³⁵ (TeliaSonera 2002).

After the juncture of 2000, top management viewed that innovation was required at too fast a schedule. The period marked the decline in funding start-ups, and the prioritizing of the funding of Smart Trust and Zed. In 2001 – 2002 Sonera's weakened balance sheet stagnated input processes in firm innovation. In top management's accounts, the innovation management process was marked by the termination of start-ups and a tight focus of innovation activity targeted at a few spearheads. This period comprised the exclusion of consultancy from innovation processes, and management's close proximity to the firm's operations. Middle management noted a deterioration of human relations inside the firm during the period.

In light of empirical evidence presented in Section 5.6, it appears that the conception of the time scale required for firm innovation outcomes may differ not only among the distinctive investor types, but it may also vary between other stakeholders of the firm, such as technology specialists, business development managers, and top management. Primary evidence points to rising anxiety and frustration among innovators of Sonera as the need for precipitating the innovation time scale was emphasized by management under the constraints of maximization of shareholder value. Primary evidence from technology specialists, supported by an investment banker's account, indicates that the time scale spans from 7 to 12 years from an initial idea to commercialized innovation in the telecommunications industry.

³⁵ as calculated from Telia stand-alone net sales. If calculated from TeliaSonera Group net sales, the R & D would stand at 1.4% of net sales (TeliaSonera 2002).

Drawing on empirical evidence presented in Section 5.5 and 4.4 of this thesis, in 1998 – 2000 the enabling and constraining conditions of firm innovation were accounted for by stakeholders is summarized as follows. State ownership was viewed as an enabling condition in the accounts of representatives from the State and investment banking as state ownership was seen to support the search for a high quality investor base. Top management representatives, on the other hand, viewed state ownership as a constraint due to the dissension in corporate governance of a state-owned firm under privatization. The variances of governance in a state-owned firm and governance imposed by capital markets under the ruling of SEC in the United States constituted an inherent conflict between ideational values of politics and the corporate world. In top management's and technology specialists' accounts the lack of temporal latitude deriving from western, financially orientated management, presented a constraint on firm innovation. In a top management's and investment banker's account equity market listing appeared to have precipitated the time scale for innovations to emerge, and in some cases resulted in the overrunning of genuine innovation by shareholder value maximization based ambitions. The accounts of representatives from top management and the Finnish State support a view that in 2001 – 2002 state ownership seems to have constituted an enabling condition of firm innovation through the State's financial support in a time of crisis. In top management's accounts Sonera represented a part of the State's innovation system before the merger with Telia, and hence provided a favorable innovation platform through cooperation between the firm and academia on an individual level. After the downturn, the previously established network with the corporate world seems to have imposed a constraint on renewed strategy, reflected in firm innovation.

Strategic Agency in a Complex Social Process

In prior literature bringing together the notion of strategic agency (an entrepreneur) and the conception of institutions as enacted scripts³⁶, the following theoretical concept has been established. When attempting to unfold the relationship between strategic agency and institutions in processes of institutional transformation and institutionalization, it is necessary to focus on the interdependency in this relationship where the notion of uncertainty is at the center of this conceptualization (Beckert 1999). Beckert (1999: 782) has proposed that a prerequisite for

³⁶ as outlined in Section 2.2 of this thesis

strategic agency lies in the existence of institutionalized structures that may reduce the situation's inherent contingency. Beckert suggests that, (ibid: 782): "*Institutionalization can be understood as the process of social interaction through which actors realize that their expectations in the behavior of others will not be disappointed.*" In other words, the purposeful and planned application of means can be chosen if actors may build their expectations of their action with regard to relevant third parties' decision-making.

Drawing on Beckert's (1999) notion of the success of an actor's strategies depend on the behavior of third parties, empirical evidence in the current research points to the challenging and controversial role of management in strategic decision-making in 1998 – 2001 when facing a social environment with its contingent political dimension. In the light of primary evidence presented in Sections 4.4.2 and 4.4.3, the political sphere and public opinion, reflected and constituted through the media, seem to have played a distinct role in guiding the discourses and actions of a state-owned firm's stakeholders. This is manifested in the firm's incentive policy as a dimension of the intended input process in 1998 - 2001.

Finding (iii): Equity Markets and Firm Innovation Interrelated

Meeting of Equity Market Investors and Firm Management

Since the IPO of 1998, followed by two additional equity issues, Sonera's main owner, the State of Finland, carefully chose the investors for the firm, together with Sonera's top management, and in line with the leading investment banks' recommendations, as described in Section 5.7.2. Excess demand of Sonera's shares empowered the State of Finland and the firm's top management to choose the investor base. Investors looking for short-term gains, such as aggressive hedge funds, were left out of the investor circle, whereas sophisticated, so-called quality investors with long-term holding preferences were given access to Sonera's shares. Quality investors in this context, according to top management and investment banks, implied the investors' thorough knowledge of the firm's industry through robust industry research capabilities, and a positive outlook toward future financial engagement with the firm.

Sonera monitored closely the distribution of investors with aggressive growth targets, investors with 'growth at a reasonable price' targets, and value investors engaged in the firm through their

holding for the long term. Long term is, however, an ambiguous concept that varies in definition. Investors with aggressive growth targets were of particular interest since their actions in the market are substantially faster and carry thus greater consequences for a firm than the actions of value investors with holdings for longer maturities.

Primary evidence presented in Section 4.4.1 points to a fairly superficial degree of firm-specific expertise (cf. Tylecote & Conesa 1999); i.e. the degree to which investors understood their investment in Sonera. Investors mainly concentrated on the issue of technological discontinuity introduced by the development of the Internet, mobile phones, and digital technology, and shared a collective belief which held that actors such as Sonera possessed the technological and market knowledge needed to succeed in future telecommunications services business.

In the light of empirical evidence presented in Section 4.4.1, it appears that the era 1998 - 2000 fostered a breed of fund managers with aggressive risk-taking appetite relying on increasing profits in technology investments. This category of fund managers was willing to take on risk based on future expected returns. During the technology boom era, market fundamentals operated in an anomalous way. Fund managers acted on the basis of the dominant market sentiment, the aberrant optimism in ever-ascending share prices in technology firms, and were therefore ready to increase growth estimates of technology firms in parallel with the rise of the respective companies' share prices. Fund managers, riding on wondrously growing profitability figures of the funds that they managed, dominated the performance of investment funds, and precipitated the force of the virtuous cycle. This is illustrated in Chapter 4 of the thesis.

The nebulous concept of the 'New Economy' had possessed the minds of a web of actors from investment bank analysts to traders and to auditors, from research entities to consultants to technology companies' management, boards, and their owners (cf. Cooper et al 2001; Thrift 2001; Zuckerman & Rao 2004; Zilber 2007). The actors were interwoven in the speculative 'hype', reinforcing one another's actions. A central notion marking this era of 'hype' was the disappearance of the traditional link between cash flow and firm performance. As illustrated in Section 4.4.1 of the thesis, no one publicly questioned the disappearance of this link in the heat of the hype, even if some warning signals entered individual minds, for the confidence was high that there would be continued market value growth in telecommunications firms with the innovative reputation which Sonera reasonably represented.

While the Nasdaq index and Dow Jones average tripled over an eight year period to 1.720 and 8.000 respectively during the last half of 1998, the future was seen as holding only increasing promises for technology companies. A financial journalist reflected the collective ‘hype’ sentiment in his investigation of the technology market bubble as follows, *“To doubt technology’s promise, to insist on evidence one could see, was to insult the new religion; it was to be trapped in old-world precepts. Had Columbus seen America before he sailed?”* (Lowenstein 2004:104).

Differentiation of Investors

As discussed in Chapter 2 of this thesis, research addressing investor influence on firm innovation has established that differences between institutional investors have an impact on the type and degree of novelty of firm innovation (Jarrell et al 1985; Jensen 1988; Jensen 1991, 1993; Allen 1993b; Tylecote 1999; Tylecote & Conesa 1999). Three mutually exclusive viewpoints have been presented by research in this area. Some researchers believe institutional investors are mainly after short-term gains from their equity investments leading to a short-term horizon of firms (Loescher 1984; Drucker 1986; Mitroff 1987; Graves 1988; Hill et al 1988; Schleifer & Vishny 1990; Hansen & Hill 1991; Kochar & David 1996; Bushee 1998, among others). Other research suggests that institutions are sound investors aiming for long-term gains from their investments. This implies that institutions have the ability to search for and invest in inherently innovative firms (Jarrell et al 1985; Jensen 1988; Allen 1993a, 1993b). According to the third view investors with substantial holdings of a firm’s shares give incentive to influence firm strategy with regard to either increasing or decreasing innovation (Jensen 1991, 1993; Kochar & David 1996; David et al 2001).

In distinguishing between investor types, the primary evidence indicates there were only two distinct types of institutional investors involved in Sonera. The first type comprised institutional investors who expected that the promises given in the prospectus would be delivered along the explicit lines of that prospectus. The prospectuses were produced by the investment banks arranging the offers and sales of securities, in close co-operation with Sonera and its owner, the State of Finland. The second salient investor type was the Finnish State, majority owner of

Sonera's shares until 2002. The role of the State of Finland as main investor is an interesting and controversial one. Primary evidence points to the role of the State of Finland as an active and even superior investor.

The placing of the State of Finland as a category of active and superior investor (Jensen 1991, 1993; Kochar & David 1996; David et al 2001) reverberated through the following actions. The State acknowledged the strategy of the company in the technology boom era. The incentive schemes of Sonera, especially concerning the remuneration of top management, became a burning issue in the eye of the public, and projected an increasingly heated debate among politicians and the media during the upswing period 1998 - 2000. Due to political pressure in Finland, Sonera was forced to decline its option schemes in spring 2001. Institutional organization theorists have underscored the relevance of institutionalized expectations deriving from the environments of organizations (DiMaggio & Powell 1983; Scott 1994; Tainio et al 2003). Following Beckert (1999) an important non-institutional structural force, power, is a major stabilizing aspect in institutional change processes. Stakeholders in the organization's environment can exercise their power resulting in the organization's compliance with institutionalized practices (Mintzberg 1983; Beckert 1999). The role of political power was manifested in Sonera's response to adjust its incentive systems in line with public opinion.

According to primary and secondary data sources, after the turning point, in March 2000, institutional investors acted again in a similar manner. Sonera's foreign ownership, excluding Swedish investors, decreased from 33.9 % in 2000 to 30.2 % in 2001. Foreign ownership decreased further to 10.8 % in 2002, although the sharpest downturn in global equity markets had already been overcome by 2002 (Figure 12). In the light of primary evidence, it appears that investor activism has continued to grow in Europe and the United States after the burst of the Worldcom and Enron corporate governance crises.

Sonera's shareholders outside Finland (1998-2001), TeliaSonera's shareholders outside Sweden and Finland (2002-2003)	
December 31, 1998:	11.1 %
December 31, 1999:	29.5 %
December 31, 2000:	33.9 %
December 31, 2001:	30.2 %
December 31, 2002:	10.8 %
December 31, 2003:	5.9 %

FIGURE 12 Sonera's Shareholders Outside Finland 1998-2001; TeliaSonera's Shareholders Outside Sweden and Finland 2002-2003

(adopted from Sonera 1998 - 2001; TeliaSonera 2002, 2003)

To summarize, the empirical evidence implies that the institutional investors of Sonera, including the major owner, the State of Finland, acted according to a uniform pattern set in motion by the cognitive and normative aspects, the collective meaning systems (Cooper et al 2001; Zuckerman & Rao 2004; Zilber 2006, among others) guiding investor behavior in the technology boom era from 1998 through to the first quarter of 2000. Moreover, institutional investors of the firm, excluding the State of Finland, also acted in conformity with the collective meaning systems of the era in the dramatic downturn period of the technology market, which had repercussions on Sonera's share price performance, as depicted earlier in this thesis. As the empirical evidence indicates, the State of Finland exhibited financial commitment to Sonera by acknowledging the international rights offering in 2001 to strengthen the firm's financial position.

Institutional Change Manifested by Sonera's Dominant Innovation Outcomes, SmartTrust and Zed

The dominant outcomes of firm innovation in Sonera were SmartTrust and Zed as illustrated in Chapter 5 of this thesis. According to the primary evidence, agency was brought in, in tune with the proactive market maker positioning of the firm. The innovation management process was driven by the search for product and services development answers from the market, not from standardization bodies such as the European Telecommunications Standards Institute, ETSI. The active search for product and services development from the market implied attempts to

constitute institutional change by institutional entrepreneurship on an organizational level (Garud et al 2002; Greenwood et al 2002; Battilana 2006), cf. a ‘trickle-up’ trajectory of institutional change (Djelic & Quack 2003). Following DiMaggio’s (1988) definition of institutional entrepreneurship, agents must have both the willingness and the ability to act as institutional entrepreneurs. Ability in this context refers to sufficient resources to be held for institutional entrepreneurship to emerge (Lawrence 1999; Battilana 2006). Beckert (1999: 786) describes the entrepreneur as:

the analytically distinguished social type who has the capability to take a reflective position towards institutionalized practices and can envision alternative modes of getting things done.

SmartTrust’s innovations, as illustrated in Chapter 5, were defined by a technology specialist and a top management representative as radical in technology, and by another top management representative as architectural (Henderson & Clark 1990). As primary the evidence emerging from middle management and technology shows, a driving force behind SmartTrust’s innovations was the bold action of its innovator who aimed at the proactive development of new standards in the European telecommunications industry, in contrast to expecting change in the prevailing standards to occur over time.

Zed’s innovation, according to respondents in technology and top management of Sonera, was in its business model, the idea of bringing the Internet portal to the mobile phone. Zed’s mobile Internet portal was defined by a top management member as an incremental business model of innovation, while another top management representative viewed Zed as a radical commercial innovation, in line with a technology specialist’s definition.

In a technology specialist’s view, management’s understanding of monetary worth, generated from patenting and the vertical link provided by the SIM card and combined with Sonera’s ownership of network technology, would be the differentiation mechanism among operators on a transnational scale. In the technology specialist’s account this defining feature of Sonera, in contrast to its competitors, partly explained the ascendance of Smart Trust and Zed from start-up firm to dominant business services in Sonera. Primary data cutting across different firm constituencies suggests that two salient issues led to the rise of both SmartTrust and Zed from start-ups to becoming dominant service businesses of Sonera.

The first issue points to the strong and determined individual personalities of the managers of SmartTrust and Zed. This implied capabilities to organize major financial and human resources

by convincing top management of the positive future development scenarios, the transnational scalability potential of both businesses. The second issue, supported by technology specialists' and top and middle management's accounts, indicated that Sonera's market value was boosted by the incorporation of both Zed and SmartTrust. Had the dominant services businesses not been incorporated, their estimated values would not have been reflected in the development of Sonera's share price. In middle management's view Smart Trust and Zed represented an internal corporate venturing model preferred by equity markets, and that both undertakings aimed to become venture capital models. From technology specialist's and an investment banker's perspectives, an exciting story was well delivered to equity markets which responded with enthusiasm. In an investment banker's view, Zed was likely 'born' during an interaction with investors, manifested by Sonera's road-show prior to listing on the equity markets. This evidence points to the role of the rhetorical social construction of reality (Berger & Luckmann 1967; Aldrich & Fiol 1994) in pursuing a dominant business of the firm.

Moreover, evidence generated through primary data indicates that as equity markets valued growth and scalability potential of the businesses, the dominant services businesses were allocated substantial financial resources compared to other services businesses of the firm. The primary data indicates that this development caused a wide divergence of opinion within the firm, and a dichotomy between the growing dominant services businesses exhibiting novelty, as opposed to the mainstream businesses in the mobile and fixed network divisions which exhibited mundane characteristics during the technology boom period 1998 - 2000.

Greenwood & Hinings (1996) have coined the degree of commitment of distinct groups in an organization to the existing institutional scheme as 'the pattern of value commitments'. In other words, these authors show that because a part or all of a given organization's interests are in conflict with the existing institutional scheme, organizational change becomes easier to conduct as opposed to the situation where all parts of the organization are committed to the existing institutional scheme (Battilana 2006). Primary evidence indicates that divergent organizational change was conducted by focusing on resource accumulation targeted at the two dominant services businesses, SmartTrust and Zed, despite conflicting voices heard in the organization from mainstream businesses and start-ups in the services business. In the light of empirical evidence, the driver for organizational change was primarily management's imperative for increasing shareholder value to satisfy the firm's shareholders' needs.

Individual's Social Position Related to Institutional Entrepreneurship

As reviewed in Chapter 2 of this thesis, in the prior literature the emergence of institutional change has been accounted for endogenously through the notion of institutional entrepreneurship. To overcome the paradox of embedded agency, neo-institutional theorists have outlined enabling conditions (Strang & Sine 2002) for institutional entrepreneurship to emerge. These enabling conditions have been categorized as institutional, market, and organizational properties (Battilana 2006). Most of the neo-institutional studies addressing this issue have largely focused on organizational, and organizational field, levels of analysis. Battilana (2006: 655) suggests that the social position of individuals is a likely enabling condition for institutional entrepreneurship to emerge:

[...] insofar as it relates individuals to the structural context in which they are embedded. Other individual-level conditions, such as psychological factors, may affect institutional entrepreneurship but analysing their role without accounting for the fact that individuals are embedded in a social position corresponds to the trap of methodological individualism and, thereby, is in contradiction with the premises of neo-institutional theory. As the impact of other individual factors on the occurrence of institutional entrepreneurship is mediated by individuals' social position, it is necessary to analyse the impact of individuals' social position first and foremost.

Battilana (2006) developed propositions about the impact of individual's social position on the analysis levels of organizational field and organizational position, and propositions on the changes in individuals' position and the probability of acting as an institutional entrepreneur. In assessing the influence of status differences³⁷ of organizations on the probability for members of an organization to conduct divergent organizational change, in other words, to act as institutional entrepreneurs, the author has made an analytical distinction between organizations of lower and higher status. She (ibid: 663) has developed the following proposition:

"Individuals who are in lower status organizations within a given organizational field are more likely to conduct divergent organizational change than individuals who are in higher status organizations."

Drawing upon the empirical evidence presented in Section 5.1, it appears that Sonera, as an incumbent national market leader - a 'higher status organization' (Battilana 2006) in the Finnish business system-, fostered innovativeness widely at an individual and firm level, particularly prior to the IPO. The empirical evidence points to organizational change conducted by

³⁷ Following Nicholson (1995) in Battilana (2006:662), the term 'status' points to "a ranking of a social entity in terms of the values of a social system."

SmartTrust and Zed through the interplay of individual managers, firm management and the equity markets from a 'higher status organization' platform. Divergent organizational change was manifested by the focusing of innovativeness, and of financial and human resources to innovations and the potential businesses SmartTrust and Zed, at the turn of the millennium which continued until the subsequent downturn.

Next, in Chapter 7, I present the conclusions of this study.

7 CONCLUSION

In the concluding chapter of this thesis, I first draw together the theoretical insights that have emerged from the confrontation of the empirically inspired, longitudinal and comparative analysis of the interaction between globally embedded equity markets and firm innovation in the context of radical industry transformation. Second, I present managerial and policy implications induced by this research. Third, I discuss the limitations of the study, and lastly I outline an agenda that considers avenues for further research.

7.1 Theoretical Contributions

The overall objective of this research was to advance understanding of the interrelationships of equity markets and firm innovation in their institutional context. Acknowledging the complex and multifaceted nature of the research phenomenon, multiple theoretical lenses were used to guide sense-making in the empirical investigation. In the research process, I conducted a constant dialog between the empirical material and prior conceptual frameworks relevant to the study as I moved from empirical observations through patterning to generate theoretical conclusions. This is discussed in Section 3.4 of the thesis. Theoretical bricolage (Denzin & Lincoln 2003) enables a deeper understanding of the multidimensional empirical phenomenon compared to using a single conceptualization as guidance in the study. A central contribution of this study is its novel approach of adding notions of the neo-institutional approach to the analysis of the interaction between equity markets and firm innovation. The research questions were employed in explicating the distinct theories. Moreover, through the processual approach, I specified how firm innovation changed over time through a sequence of events. The sequence of events represented an underlying pattern of cognitive transitions by a firm dealing with firm innovation (Van de Ven 1992). Focusing on the linkages between equity markets and firm innovation I have brought both organizational and individual dimensions to the forefront of analysis. As the qualitative, longitudinal and comparative single case study reveals, there can be a multitude of disparate influences giving rise to patterns of events that produce innovation outcomes. The conceptual arguments emerging from the research are the following.

First, the research seeks to contribute to the development of a theory of innovative enterprise by analyzing the role of changing firm ownership, and its relation to firm innovation. In the process, the study considers the influence of changes in state ownership of a firm and the influence of equity markets governance on the enabling or constraining of firm innovation. The study complements the conceptualization proposed by Carpenter et al (2003) and Lazonick & Prencipe (2005) by discussing how and why strategic control may influence firm innovation outcomes. The study shows that the (in)compatibility of divergent owners' cognitive frames influences firm innovation outcomes. Drawing on the findings of the present research on the relation between firm innovation and ownership structure, ownership can be an enabling condition for firm innovation when the firm is solely embedded in the institutional order of the state. In contrast, the study indicates that ownership can be a constraining condition for firm innovation when the firm is simultaneously exposed to two distinct institutional orders. These diverging institutional orders can manifest themselves as the exigencies of a U.S. listed firm's marketplace, and the institutional order of the state, and alternatively, as the distinct institutional logics of two states underlying the governance policies of a firm. I therefore argue that the configuration of firm ownership and the identity of institutional investors as a dimension of ownership influence a firm's set of strategic decisions by either enabling or constraining firm innovation.

Second, the findings of the research underscore the role and interpretations of innovations by distinct stakeholders of a firm. The research suggests that the interplay between equity markets and firm innovation is determined by stakeholders' market expectations and reciprocal action in the social construction of reality. The study extends the conceptualization described by Tainio (2003a) and Tainio et al (2003) of the multifaceted relationship between investors, managers and corporate restructuring by illuminating the distinct and potentially conflicting views of a firm's stakeholders which reverberate on managerial latitude of action and subsequently firm innovation. I argue that a firm's stakeholders' diverging views on innovation derive from differing cognitive and normative perspectives on time horizons and incentive mechanisms required for the emergence of firm innovation. Moreover, I contend that the stakeholders' diverging views on innovation are owed to differences in the social position of stakeholders inside the firm which implies to the salient role of power as a determinant of firm innovation outcomes.

Third, the research implies that firm innovation cannot be accounted for by any single actor's actions, but that innovation is an outcome of a multidimensional social process. The study shows that stakeholders influence innovation inputs through resource allocations, reverberated on outcomes. The firm makes resource allocations based on innovations' opportunity value judged by the management. The opportunity value of innovation is derived from the communicated expectations of all stakeholders of the firm. The way in which distinct stakeholders react to firm innovation is in turn derived from the stakeholders' communication and actions. If the communicated expectations diverge from the actual actions, management runs a (higher) risk of making miscalculations. The less interdependency manifests itself between the communication and actions of a firm's stakeholders, the more misguided the innovation resource allocations of a firm will be. Moreover, the study shows that firm innovation and equity markets are interrelated as follows. Firm innovation develops as an artifact of institutional change, as it is driven by the convergence of the structural and ideational dimensions of the institution of the equity markets. This convergence is manifested in the expectations set on firm innovation by the public market. In the light of the present research I therefore suggest that a distinction should not be drawn between theorizing on external and internal forces influencing firm innovation outcomes because institutional change, and the social processes of firm innovation may be interrelated, reflecting and constituting one another.

7.2 Managerial and Policy Implications

The study on the interaction between equity markets and firm innovation also raises pragmatic concerns. The study's findings may provide inspiration, and act as a platform from which contemporary management practices may be questioned. Hence, the study may aid practitioners and policy makers in taking new approaches and identifying new threats when facing complex and multifaceted empirical events that arise from the interplay between firm strategy and the investor sphere. However, given the contingent and context specific research phenomenon, the pragmatic implications may not be easily transported into another context. Therefore, the conclusions of this study should be advanced in a tentative tone. The empirical observations of the present research generate the following managerial and policy implications.

When considering the enabling and constraining conditions of firm innovation, a key issue that this research raises is that firm innovation is contingent on the firm's underlying ownership structure. Not only firm management, but also the board may benefit from acknowledging the

distinct properties of governance in a state-owned firm, and juxtapose this with the institutional logic of governance imposed by the governing law infrastructure of an equity market. The study indicates that managerial challenges may derive from distinct stakeholders' divergent sets of values and cognitive frames guiding action. The study shows how intended managerial processes aimed at fostering innovation in a state-owned firm under privatization, guided by the institutional logic of the equity market, generate unintended consequences, echoed from political arenas representing a diverging institutional logic. Managerial latitude of action, reflected in incentive policies implemented and time scales set, were not determined only by the firm's governance structure, but also by the financial governing institution's specific properties, and the interplay between the divergent governance models.

Another key point this study raises pertains to the configuration of the board of a firm under privatization, confronted with the challenges of a global marketplace. The study points to the salient role of the board and its members' experience of a globalizing firm's governance challenges as a crucial determinant of success or failure of a firm, reverberated on innovation outcomes.

Moreover, this study raises the issue of the challenges imposed on firm innovation by ownership of a firm by two nation states. The study shows that the discrepancies in ownership policies may emanate from cultural differences in implementation of merger and shareholders' agreements. Policy makers may find this case study as yet another example of the complexity of sovereign shareholders' divergent sets of values and cognitive frames in practice. The study could thus inspire policy makers to further consider the conditions under which corporate governance requirements that are set during merger and shareholders' agreements can be implemented. Again, as this study also points out, ownership ultimately sets the guidelines for managerial action determining the spatial and temporal latitude of firm innovation.

Lastly, this study raises additional questions to policy makers. What are the criteria for a strategic or financial investment of the state in the current era of globalization? How should the governance of the state's shareholding be organized in practice from the point of view of competitiveness and national security? Although this study has focused temporally on a relatively short period of time in a firm's life, it acknowledges that the innovations witnessed at a certain period of time build on years of work on technological and market knowledge. The accumulated knowledge is the outcome of dedicated work by a web of actors on an individual,

firm, and national level, which also transcending national boundaries in the process. How is knowledge built in the telecommunications industry, and its future prospects valued on a national level, and what are the implications for ownership strategy on a firm level? No easy answers can be expected to complex and vexed issues of ownership. It appears, however, that the current global financial crisis has sparked new interest among nation states in determining strategic and financial investments, and in reorganizing their ownership.

7.3 Limitations of the Study

Research on a dynamic and context-specific phenomenon is naturally subject to limitations, and this study is no exception. To a large extent the limitations can be considered as resulting from the choices and decisions regarding research design and strategy, coupled with methodological choices and the conceptual approach that fall on every researcher. However, the limitations of the study may provide a source of ideas for future research.

First, the single case study employed is grounded in a particular organizational and institutional context. Hence, the conclusions of the study cannot be easily transported into another organizational or institutional context. However, by an in-depth study of a specific social setting, the researcher is able to rely on rich detail of complex social dynamics, and may thus create new theoretical constructs, and more complicated theory than through a multiple case approach (Dyer & Wilkins, 1991; Eisenhardt & Graebner 2007). This study does so by combining theory on innovative enterprise and neo-institutional theory, and by weaving them together in a new conceptual framework of equity markets and firm innovation in interaction.

Limitations pertain also to the methodological approach chosen in conducting the research. I have adopted a processual approach to shed light on the mechanisms of a complex social process, the change of firm ownership, reflecting and constituting institutional change. The starting point of processes is often elusive, and thus difficult to determine. The innovations studied were the outcome of a historical and contingent process which commenced long before the actual time period that was the focus of this research; this is pointed out in Section 5.1 in the thesis. This study focuses on social processes of firm innovation in interplay with equity markets from listing of a firm on equity markets up until the firm's merger. It is acknowledged that the interpretations of the merger are carried out by stakeholders involved in the Finnish entity and thus Swedish actors in the post-merged entity might have had a divergent perspective on the

above issue. Also, in conducting the interviews, it is acknowledged in this study that the social reality in which innovation is embedded was interpreted in retrospect by the respondents. However, conducting 'real-time' interviews would have most likely limited further the number and quality of respondents due to jeopardy of public exposure of the informants. It is questionable, whether in the heat of the battle, the interviewed actors would have had the necessary analytical distance to provide a temperate reflection of lived phenomena. The temporal distance allowed most likely for a more balanced and comprehensive reflection of what the actors were living, cf. Section 3.3 of the study. Furthermore, the researcher is always also involved in constructing the empirical material through her interpretation of events as social sciences, in essence, are marked by interpretation (Denzin 1994; Alvesson & Kärreman 2007).

Finally, the conceptual approach chosen in this study is also subject to limitations. The multiple theoretical lenses chosen to conceptualize the complex research phenomenon of the interaction between equity markets and firm innovation in its institutional context provide a particular interpretation of an empirical investigation. Yet, given the multifaceted nature of the dynamic research phenomenon, the choice of theoretical bricolage (Denzin & Lincoln 2003) responds to the need of a broader conceptual landscape within which to advance understanding of the complex interplay between institutional investors and firm innovation in the current era of globalization.

7.4 Avenues for Further Research

This research has gauged the paramount role of ownership, emphasizing power and money in determining enabling and constraining social conditions that innovation entails. The study has provided a source of ideas for further research, derived mainly from the design of the research, and methodological and conceptual choices. Issues to be addressed in future research also arise from the present, historical phase of turmoil in the sphere of global financial markets.

If the past serves as any guide, innovation is no transient phenomenon on micro or macro levels, but requires further investigation in ensuring competitiveness and survival in the globalization era. Furthermore, the present global financial crisis provides evidence for the need to accentuate theory development on how strategic control, financial commitment, and organizational integration matter in the analysis of innovative enterprise (cf. Carpenter et al 2003; Lazonick 2003; Lazonick & Prencipe 2005). In addition to the analysis of ownership (changes), this would

imply incorporating a study of organizational learning as a determinant of firm innovation. Furthermore, interesting theoretical and empirical avenues could emerge from studying the institutional and social factors around aborted innovations or less successful innovations. Moreover, further research could benefit from an inquiry analyzing the magnitude of changes an innovative firm can manage in its race for survival, and its quest for innovative capability, in the current era of the challenges in the face of globalization.

One avenue that lies considerably beyond the scope of this research, due to the nature of the single case study approach, is comparative historical research on the success and failures of innovation in state-owned, privatized firms. Micro-level cross-case comparisons could further benefit from national comparisons, in order to permit a multi-level analysis. The present in-depth qualitative empirical inquiry specified social processes and identified their underlying mechanisms in the interaction between equity markets and firm innovation in a specific social setting. Yet, a quantitative survey, analyzing social conditions of innovative enterprise, could add to our knowledge of firm- and sector-specific enabling and constraining conditions of firm innovation in interplay with the fundamental domain of modern societies, the financial markets.

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APPENDICES

APPENDIX 1

Summary of Sonera's State Ownership History and Name Changes Until 2002

Sonera's history began shortly after Finland gained its independence in 1917 when the Telegraph Office of Finland was established as state organization. The Telegraph Office merged with the state organization, Post of Finland in 1927, and formed the Post and Telegraph Office of Finland. This entity was later named Post and Telecommunications of Finland which had a dual role as telecommunications operator and regulator of the telecommunications market. Since the beginning of 1990, Post and Telecommunications of Finland became an unincorporated state-owned enterprise with its operations separated from the state budget. In the beginning of 1994, Post and Telecommunications of Finland was converted into PT Finland, a limited liability company with business operations and assets divided into two main business areas: postal services and telecommunications. The two business areas were transferred into Finland Post Ltd. and Telecom Finland. The firms began to operate on commercial terms. At the end of 1997 a gradual, partial privatization of Telecom Finland was approved by the Finnish Parliament. PT Finland was divided into separate telecommunications and postal services groups where Telecom Finland among other subsidiary and associated companies of PT Finland were placed under Telecom Finland Group plc. The demerger, effected in July 1998, aimed to enable Telecom Finland access to international capital markets whereby the firm could implement a capital structure addressing the financial needs of a global telecommunications services provider. In January 1999, the name of Telecom Finland Group plc was changed to Sonera Group plc. The name change was due to management's belief of better representation of the ongoing strategy with a global reach, aiming also to delineate Sonera from the impression of a Finnish telecommunications monopoly. Furthermore, the name change anticipated the firm's upcoming privatization process (Sonera 2001).

"The merger between Telia and Sonera was completed on December 9, 2002 after shareholders equivalent to 95 percent of the shares and warrants in Sonera accepted Telia's offer to exchange Sonera shares for Telia shares. The Group changed its name to TeliaSonera and was listed on Helsinki Exchanges and Nasdaq, in addition to the existing listing on Stockholmsbörsen. Efforts to integrate the two companies were implemented immediately following the merger." (TeliaSonera 2002:2)

APPENDIX 2

Interview Guide

The central question to be addressed is: Was innovation equity market induced or did innovation act as driver for the equity markets? Or both in interaction?

In what way did the equity markets and firm innovation interact in Sonera during 1998-2002? i.e. How was the interplay between firm innovation processes and the equity market exhibited in Sonera in 1998-2002?

Whether and how were Sonera's innovation processes affected since the Initial Public Offering (IPO) in November 1998?

Whether and how did the Sonera's innovation processes change during 2001-2002 compared to 1998-2000?

How significant / insignificant were the changes?

How did the equity market impact strategic control, i.e. in what way did the use of the equity market through the combination* and compensation** function influence strategic decision-making in 1998 to 2000?

The significance of stock options in gearing managerial action throughout organization toward the pursuit of innovations?

How did the predictions of market growth in telecommunications services business imposed by telecommunications industry research firms and investment banks' telecommunications sector analysts influence Sonera's view on its future prospects at different organizational levels of the firm?

How did the equity market influence organizational integration?*** i.e.

Whether and how did the use of the equity market through the combination and compensation function promote or undermine innovation processes compared to the time before the IPO of 1998?

How did the equity market affect financial commitment, i.e. whether and how did the use of the equity market through the combination, compensation or cash function promote or undermine Sonera's access to financial means of developing innovation processes?

- To be asked mainly from technology specialists:

How would you define the degree of novelty of firm innovation in specific services businesses, SmartTrust and Zed? Would you define them as incremental or radical innovation?

* combination: In the combination function, the equity market may, by providing a firm the currency for mergers or acquisitions, extend strategic control from one firm to the other (Carpenter et al 2003).

****compensation:** In the compensation function, the equity market can provide the firm with “*a currency for recruiting, retaining and motivating personnel, and thus can serve as a mechanism for organizational integration*” (Carpenter et al 2003: 974-975).

******* “*...organizational integration, defined as a set of relations that creates incentives for people to apply their skills and efforts to collective learning processes. ...Modes of compensation are key instruments for integrating individuals into the organization. To generate innovation, however, a mode of compensation cannot simply manage the labor market – that is, recruit and retain employees; it must be a part of a reward system that manages the learning process – that is, motivates employees as individuals to engage in collective learning*” (Carpenter et al 2003: 972-973).

Many thanks for your time and effort!

APPENDIX 3

The Shareholder Distribution of Sonera, December 31, 1998

Shareholder	Number of Shares	Holding, %
Finnish State	562,061,220	77.8
The Local Government Pensions Institution	6,060,000	0.8
Sampo-Varma Group		
Varma-Sampo Mutual Pension Insurance Company	2,426,000	
Nova Life Insurance Company Ltd	919,100	
Sampo Insurance Company plc	607,000	
Sampo Enterprise Insurance Company Limited	607,000	
Industrial Insurance Company Ltd	606,000	
Sampo Life Insurance Company Limited	302,000	
Otso Loss of Profits Insurance Company Ltd	261,000	
Kaleva Mutual Insurance Company	<u>151,000</u>	
	5,879,100	0.8
Pohjola Group		
Ilmarinen Mutual Pension Insurance Company	3,030,000	
Suomi Mutual Life Assurance Company	800,000	
Pohjola Life Assurance Company Ltd	800,000	
Pohjola Non-Life Insurance Company Ltd	<u>800,000</u>	
	5,430,000	0.8
Fennia Group		
Mutual Insurance Company Pension-Fennia	1,996,500	
Enterprise-Fennia Mutual Insurance Company	759,900	
Fennia Life Insurance Company Ltd	<u>121,000</u>	
	2,877,400	0.4
Tapiola Insurance Group		
Tapiola Mutual Pension Insurance Company	737,000	
Tapiola General Mutual Insurance Company	369,000	
Tapiola Mutual Life Assurance Company	205,000	
Tapiola Corporate Life Insurance Company	<u>104,500</u>	
	1,415,500	0.2
PT Pension Fund	1,246,700	0.2
Sitra, the Finnish National Fund for Research and Development	1,141,400	0.2
Merita Optima Mutual Fund	640,000	0.1
The Central Church Fund	637,500	0.1
Nominee-registered shares	79,559,643	11.0
<u>Other shareholders, total</u>	<u>55,051,537</u>	<u>7.6</u>
Total	722,000,000	100.0

(Sonera 1998: 41)

Shareholders by Group at December 31, 1998

Group	Number of Shares	Holding, %
Privately held companies	3,992,975	0.6
Publicly held companies	168,020	0.0
Financial and insurance institutions	14,337,590	2.0
Public sector entities		
Finnish State	562,061,220	
Occupational pension schemes and other social security funds	20,441,140	
Other public sector entities	153,515	
	582,655,875	80.7
Non-profit entities	4,462,470	0.6
Households	36,045,397	5.0
International Owners	80,258,048	11.1
On the book-entry register joint account	79,625	0.0
Total	722,000,000	100.0

(Sonera 1998: 42)

APPENDIX 4

The Shareholder Distribution of Sonera, December 31, 1999

Shareholder	Number of Shares	Holding, %
Finnish State	415,617,111	57.6
Pohjola Group		
Ilmarinen Mutual Pension Insurance Company	5,758,800	
Pohjola Life Assurance Company Ltd	2,327,000	
Suomi Mutual Life Assurance Company	1,617,600	
Pohjola Non-Life Insurance Company Ltd	<u>1,617,600</u>	
	11,321,000	1.6
Sampo-Varma Group		
Varma-Sampo Mutual Pension Insurance Company	3,729,850	
Sampo Insurance Company plc	1,205,200	
Sampo Life Insurance Company Limited	1,033,000	
Industrial Insurance Company Ltd	606,000	
Kaleva Mutual Insurance Company	504,000	
Sampo Enterprise Insurance Company Limited	353,500	
Otso Loss of Profits Insurance Company Ltd	<u>143,000</u>	
	7,574,550	1.0
The Local Government Pensions Institution	6,060,000	0.8
Fennia Group		
Mutual Insurance Company Pension-Fennia	2,839,500	
Enterprise-Fennia Mutual Insurance Company	783,600	
Fennia Life Insurance Company Ltd	<u>191,700</u>	
	3,814,800	0.5
Tapiola Insurance Group		
Tapiola Mutual Pension Insurance Company	461,500	
Tapiola General Mutual Insurance Company	242,500	
Tapiola Mutual Life Assurance Company	142,000	
Tapiola Corporate Life Insurance Company	<u>66,000</u>	
	912,000	0.1
PT Pension Fund	1,296,700	0.2
Sitra, the Finnish National Fund for Research and Development	1,206,500	0.2
LEL Employment Pension Fund	644,900	0.1
Neste Pension Foundation	575,700	0.1
Nominee-registered shares	212,444,271	29.4
Other shareholders, total	<u>60,532,468</u>	<u>8.4</u>
Total	722,000,000	100.0

(Sonera 1999: 51)

Shareholders by Group at December 31, 1999

Group	Number of Shares	Holding, %
Privately held companies	3,497,643	0.5
Publicly held companies	138,110	0.0
Financial and insurance institutions	17,482,041	2.4
Public sector entities		
Finnish State	415,617,111	
Occupational pension schemes and other social security funds	25,948,584	
Other public sector entities	<u>145,125</u>	
	441,710,820	61.2
Non-profit entities	4,736,803	0.7
Households	41,274,909	5.7
International Owners	213,154,844	29.5
<u>On the book-entry register joint account</u>	<u>4,830</u>	<u>0.0</u>
<u>Total</u>	<u>722,000,000</u>	<u>100.0</u>

(Sonera 1999: 52)

APPENDIX 5

The Shareholder Distribution of Sonera, December 31, 2000

Shareholder	Number of Shares	Holding, %
Finnish State	392,620,585	52.8
Sampo-Varma Group		
Varma-Sampo Mutual Pension Insurance Company	3,158,350	
Sampo Life Insurance Company Limited	1,513,000	
Sampo-Leonia Insurance Company Plc	1,377,200	
Industrial Insurance Company Ltd	606,000	
Kaleva Mutual Insurance Company	492,000	
Sampo Enterprise Insurance Company Limited	<u>368,500</u>	
	7,515,050	1.0
The Local Government Pensions Institution	6,385,000	0.9
Pohjola Group		
Ilmarinen Mutual Pension Insurance Company	2,577,850	
Suomi Mutual Life Assurance Company	1,637,600	
Pohjola Non-Life Insurance Company Ltd	1,280,000	
Pohjola Mutual Life Assurance Company Ltd	<u>886,000</u>	
	6,381,450	0.9
Fennia Group		
Mutual Insurance Company Pension-Fennia	1,534,500	
Enterprise-Fennia Mutual Insurance Company	<u>149,000</u>	
	1,683,500	0.2
PT Pension Fund	1,296,700	0.2
LEL Employment Pension Fund	1,155,650	0.1
Tapiola Insurance Group		
Tapiola Mutual Pension Insurance Company	541,200	
Tapiola General Mutual Insurance Company	241,100	
Tapiola Mutual Life Assurance Company	<u>125,000</u>	
	907,300	0.1
Neste Pension Foundation	721,900	0.1
Sitra, the Finnish National Fund for Research and Development	574,250	0.1
Nominee-registered shares	250,548,315	33.7
Other shareholders, total	<u>73,754,786</u>	9.9
Total	743,534,486	100.0
Shares in the Company's possession	550,000	0.1
Total Shares Outstanding	742,984,486	99.9

(Sonera 2000: 81)

Shareholders by Group at December 31, 2000

Group	Number of Shares	Holding, %
Privately held companies	7,171,628	1.0
Publicly held companies	335,989	0.0
Financial and insurance institutions	20,509,252	2.8
Public sector entities		
Finnish State	392,620,585	
Occupational pension schemes and other social security funds	22,334,670	
Other public sector entities	<u>282,400</u>	
	415,237,655	55.8
Non-profit entities	4,607,647	0.6
Households	43,745,581	5.9
International Owners	251,925,616	33.9
<u>On the book-entry register joint account</u>	<u>1,118</u>	<u>0.0</u>
<u>Total</u>	<u>743,534,486</u>	<u>100.0</u>
Shares in the Company's possession	550,000	0.1
<u>Total Shares Outstanding</u>	<u>742,984,486</u>	<u>99.9</u>

(Sonera 2000: 82)

APPENDIX 6

The Shareholder Distribution of Sonera, December 31, 2001

Shareholder	Number of Shares	Holding, %
Finnish State	588,880,237	52.8
Pohjola Group		
Ilmarinen Mutual Pension Insurance Company	8,180,552	
Suomi Mutual Life Assurance Company	2,041,474	
Pohjola Non-Life Insurance Company Ltd	1,929,856	
Suomi Insurance Company Ltd	<u>1,764,780</u>	
	13,916,662	1.3
The Local Government Pensions Institution	7,308,203	0.7
Varma-Sampo Mutual Pension Insurance Company	4,467,201	0.4
State's Pension Institution	3,500,000	0.3
Fennia Group		
Mutual Insurance Company Pension-Fennia	2,675,175	
Enterprise-Fennia Mutual Insurance Company	185,500	
Fennia Life Insurance Company Ltd	<u>85,500</u>	
	2,946,175	0.3
LEL Employment Pension Fund	2,856,590	0.3
OP-Delta sijoitusrahasto	2,695,850	0.2
Sampo Group		
Sampo Life Insurance Company Limited	1,372,750	
Kaleva Mutual Insurance Company	738,000	
Finanssi-Sampo Oy	<u>120,000</u>	
	2,230,750	0.2
OP-Tuotto Sijoitusrahasto	1,626,675	0.1
H.Kuningas & Co Oy	1,625,000	0.1
Alfred Berg Portfolio Unit Trust	1,558,495	0.1
Nominee-registered shares	334,134,418	30.0
Other shareholders, total	147,555,473	13.2
Total	1,115,301,729	100.0
Shares in the Company's possession	550,000	0.0
Total Shares Outstanding	1,114,751,729	100.0

(Sonera 2001: 76)

Shareholders by Group at December 31, 2001

Group	Number of Shares	Holding, %
Privately held companies	16,921,974	1.5
Publicly held companies	391,326	0.0
Financial and insurance institutions	37,648,778	3.4
Public sector entities		
Finnish State	588,880,237	
Occupational pension schemes and other social security funds	41,864,573	
Other public sector entities	<u>489,917</u>	
	631,234,727	56.6
Non-profit entities	8,723,711	0.8
Households	83,866,350	7.5
International Owners	336,508,886	30.2
On the book-entry register joint account	5,977	0.0
Total	1,115,301,729	100.0
Shares in the Company's possession	550,000	0.0
Total Shares Outstanding	1,114,751,729	100.0

(Sonera 2001: 76)

APPENDIX 7

The Shareholder Distribution of TeliaSonera, December 31, 2002

<u>Shareholder</u>	<u>% of capital/votes</u>	<u>Total no. of shares</u>
Swedish State	46.00	2,118,278,261
Finnish State	19.36	891,800,230
Robur funds	2.28	105,193,525
SEB funds	1.00	45,403,915
Fjärde AP-fonden	0.92	42,510,349
Skandia	0.91	41,851,433
AMF Pension	0.88	40,590,000
SEB-Trygg Försäkring	0.73	33,477,800
Alecta	0.67	30,974,346
Tredje AP-fonden	0.57	26,313,757
AFA Försäkring	0.56	25,991,700
Första AP-fonden	0.56	25,749,045
Nordea funds	0.50	22,965,886
SHB/SPP funds	0.41	19,088,790
Andra AP-fonden	0.30	13,894,422
Skandia Carlson funds	0.29	13,298,292
Banco funds	0.18	8,255,138
Local Government Pensions Institution	0.17	8,047,798
Pension fund of the Finnish State	0.17	7,874,880
KP Pension & Försäkring	0.17	7,840,200
<u>Total others</u>	<u>23.37</u>	<u>1,076,356,958</u>
Total	100.0	4,605,756,725

Shareholders by Group at December 31, 2002

<u>Group</u>	<u>Holding, %</u>
Swedish State	46
Finnish State	19.4
Institutions and companies, Sweden	14.7
Shareholders outside Sweden and Finland	10.8
Individual investors, Sweden	3.9
Individual investors, Finland	2.4
<u>Institutions and companies, Finland</u>	<u>2.8</u>
Total	100.0

(TeliaSonera 2002: 43)

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