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Co-evolution in Strategic Renewal Behaviour of British, Dutch and French Financial Incumbents: Interaction of Environmental Selection, Institutional Effects and Managerial Intentionality*

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ABSTRACT How do incumbent firms and environments co-evolve and how are firm-level adaptation and selection at industry level interrelated? Can and do large established organizations renew themselves to adapt to their environment? Three single-lens theories, relating to environmental selection, institutional theory, managerial intentionality, and a co-evolutionary perspective are used to investigate strategic renewal of incumbent firms. We derive propositions and distinguish between three dimensions of strategic renewal and develop metrics to investigate our propositions in a multi-level, multi-country, longitudinal study of the European financial services industry.

Our results provide the following insights. From an environmental selection perspective, we found incumbents have a preference for exploitation renewal actions. Country institutional environments appear to explain to what extent incumbents prefer internal and/or external renewal actions. Managerial intentionality seems to explain outlier behaviour and firm-specific frequency and timing of renewal actions. From a co-evolutionary perspective, interaction effects explain deviations from predictions derived from the single-lens theories applied in this paper.

INTRODUCTION

How do environmental selection processes, institutional effects, and managerial intentionality drive strategic renewal of large established firms operating in a changing environment? Does a co-evolutionary perspective provide complemen-

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tary explanations to single-lens approaches? We analyse these questions in a multi-country, multi-level, and longitudinal investigation of the European financial services industry.

The financial services sector in the European Union (EU) is well suited for studying co-evolutionary processes at the industry, institutional, and firm level of analysis, as these levels capture 'the promise and the empirical challenge of conducting coevolutionary research' (Lewin and Koza, 2001, p. vii). This sector experiences major technological developments at *industry* level. Substantial and identifiable changes in EU and national regulations impact at *institutional* level. At *firm* level, we focus on large, long-lived established financial services firms in the EU of which strategic renewal actions will be investigated.

We use three single-lens theories and a co-evolutionary approach to explain strategic renewal of incumbents. By developing propositions and metrics that address three levels of analysis, we seek to appreciate the value of these theories and of the addition of a co-evolutionary perspective. The propositions and metrics will be illustrated in a qualitative empirical analysis of the content, context, and process dimension of strategic renewal actions of incumbent financial services firms including their interaction effects. The empirical set-up should be designed in such a way that these interaction effects are revealed (Volberda and Lewin, this issue). We therefore use both a longitudinal and cross-section design at the industry, country, and firm level, with appropriate metrics (McKelvey, 1997) to relate these levels.

Many publications on co-evolution have a conceptual nature (e.g. Lewin and Volberda, 1999; McKelvey, 1997) and most empirical contributions use a case study approach in which narration and a historical analysis are applied (e.g. Carney and Gedajlovic, 2002; Djelic and Ainamo, 1999; Huygens et al., 2001; Jones, 2001). The purpose of this paper is to contribute to this literature by developing metrics that link actual renewal actions of firms, and by explaining renewal actions as resulting from interaction effects of environmental selection, institutional effects and managerial intentionality (Lewin and Volberda, 1999).

A CO-EVOLUTIONARY PERSPECTIVE: ENVIRONMENTAL SELECTION, INSTITUTIONAL EFFECTS, AND MANAGERIAL INTENTIONALITY

Co-evolutionary theory argues that the concurrent operating of adaptation and selection explains processes of change and renewal. As such, our theoretical basis is derived from theories that address selection processes, institutional effects and managerial intentionality (Lewin and Volberda, 1999; Volberda et al., 2001). We choose the population ecology and the institutional approach to investigate environmental selection and institutional effects, and the strategic choice and dynamic

capabilities approach to analyse managerial intentionality. Below, we will discuss these four theoretical lenses, and develop four propositions.

According to *population ecology* (Carroll and Hannan, 2000; Hannan and Freeman, 1977, 1984), large organizations are well suited to exploit today's markets, but their build-up inertia makes adaptation to the future difficult. Change occurs at the population level through a continuous process of variation, selection, and retention, during which environmental forces select organizations that fit the resource base of an environmental niche best (Hannan and Freeman, 1977). Organizations that are reliable, accountable, and reproducible (Hannan and Freeman, 1984) will be favoured in the selection process. Organizations that survive the selection process will in turn increase their level of structural inertia. As the environment changes, the inertness of these organizations results in deteriorating performances. Aldrich (1979, 1999) and Hannan and Freeman (1984) argue that this structural inertia is difficult to overcome, resulting in eventually selecting out firms whose competencies have become outdated. New organizations that emerge over time ultimately replace the current organizational population. Recent contributions of population ecologists (Barnett and Burgelman, 1996; Baum and Singh, 1994) point out organizations can to some extent adapt to the environment if that environment is relatively stable. In times of radical change the organizational population will generate a variety of strategies, of which only some will prove to be successful. Firms who have tried a different strategy have to comply with this dominant strategy; otherwise they will be selected out. However, variations in new strategies result from a random process and no single firm can consistently create the dominant strategy. As time goes on, this process eventually results in an alteration of the composition of the organizational population.

Arguing from a population ecology approach, organizations are structurally inert and slow to change (Hannan and Freeman, 1984). Individual attempts to renew decrease firm survival chances, while high reliability, accountability and reproducibility increase survival chances (Hannan and Freeman, 1989). Therefore, the renewal patterns of firms within a particular industry will be predominantly characterized by exploitation actions. In times of high rates of environmental change, this theoretical lens suggests incumbent firms should exploit their niche. The impact of environmental selection on incumbents' strategic renewal, therefore, suggests the following proposition:

> *Proposition 1*: From *a population ecology approach*, to achieve high reliability, accountability and reproducibility, incumbent firms pursue exploitation actions over exploration actions in their strategic renewal behaviour.

Institutional theory examines the influence of the institutional context on the organizational structure (Scott, 2001; Tolbert and Zucker, 1996; Wicks, 2001). Orga-

nizations are more homogeneous than unique because of coercive, normative, and mimetic isomorphism (DiMaggio and Powell, 1983). Mimetic isomorphism may result in bandwagon pressures (Abrahamson and Rosenkopf, 1993), according to which strategies diffuse through an organizational field once a strategy is perceived to be legitimate (Meyer and Rowan, 1977). This so-called 'old institutionalism' (Greenwood and Hinings, 1996) is not known for explaining change due to a lack of explanations of the internal dynamics of change in organizations. Neo-institutional theory has a less static approach. According to neo-institutionalists, the embeddedness of organizations in their institutional context is a basic reason for resistance to change. The more organizations are coupled to a prevailing organizational template in a highly structured institutional context, the higher the resistance to change, and the more radical organizational responses to drastic environmental changes. In addition, the pace of change is contingent on the differences in structures of distinct institutional sectors. That is, organizational change varies *across* institutional sectors. Internal dynamics of organizations are the reason for differences in the pace of change within sectors. In an uncertain environment, changes in the power structure and competing ideas result in different strategic thinking, which gives rise to the emergence of new strategies. Thus, changes also vary *within* sectors (Greenwood and Hinings, 1996).

Institutional pressures may lead organizations to adopt initiatives undertaken by other organizations in their institutional environment. This process of institutional bandwagon effects explains the phenomenon that a significant number of organizations in institutional settings undertake similar types of initiatives. As the number of organizations that adopt the initiative increases, the initiative becomes value infused. Organizations that do not adopt the initiative risk loss of stakeholders, in particular of shareholder support, which may lead them to adopt the innovation after all (Abrahamson and Rosenkopf, 1993). In this connection, Scott (2001) emphasizes the impact regulative, normative, and cultural-cognitive institutional factors have on organizations. Greenwood and Hinings (1996) also recommend a fast follower strategy to achieve long-term survival to prevent firms from drifting away from the prevailing institutional template. Institutional effects on strategic renewal actions of incumbents firms suggest the following proposition:

> *Proposition 2*: From an *institutional approach*, incumbent firms will mimic the renewal actions of other firms in their institutional environment, which results in similar strategic renewal behaviour.

The *strategic choice* approach (Child, 1972, 1997; Miles and Snow, 1978) endows organizations with a capacity to change their destiny by adapting themselves and reshaping their environments. This approach emphasizes the importance of managerial intentionality of decision makers being the intermediary between organi-

zations and their environments. Child (1972, 1997) attributes decision makers some managerial leeway regarding environmental factors, performance standards, and organizational design. Few organizations function at the limits of their efficiency (Cyert and March, 1963), resulting in organizational slack allowing incumbents to meet short-term performance needs (Schiff and Lewin, 1970) and enabling multiple forms of organizations to be viable in an environment.

Teece (1984) has argued that a limited repertoire of available routines severely constrains a firm's available strategic choices. Firms develop core rigidities together with highly specialized resources in order to enhance profits, however at the price of reduced flexibility (Volberda, 1996). Wernerfelt (1984) pointed at the possibility of managerial action to develop new capabilities. Consequently, Teece et al. (1997) argue that the firm must remain in a dynamic capability-building mode, which is an organization's latent ability to renew its core competence. According to this *dynamic capabilities* approach, an organization should retain its capacity to renew, augment, and adapt its core competence over time.

Firms try to escape the competence trap by remaining in a dynamic capability building mode and continuously renew themselves by exploring opportunities arising in their environment (Teece et al., 1997). This approach is based on organizational learning and focuses on how organizational members notice and interpret information and knowledge and use it to reconsider the fit of firms with their environment (Best, 1990; Eisenhardt and Martin, 2000; Van Den Bosch and Van Wijk, 2001; Van Den Bosch et al., 2003). In reconsidering this fit, a firm's absorptive capacity plays an important role (Lewin et al., 1999). A firm's absorptive capacity influences the expectation formation process and its exploration/exploitation balance (Van Den Bosch et al., 1999, 2003). Cohen and Levinthal (1990, p. 137) suggested that the higher the absorptive capacity, the more likely it will be that a firm's aspiration level or expectation formation process will be defined in terms of environmental opportunities, independent of current performance criteria such as profitability. Cohen and Levinthal (1990) even suggest that firms with higher levels of absorptive capacity will tend to be more proactive: fortune favours the prepared firm (Cohen and Levinthal, 1994). From a knowledge-based and dynamic capability perspective on managerial intentionality, we therefore expect the pattern of strategic renewal actions of firms to be firm specific regarding the timing, frequency and volatility of strategic renewal actions.

Proposition 3: From a *managerial intentionality approach*, renewal actions of incumbent firms will show firm-specific patterns regarding the temporal dimension of strategic renewal behaviour.

Lewin and Volberda (1999, p. 526) define co-evolution 'as the joint outcome of managerial intentionality, environment, and institutional effects'. McKelvey (1997) suggests co-evolution as one of four frontiers to attack the idiosyncrasy problem

in organization science. Lewin et al. (1999, p. 535) emphasize that a co-evolutionary perspective 'considers organizations, their populations, and their environments as the interdependent outcome of managerial actions, institutional influences, and extra-institutional changes'. Co-evolution can be studied on varying levels of analysis. Baum and Singh (1994) propose that changes may occur in all organizations or populations that interact. McKelvey (1997) distinguishes between micro- and macrocoevolution. Microcoevolution refers to co-evolution within firms (Barnett et al., 1994), whereas macrocoevolution takes place between firms and their niche.

Interaction effects between levels of analysis are a key phenomenon to be studied in co-evolutionary research. Lewin and Volberda (1999) mention mutual, simultaneous, lagged, and nested effects, which most likely are not linear and may lead to counterintuitive outcomes because of feedback loops. McKelvey (2002, p. 1) points out that co-evolution 'approximates a mutual-causal, deviation-amplifying, positive feedback process (Maruyama, 1963)', in which A reacts to B, and B to A, and so on, until halted by a damping mechanism. This study builds on Lewin and Volberda's (1999) definition of co-evolution as the joint outcome of managerial intentionality, institutional, and selection effects. We operationalize co-evolutionary effects by considering the interaction effects that stem from feedback relations between organizations and environments (Baum and Singh, 1994; Lewin and Volberda, 1999).

The previous three propositions are based on single-lens theories. In a *co-evolutionary approach*, however, strategic renewal actions are analysed as the joint outcome of environmental selection, institutional effects and managerial intentionality (Lewin and Volberda, 1999). The outcome of co-evolutionary processes of strategic renewal will deviate from the predictions derived from the single-lens theories because of interaction effects between multiple levels of analysis.

Proposition 4: From a *co-evolutionary perspective*, interaction effects of industry selection, country institutional effects and managerial intentionality at firm level explain deviations of strategic renewal behaviour of incumbent firms from predictions derived from single-lens theories.

METRICS TO CONNECT THE INDUSTRY, INSTITUTIONAL, AND FIRM LEVEL IN PROCESSES OF STRATEGIC RENEWAL

We defined strategic renewal as strategic actions to align organizational competencies with the environment to increase competitive advantage. Our propositions and strategic renewal definition require metrics that connect the industry, institutional, and firm level in strategic renewal processes. To this end, we distinguish between *three dimensions of strategic renewal* (cf. Volberda et al., 2001) – the content, context, and process of strategic renewal – and develop metrics for each of these

dimensions. The exploration/exploitation ratio relates to the content dimension. The ratio of external to internal strategic renewal actions addresses the context dimension. The process dimension refers to the temporal character of strategic renewal and covers the timing, frequency, and volatility of strategic renewal actions. These metrics allow observing both uni-directional and multi-directional causalities in trajectories of strategic renewal and linking multiple levels of analysis.

March's (1991) conception of exploration and exploitation gives rise to our *first metric*. This metric, the exploration/exploitation ratio, is defined as the number of exploration actions divided by the total number of strategic actions over a time period. Exploitation concerns refinement and efficiency, which relates to environmental selection. Exploration 'includes search and variation' (March, 1991, p. 71). Environmental selection theories emphasize that successful firms undertake similar strategic renewal activities and aim their actions at strengthening and *exploiting* existing core competencies. This contrasts to theories focusing on managerial intentionality, which suggest that firms may adapt by behaving differently and *exploring* new competencies. We assume, therefore, that strategic actions resulting in exploration are more related to managerial intentionality. As the balance of exploration to exploitation actions is linked to changes in the population of organizations (Levinthal and March, 1993; Lewin et al., 1999; March, 1991), this metric also signals multi-directional causalities (Volberda and Lewin, this issue).

We propose the ratio of external to internal strategic renewal actions as a *second metric*. This metric is defined as the number of external strategic renewal actions divided by the total number of actions over a time period. External actions involve parties outside a firm's boundaries in implementing renewal actions, and include mergers, acquisitions, joint ventures, and cooperative agreements. Internal actions take place within the firm, comprising greenfield investments, the launch of a new line of services, and rationalizations. The process of importing external business units into the organization, or selling internally developed units to other organizations, also links the intraorganizational and interorganizational level of analyses. Institutional approaches highlight isomorphism regarding internal and external renewal actions of incumbents in the same institutional context.

The *third metric* relates to the temporal dimension, i.e. the timing, frequency, and volatility of strategic renewal actions. In hypercompetitive environments, success is often tied to speed (D'Aveni, 1994). Typically, managers act prudently and wait until environmental turbulence reaches a critical threshold before responding, which often results in organizational inertia (Hambrick and D'Aveni, 1988). Proactive strategic acting suggests managerial intentionality, whilst concurrent or delayed acting can be related to institutional theory and environment selection. We assume firm specific timing, frequency or volatility to indicate managerial intentionality.

METHODOLOGY

During the past decades, the European financial services industry has experienced a series of environmental and institutional jolts that altered the selection environment. To approximate these higher-level changes, we follow Haveman et al. (2001) and investigate the impact of regulatory and technological changes across countries. We investigate the pace of diffusion of these changes by determining the year of implementation of European Union (EU) banking regulations, and of significant technological innovations across five European countries.

Firm level changes are assessed by the three metrics discussed above. To empirically assess the first metric, renewal actions of financial incumbents were coded for exploitation or exploration. Following March (1991), exploitation actions are defined as strategic renewal actions that elaborate on the current range of activities and fall within the current geographic scope, or that rationalize activities. Exploitation actions include cost savings, the dissolution of a range of products, sale of activities, and actions aimed at increasing the scale of the activities performed. We define exploration actions as strategic renewal actions that add new activities to the current repertoire of the organization and/or that increase the geographic scope of the firm. Examples are banks entering insurance, or the expansion into a new geographic region. The latter often requires new competencies to cope with new business practices, knowledge about clients, etc. (Sivula et al., 2001).

We derived our second metric by coding strategic renewal actions as being externally or internally driven. Internal actions originate from within the firm, such as starting up new businesses, closing offices, reorganizing activities, and job cuts. External actions are undertaken in conjunction with other organizations and include mergers, acquisitions, joint ventures, and alliances. The third metric relates to the temporal dimension of strategic renewal, i.e. the timing (in which year a particular action took place), frequency (the number of renewal actions per year), and volatility (i.e. standard deviation) of strategic renewal actions.

Sources of Data

The data regarding the timing of regulatory and technological developments is based on Gual (1999) and on secondary data. To overcome the problems of interviews, which risk retrospective sense making (Weick, 1988; Weick and Daft, 1983), the data collection strategy of strategic renewal actions intended to find contemporaneous accounts of actions of renewal. We thus chose to examine publicly available data to track down contemporaneous accounts of strategic renewal actions. Annual reports and the *Financial Times* served as our sources to detect strategic renewal actions. These sources report on actions from both an inside

Table I. Market capitalization and business of the companies investigated

Company	*Market capitalization**	*Share of banking and insurance revenues (%)***	
France	*(In billion Euros)*	*Banking*	*Insurance*
Axa UAP***	39.7	16	84
BNP	17.4	95	5
Paribas	15.7	92	8
Société Générale	21.5	96	4
The Netherlands			
ABN Amro	32.9	100	–
Aegon	49.6	5	95
Fortis	11.6	59	41
ING	54.6	21	79
Rabobank	N/A (co-operation)	92	8
UK			
Barclays	39.8	100	–
Lloyds TSB	67.7	92	8
Prudential	24.1	–	100

* *Source:* Worldscope (1998).
** *Source:* Annual Reports (1997).
*** Axa and UAP merged in 1996.

(company) and an outside (*Financial Times*) perspective, which overcomes potential biases of using just one source. We chose the *Financial Times* above potentially more detailed national sources (e.g. the Dutch *Financieele Dagblad*) to prevent differences stemming from using different sources for each of the countries, and to overcome linguistic problems. Other arguments for using the *Financial Times* are its European focus and its extensive electronic database, which goes back as far as 1990.

We investigated our data using the NUD*IST (Non-numerical Unstructured Data Indexing, Searching, and Theorizing) software. In comparison to manual coding procedures, the use of NUD*IST results in a more consistent, more rigorous breakdown of large files of data into an overview of strategic renewal actions. This method supports the categorization of large amounts of information from various data sources. In line with Barr et al. (1992), samples of actions were used to ascertain intercoder reliability. We recognize, however, that there are potential biases in our data and we will address these in the concluding section. We investigated strategic renewal actions of British, Dutch, and French financial services companies. Table I provides key data about these firms. We examined the period 1990 to 1997, which spans a period of increasing turbulence for the financial services industry.

MACRO-COEVOLUTION: INCREASING ENVIRONMENTAL SELECTION PRESSURES AND DECREASING INSTITUTIONAL EFFECTS

We assess changes in environmental selection pressures and national institutional effects by analysing how and, in particular, when EU banking regulations and technological innovations in providing bank services were implemented in five EU countries; France, Italy, the Netherlands, Sweden, and the United Kingdom during the period 1972–99. This analysis provides the context of our investigation of strategic renewal behaviour of European financial incumbents and is used for the selection of countries in the empirical section.

Pace of Diffusion of Changes in EU Regulations

The process of deregulation and harmonization in the European financial services sector has been a gradual one and has varied considerably across European countries. We focus on *three main categories of regulatory changes* aimed at: (1) eliminating restrictions to domestic competition; (2) increasing the scale and scope of financial activities; and (3) improving the external competitive position of financial firms (Gual, 1999).

We study the first category by comparing the dates on which capital flows, which limit foreign competition (Gual, 1999), and interest rates were deregulated. The first mover country regarding interest rate deregulation was the UK (1979), two years later followed by the Netherlands. The UK also moved first in liberalizing capital flows, closely followed by the Netherlands. France and Italy lagged almost ten years in both the deregulation of interest rates and the liberalization of capital flows. These late movers followed a more gradual policy of deregulating interest rates and liberalizing capital flows (EFB, 1999). For both regulatory indicators, we calculated the average time lag per country (see Table II).

The second category comprises indicators on the relaxation of regulations that limit the scale and scope of financial services. These include restrictions on cross-border establishment and limits on combining banking, insurance, and securities activities within a single firm (Gual, 1999). The effectuation of the First and Second Banking Directive were important indicators in expanding the scale and scope of financial activities. France, the Netherlands and the UK implemented the First Banking Directive in 1980. Italy, the UK and the Netherlands were the first to implement the Second Banking Directive. France followed one year later. Sweden lags in implementing the Banking Directives because of its late entrance to the European Union. Table II depicts the results.

The third category comprises the implementation period of harmonization of prudential regulations across the five EU countries. Prudential regulation includes, amongst other things, legislation on solvency ratios and the definition of own funds

Table II. Average time lags per country of the diffusion time of the implementation of regulatory and technological indicators of change in France, Italy, the Netherlands, Sweden, and the United Kingdom

Regulatory indicators	*Starting year*	*Ave. time lag*	*Technology indicators*	*Starting year*	*Ave. time lag*
Interest rate deregulation	1979	6	ATM network	1974	10
Liberalization of capital flows	1979	7.2	EFTPoS network	1984	2.6
Impl. 1st Banking Directive	1980	3.6	Tel. banking	1985	5.4
Impl. 2nd Banking Directive	1992	0.4	PC banking	1985	4.4
Impl. prudential regulation	1993	1.6	E-purse	1989	6
Introduction Euro/ EMU	1999	0	Branchless bank	1989	4.6
			Internet banking	1995	1.2

Source: Regulatory indicators: Gual (1999); technological indicators: Erasmus Strategic Renewal Centre, adapted from Flier et al. (2001), Table 1.

(Gual, 1999). The starting dates of the implementation process range between 1989 and 1991. A notable exception is the United Kingdom, which had already started in 1985. Four countries finished implementation of prudential regulation in 1995. Italy finished two years earlier. The establishment of the European Monetary Union (EMU) and the introduction of the Euro took place without any difference in time lag between the countries investigated. The results presented in Table II indicate decreasing average diffusion times during the research period, highlighting increasing convergence in the institutional environment of the five countries.

Pace of Diffusion of Technological Developments

Technological developments are a major selection force (Haveman et al., 2001; Spedale, 2003) and have had a substantial impact on the European financial services landscape. Based on Flier et al. (2001), we investigated the pace of diffusion of the implementation of technological developments along *five related technological innovations* (see Table II). The establishment of Automated Teller Machines (ATMs) networks is the first indicator. The first ATM network, Bankomat, was founded in 1972 in Sweden. Italy followed 11 years, and France 12 years later. In the Netherlands, Rabobank, ABN, Amro, NMB, and Van Lanschot formed an ATM network in 1985. In the UK, the Link network was founded in 1986. This resulted in an average time lag per country of about ten years (see Table II).

The second innovation, EFTPoS (Electronic Fund Transfer at the Point of Sale), is 'an electronic payment method involving goods and services being paid for at the point of sale through electronic debit of the customer's account' (Essinger, 1999, p. 70). In France, the CB network was founded in 1984, consisting of an ATM and EFTPoS network. The UK's first debit card payment system Switch was founded in 1988. The Dutch did not introduce their EFTPoS network PIN until 1990.

The third innovation is the e-purse, a substitute of cash. The Netherlands was the first country to launch an e-purse trial in 1989. The Netherlands was also the first country to introduce a nationwide e-purse scheme, called Chipknip, in 1996. The Mondex card was introduced in the UK in 1995 with a trial undertaken in Swindon. The French acquired the licence for the latter card, which was introduced in 1999. The average time lag per country of this indicator is about six years (see Table II).

The fourth innovation is remote banking. We split up remote banking into three different types: telephone banking, PC banking, and Internet banking (cf. Daniel and Storey, 1997; Taylor, 1998). Swedbank first introduced telephone banking in Sweden in 1985. First Direct was the first to offer a complete banking service in the UK via the telephone in 1989. In France, Paribas first offered this service in 1990. In the Netherlands, the Postbank (part of ING) started offering a telephone banking service called Girofoon in 1993. Of the five countries, the UK pioneered PC banking in 1985. Of the Dutch incumbents, ING followed one year later. BNP, the French bank, introduced BNP Micro in 1994. The time lags in the diffusion pattern of Internet banking are much shorter than in telephone and PC banking. Sweden first introduced Internet services in 1995, followed one year later by the Netherlands and Italy. France and the UK enabled Internet banking in 1997. Table II shows the resulting average time lags.

Our final indicator is the establishment of the first branchless bank in a country. In 1989, First Direct in the UK was the first branchless bank of the five countries we investigated. In 1994, Banque Directe of BNP was founded in France, while ING established ING Direct as a branchless bank offering complete banking services in 1996. This indicator results in an average time lag of about five years (see Table II).

Pace of Diffusion: Decreasing Institutional Effects and Increasing Environmental Selection Pressures

Table II shows increasing speeds of diffusion of the regulatory indicators from an average time lag per country of about 6–7 years to an average time lag of about 0–1.6 years for the most recent changes. A similar pattern emerges from the diffusion of technological developments. These preliminary results suggest increasing selection pressures. On the other hand, the influence of the national

institutional context on financial incumbent firms appears to be decreasing. The national institutional context, however, remains an important factor. We accumulated the time lags in relation to the first mover country in the diffusion of regulatory changes and the time lags in relation to the country of the first mover firm in implementing technology changes of each country (see also Flier et al., 2001). The UK heads in the pace of diffusion of regulatory changes, closely followed by the Netherlands. Firms in Sweden are early in diffusing technological developments, followed again by British and Dutch firms. France and Italy are late movers. Sweden's timelag in diffusing regulatory changes results from its late entrance to the European Union.

Our analysis suggests at least two findings. First, the pace of diffusion of regulatory change and technological developments was on average the highest in the British and Dutch financial services environment. France and Italy were late movers. This suggests that the Netherlands and the UK can be considered as examples of first mover countries, and France as a late mover. These countries provide an interesting research context for exploring the relationship between managerial intentionality of firms and environmental selection and institutional effects. The second finding relates to the decrease of country institutional differences in the pace of diffusion, whilst selection pressures increased.

CO-EVOLUTION ON FIRM LEVEL: STRATEGIC RENEWAL BEHAVIOUR OF BRITISH, DUTCH, AND FRENCH FINANCIAL INCUMBENTS

We start our analysis of renewal actions of financial services firms by presenting aggregated data on country level to investigate how financial incumbents combine external versus internal renewal actions. Table III displays eight-year averages of the average external/internal actions ratio of the Dutch, French and British incumbents investigated. Dutch incumbents appear to have a preference for external over internal actions. About 60 per cent of the actions were externally oriented. French incumbents are on average more balanced in using external and internal actions of renewal. UK firms show a different pattern. On average, only one quarter of their actions was externally oriented.

Table III also shows the average exploration/exploitation ratios. The Dutch, French, and UK firms appear to have comparable average exploration/exploitation ratios. In all three countries exploitation actions by far out number the exploration actions. Both the Dutch and UK incumbents appeared to have on average 80 per cent of their actions focused on exploitation. French companies averaged about 70 per cent over the research period.

To investigate the frequency of strategic renewal actions, we present data on the average number of renewal actions per year over the time period 1990–97 in Table IV. These data illustrate significant differences in the average number of

Table III. Average external/internal actions ratio and average exploration/exploitation actions ratio of the largest financial services incumbents in three countries; 1990–97

	Dutch incumbent firms	*French incumbent firms*	*UK incumbent firms*
External/internal ratio	0.63	0.55	0.24
Exploration/exploitation ratio	0.20	0.32	0.21

Source: Erasmus Strategic Renewal Centre.
Total number of strategic renewal actions over the period 1990–1997: N = 209 (NL); N = 257 (FR); N = 217 (UK).

Table IV. Firm specific average number of renewal actions per year (frequency) (1990–97)

Dutch incumbent firms		*French incumbent firms*		*UK incumbent firms*	
ABN Amro	9.5	Axa	9.3	Barclays	16.6
Aegon	3.3	BNP	6.8	Lloyds TSB	10.0
Fortis	3.9	Paribas	7.0	Prudential	5.6
ING	7.8	Société Générale	7.3		
Rabobank	4.4	UAP	6.4		

Source: Erasmus Strategic Renewal Centre.

Table V. Firm specific average external/internal actions ratio (standard deviation in brackets) (1990–97)

Dutch incumbent firms		*French incumbent firms*		*UK incumbent firms*	
ABN Amro	0.68 (0.31)	Axa	0.53 (0.25)	Barclays	0.28 (0.14)
Aegon	0.58 (0.30)	BNP	0.70 (0.24)	Lloyds TSB	0.29 (0.23)
Fortis	0.74 (0.37)	Paribas	0.45 (0.26)	Prudential	0.16 (0.18)
ING	0.48 (0.22)	SocGen	0.47 (0.17)		
Rabobank	0.66 (0.30)	UAP	0.60 (0.33)		

Source: Erasmus Strategic Renewal Centre.

renewal actions per year, or firm specific average *frequency* of strategic renewal actions undertaken by the incumbents investigated. Tables V and VI present the eight-year averages and standard deviations of respectively the external/internal actions ratio and the exploration/exploitation actions ratio of the thirteen sample firms. We use the standard deviation as an indicator of the volatility of strategic renewal behaviour. The standard deviations of external/internal ratios indicate that some firms, like Barclays and SocGen, have had a more stable pattern of strategic renewal actions than others, such as Fortis and UAP. The standard deviations of the exploration/exploitation ratios also indicate varying levels of volatility across the incumbents with high levels of Dutch financials Aegon, Fortis and

Table VI. Firm specific average exploration/exploitation actions ratio (standard deviation in brackets) (1990–97)

Dutch incumbent firms		*French incumbent firms*		*UK incumbent firms*	
ABN Amro	0.21 (0.16)	Axa	0.26 (0.21)	Barclays	0.23 (0.06)
Aegon	0.21 (0.39)	BNP	0.37 (0.20)	Lloyds TSB	0.14 (0.18)
Fortis	0.10 (0.37)	Paribas	0.25 (0.20)	Prudential	0.24 (0.29)
ING	0.42 (0.38)	SocGen	0.48 (0.12)		
Rabobank	0.07 (0.09)	UAP	0.23 (0.14)		

Source: Erasmus Strategic Renewal Centre.

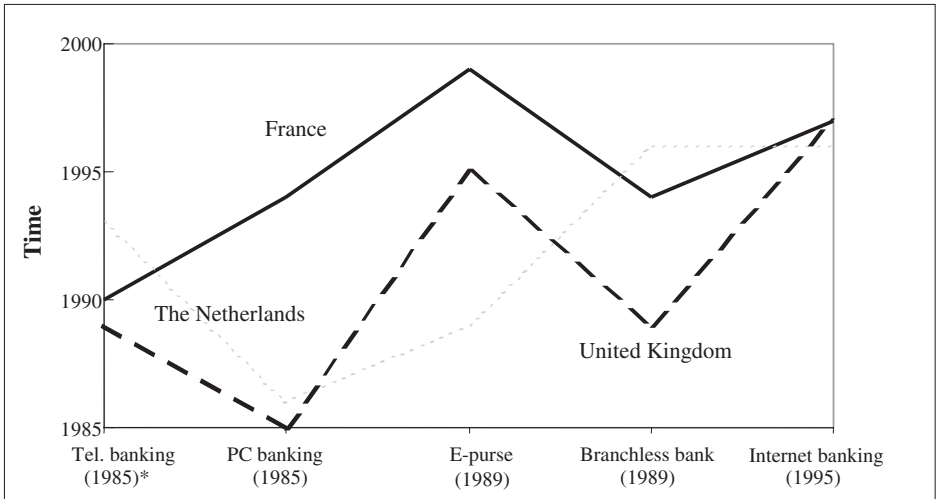
ING. As presented in Table VI, 11 of the 13 firms exhibited exploration/exploitation ratios of on average about 20 per cent in the 1990–97 study period. Two firms, ING and Société Générale, however, appear to have a two times higher exploration/exploitation ratio.

CO-EVOLUTIONARY INTERACTION EFFECTS: INDUSTRY SELECTION, COUNTRY INSTITUTIONAL EFFECTS, AND MANAGERIAL INTENTIONALITY

This section addresses co-evolutionary dynamics, and investigates the interaction effects of industry selection, country institutional effects, and managerial intentionality in strategic renewal processes. We investigate co-evolutionary dynamics in *three ways*. First, we study the link between the country institutional and firm level by investigating the connection between the speed of implementing regulatory changes and the pace of implementing technological changes by the incumbents operating in those countries. Second, we concentrate on one country and investigate differences in the diffusion of four technologies among the five largest incumbents in the Netherlands. We finally focus on the firm level and investigate the coevolutionary path of the genesis and development of the Dutch largest incumbent (ING) and the Dutch financial regulatory and supervisory structure.

We will focus on how *across the three countries* the pace of implementing regulatory changes relates to the speed of implementation of technological innovations by incumbent firms. We expect that incumbents in first moving countries regarding regulatory changes implemented new technologies faster compared to slower moving countries to cope with increasing levels of competition.

Figure 1 depicts the first-moving incumbent in implementing technological innovations associated with remote banking and in establishing a branchless bank. From the technology indicators used in Table II, we selected these innovations to exclude innovations that involved 'collective' renewal actions that included bank consortia, such as the introduction of the Electronic Fund Transfer at the Point



Technological Innovation**	France	The Netherlands	United Kingdom
Telephone banking	1990 (Paribas)	1993 (ING)	1989 (First Direct)
PC banking	1994 (BNP)	1986 (Postbank [ING])	1985 (Bank of Scotland)
E-purse	1999 (Crédit Mutuel)	1989 (Dutch Bank consortium)	1995 (Mondex consortium)
Branchless bank	1994 (BNP)	1996 (ING)	1989 (First Direct)
Internet banking	1997 (BNP Paribas)	1996 (ING)	1997 (Nationwide)

Source: Erasmus Strategic Renewal Centre.
* Indicates the year of implementation of the first mover in one of the five countries investigated (see also Table II).
** See also Table II.

Figure 1. First mover incumbents regarding the implementation of five technological innovations in France, the Netherlands and the UK (1985–99)

of Sale (EFTPoS). As Figure 1 indicates, UK and, to a lesser extent, Dutch incumbents appear to implement technological innovations prior to French incumbents. This suggests that incumbents in first mover countries regarding regulatory changes are likely to move first as well in implementing technological innovations. Such a connection between implementation speed of regulatory and technological changes may result in positive feedback effects. Countries with first movers in implementing technological innovations may be influenced by these first movers and their stakeholders to speed up regulatory change to enable the next technological innovation.

We now *focus on one country* to investigate co-evolutionary dynamics and interaction effects. We selected the Netherlands for reasons of data availability and because we could investigate all five large Dutch incumbents (with a combined market share of about 90 per cent). Figure 1 illustrates that ING moved first in four out of the five technological innovations. A case in point is the introduction of the e-purse in the Netherlands. The e-purse case illustrates cross-industry interaction effects between the banking and telecom industries, the role of mavericks

in developing a financial services technology, and exemplifies how interactions between financial services incumbents and other players can drive technological developments.

A Dutch bank consortium (including ING) moved first in implementing the e-purse (see Figure 1), a technology in which the Netherlands was first in Europe. In 1989, a consortium including all major Dutch banks, consumer organizations and retailers undertook a chipcard trial in Woerden, but decided not to pursue this technology. An attempt to commercialize the e-purse by PTT Telecom, the Dutch telephone operator, in the early nineties failed. Eventually, in 1995 a consortium of large Dutch banks, including ING, developed the Chipknip – the Dutch e-purse. ING's Postbank left the consortium within a month as it decided to pursue a more innovative e-purse strategy. It linked up with PTT Telecom and developed the Chipper. As an example of *mutual-causal interaction effects*, the remaining incumbents speeded up the rollout of the Chipknip and introduced it at the end of 1996. Postbank and PTT Telecom introduced the more sophisticated Chipper in the second half of 1997 (BIS, 2000), which urged the Chipknip consortium to improve the functionality of their product. Both the Chipknip and Chipper however had moderate success. Chipper and Chipknip jointly promoted the use of both e-purse systems, signed an interoperability agreement, and eventually integrated the two e-purse systems in 1999 (De Vries and Nielen, 2001).

This case illustrates how managerial intentionality of PTT Telecom and ING accelerated the introduction of the e-purse and took its functionality to a higher level. As an example of the feedback mechanism of firm-environment relations (Baum and Singh, 1994), these first mover incumbents subsequently influenced the selection pressures on other incumbents.

We will zoom in on the case of the Dutch ING to address the *firm level*. We will illustrate interaction effects between its strategic renewal behaviour and changes in the Dutch financial regulatory and supervisory structure. In the late eighties, innovative Dutch financial services firms increasingly integrated banking and insurance activities. These developments induced the Dutch government to lift the ban on combining banking and insurance operations from 1 January 1990. As an example of the feedback mechanism of firm-environment relations, Dutch insurer Nationale Nederlanden and NMB Postbank were already proactively negotiating a merger to establish the Internationale Nederlanden Group (ING). This merger was completed in March 1991. ING was the first of the major Dutch incumbents in implementing the concept of integrated financial servicing. Concurrently, the regulatory and supervisory systems are changing again. According to the 1990 change in regulation, banking and insurance activities should be legally separated. However, as integrated financial institutions like ING gradually dissected their operational structure from their legal structure, two problems arose. First, it became increasingly difficult for Dutch regulatory agencies to supervise the formerly sectorally separated financial activities. Second, it also became problematic

for large integrated companies to cope with conflicting claims of these separate agencies. Therefore, in July 1999, the Dutch Board of Financial Supervisors was founded to add a cross-sector perspective to the sectoral supervisory model.

DISCUSSION AND CONCLUSION

This explorative paper applied three complementary single-lens theories and a co-evolutionary perspective to develop four propositions. We designed novel metrics to investigate environmental selection, institutional effects, managerial intentionality, and co-evolutionary interaction effects at three levels of analysis. At the industry and country level, we analysed the impact of major technological innovations and changes in EU regulations to assess the development of changing selection pressures and the importance of country institutional effects. We then analysed three dimensions of strategic renewal behaviour of a sample of 13 financial incumbent firms. We now discuss our findings, indicate limitations and suggest issues for further research.

Environmental Selection and Strategic Renewal

Two findings relate to the selection perspective. First, incumbent firms show rather similar exploration/exploitation ratios (see Table III). Exploitation actions by far outnumber the exploration actions in the three countries investigated. This suggests strong selection pressures regarding exploitation and exploration as predicted by population ecology, illustrating Proposition 1. This is remarkable since the incumbents investigated (see Table I) include insurance companies like Aegon and Prudential, banks like Barclays, and integrated financial services firms such as ING, which are rooted in different regulatory and national environments, and have different path dependencies. From a population ecology perspective, incumbents appear to prefer leveraging their routines and resources (exploitation actions) above changing the routines and developing new resources and competencies (exploration actions) in coping with organizational inertia (Hannan and Freeman, 1984) and maintaining fit with their selection environment.

Selection forces 'arise from the constraining role played by cultural elements, such as symbols, cognitive systems, and norms and rules' (Aldrich, 1999, p. 49). Regarding these cognitive systems, Weick (1979) suggests that managerial beliefs can be inferred from actions. To the extent this is the case, the incumbent firms investigated may share a common industry recipe (Spender, 1989), dominant logic (Prahalad and Bettis, 1986), or top management mindset regarding exploration/exploitation renewal actions (Barr et al., 1992). We did not investigate whether the causes of similarity stem from common dominant logics, similar top management mindsets regarding exploration/exploitation actions, or in features commonly ascribed to strategic groups (McGee and Thomas, 1986; Peteraf and

Shanley, 1997). The firms investigated, however, are all financial incumbents that share a common industrial context, the EU financial services industry. The impact of variation in national selection environments on the prevailing management logics regarding exploration/exploitation in the financial services sector thus appears to be limited (Dijksterhuis et al., 1999).

Institutional Effects on Strategic Renewal

The second finding deals with country institutional effects on the context dimension of strategic renewal of incumbents. These country differences regarding external/internal ratios may be the result of the *distinct economic and institutional structure* of the financial services sector in these countries. The Dutch financial services industry was much more concentrated than the British industry. If Dutch companies wanted to grow, external actions abroad offered more opportunities than internal or external actions in their domestic market. British financials were confronted with a different climate. In the early nineties, the British financial players had to overcome a troublesome period caused by an economical slowdown, leading to restructuring operations, which are typically internal actions. The French sector represents a mix of the Dutch and British national circumstances. Overall, this second finding illustrates Proposition 2.

Managerial Intentionality and Strategic Renewal

Focusing on differences at firm level, Table VI indicates that ING and Société Générale have significantly higher average exploration/exploitation ratios. This suggests these firms possibly have a higher absorptive capacity than the other incumbent firms. Firms with higher levels of absorptive capacity tend to consider opportunities in their environment independent of current performance criteria in their industry, which might result in higher exploration/exploitation ratios. This facilitates managerial intentionality, which is reflected in more proactive strategic behaviour regarding the changing selection environment (Van Den Bosch et al., 1999, 2003). Regarding Proposition 3, ING and Société Générale could be interesting examples of managerial intentionality regarding the content dimension of strategic renewal.

The findings regarding the process dimension of renewal actions suggest that financial incumbents appeared to have their own timing of renewal actions (see also Figure 1). In the Netherlands, ING was a first mover in creating particular resource configurations in its strategic renewal trajectory, which contributed to its competitive advantage (Eisenhardt and Martin, 2000). The firms also differed markedly in terms of the frequency of renewal actions (see Table IV). Incumbents further diverged with respect to the standard deviation of both ratios, indicating firm specifics in terms of the volatility of strategic renewal patterns. In conclusion,

the incumbents investigated seem to have had sufficient slack to allow for, and use, different timing and frequency of actions of renewal. Moreover, two incumbents seem to have deviated by exploring the environment to a greater extent than their competitors, which suggests incumbents can overcome structural inertia and still be viable. These observations indicate managerial intentionality at firm level and suggest evidence regarding Proposition 3.

Co-evolutionary Interaction Effects and Principles of Self-renewing Incumbents

Explaining strategic renewal behaviour of financial incumbents using a selection, institutional, or managerial intentionality approach offers partial explanations. Depending on the level of analysis and point of view taken, Propositions 1, 2 and 3 can all be illustrated within the corresponding theoretical approach. The previous section, however, illustrates co-evolutionary interaction effects in three complementary ways. Each addresses interaction effects within and between several levels of analysis. Our study shows that co-evolutionary interaction effects play a significant role in understanding strategic renewal behaviour. With regard to Proposition 4, our research indicates that interaction effects based on a co-evolutionary perspective can explain deviations of observed renewal actions from predictions derived from these theories.

As co-evolution 'is at the root of self-organizing behaviour' (McKelvey, 2002, p. 1), it is important to reflect on how our findings contribute to the understanding of self-renewing organizations. In this connection, Volberda and Lewin (this issue) raise the important question of how to become and sustain a self-renewing organization and identify *three* overarching *principles*. The first principle relates to managing 'the internal rates of change'. Enabling strategies can drive momentum and early mover behaviour. The second principle is 'optimizing self-organizing'. Managing the rate of internal growth through innovation is a key enabling strategy, and suggests that forms of decentralized structures are associated with this principle. Their third principle highlights the necessity of synchronizing concurrent exploitation and exploration (March, 1991). This principle requires slack resources to enable exploration and pursuing multiple strategies in which parallel exploring may take place. Do the findings of this paper provide empirical evidence of these three key principles in the context of self-renewing incumbents?

To address this question, we relate the three principles to our findings of the strategic renewal of the Dutch incumbents. The first principle about internal rates of change and early mover behaviour implies relatively low external/internal ratios (i.e. internal renewal actions outnumber external ones). As indicated above, ING had the lowest external/internal ratio of the five Dutch incumbents, and is first mover in implementing technological innovations in the Netherlands (see Figure 1). The second principle stresses the importance of internal growth through

innovation and of forms of decentralized organizational structures. Again, ING has the lowest external/internal ratio and the highest exploration/exploitation ratio of the Dutch incumbents. Furthermore, ING has a decentralized structure (Volberda et al., 2001). Due to large-scale merger and acquisition processes, ING emerged as a collection of unconnected divisions, each of which is subject to its own selection environment. The third principle, which regards synchronizing concurrent exploitation and exploration and pursuing multiple strategies, can partly be illustrated by the ING case. ING has by far the highest exploration/exploitation ratio of the Dutch incumbents (see Table VI). Its exploration/exploitation ratio, however, was not stable during the research period. ING's on-line financial services strategy is an interesting example with regard to pursuing multiple strategies that foster parallel exploration. Major divisions, such as ING's Postbank and Nationale Nederlanden, developed their own on-line strategies. Only very recently top management began emphasizing the necessity of creating an ING-wide Internet portal. In sum, the empirical evidence provided here shows that our metrics can be helpful in further exploring self-renewing organizations and in operationalizing the three principles.

Limitations and Issues for Future Research

No study is without limitations. As our regulatory and technological indicators are primarily related to the banking industry, developments in the insurance and securities industries were largely kept out of the analysis. Furthermore, we limited our analysis to two major selection forces, regulatory and technological changes. This excluded other major influences including globalization, changing demographics and consumer preferences, disintermediation, and changing corporate governance.

Another limitation concerns potential biases in our data. Strategic renewal actions were measured in terms of their number and not their magnitude. Weighing renewal actions in terms of their magnitude, however, was not possible. The *Financial Times* and the Annual Reports of the incumbents investigated do not systematically report the present, let alone the expected future impact or consequences of these renewal actions. We expect, however, marginal activities are less likely to be reported than those of greater significance. As the marginal projects of the investigated firms are subject to the same potential bias, and since actions are evaluated in terms of their ratios rather than counts, interpretation problems caused by this potential bias are largely avoided.

A first suggestion for *future research* is to investigate in greater detail the two findings discussed above: (1) the exploration/exploitation ratio seems to a large extent to be determined by the industry selection environment; and (2) the external/internal ratio appears to be influenced by the institutional environment. Second, in future research it is important to develop methodologies that measure strategic

renewal actions by their magnitude including the impact on the ratios as presented in this paper. Another important issue is to incorporate new entrants into the coevolutionary analysis. We mainly focused on financial incumbent firms and excluded new entrants. These new entrants may be either brand new entrants or incumbent firms from another industry, such as the ICT industry. We expect that interaction effects of industry selection, institutional effects and managerial intentionality will give rise to a coevolution of both incumbents and new entrants, which might increase the average exploration/exploitation ratio of financial incumbents (Hensmans et al., 2001). Introducing new entrants in a more encompassing co-evolutionary analysis enables the investigation to what extent new entrants are related to damping mechanisms being mechanisms that influence the rate of co-evolution (McKelvey, 2002). Future research could also include case studies of outlier companies in terms of the three dimensions of strategic renewal. These case studies could contribute to the understanding of the managerial, organizational and knowledge process factors and the role of leadership that enable and inhibit self-renewing organizations. We already indicated the absorptive capacity construct and its expected relation with proactive behaviour (Van Den Bosch et al., 1999, 2003) could be helpful in such an endeavour. Finally, it is interesting to investigate to what extent CEO changes and changes in the composition of the Top Management Team will have an impact on the speed of a firm's co-evolution.

In *conclusion*, how does this paper contribute to answering questions related to the 'Beyond Adaptation versus Selection' theme (Volberda and Lewin, this issue)? We hope that our analysis shows that a co-evolutionary approach is fruitful to overcome the partial explanations of single-lens perspectives. In previous research on this topic similar conclusions have been reached. Our study, however, has at least three contributions. First, we proposed to use metrics linking strategic renewal actions of firms to environmental selection, institutional effects and managerial intentionality. Such metrics have been lacking up till now. Second, we showed that single-lens perspectives cannot explain co-evolutionary interaction effects operating between different levels of analysis in the empirical world. Third, in a more detailed empirical analysis for one incumbent firm, it appeared these metrics provide preliminary evidence for the three principles that Volberda and Lewin (this issue) associate with self-renewing organizations.

Reflecting on these contributions, we suggest that co-evolutionary research can make progress in three ways. First, researchers have to investigate other single-lens theories to assess selection, institutional effects and managerial intentionality in co-evolutionary dynamics. Second, and even more important for building co-evolutionary theories, is the development of conceptual metrics, such as those presented in this paper, to link multiple levels of analysis. Third, these metrics can be applied in quantitative research to explore the nature and types of co-evolutionary interaction effects and of principles of self-renewing organizations.

By combining these efforts, co-evolutionary theory building and empirical research will make progress.

NOTE

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REFERENCES

Abrahamson, E. and Rosenkopf, L. (1993). 'Institutional and competitive bandwagons: using mathematical modeling as a tool to explore innovation diffusion'. *Academy of Management Review*, **18**, 487–517.

Aldrich, H. (1979). *Organizations and Environments*. Englewood Cliffs, NJ: Prentice Hall.

Aldrich, H. (1999). *Organizations Evolving*. London: Sage.

Barnett, W. P. and Burgelman, R. A. (1996). 'Evolutionary perspectives on strategy'. *Strategic Management Journal*, **17**, Summer, 5–19.

Barnett, W. P., Greve, H. R. and Park, D. Y. (1994). 'An evolutionary model of organizational performance'. *Strategic Management Journal*, **15**, 11–28.

Barr, P. S., Stimpert, J. L. and Huff, A. S. (1992). 'Cognitive change, strategic action, and organizational renewal'. *Strategic Management Journal*, **13**, 15–36.

Baum, J. A. C. and McKelvey, B. (1999). 'Whole-part coevolutionary competition in organizations'. In Baum, J. A. C. and McKelvey, B. (Eds), *Variations in Organization Science: In Honour of Donald T. Campbell*. London: Sage, Chapter 7, 113–35.

Baum, J. A. C. and Singh, J. V. (1994). 'Organization-environment coevolution'. In Baum, J. A. C. and Singh, J. V. (Eds), *Evolutionary Dynamics of Organizations*. New York: Oxford University Press, Chapter 1, 379–402.

Best, H. (1990). *The New Competition, Institutions of Industrial Restructuring*. Cambridge: Polity Press.

BIS (Bank for International Settlements) (2000). *Survey of Electronic Money Developments*. 38, May 2000.

Carney, M. and Gedajlovic, E. (2002). 'The co-evolution of institutional environments and organizational strategies: the rise of family business groups in the ASEAN region'. *Organization Studies*, **23**, 1, 1–29.

Carroll, G. R. and Hannan, M. T. (2000). 'Why corporate demography matters: policy implications of organizational diversity'. *California Management Review*, **42**, 3, 148–63.

Child, J. (1972). 'Organizational structure, environment and performance: the role of strategic choice'. *Sociology*, **6**, 1–22.

Child, J. (1997). 'Strategic choice in the analysis of action, structure, organizations and environment: retrospect and prospect'. *Organization Studies*, **18**, 1, 43–76.

Cohen, W. M. and Levinthal, D. A. (1990). 'Absorptive capacity: a new perspective on learning and innovation'. *Administrative Science Quarterly*, **35**, 1, 128–52.

Cohen, W. M. and Levinthal, D. A. (1994). 'Fortune favors the prepared firm'. *Management Science*, **40**, 2, 227–51.

Cyert, R. and March, J. (1963). *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.

Daniel, E. and Storey, C. (1997). 'On-line banking: strategic and management challenges'. *Long Range Planning*, **30**, 890–8.

D'Aveni, R. (1994). *Hyper-competition: Managing the Dynamics of Strategic Manoeuvring*. New York: The Free Press.

De Vries, H. J. and Nielen, S. (2001). 'Banking Chipcards in the Netherlands – A Battle Between Two Standards'. BSM Research Memorandum 0069, Rotterdam: Erasmus Universiteit Rotterdam, Rotterdam School of Management/Faculteit Bedrijfskunde.

Dijksterhuis, M. S., Van den Bosch, F. A. J. and Volberda, H. W. (1999). 'Where do new organization forms come from? Management logics as a source of coevolution'. *Organization Science*, **10**, 569–82.

DiMaggio, P. J. and Powell, W. W. (1983). 'The iron cage revisited: institutional isomorphism, and collective rationality in organization fields'. *American Sociological Review*, **48**, 147–60.

Djelic, M.-L. and Ainamo, A. (1999). 'The coevolution of new organizational forms in the fashion industry: a historical and comparative study of France, Italy, and the United States'. *Organization Science*, **10**, 5, 622–37.

EFB (Economisch Financiële Berichten) (1999). *De Europese banksector herstructureert.* **54**, 1–11.

Eisenhardt, K. M. and Martin, J. A. (2000). 'Dynamic capabilities, what are they?'. *Strategic Management Journal*, **21**, 1105–21.

Essinger, J. (1999). *The Virtual Banking Revolution, The Customer, the Bank and the Future.* London: International Thomson Business Press.

Flier, B., Van den Bosch, F. A. J., Volberda, H. W., Carnevale, C. A., Tomkin, N., Melin, L., Quélin, B. and Kriger, M. P. (2001). 'The changing landscape of the European financial services sector'. *Long Range Planning*, **34**, 179–207.

Greenwood, R. and Hinings, C. R. (1996). 'Understanding radical organisational change: bringing together the old and new institutionalism'. *Academy of Management Review*, **21**, 1022–54.

Gual, J. (1999). 'Deregulation, integration and market structure in European banking'. *EIB Papers*, **4**, 35–48.

Hambrick, D. and D'Aveni, R. (1988). 'Large corporate failures as downward spirals'. *Administrative Science Quarterly*, **33**, 1–23.

Hannan, M. T. and Freeman, J. (1977). 'The population ecology of organizations'. *American Journal of Sociology*, **82**, 929–64.

Hannan, M. T. and Freeman, J. (1984). 'Structural inertia and organizational change'. *American Sociological Review*, **49**, 149–64.

Hannan, M. T. and Freeman, J. (1989). *Organization Ecology*. Cambridge, MA: Harvard University Press.

Haveman, H. A., Russo, M. V. and Meyer, A. D. (2001). 'Organizational environments in flux: the impact of regulatory punctuations on organizational domains, CEO succession, and performance'. *Organization Science*, **12**, 253–73.

Hensmans, M., Van den Bosch, F. A. J. and Volberda, H. W. (2001). 'Clicks vs. bricks in the emerging online financial services industry'. *Long Range Planning*, **34**, 231–47.

Huygens, M., Baden-Fuller, C., Van den Bosch, F. A. J. and Volberda, H. W. (2001). 'Coevolution of firm capabilities and industry competition: investigating the music industry, 1877–1997'. *Organization Studies*, **22**, 6, 971–1011.

Jones, C. (2001). 'Coevolution of entrepreneurial careers, institutional rules and competitive dynamics in American film, 1895–1920'. *Organization Studies*, **22**, 6, 911–44.

Levinthal, D. A. and March, J. G. (1993). 'The myopia of learning'. *Strategic Management Journal*, **14**, 95–112.

Lewin, A. Y. and Koza, M. P. (2001). 'Empirical research in coevolutionary processes of strategic adaptation and change: the promise and the challenge'. *Organization Studies*, **22**, 6, v–xii.

Lewin, A. Y. and Volberda, H. W. (1999). 'Prolegomena on coevolution: a framework for research on strategy and new organization forms'. *Organization Science*, **10**, 519–34.

Lewin, A. Y., Long, C. P. and Carroll, T. N. (1999). 'The coevolution of new organizational forms'. *Organization Science*, **10**, 535–50.

March, J. G. (1991). 'Exploration and exploitation in organizational learning'. *Organization Science*, **2**, 71–87.

Maruyama, M. (1963). 'The second cybernetics: deviation-amplifying mutual causal processes'. *American Scientist*, **51**, 164–79.

McGee, J. and Thomas, H. (1986). 'Strategic groups: theory, research and taxonomy'. *Strategic Management Journal*, **7**, 141–60.

McKelvey, B. (1997). 'Quasi-natural organization science'. *Organization Science*, **8**, 352–80.

McKelvey, B. (2002). 'Managing Coevolutionary Dynamics'. Paper presented at the 18th Egos Colloquium, 4–6 July, Barcelona, Spain.

Meyer, J. W. and Rowan, B. (1977), 'Institutionalized organizations: formal structure as myth and ceremony'. *American Journal of Sociology*, **83**, 340–63.

Miles, R. E. and Snow, C. C. (1978). *Organizational Strategy, Structure, and Process*. New York: McGraw-Hill.
Peteraf, M. A. and Shanley, M. (1997). 'Getting to know you: a theory of strategic group identity'. *Strategic Management Journal*, **18**, Summer special issue, 165–86.
Prahalad, C. K. and Bettis, R. A. (1986). 'The dominant logic: a new linkage between diversity and performance'. *Strategic Management Journal*, **7**, 485–501.
Scott, W. R. (2001). *Institutions and Organizations*, 2nd edition. Sage: Thousand Oaks.
Schiff, M. and Lewin, A. Y. (1970). 'The impact of people on budgets'. *The Accounting Review*, **45**, 2, 259–68.
Sivula, P., Van den Bosch, F. A. J. and Elfring, T. (2001). 'Competence-based competition: gaining knowledge from client relationships'. In Sanchez, R. (Ed.), *Knowledge Management and Organizational Competence*. Oxford: Oxford University Press, 77–94.
Spedale, S. (2003), 'Technological discontinuities: is co-operation an option?'. *Long Range Planning*, **36**, 3, 253–68.
Spender, J. C. (1989). *Industry Recipes and Enquiry into the Nature and Sources of Managerial Judgement*. Oxford: Basil Blackwell.
Taylor, B. (1998). 'The Darwinian shakeout in financial services – an interim report'. *Long Range Planning*, **31**, 82–92.
Teece, D. J. (1984). 'Economic analysis and strategic management'. *California Management Review*, Spring, 87–110.
Teece, D. J., Pisano, G. and Shuen, A. (1997). 'Dynamic capabilities and strategic management'. *Strategic Management Journal*, **18**, 509–33.
Tolbert, P. S. and Zucker, L. G. (1996). 'The institutionalization of the institutional field'. In Clegg, S. R., Hardy, C. and Nord, W. R. (Eds), *Handbook of Organization Studies*. London: Sage, 175–90.
Van Den Bosch, F. A. J. and Van Wijk, R. A. (2001). 'Creation of managerial capabilities through managerial knowledge integration: a competence-based perspective'. In Sanchez, R. (Ed.), *Knowledge Management and Organizational Competence*. New York: Oxford University Press, 159–76.
Van Den Bosch, F. A. J., Volberda, H. W. and De Boer, M. (1999). 'Coevolution of firm absorptive capacity and knowledge environment: organization forms and combinative capabilities'. *Organization Science*, **10**, 551–68.
Van Den Bosch, F. A. J., Van Wijk, R. A. and Volberda, H. W. (2003). 'Absorptive capacity: antecedents, models, and outcomes'. In Easterby-Smith, M. and Lyles, M. (Eds), *Blackwell Handbook of Organizational Learning and Knowledge Management*. Oxford: Blackwell (forthcoming).
Volberda, H. W. (1996). 'Toward the flexible form: how to remain vital in hypercompetitive environments'. *Organization Science*, **7**, 4, 359–74.
Volberda, H. W. (1998). *Building the Flexible Firm: How to Remain Competitive*. Oxford: Oxford University Press.
Volberda, H. W. and Lewin, A. Y. (2003) (this issue). 'Co-evolutionary dynamics within and between firms: from evolution to co-evolution'. *Journal of Management Studies*, **40**, 8, 2105–30.
Volberda, H. W., Van Den Bosch, F. A. J., Flier, B. and Gedajlovic, E. R. (2001). 'Following the herd or not? Patterns of renewal in the Netherlands and the UK'. *Long Range Planning*, **34**, 209–29.
Weick, K. E. (1979). *The Social Psychology of Organizations*, 2nd edition. Reading, MA: Addison-Wesley.
Weick, K. E. (1988). 'Enacted sensemaking in crisis situations'. *Journal of Management Studies*, **25**, 4, 305–17.
Weick, K. E. and Daft, R. L. (1983). 'The effectiveness of interpretation systems'. In Whetton, D. A. (Ed.), *Organizational Effectiveness: A Comparison of Multiple Models*. New York: Academic Press.
Wernerfelt, B. (1984). 'A resource-based view of the firm'. *Strategic Management Journal*, **5**, 171–80.
Wicks, D. (2001). 'Institutionalized mindsets of invulnerability: differentiated institutional fields and the antecedents of organizational crisis'. *Organization Studies*, **22**, 4, 659–92.