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Changes in capital allocation practices – ERM and organisational change

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ABSTRACT

This paper aims to study changes in capital allocation routines following the introduction of a new risk management system, enterprise risk management (ERM). Based on an institutional framework and empirical evidence from multiple sources in a large UK insurance company, we evaluated the extent and nature of organisational change. ERM was seen as an external driver to the change in the existing routines, which in turn led to internal changes in new capital allocation routines. The change was extreme, which signifies that existing capital allocation routines were not strong enough to deal with ERM as a key driver of change.

1. Introduction

Enterprise risk management (ERM), from its insurance origins, has developed into a full-fledged management function which has since progressed into areas of business that were considered unrelated. Such a portfolio approach to risk recognises that risks are interrelated and significant benefits can be achieved if risk is evaluated and monitored on a company wide basis (De La Rosa, 2007). Thus, it takes into account all types of risk a company faces and manages the overall risks in aggregate rather than independently. ERM differs from traditional risk management. First, it identifies and classifies both the risks which the company has information or advantage about, and risks that the company has no information or advantage about. Second, ERM analyses risk as part of a company. Third, it merges the various risks and actions of risk management into one internal risk management system (Culp, 2001; D'Arcy & Brogan, 2001). In an ERM environment risk is treated as an opportunity for making profit rather than something to be minimised or eliminated. If ERM is executed effectively it is a powerful management tool because it can offer companies rewards including market leadership, robust growth, stock price premiums, and investor confidence (Schneier & Miccolis, 1998). The call for strengthened corporate governance and risk management, following some business failures, has led to the release of ERM frameworks as a way to help companies standardising ERM.[1] The ERM literature shows that the principal objective of ERM, as seen by insurers, is to create and improve shareholders' value through better risk-based decision making and capital allocation in order to increase the market value of equity capital (Tillinghast-Towers Perrin, 2004). Thus, financial institutions have developed risk management practices to address issues

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[1] Examples of ERM frameworks released are COSO (the Committee of Sponsoring Organisations of the Treadway Commission) (2004a,b) and ISO 31000 (2009).

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related to capital adequacy and to internal capital allocation to business units (Venter, 2004; Zanjani, 2002; Zeppetella, 2002), and hence an increasing number of insurance companies have adopted ERM principles (Acharyya, 2008; Dickinson, 2001), which seems to have brought about a significant change in their operations. Basically, prior studies have recognised the potential change triggered by ERM implementation in risk management routines (Meulbroek, 2002a,b; Millage, 2005; Nocco & Stulz, 2006), and particularly capital allocation routines.[2] In this regard, ERM can be seen as a change driver. Further, risk-based capital calculations have been advocated as internal representations of risk profiles, the usage of which is expected to add a new facet to companies' accountability (Mikes, 2009). However, to the best of our knowledge, there has been no empirical evidence to support ERM implementation in association with changes in capital allocation routines. These routines are part of the control practices within the firm.

This paper aims to study changes in capital allocation routines following the introduction of ERM. It reports our research that consists of interviews with officers and staff from different levels within a single non-life insurance company, as well as documentation on risk management strategies. We refer to this company as VC. This study aims to provide a better understanding of the change processes in capital allocation practices associated with ERM implementation. Further, we examine institutional change aspects within the risk management context, and thus extend prior research through developing a processual view of change (Burns & Scapens, 2000; Cruz, Major, & Scapens, 2009; Hirsch & Lounsbury, 1997; Seo & Creed, 2002; Sharma, Lawrence, & Lowe, 2010). This study draws on an institutional framework to explain the ERM processes through which changes in capital allocation routines are expected to arise. Although risk management systems are known to be associated with changes at the institutional level, institutional theorists have not explored the change processes in the risk management context.

It is argued that ERM implementation as an innovation in management control leads to changes in risk management practices within companies, which when actioned can be a part of enacting and adding legitimacy to the changes of management control systems (Chenhall, 2003). Thus, risk management as a managerial practice has the power to augment or challenge traditional management control forms (Huber & Scheytt, 2013). ERM is adopted in financial institutions and is set in the domain of financial decision making and management control. The management accounting literature can help in making sense of ERM implementation. However, exploring ERM as a facet of control and considering the changes surrounding its implementation can enrich the existing body of management controls research (Mikes, 2009). Thus, we address three research questions in this paper. First, what is the organisational impact of ERM as a new risk management system? Second, what is the role of institutionalised risk management practices? And third, how have change agents' actions played a role in those change processes? The remainder of the paper consists of further five sections. Section 2 reviews the relevant literature on risk management and capital allocation. Sections 3 and 4 detail the theoretical underpinnings and the research design, respectively. The findings are presented in Section 5. The final section is the discussion and conclusions.

2. Risk management and capital allocation practices in the insurance industry

Traditionally, financial institutions' risks have been considered independent silos, with negative implications for a company's risk management. Risk-based capital has emerged as a common currency in which all risks can be expressed. This led to a leveraging of this concept to establish the key basis of ERM (Rao & Dev, 2006). Capital is the most expensive and important input in production for financial firms and has a different role in financial institutions as compared to non-financial institutions. It is not considered a main source of funding for companies, but a buffer to absorb large unexpected losses, protect depositors and other claim holders, and provide confidence to external investors and rating agencies on the financial health and viability of the firm (Aziz & Rosen, 2004). Capital is deployed through holding a large number of financial risk positions that should be evaluated. In this regard, capital can be an ideal metric used to aggregate risks across different asset classes and different risk types (Aziz & Rosen, 2004). Insurance companies have used various approaches to capital allocation such as regulatory guidelines and marginal capital allocation. The idea of incorporating risk into capital allocation has been in the literature since the late 1990s (Cummins, 2000; Crouhy, Galai, & Mark, 2006). The main capital allocation methods in the literature are summarised in Appendix A. A brief analysis of those methods shows that they do not consider the wide view of risk(s) pertaining to particular lines of business.

Researchers provided evidence that information quality directly affects capital allocation, which appears in companies' cost of capital (Leuz & Verrecchia, 2005). They further argued that ERM is expected to improve risk information within insurance companies (Weiner, 1998). This supports our argument that ERM can play a major role in changing capital allocation practices as risk is the first factor to consider when holding and allocating capital. Companies hold capital to protect themselves against losses in excess of reserves for credit, interest-rate fluctuations, inflation, economic operations, and market risks (Weiner, 1998). Thus, any changes in risk management practices should influence the actions and practices within the capital allocation process. Specific capital allocation practices, on the other hand, can lead to misinformed financial decisions (Grundl & Schmeiser, 2007), and hence affect a firm's value. Thus, adopting appropriate capital allocation practices should enhance a firm's value, which, arguably, is the ultimate objective of ERM (Nocco & Stulz, 2006).

[2] *Capital allocation routine* refers to capital allocation practices, i.e., the ways/approaches used to allocate capital to different business units, products, and customers as a main part of the process of profitability-measurement. Thus, practices are the ways in which capital allocation is exercised.

Changing capital allocation practices towards more risk-based ones is one side of the story, managing risk as a part of capital allocation practice is the other side of the story. It is very important to ensure a sound risk management process when allocating capital in financial institutions given that their financial assets constitute a major part of the company's capital, unlike capital investment (Meulbroek, 2002a,b; Rao & Dev, 2006). Therefore, we can argue that implementing ERM, which is arguably a more advanced system of risk management, can facilitate a better understanding and measurement of the aggregate risk inherent in various business activities. This in turn can lead to a more objective basis for resource allocation and hence improve capital efficiency and return on equity (Hoyt & Liebenberg, 2011). Given that a developed risk management system will enhance the ability to decide on investments based on a more accurate risk-adjusted rate, companies are more likely to obtain benefits (Meulbroek, 2002a,b). Thus, in an ERM (holistic risk) environment, the aim of risk management can be seen as to increase returns on equity capital rather than reducing risk (Froot, Scharfstein, & Stein, 1993; Strongin & Petsch, 1999).

A web-based survey by Tillinghast-Towers Perrin (2004) reported that economic capital was a key decision-making tool for insurers at all levels in a firm, and risk and capital management were making a difference. Insurers' business decisions were also found to be guided by enhanced risk and capital management approaches as a result of using them more broadly at the company level (Tillinghast-Towers Perrin, 2004). Another survey by AON (2010)[3] showed that 57 per cent of the responding companies embed risk management within the capital allocation process. The survey provided evidence that companies with well-developed ERM systems were able to better manage the process of capital allocation. In contrary, companies in the early stage of ERM implementation did not use ERM for capital allocation process. As such, ERM is expected to affect capital allocation practices when its implementation develops over time. Further, a risk-constrained optimisation approach was employed by Ai, Brockett, Cooper, and Golden (2011) to study capital allocation decisions under ERM. They holistically treated the issue of managing enterprise-wide risks via maximising the expected total return on capital while trading off risks in Value-at-Risk sort of constraints.

The above review shows that prior studies addressing the relationship between ERM implementation and capital allocation practices have mainly adopted a positivistic perspective. There is an absence of empirical evidence on how ERM rules modify or change capital allocation routines. It is necessary to go beyond isomorphism and symbolic conformity to stress actors and practices, and the relationship of institutional forces to micro-processes (Burns, 2000; Lounsbury, 2008; Sharma et al., 2010; Siti-Nabiha & Scapens, 2005; Soin, Seal, & Cullen, 2002). This study addresses this gap in the literature.

3. Institutional framework

Different institutional approaches have been adopted to analyse management accounting practices. Studies informed by old institutional economics (OIE) provided evidence on how management accounting practices change (Burns, 2000; Burns & Scapens, 2000; Coad and Cullen, 2006; Lukka, 2007; Quinn, 2013; Siti-Nabiha & Scapens, 2005; Soin et al., 2002). However, they exhibit a taken-for-granted nature. New institutional sociology (NIS) has been used to explain the change in management accounting that is due to external pressures such as regulatory changes (Collier, 2001; Tsamenyi, Cullen, & Gonzalez, 2006). Further, rules and routines concepts have been adopted in a number of studies (Burns, 2000; Burns & Scapens, 2000; Quinn, 2011; Van der Steen, 2009, 2011). Our study focuses on the micro-processes of change in management accounting, particularly risk management practices within a single insurance company. New institutional sociology theory (NIS) considers extra-organisational institutions like social, economic, and political institutions which exist in the organisational field and society. Further, new institutional economics (NIE) is not appropriate to use in this research because our main focus is the intra-organisational process of change driven by institutions and rules that already exist in the organisational field rather than determining whether institutions exist based on underlying economic theory, which makes NIE out of the scope of this study.

As such, old institutional economics (OIE) is deemed most suited to this study. This institutional economics stream proposes actors' tastes and preferences should be treated as socially conditioned not as given preference functions, which is not consist with NIE assumptions of rational, maximising behaviour by agents with given and stable preference functions (Hodgson, 1998). Thus, institutionalists rejected the use of given preference functions to model individuals. Thus, OIE discards the assumptions of neo-classical economics related to rational economic man and equilibrium-based theorising. The interaction between individuals forms institutions, but individuals' purposes/preferences are also shaped by socio-economic conditions (Hodgson, 1998). OIE further assumes that tastes and preferences of individuals need to be analysed in relation to their effect on both action and behaviour. As such, rules, norms and routines are argued to have an impact on tastes and preferences (Hodgson, 1998). Institutional theorists (Barley & Tolbert, 1997) have mainly addressed how institutional structure and agency exercised by actors influence each other (Sharma et al., 2010). However, they have been quiet about the use of institutional theory within the risk management field. Thus, more research is needed using institutional theory to address the mechanisms playing a role in choosing specific risk management rules and routines, and the circumstances under which risk officials affect institutional change. In this study, we aim to find out how specific institutional forces (ERM rules here) can affect the choice of changing/modifying capital allocation routines at the institutional level. In this respect, ERM and the related actions of the risk management team can be conceptualised as an agent of change.

[3] Twelve per cent of the survey respondents were from the financial industry.

Institutional theory is used in this case study because it is traditionally considered as a theory of stability and hence there is a need to extend it to incorporate changes (Sharma et al., 2010). This study is based on Burns and Scapens' (2000) institutional model as it takes into account management accounting change within individual firms (intra-organisational processes of change), which is the aim of this study. Institutional theory has informed studies on changes in both management accounting and management control systems fields (Burns & Baldvinsdottir, 2005; Goretzki, Strauss, & Weber, 2013; Sharma et al., 2010). However, it has not been used in the risk management field and specifically not in relation to ERM although there is little doubt that risk management systems are generally associated with changes at the institutional level. However, institutional theory usage has been criticised. For example, using institutional theory to address change processes was seen to have a tendency to ignore agency (Volkoff, Strong, & Elmes, 2007). Burns and Scapens' (2000) framework can help overcome this problem because of its focuses on agents' actions (see Fig. 1). Further, DiMaggio (1988) argued that power and group interests are smuggled into the institutional perspective at the expense of sustained theoretical objectivity.

Fig. 1 presents the theoretical processes of capital allocation routinisation at VC, and is based on Burns and Scapens' (2000) institutional model. Specific behaviours are expected to dissociate from their historical circumstances throughout the institutionalisation process of capital allocation routines. As such, rules and routines become the way things are: i.e., institutions. ERM rules can allow for the deinstitutionalisation of prior institutions and the introduction of new rules and routines through the processes of enactment, reproduction, and institutionalisation (Burns & Scapens, 2000). Actors' actions lead to changes in rules and routines through those processes. Those institutions will be encoded into the on-going rules and routines and will form new rules, and so on. In this regard, institutions are the structural properties comprising the assumptions regarding the way of doing things that are taken for granted. They shape and restrict the rules and routines, and decide the individual actors' meanings, norms, values, and powers (Burns & Scapens, 2000). Rules and routines concepts have been adopted to analyse management control practices (Quinn, 2011; Van der Steen, 2009, 2011), but not risk management practices. Thus, this study can be considered as a specific application of Burns and Scapens' model to the analysis of risk management change. Any change in management accounting can be interpreted using phenomena such as rules and routines enabling and constraining actions, and risk management change is no exception. Drawing on OIE, Burns and Scapens (2000) suggest three dichotomies: formal versus informal change, that is, conscious design as against tacit change; revolutionary versus evolutionary change, or in other words, fundamental disruption as opposed to gradual change; and regressive versus progressive change, that is, ceremonial as opposed to instrumental change.

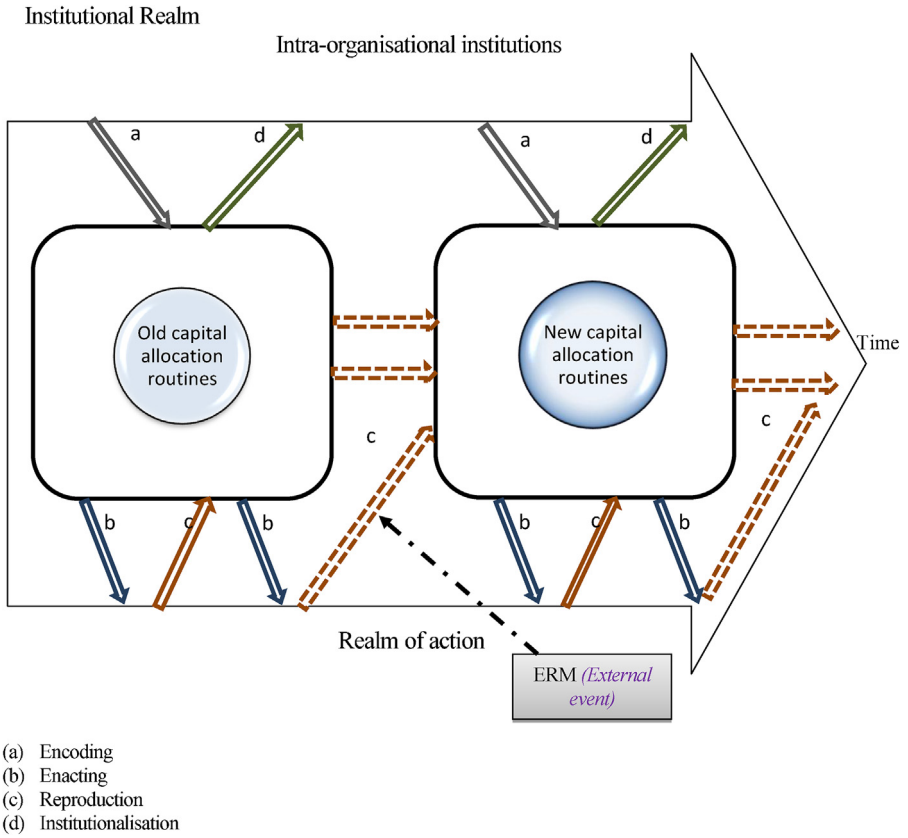

Fig. 1. Theoretical framework.

Adapted from Burns and Scapens (2000, p. 9).

The concept of organisational routines will be drawn upon in our study to interpret micro-level risk management change in an insurance company. Burns and Scapens (2000) defined rules as 'the formalised statement of procedures', and routines as 'the procedures actually in use' (Burns & Scapens, 2000, p. 7). 'Rules are normally changed only at discrete intervals; but routines have the potential to be in a cumulative process of change as they continue to be reproduced' (Burns & Scapens, 2000, p. 7). Change, according to Burns and Scapens (2000), is slow, longer-term, and evolutionary over a long period of time, but they recognise that it can occur in response to internal organisational processes. However, they also argue that revolutionary change mostly stems from external causes. As such, our study conceptualises ERM implementation as an event for structuration, which is consistent with what is called 'the cumulation of events deriving from an initiating circumstance without which that cumulation would not have been found' (Giddens, 1984, p. 13).

Even though we follow Burns and Scapens' (2000) definition of *routines* in this study, we recognise that there is a need to go beyond the simplistic view of routines[4] (Pentland, 2011; Pentland & Feldman, 2005, 2008). Rules and routines are expected to have material aspects (Volkoff et al., 2007) alongside ostensive and performative aspects (Feldman & Pentland, 2003). This is beyond the scope of this paper as we focus more on the argument that change can be brought about by shocks to companies (Burns & Scapens, 2000). Even though dynamics capabilities are featured, 'organisations often have to cope with problems they are not well prepared for' (Winter, 2003, p. 992). This notion is an essential starting point in the story of new/changed capital allocation routines at VC. As such, it is necessary to identify the actual routine's change processes (encoding, enacting, reproduction, and institutionalisation) before we examine the internal dynamics of those routines.

The institutional framework informing this study offers the theoretical basis to explain the extent to which ERM environment shapes the behaviours of different actors, and to analyse how and why change agents modify and transform capital allocation routines, and ultimately the whole company. This institutional framework outlines a suitable way to study organisational changes following the instruction of ERM within VC. First, this framework is a sequential model, which analytically separates the institutions synchronic effects on actions from the actions' diachronic effects on institutions. Such separation facilitates the examination of change processes from the introduction of new rules as an action, which is formed by existing institutions to the institutionalisation of such rules. Second, the routines concept, as programmatic rule-based behaviours, provides the connection explaining how the new rules turn out to be institutions over time (Kholeif, Abdel-Kader, & Sherer, 2008).

4. Research design

4.1. The case company (VC)

Due to the lack of empirical research on the change in capital allocation routines driven by ERM in the insurance sector, and the need to investigate such change, an explanatory case study methodology (Ryan, Scapens, & Theobald, 1992) has been chosen for this study. The selection of this specific company was made for two main reasons. First, it is a large global insurance company. Prior accounting research emphasises that firm size is an explanatory factor for the emergence and use of management control systems (Haka, Gordon, & Pinches, 1985; Myers, Gordon, & Hamer, 1991; Shields, 1995) and is positively related to ERM adoption and use (Beasley, Clune, & Hermanson, 2005; Hoyt & Liebenberg, 2011). Second, ERM is considered by the company officers to be mature and fully implemented across the company. This was also obvious in the annual reports. A mature ERM helps when considering all the aspects of ERM throughout its evolution. Interviewees came from almost all departments and worked at different levels (both senior and non-senior). They were those who have risk responsibilities and use ERM in their day-to-day work. This helped in covering various views on ERM and the way it has been used by different people and at different levels.

VC was founded in the late 18th century as a general insurance company with various lines of business. It is one of the largest insurance groups in the world. A large number of offices are situated across Europe, the USA, and Asia. The company is reputable as a leading commercial insurer. It has gained this reputation because of its solid underwriting expertise, financial strength, and excellent security rating. VC showed a sustainable growth through good management that takes into consideration all social, environmental and economic aspects. Standard & Poor's (S&P) rated the company highly for its financial strength. Such a high rating and assessment indicates the company's financial security in terms of its ability to meet financial commitments and contractual obligations. Various services and strategies are conducted by a professional team to address exposures and provide efficient solutions. These services provide a great help to the company's risk managers in assessing the risks portfolio, and allocating premiums and budgets for risk improvements based on possible loss expectancies. The company's risk managers have Internet based access to all the information provided by their team, which assists in monitoring risk improvements. Training programmes concerning loss prevention are continuously carried out in the company to enhance the awareness of loss prevention and to assist corporate risk managers in carrying out risk management activities.

4.2. Data collection

The case company was visited over a period of 14 months between 2011 and 2012. Multiple data collection methods, semi-structured interviews and documentary evidence, were used to get a rich set of data and to capture the contextual

[4] Risk management routines can be approached as a unit of analysis whereby there is a need to study their internal dynamics when designing or managing them within an ERM environment (Feldman and Pentland, 2003; Pentland and Feldman, 2005).

complexity (Benbasat, Goldstein, & Mead, 1987). Notes were taken during the interviews and more detailed notes were written up as soon as possible following each interview. Interviews are considered as a fundamental source of case study evidence because generally case studies are about human relationships or behavioural events. Significant insights into such relationships or events can be provided by well-informed interviewees. However, interviews are considered as verbal reports only. Therefore, the interviewees' responses are exposed to the general problems of bias, poor recall, and poor or inaccurate articulation. To minimise the effect of such problems, we corroborated interview data with other internal and publicly available sources of data (Yin, 2009).

The internal company documents accessed included ERM polices and framework documents, business plans, operating performance records, a CFO report, management analysis reports, and documents concerning training programmes. Some other computerised processes were accessed at the company at the time of the interviews. Reference to publicly available data such as annual reports and the company's published information was made. Such triangulation of data sources helped improve the internal validity of the research. Access to VC employees and documents was very good. However, some documents such as the corporate plan were considered to be highly confidential and were available to us only in redacted form. VC's annual reports helped us understand the history of such a large insurance company and facilitated the plan for interviews as well as the analysis.

Fifteen face-to-face semi-structured interviews were conducted between 2011 and 2012 with a number of officers and staff from different levels within the company (see Appendix A). The initial access was the company's CRO, who was interested in our research and helped by putting us in contact with other officers, and they in turn put us in contact with people from various departments in the company (a snowballing approach). Each interview lasted for an hour on average and was digitally recorded; then they were subsequently transcribed and validated by the interviwees. The interviews were conducted in the employee's office or the company's meeting rooms. The questions asked were directed to get detailed information on prior capital allocation routines as well as the new capital allocation routines following ERM implementation and embedding. The interview schedule was prepared to suit the role and background (with regard to risk) of each participant. In each subsequent interview, some issues were added to the interview schedule. These issues provided the main basis on which to determine whether additional explanation was needed in the following interview.

4.3. Data analysis

The analysis of the interviews transcripts began by reducing the transcripts to exclude any irrelevant data. This enabled in-depth analysis of the first stage of forming the field. Then, we followed coding and verification procedures to help us to comprehend the data. Thus, the transcripts data were coded according to categories that were pre-defined in the theoretical framework that is: institutions, rules, routines, and actions at the level of VC. However, we identified new categories such as: routine internal dynamics, which were included in the final coding. The text was then coded using Nvivo[5] and manual-coding according to what resembles institutions, rules, routines, and actions; where they exist (field or organisational level); at what point in time the change took place; and who/what led this change. The coding progressed following the procedures suggested for qualitative research (Miles & Huberman, 1994). The first analysis of data identified that the institutional change took place following ERM implementation and key changes, specifically in capital allocation routines, occurred as ERM become more mature, while the risk department played the main role in enacting the risk management rules. Using qualitative coding and analysis software facilitated the process of identifying themes in the data, categorising them, and representing them in network diagrams. In order to verify the validity of our interpretations, debriefing was done where the transcripts and a brief analysis were sent to the interviewees to get their feedback, as well as viewing and analysing internal and publically sources of information and extracting the relevant information. Then we compared it to what interviewees expressed. These procedures helped in confirming the results generated from the interviews.

Data analysis then moved to the next stage where the change in capital allocation routines took place (2006/2007), which represented an institutional change process. Following Strauss and Corbin (1998) and Yin (2009), the data was synthesised by identifying the relevant themes and concepts including encoding, enactment, reproduction, and institutionalisation. Further, the use of axial and selective coding helped us detecting emergent themes that were linked to specific categories, connecting the categories to each other, summarising the categories into various themes, and refining them in relation to explanatory concepts. Such process allowed the comparison with previous research findings and helped making connections with existing theory.

5. Findings: production and reproduction of capital allocation routines (actions and routines)

Burns and Scapens' (2000) model suggests identifying three key elements: organisational routines and habits, an institutional realm, and a realm of action. Our analysis of the institutional realm shows that there are highly regulated set of institutions outside insurance companies, which were mirrored by institutions and routines within VC. However, the unit of analysis in our study is the underwriting department within VC. Thus, the immediate institutional realm is not the

[5] Even though the data analysis process was supported by using Nvivo software for textual analysis, it was a helping hand tool as the researchers felt more comfortable referring to the actual transcripts. Nvivo facilitated the process through applying mapping techniques when structuring the data.

institutions outside VC but the influence of other departments in VC, especially its risk management system. Moving to the action realm, we found that VC responded to increased competition through improving its risk management system by having a more holistic approach as outlined in the company's objectives. The adoption and implementation of ERM in VC started in 2002, but stronger ERM activities and risk management routines were developed in the last six years. ERM adoption occurred at a specific time, whereby risk management systems were deinstitutionalised from their historical circumstances. Traditional risk management systems were replaced by a new holistic approach to risk management; ERM. The traditional systems basically focused on operational risk, whilst underwriting risk (or credit risk) was managed by the Chief Underwriter and CFO. However, ERM embedding was a long process that evolved over time. Furthermore, the company's documents indicated that VC establishes its own basic principles for risk management and keeps all risks associated with carrying out its business under control by having a department responsible for risk management. All the company's risks are managed through processes of the specification, evaluation, and control of risks; contingency plans; monitoring; and reporting. Necessary adjustments are made according to the particular nature of specific risks. Principles for integrated risk management are established and quantitative risk management is conducted, with the aim of maintaining credit ratings and preventing bankruptcies. The size of the risk management and actuarial departments has been increased and specialised people were recruited to embed ERM following its adoption. Therefore, ERM implementation was assigned to an internal team drawn from VC's own staff alongside newly recruited risk-specialised staff. The ERM team consisted of one person (the CRO) when the adoption decision was made, and then a risk team was developed from 2004/2005 to carry out ERM implementation and embedding.

ERM is considered as an action that encodes institutional principles at VC. It formed the context out of which new risk management routines emerged. Thus, there have been various changes in capital allocation routines. ERM embedding was followed by an accumulated change, over six years, in the capital allocation routines enacted by VC. Encoding the new ERM rules (that is frameworks and policies) allowed for the deinstitutionalisation of old capital allocation institutions and the introduction of new capital allocation routines. The following subsections explain the encoding, enactment, reproduction, and intra-institutional processes of these routines.

5.1. Encoding and enactment of capital allocation routines

The literature suggests that ERM implementation occurs first and this is followed by changes in capital allocation routines. This path dependency process was evident in the VC case. Introducing ERM rules and their related subsequent actions was a trigger for micro-processes of change in capital allocation routines, as it tended to routinise new routines. ERM did not support existing capital allocation routines (see Section 5.2). This is because ERM's built-in knowledge has been transferred to its users; specifically, the people responsible for capital allocation. Further actions were taken by VC following ERM embedding to improve its risk reporting structure. The wider risk communication enacted by ERM, within a risk reporting structure, enabled VC to achieve a consistent and appropriate risk response. As argued by Woods (2011), this approach enables risk management activities to fully support the achievement of the strategic objectives of the firm.

From the interviews and documentary materials it was evident that the formation of the Risk Management Department (RMD) was the trigger to facilitate the introduction of new capital allocation routines as a part of the enactment of ERM rules. However, it was a process of change, not a static point at which the new rules were introduced. The CRO and the risk management team started the enactment process by defining all the basic structures, including frameworks and policies, which should be considered on daily basis. One difficulty faced the risk management team in introducing the new rules of capital allocation was to get staff to learn how to adopt them. Thus, an educational and training programme was established to support and push the process of enacting capital allocation routines. The CEO and CFO provided the financial support to complete this process of change. For example, one of the training programmes centred on how to become an ERM underwriter. All underwriters in VC were required to complete this programme. Although underwriters still want to maximise profit, now they have to look at the wider implications of their underwriting decisions and how much capital will be consumed.

> "If I said for example that I want my preferred mix of business to be 20 per cent marine, 20 per cent property, 20 per cent liability, 20 per cent PA and however you may want to do that. And then actually what I end up writing is 50 per cent of it as property but I still get to my overall premium plan number, is that OK? Actually it is not OK because by writing a lot more property business, I am probably going to consume a lot more capital." (EOO)

The risk information needed to allocate capital within ERM varies and has to be sourced from different departments in VC. Although the RMD is the main source of risk registry, which helps actuaries run the capital model, the information related to underwriting risk was provided by the Underwriting Department. Expert judgement also played a role in providing risk information, which was built on historical and market information. Reserving and market risk information was provided by the Finance Department. The multiple sources of risk information and coordination among different departments to enact the new capital allocation routines provide evidence that risk management has become holistic and embedded across all departments in VC. It was evident that people have started to use ERM in their day-to-day activities and to communicate with people from other departments.

ERM is not an arcane theory, but has practical applications. The general belief in VC was that ERM will make the business healthier and better managed. The new capital allocation routines have become more rigorous because ERM provided a

well-structured framework and governance. This framework encoded rules, which encompass considering capital allocation routines by staff and getting an efficient allocation. The output of the ERM process helped VC determine where its business should go in the future. EOO explained:

> ". . . say different lines of business consume different amount of capital. So what is the optimum mix for our business? Maybe we don't have that today but we can plan towards where we want to be three/four/five-year time. Again if we have growth plan, do we have a desire to grow by let's say 10 per cent per annual over the next few years. Do we have the capital resources to do that? If we grow in different ways what are the implications of that. Our model gives us a lot of valuable outputs to help us think hard about strategy and shape our strategy." (EOO)

Some interviewees have explained how information generated from the ERM is used to decide which line of business to grow or which line of business to reduce, as well as a sort of early warning system in assessing the performance of VC's business lines. Following ERM embedding, an internal capital model was developed to quantify how much capital needed to be held above best estimates in order to provide confidence in capital decisions. When setting VC business plans, the capital model is used to identify the lines of business that provide a good return compared to the risk they take as well as the lines providing a return that is not good relative to the risk they take.

> ". . . within capital allocation you'll have to have what is classified as reserving risk, so because I do the reserving and my work is extended into how much risks are there behind, have I got the reserves right or wrong. So then I'll fit it into capital. The capital is then determined for each of the classes of business, it uses the reserves that I have calculated. So if I've got the reserves wrong, the CA might be too high or too low." (AA/1)

ERM implementation was a top-down approach and was strongly pushed to the extent that people knew that they were obliged to learn about it. To support this, communication across the company has been improved and become well documented. This offered a stronger base for controlling all the risks facing VC and thus led to a better allocation of capital. However, this process was accompanied by many different documents which were sometimes very difficult to understand and resulted in an overload of information.

> ". . . in the claims department you hear it from your manager, from the top people. But, the problem we have is almost like a bit of information overload. We've got a lot of documents. We've got a lot of ERM polices and sub polices for all the different risk categories. We've also got business continuity management policies, and lots of manuals supporting these. Many of our documents are mandatory for staff to read, so can you imagine if you receive many large documents to read, at some point you would turn off, it doesn't matter what it is." (RM/1)

5.2. Reproduction of capital allocation routines

Prior to ERM, capital allocation in VC was based on a fixed percentage of the premium. That is, there was no risk assessment in allocating capital. The use of ERM has led to what can be considered a revolutionary change in capital allocation routines. Staff have to think more realistically as they have become more aware of their capital requirements. Therefore, there is a larger chance that people will be able to identify potential risks in advance of any damaging effects on capital. As such VC has started to use the risk-based capital allocation method. It was claimed that using this specific method led to a higher return on capital as it gave a greater understanding of the risks to which the company is exposed, and hence capital is allocated particularly to individual exposures. Understanding different types of risk in more detail can enhance capital allocation routines. This change has been to a more process-oriented decision-making practice. However, it was ultimately affecting the financial decision because of ERM outputs. The CUO stated:

> ". . . we have to think about what kind of a change has happened in the market and we have to amend the expected figures. Then decide the direction we should go and what kind of resource we need." (CUO)

A smaller buffer was experienced with more confidence regarding capital decisions and a higher return on capital was achieved after embedding ERM rules. In this regard, it was believed that extra benefits were offered to both shareholders and employees.

> ". . . I think before having the model our buffer is much bigger. But for the sake of I like to sleep well in the bed, okay so let's put 50 per cent buffer. Now we are much more confident about our necessity of the capital itself so the buffer should be smaller". (CUO)

Understanding the risks inherent in the company and providing the right data allow for an assessment of the level of capital needed to balance the expected risks.

> "It [ERM] should allow the Company to reduce the amount of guessing needed to allocate capital and, instead, base it on a more robust methodology. You can say if you use the correct models and the right techniques within your internal model, you can be a lot more specific and have a lot more confidence in the capital allocation. So when your model says you need £80 million of capital, you can have a good level of confidence that this truly reflects the exposure that the Company faces." (RM/2)

ERM structure and culture have offered a better understanding of why there is a need to do the work in a specific way. In particular, following ERM, underwriters have a clear responsibility for providing the most relevant possible information and the new routines have supported this by providing a higher quality data. The EOO stated:

> ". . . The underwriters must understand that they are responsible to the quality of the data, the accuracy of the data, the completeness of the data. Again what does that mean? Well, actually if we have got incomplete data that means we can't model out our CAT risk. If we can't model out our CAT risk then we are aware that this is a big deficiency and probably that means we have to hold more capital and the rate of return we need become lower." (EOO)

The RMD gets staff involved in discussions and also participates with groups. They rehearse tasks and perform tests to ensure that staff understand what is asked of them. They also give feedback to staff at lower levels. However, it transpired that staff needed much more time to absorb the changes enacted by ERM and that the change was a learning process that involved mistakes and corrections until ERM had time to develop.

> "The more people become involved the more questions people are asking. So if people are asking questions it's helping them to understand but also the Risk Department maybe question even more and more different things, therefore they can sort of recognise risk much earlier. We've got the risk register which is filled in and updated daily. And if it's been changed they send an e-mail to the whole company so we all know it's been changed and we should all go and read it. We should try and understand why it's been changed. And they've certainly, from when I've been here, it's become much more apparent how important ERM to the company" (AA/1)

Maximising the efficiency of capital use is considered as a key challenge for VC after using ERM. This confirms the significant effect ERM has on capital allocation in the insurance industry. The high rating by S&P is seen to be coming from the capital strands as they imply the strength of VC's risk management and capital management processes. Capital allocation is monitored and reviewed to decide whether to take more risks and what kind of profits can be made.

5.3. Intra-institutionalisation of capital allocation routines

As explained earlier, the introduction of risk-based capital allocation evolved as a result of using ERM and was not imposed by the management. In this regard, it represents a routine in that it is a procedure actually in use. This is evident by running ERM training programmes, which are tailored to suit different departments' requirements. This supported the institutionalisation of the new capital allocation routines. Efforts were also directed to facilitate the use of risk-based capital allocation routines following the embedding of ERM. This was evident in introducing fundamental changes to the risk and capital information available to staff. Furthermore, different understandings and beliefs were shaped about capital allocation routines following ERM implementation. For example, capital allocation was redirected to aim for a higher return on capital instead of higher profits. Risk management was the core of this process as capital allocation has become the basis for the quantification of the company's risk. The process of deciding what type of business to write (or not to write) has become based on the associated risks that is included in the new capital allocation routines. Within VC the people responsible for capital allocation have started to think in terms of how much capital they will need to grow without significantly increasing their risks. Thus, it is affecting the underwriters' ways of thinking. They now understand the interaction of capital in the decisions they make and the effect of their decisions on the capital.

One particular problem was experienced in the capital allocation process because of the lack of the software that supports the need for having risk information and the access to real-time information alongside historical data. CRO and CAc asked for new software that relies on the new ERM strategy. This was facilitated by the financial support from the CEO and the CFO. The new software was installed shortly after the introduction of risk-based routines and included an internal model to allocate capital in a more detailed fashion and to all segments of the business. It was believed that decision making with regard to capital allocation processes has improved and the embedding of ERM rules played a major role in providing the necessary information it needs. It is sufficient to recognise that although the basic concept of linking capital to risk has been recognised for a long time, the evolution to capital models is far more recent. The internal capital model was put in action as a key strategic and operational decision making tool, which enabled the company to integrate the process of both risk and capital management. The output of the internal model has been systematically used to manage the daily business. Then the company has monitored the capital needed to support its business plans. VC has thought about enhancing such a strategy because it may help achieving better management systems and bring about a more efficient usage of resources. This indicates that the capital model has become much more of an integrated part of the business, which facilitates the institutionalisation of those routines.

Interviewees realised the need for adopting ERM practices as a key part of VC's internal capital models and thus its capital allocation routines. Because VC has become more capital oriented, seeking to improve its return on capital, a quantitative aspect was added to the qualitative aspect in the risk management process. The quantitative aspect is now a main part of how the outputs of the internal model guide VC in terms of where to grow, downsize, or modify its business. In particular, behaviours of and tools for underwriters have been reengineered over the year that followed practicing risk-based capital allocation in the Underwriting Department. This shows how 'routines have the potential to be in a cumulative process of change as they continue to be reproduced' (Burns & Scapens, 2000, p. 7). As a part of the institutionalisation process, specific

statements were introduced at particular intervals providing detailed information on what underwriters should and should not do, and which tools they are required to use and how to use them. Therefore, risk-based capital allocation has become a rule in the sense that it became the formalised statement of procedures at discrete intervals. Thus, the way underwriters' work has changed. This was further documented to include elements of ERM in the new capital allocation routines. This led to changing staff's understanding throughout the business, including those responsible for capital allocation, as now they have a clearer picture and better understand the concepts related to what they are doing.

Institutionalisation can be viewed in terms of the actions related to organising the documentary cycle and thus eliminating duplication of work and offering staff easier and quicker access to information. Underwriters have started to document their processes to clearly and easily identify gaps and risks when looking at these documents. This means that they reported risks and looked clearly at the mitigation circumstances that surrounded it more efficiently and effectively.

> ". . . So to be direct, decision making is fast and allocate the capital is adjusted too to monitor the performance." (CUO)

Particular evidence for the institutionalisation of the new risk-based capital allocation in VC was that the staff believed there will be no further change to this approach. Staff are content about the efficiency of this new capital allocation approach and not expecting any further changes. For example, AA/1 stated:

> "So as your data becomes more accurate as well, it's going to be very difficult to argue against the risk-based approach. So I think as time goes on, yes, they may find other ways of doing things, but I still don't think it'll change risk-based I think that's that is best measure they have." (AA/1)

However, there is always the possibility for changing and improving capital allocation methods in the case of emergence of new innovations and/or regulatory requirements in the future.

6. Discussion and conclusions

This study investigated changes in capital allocation routines following the introduction of ERM. Our analysis was informed by an institutional framework, and this analysis started with the identification of the intra-institutional realms and the initial set of rules and routines characterising the VC's risk management. Further, the realm of action was analysed to identify the main actors in the new risk environment and their relationships with the institutional realm. Having established risk-based capital allocation as new risk management routine, we aimed at exploring the effect of an external factor (ERM) on existing routines (see Fig. 2). As stated earlier, OIE, and particularly Burns and Scapens' (2000) framework, proved to be most suited to understanding and explaining the micro-processes of change in risk management practices within a single insurance company. Burns and Scapens' (2000) model proposed a number of ways to track and evaluate the organisational change. Referring to Fig. 1, it seems that the CRO and risk team were the main actors in the process of encoding new principles from the institutional realm (step a). The risk management team alongside the risk sponsors were involved in the enactment process (step b). Those teams did not participate in a 'one shot' change in work process, but participated in setting up new routines, which would reproduce themselves and feedback to the institutional realm through reflexive monitoring. Thus only ERM could reproduce (step c) and institutionalise practices (step d). Encoding, enactment, and reproduction are continuing processes introducing the new ERM rules. As such, capital allocation process has become routinised in a consistent manner as explained by Burns and Scapens (2000). Consequently, it can be argued that other theories including NIS, and NIE are not appropriate to explain the change studied by this research. The main concern of such theories is not particularly related to the understanding of the intra-organisational processes of change.

As noted by scholars such as Burns and Scapens (2000), change can be brought about by shocks to organisations. Although referring to dynamics capabilities, 'organisations often have to cope with problems they are not well prepared for' (Winter, 2003, p. 992) is a good starting point in the story of new (and changed) capital allocation routines at VC. In this regard, ERM can be theorised as a system that has different facets interacting together in the process of change undertaken by companies. ERM was initiated as an *action* encompassing a combination of hardware and software within the realm of action. This initiating circumstance generated consequent events that cumulated over time to develop ERM as a *holistic approach* and hence an *institutional force*. Those events were essentially derived from ERM acting as *rule* and as an *agent of change*. ERM rules were theorised in the form of written frameworks and policies (artefacts) as a part of forming ERM basic structure, which encoded and enacted specific mechanisms of working shaping risk management routines as organisational routines. Therefore, the day-to-day risk management practices were re-shaped to a large extent by routines. Risk management routines in turn affected ERM rules because the established routines were formalised in new rules, i.e. risk-based capital allocation. As such, ERM rules and risk management routines are not related in a unidirectional way, and hence ERM can shape and be shaped by the institutions governing insurance companies, which is consistent with Burns and Scapens (2000).

Those teams also had interrelated roles in this process, which raised the dialectic of control issue. One action was to get staff to attend intensive training. This training is directed to explain ERM process, staff's risk responsibilities, and the necessity of taking these specific responsibilities as a part of ERM embedding. Such training can also be seen as a tool to communicate a clear understanding of responsibilities, which should help to avoid some conflict caused as a result of dialectic of control. Discussion with some interviewees revealed that continuous internal training programmes improved their risk management education and helped them to understand the impacts of ERM implementation.

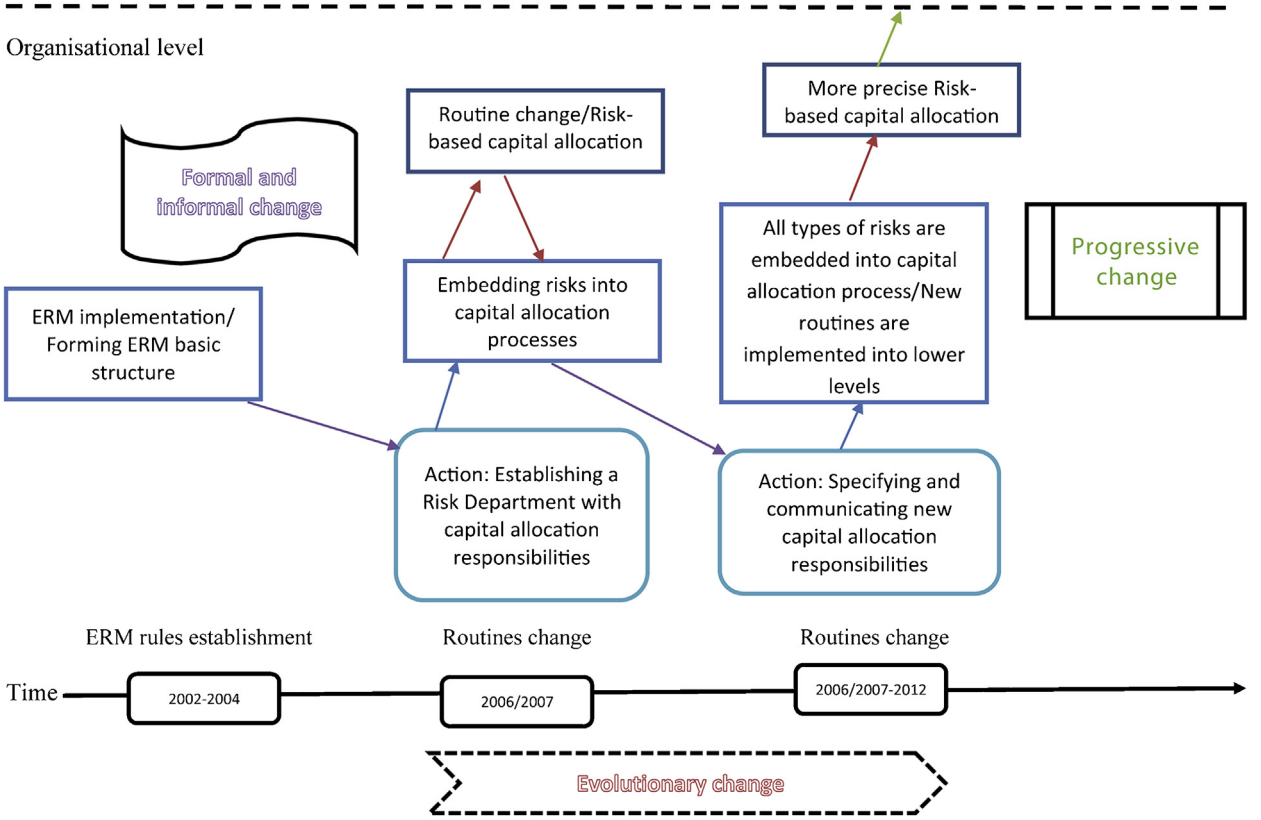

Fig. 2. Processes of organisational change in VC. *Note*: Encoding; Enactment; Reproduction; Institutionalisation.

Routine change has been discussed in the accounting literature using Burns and Scapens' (2000) model, but not specifically in ERM environment. The establishment of risk-based capital allocation as a new risk management routine led us to explore the effect of an external factor (ERM, in our case) on existing routines. In order to further evaluate organisational change our interpretations can benefit from Burns and Scapens (2000) study where they refer to three dichotomies: formal versus informal change, evolutionary versus revolutionary change, and progressive versus regressive change.

6.1. *Formal versus informal change*

The encoding and enacting processes of change featured both formal and informal changes at VC. For example, the risk officials promoted a risk culture informally and led other staff to think in a way consistent with ERM. All staff across the company started to appreciate risk data more because they were derived from actual technical knowledge rather than non-clear allocations. This is consistent with Bhimani and Piggott (1992) who found that a better appreciation for accounting information was developed in their case. More specifically, underwriters at VC are seen to rediscover a technical knowledge base that had been missing prior to ERM implementation. However, some staff exercised resistance to the new system and this was managed by setting up a risk management department with clear roles and responsibilities. Organisational resistance in the enactment of rules and routines could affect the change extent and type. 'Unconscious/unintended change may occur in the absence of systems to monitor the execution of the routines and where the rules and routines are not sufficiently understood and/or accepted by the actors' (Burns & Scapens, 2000, p. 10). The new department has supported all ERM-related actions and managed staff resistance. It was also essential to run non-compulsory ERM training programmes, which supported risk embedding into capital allocation routines. Afterwards, more formal compulsory training programmes were put in place. It was not surprising that underwriting and Actuarial Departments used ERM more extensively than other departments because they mainly exercise capital allocation routines. At the same time, the risk function was given the appropriate authority (power) to run ERM implementation and embedding processes, and moved from being the CFO's responsibility to the CEO's. Further, forming a risk committee (which included a number of chief officers who have risk responsibilities) and/or appointing a risk coordinator in every department illustrates how ERM was made the responsibility of everyone across the company. ERM enabled the risk department to provide risk officials, and particularly the underwriting team, with both qualitative and quantitative data on all types of risks that affects business lines and capital allocation

processes and activities. The risk team put large efforts into ensuring that their risk data is as precise as possible, which added credibility to their outputs. The perceptions of underwriters and actuaries were that risk information is now more reliable and precise rather than being the result of personal judgement only. ERM has altered the organisational reality for underwriters and actuaries by providing a new set of risk categories and tools with which individuals can order and structure their world. The reality was not just about using a different method to capital allocation, but also on greater understanding of capital allocation processes. The participation of staff at different levels in the implementation and embedding of ERM has changed their attitudes.

6.2. Revolutionary versus evolutionary change

The introduction of ERM-related actions in the theoretical framework helped to trace change pathways, including the way capital allocation routines changed throughout the company, which is manifested in the reproduction phase of the change process. Such changes occurred subsequent to the introduction of ERM rules (process oriented decision) at different timings and were incorporated into new routines. This change is consistent with the survey findings of AON (2010). The changes introduced by ERM to capital allocation practices can be classified as being evolutionary because of the special circumstances of the insurance context although the previous exposure to risk management information had been very limited. It was often found that more extensive changes to capital allocation routines have occurred in a company with well-developed ERM, which implies that the change took place at different intervals, and capital allocation routines changed later on in the process as compared to the other risk management practices (e.g. communications). ERM has become a tool to provide information and guidance for senior management as well as offering lessons to RMs who are seeking to make an enhanced contribution to the success of their company (Woods, 2011). A new risk-management-influenced organisational reality was created through providing completely new tools for underwriters and new risk categories to embed in the process of capital allocation. Thus, existing capital allocation practices were not refined but completely changed.

New risk categories were embedded into the capital model, in particular reputation risk, which is considered as a main driver for business value. Thus, a key aspect of risk management should be preserving a company's reputation and it is evident that it affects customers' buying decisions, employee loyalty, and investor choices. A good reputation also protects a company's competitive position (Woods, 2011). In the Economist Intelligence Unit's survey of senior executives, reputation risk was ranked at the top, but was found particularly difficult to manage by senior executives (EIU, 2005). Reputation is a valued asset; however, it could be argued it is not a separate category of risk, but rather reflects a failure to manage other risks. For example, the underwriting and actuarial departments began to investigate how they could improve their risk inputs in the process of allocating capital and to present their work to the risk management department. This illustrates how ERM requirements resulted in re-engineering the business process. There was a general awareness that a new understanding of the capital processes was promoted by ERM implementation. The implications of ERM went beyond the capital team; they extended throughout the whole company. For example, by collecting risk data from risk sponsors and their teams, ERM showed that processes should change for everyone with risk responsibility across the whole company. This is due to the fact that risk might exist in different departments.

Therefore, the day-to-day risk management practices were re-shaped to a large extent by routines. Risk management routines in turn affected the ERM rules because the established routines were formalised in new rules, i.e. risk-based capital allocation. As such, ERM rules and risk management routines are not related in a unidirectional way, and hence ERM can shape and be shaped by the institutions governing insurance companies, which is consistent with Burns and Scapens (2000). Organisational resistance in the enactment processes of rules and routines influenced the extent and type of change. However, the efforts of the CRO and his team, as well as having ERM implemented and embedded in an evolutionary structured way, offered a risk culture that facilitated the acceptance of ERM. People across the company have realised the importance of embedding ERM into their day-to-day activities and hence have started to think in a consistent way with ERM.

6.3. Progressive versus regressive change

By suggesting a continuous embedding of ERM rules and routines into lower levels and compulsory training until all staff understand ERM and its related responsibilities, there is evidence that such change is progressive rather than regressive. This is evident in the institutionalisation of capital allocation routines at VC level. The new routines were instrumental in decreasing the distance of power between management and employees. Risk-based routines were implemented in lower levels, and everybody was getting involved and took on risk responsibilities Underwriters were the key users of capital and had to set the related risk appetite. Theoretically, all the people across the company should use ERM. However, underwriting risk composes 60 per cent of VC's risk and drives its capital necessity. Thus, underwriters were seen to be the main users of ERM. Risk-based capital allocation routines were embedded into underwriters' daily work because they needed to understand that the individual decisions they take have a wider implication for the business. They also provided a broader understanding behind what underwriters were trying to achieve. Therefore, risk-based routines form a part of underwriters' day-to-day jobs.

ERM formalisation tended to routinise and institutionalise the new risk management routines and institutions. The new and ongoing risk management routines embedded meanings, norms, and powers, which facilitated their institutionalisation. For example, risk has become a major input driving the process of capital allocation, whereby a risk-based capital allocation method has become the norm in VC. As such, powers related to capital allocation routines and decisions were shared by staff in risk, underwriting, and actuarial departments. These new risk management routines were shaped by the prevailing institutions governing the insurance companies and, over time, they were institutionalised. It is evident that the risk management routines were institutionalised instrumentally because the new routines helped to make informed decisions. For example, our case study showed that introducing ERM rules led to changes in capital allocation routines and institutionalised the new risk management routines as a path dependent process. Further, ERM was embedded into all critical decisions in the company, and risk-based capital allocation became the key for making decisions. Following ERM embedding, VC took actions to improve its risk reporting structure. In particular, actions related to improving risk communication within risk reporting structure help firms to achieve a consistent and appropriate risk response. By taking this approach, risk management activities fully support the achievement of the strategic objectives of the firm (Woods, 2011).

The ERM system contributed directly, through the new software, and indirectly, through strategy settings, to the intra-institutionalisation of capital allocation routines. It partially disassociated old capital allocation routines from their historical circumstances. Further, ERM is argued to be a practice which oscillates between IT-based representations and social interpretations and which produces circulation and movement (Tekathen & Dechow, 2013). The CRO and his team can now access real-time risk information to check the availability of resources and analyse their portfolio. 'At the root of ERM is the idea that risk management is embedded right across the organisation, and consequently is the responsibility of everyone. Specialist experts have their place but they need support from operational staff' (Woods, 2011, p. 41).

Although ERM introduced organisational changes that are evolutionary and socially reproduced through the new rules and routines, there was also evidence of regressive change (Burns & Scapens, 2000). And, although there was an inward-looking system in which 'norms' were set by experts, ERM potentially enabled a more outward looking approach that tracked business processes across the company and into the external competitive environment. Thus, there was tendency towards employing the full strategic potential of ERM. This could be attributed to the ability of VC to see the benefits of ERM implementation. Although there was an understanding of the strategic implications of holistic sound risk management system, there was still some uncertainty about the strategic possibilities. By defining risk, staff's behaviour was being determined by risks, which were used as information for decision-making.

Although it could be argued that ERM implementation can be a symbolic embrace of the latest risk management system, the subsequent understanding of ERM rules and routines can be interpreted as evidence of instrumental rather than ceremonial change. As illustrated by Giddens (1984), social control is a dialectical process and even seemingly weak actors may be able to exploit local advantages, such as information asymmetries, in their struggles with powerful actors, such as senior management. It can be argued that it is often difficult to determine the instrumental impact of a new risk management technique like ERM. However, finding out that it has been used to inform capital allocation decisions (risk-based and strategic) provides a clear evidence of an instrumental effect of ERM.

6.4. Concluding remarks

This study is aimed at understanding the changes in capital allocation routines following the introduction of ERM rules. Interviews with staff at different levels in VC and documentary evidence were the main sources of data for this study. The study provided a view of risk management at an important time for the insurance industry. Economic capital allocation has become the main base of the ERM era, and it allows the strategic shift in financial institutions to shareholders' value creation (Rao & Dev, 2006). It requires understanding and modelling of various types of risk that are borne by a financial company. It is argued that the outcome of this process is a higher return on capital with less risk taken.

This study contributes to debates in the existing literature. It offers an understanding of the change processes in capital allocation practices associated with ERM implementation. Understanding when and why various actors trigger and respond to different processual mechanisms within the organisational environment can facilitate the change processes in capital allocation practices in the companies implementing/moving towards ERM. As such, we addressed three research questions as follows:

The first and second research questions focused on the extent of change in the relative roles of institutionalised risk management practices and to assess the organisational impact of ERM as a new risk management system. Overall, the findings indicate that ERM initiated a change in capital allocation rules (and routines) where ERM was successfully implemented[6] and is at a mature level. It led to embedding different types of risks in the capital allocation process considering their interrelated impact on capital decisions. ERM was the main institutional force behind introducing such changes. The institutionalisation process involved a dissociation of risk management routines from their historical circumstances. For instance, while ERM did not support the existing capital allocation routines in VC, it institutionalised the new capital allocation routines; namely,

[6] Success here describes the implementation process itself, which refers to a well-developed and full implementation of ERM related processes at all levels of the company. In this regard, ERM processes are embedded into decisions at different levels in the company.

risk-based capital allocation (a path dependent process). Capital allocation routines were expected to institutionalise after moving to risk-based capital allocation and little further change is anticipated. Further, the risk reporting structure was enhanced after ERM embedding. Such intentions and changes facilitated the implementation of ERM and the institutionalisation of risk management routines. Thus, the new risk management rules and routines became the way processes are executed, i.e. institutions. These institutions were encoded into the on-going risk management rules and routines and formed new rules. The case company has become more capital oriented, and risk-based capital allocation routines have been embedded into different functions.

To address the third research question, we explored the interplay between the impacts of both ERM and the consequent change and change agents' actions via analysing the organisational routines. The findings showed that the new risk management institutions established different meanings, norms, values, and powers of different actors. For example, a risk function was created following ERM implementation and expanded over time, which shaped the institutionalisation of capital allocation routines. The roles and responsibilities of people across the company have changed as a result of adding particular and clearly articulated risk responsibilities to them. The capital allocation routines were shown in this study to be programmatic rule-based behaviours which explain the way in which new risk management rules became institutions over time.

This study further gives insights on how ERM can be a powerful management tool in the light of its ability to offer companies rewards from better capital allocation decisions. The use of institutional theory to explicate the change process in this study is another contribution. Although risk management systems are known to be associated with changes at the institutional level, institutional theorists have not explored the change processes in the risk management context. Further, examining the institutional change aspects within the risk management context extends prior research through developing a processual view of change that provided a better explanation of the change process, which adds to the risk management and hence management accounting literature.

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Appendix A. Capital allocation methods

Regulatory risk-based capital or regulatory guidelines

- It is used to specify the minimum capital a company must hold to satisfy regulatory standards (Cummins, 2000).
- This method is simple and helps companies to recognise how regulators view their capital adequacy.
- It applies only to assets, addresses risk only and bears little resemblance to reality (Weiner, 1998).
- However, regulatory charges do not consider key risk sources such as interest rate risk, and the transactions of insurer's transactions in the derivatives market (Cummins, 2000).

The capital asset pricing model (CAPM)

- It involves using the capital asset pricing model (CAPM).
- Its usage helps managers to compare between the preferred method and the results that are generated by a classic technique (Cummins, 2000).

Value at risk (VaR)

- It is the amount the company may lose with a specified small probability in a specified period of time.
- VaR is likely to be useful to insurers and is related to the concepts of time-honoured insurance and actuarial such as the maximum probable loss.
- However, the application of sophisticated VaR techniques requires very frequent data updates, but the prices and losses of insurers are not observed either with sufficient frequency or in a market context.
- Using VaR needs an integration of the capital allocation methodology with data processing and information systems.
- Such integration helps ensuring that relevant and valuable data is generated to offer inputs for VaR models (Cummins, 2000).

Marginal capital allocation

- It is applied to techniques proposed by Merton and Perold (1993) and Myers and Read (1999).
- These techniques are based on the firm option pricing model.

- The firm options view states that the value of the policyholders' claim on the firm is equal to the present value of losses minus the value of the insolvency put option (Cummins, 2000).

Percentage of average assets

- It is the simplest approach to allocate capital which uses the same ratio for all units, products, and customers.
- Either the institution's actual capital ratio or a targeted capital ratio can be used.
- This method is easy to apply and can be used to translate the requirements of company's overall regulatory capital specified to individual units, products, and customers.
- However, it does not distinguish between the risk various levels, capital investment, or growth. Different fixed assets levels should also require different capital levels. Units, products, and customers, which are growing faster, require extra amount of capital because of the step-fixed nature of most financial institutions costs (Weiner, 1998).

The top-down

- It breaks the capital down into its components based on all units, products, and customers applicable to a specific institution.
- It provides variability to the process of capital-allocation and communicates organisational priorities for the employment and use of capital.
- There are some difficulties associated with this method arising from two factors: (1) Firstly, some managers will arbitrary perceive and prioritise the components; (2) an institution still has to choose a method for allocating each component after defining and prioritising them (Weiner, 1998).

The relative-ranking

- It starts with defining and prioritising capital components, similar to the top-down method.
- Then it applies a measure of perceived relative risk to each source of risk.
- This method is somewhat arbitrary similar to the top-down method, but it helps to accomplish the capital allocation main goal (Weiner, 1998).

The market comparables

- It looks at the capitalisation of other companies that are engaged in the same line of business.
- This method provides an objective, external view of capital allocations. It can be used for any line of business, product, or customer.
- But, it is sometimes difficult to find exactly comparable businesses and this business might not be capitalised in an equivalent way. Deriving appropriate capital ratios for certain parts of a financial corporation depending on stand-alone businesses ignores the portfolio effect that reduces the capital which is required for two complementary lines of business (Weiner, 1998).

Risk adjusted return on capital (RAROC)

- It was developed by large financial institutions as a common risk language and quantitative technique.
- RAROC is an approach used by practitioners to allocate risk capital to business units and individual transactions with the objective of measuring economic performance. An obvious trade-off between risk and reward for a capital unit is made by this approach.
- Senior managers are enabled by the RAROC information to better understand where shareholders' value is being created or destroyed (Crouhy et al., 2006).
- It assists strategic planning, risk-adjusted profitability reporting, proactive resources allocation, better concentration risk management, and better product pricing (Crouhy et al., 2006).

Appendix B. List of interviewees

Interviewee	Code
Chief Risk Officer	CRO
Chief Underwriting Officer	CUO
Chief Underwriting Europe	CUE
Chief Actuary	CAc
Operations Manager	OM
Chief Accountant	CA
Actuarial Analyst 1	AA/1
Risk Manager, 1	RM/1
Chief Financial Officer	CFO
Actuarial Analyst 2	AA/2
Risk Manager, 2	RM/2
Chief Operating Officer	COO
Executive Operations Officer	EOO
Management Accountant	MA
Senior Corporate Underwriter	SCU

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