

An Empirical Map of Enterprise Risk Space for Life Insurers: Implications for ERM

Etti G. Baranoff

Associate Professor of Finance and Insurance
School of Business
Virginia Commonwealth University
1015 Floyd Avenue
Richmond, Virginia 23284-4000
ebaranof@vcu.edu

Thomas W. Sager

Professor of Statistics
Department of Information, Risk, and Operations Management
The University of Texas at Austin, CBA 5.202
Austin, Texas 78712-1175
(512) 471-3322

Working paper

An Empirical Map of Enterprise Risk Space for Life Insurers: Implications for ERM

Abstract

In this paper we use accounting data of the life insurance industry in 2003 to examine the empirical relationship between the spectrum of enterprise risks and the spectrum of enterprise risk management (ERM) tools of this industry. We find asset and product risk management tools appropriately interrelated with asset and product risks, but little matching interrelationship between operational risks and tools despite significant deployment of variables to proxy such risks and tools. Following earlier work (Baranoff and Sager, 2006), we design maps of risk and ERM tool space by extracting over 150 risk variables and over 70 ERM variables from insurer annual statements. We group the risk variables into clusters of thematically related risks through cluster analysis to determine the groups and through factor analysis to identify the themes. We similarly group the ERM tools. We interpret the risk clusters as a map of risk space and the ERM tool clusters as a map of tool space. We then ascertain the relationship between risks and risk-mitigating tools by canonical correlation of the most important factors of each space. Theoretical conventional wisdom expects that risk space should be organized into asset, product, and operational risk categories with significant cross-category overlap generated by financial risk and the risk of asset/liability matching (ALM). The organization of tool space is expected to mirror the hypothetical organization of risk space, since insurers deploy the tools to mitigate the risks. Our results show that in the ERM tools, the health and life ALM tools are present and mitigate both asset and product risks. Noticeable by its absence is a role for operational risks (except in one factor) or tools. We provide visual mapping of Risks-ERM interrelationships of insurers. Insurers can place themselves in any of these relational maps or aspire to use them as benchmark tools.

An Empirical Map of Enterprise Risk Space for Life Insurers: Implications for ERM

Introduction

Corporations face a broad spectrum of risks, which they try to manage holistically. Enterprise risk management (ERM) does not supplant, but rather supplements the traditional management of separate risk exposures (Baranoff, 2004 A, B and C). As noted in Baranoff and Sager (2006), all aspects of risk – pure and speculative – are recognized within the objective to maximize the firm’s value and as such are of interest in ERM study. The current article is an extension of Baranoff and Sager (2006) study of life insurers’ risk and ERM tool spaces. Whereas the earlier work focused on discerning the structure of risk and tool space, the focus in this article is on the interactions between the risks and ERM tools. To achieve this objective, some of the steps of Baranoff and Sager (2006) are repeated, but with an enhanced set of proxies for risks and ERM tools.

Conventional thinking, depicted in Figure 1, reflects the view that the spectrum of enterprise risk management tools is directed against the spectrum of enterprise risks confronting insurers. The conventional wisdom also expects that risk space should be organized into asset, product, and operational risk categories with significant cross-category overlap generated by financial risk and the risk of asset/liability matching (ALM). The organization of tool space is expected to mirror the hypothetical organization of risk space. We are initially neutral regarding this hypothesis. Our objective is to determine the empirical reality based on insurer behavior as reflected in their financial statements.

We use accounting data of U.S. life insurers to map the spectrum of ERM tools and the spectrum of enterprise risks and their interrelationship. These are empirical maps. They show what insurers actually do with the actual risks they confront, as reflected in their annual statement data. The maps are also hierarchical. Just as geographic maps show how counties relate to each other inside states and then inside nations, so the enterprise risk maps figuratively show how risks relate to each other in themes and the themes to each other in higher-order themes – and similarly for ERM tools. Just as geographic maps highlight important cities and roads, so the enterprise risk maps identify key factors within the themes. The ultimate objective is to

understand how the ERM tools match up with the risks they were designed to manage. A map helps us understand the region displayed. By comparing two maps, we can understand how they interrelate. Our maps are statistical in nature, rather than geographical, based on cluster analytic groupings, with factor analysis used to reveal their meaning. The process we adopt here, utilizing Figure 1 for illustration, is as follows:

- (1) Uncover the best way to analyze the risk space of life insurers in order to have a clearer view of the risks. These risks are assumed to be overlapping and dependent to some extent. (The visual illustration of the risks in Figure 1 (Part A) is for demonstration only. Keep in mind the fuzziness of relationships.)
- (2) Follow the process of step (1) for the ERM tools and activities of life insurer (see Figure 1 Part B). For example, one important tool is the asset/liability matching (see Santomero and Babbel, 1997), and

(3) Analyze the relationships between the risks space and the ERM tool space (Interrelationship between Parts A and B in Figure 1). Unlike studies such as Santomero and Babbel (1997) that used surveys and interviews, our empirical analyses attempt to unveil the actual ERM activities of life insurers in response to the risks and visa versa using life insurers' own accounting reports. Our statistical techniques offer the opportunity to convert these data elements into actual stories about risk exposures and ERM behavior.

Using cluster analysis in combination with factor analysis and over 150 variables from the 2003 life insurance annual statement of about 1,000 U.S life insurers, this paper attempt to respond to the main question:

What is the correlation between risk and ERM tools?

This can be answered only after we unveil

- The risks of life insurance companies
- The ERM tools used by insurers, and

Their themes

Explanation and Illustration

To illustrate better the objective of our study we created Figure 1 noted above, reproduced from Baranoff and Sager (2006). Figure 1 depicts our interpretation of the conventional wisdom about the structure of the risks and ERM tools of financial institutions, and particularly, life insurers. : (Part A) the space of risks, (Part B) the space of ERM, and (Part C) the interaction between the risks space in Part A and the ERM tools space in Part B.

Part A depicts the risk space of life insurers in its form as most commonly apprehended in current research (i.e. Baranoff and Sager, 2002 and 2003, Cummins and Sommer, 1996 and Shrieves and Dahl, 1992) and in practice. The enterprise risks of a life insurer originate from three broad activities in which life insurers engage: underwriting (product) risks that arise from selling insurance contracts and policies; asset risks that arise from investing premiums and other income; and operational risks from engaging in necessary and appropriate supporting activities as a business entity. Asset/liability matching is considered a major risk overlapping all three categories and is denoted as a major ERM tool.

It is important to note, that the conventional wisdom does not regard these risks as mutually exclusive. Many risks overlap each other and have fuzzy boundaries. The full story of risks is too complex to portray in detail, given the limitations of schematics such as Figure 1.

Part B is the space of the ERM tools in mitigating the risks described in Part A. This part utilizes tools discussed by the survey study of Santomero and Babbel (1997), RM tools discussed in Baranoff (2004) and many practical tools that can be proxied using accounting data. Again, as in Part A, ERM tools are categorized in three groups: for asset risk, for product risk and for operational risks that flow from Part A. The same complexity that is emphasized for Part A is applicable to Part B.

Figure 1. The Conventional View of Risk and ERM Tools

Part C: Interaction between Risk and ERM Tools Spaces	RISKS		ERM TOOLS	
	Capital structure risk	<====>	Capital structure risk management	
	Asset/Liability matching risk	<====>	Asset/Liability matching risk management	
	Asset risk	<====>	Asset risk management	
	Product risk	<====>	Product risk management	
	Operational risk	<====>	Operational risk management	
	Capital Structure (Financial risk) Management Tools			
	Asset/Liability Matching Management Tools			
Part B: Life Insurers' Enterprise risk Management Tools	ASSET RISK Management Tools	PRODUCT RISK Management Tools	OPERATIONAL RISK Management Tools	
	<ul style="list-style-type: none"> • Hedging/derivatives • Asset allocation management (Active vs. passive) 	<ul style="list-style-type: none"> • Reinsurance • Reserving • Securitization • Diversification 	<ul style="list-style-type: none"> • Control over agents and brokers • Organizational/corporate structure • Adherence to regulation • IT controls • Operational safety and loss controls 	
Part A: Life Insurers' Enterprise Risks	SPECTRUM OF RISKS OF LIFE INSURERS			
	Capital Structure (Financial risk)			
	Asset/Liability Matching			
	ASSET RISK	PRODUCT RISK	OPERATIONAL RISK	
• Default risk	• Catastrophes risk	• IT risk		

	<ul style="list-style-type: none"> • Volatility risk (market risk) • Liquidity risk 	<ul style="list-style-type: none"> • Incomplete contracts risk • Reserves risks 	<ul style="list-style-type: none"> • Distribution risk • Regulatory risk • Legal risk • Globalization risk
--	---	---	--

Part C illustrates the interaction between parts A and B.

Data, Methodologies and Results

Since we are working with more than 150 variables, our discussion of the data is necessarily truncated. See the Appendix for summary statistics. We undertake the work in 4 steps as follows:

Following Baranoff and Sager (2006), we first map the enterprise risk space of life insurers. Using accounting data of life insurers for 2003 the risk space is developed using a two-step methodology: (1) cluster analysis to group risk variables into related clusters, and (2) factor analysis to uncover the hidden dimensions of those clusters. We identified over 150 proxies for risk variables in annual report data filed with the NAIC. The results shown here use year 2003 reports for nearly 1000 life insurers, and then delete firms lacking information or having anomalous data values, such as negative assets.

Cluster Analysis Methodology

The clustering algorithm that we used is hierarchical agglomerative in nature. Note that we cluster *variables* rather than *insurers*. Clustering begins with each risk variable in its own singleton cluster. It then joins the two risk variables that are most highly correlated. The algorithm proceeds in this manner, at each step merging the two clusters that are most highly correlated with each other. Thus, the number of remaining clusters is reduced by one at each step. Eventually the process ends with one super-cluster containing all the variables. By studying the history of the cluster mergers, one can identify a step in which all remaining clusters are relatively disparate. That step identifies an optimal set of clusters of risk variables. There is a degree of subjectivity in the selection of an “optimal” stopping point in the mergers, since cluster analysis is more an exploratory technique than a tool with a well-developed theory of optimality. Nonetheless, it can be quite helpful and illuminating. In addition, the analyst has the option of

selecting an early stop in order to preserve more structure – or a late stop in order to reveal higher-order “super-clusters” of related clusters. An example of super-clustering would be the proposed classification of insurer risks into *asset*, *product-liability*, and *operational* categories on theoretical grounds. Each of these large groups could have numerous sub-clusters within it.

Results of Cluster Analysis for Risks

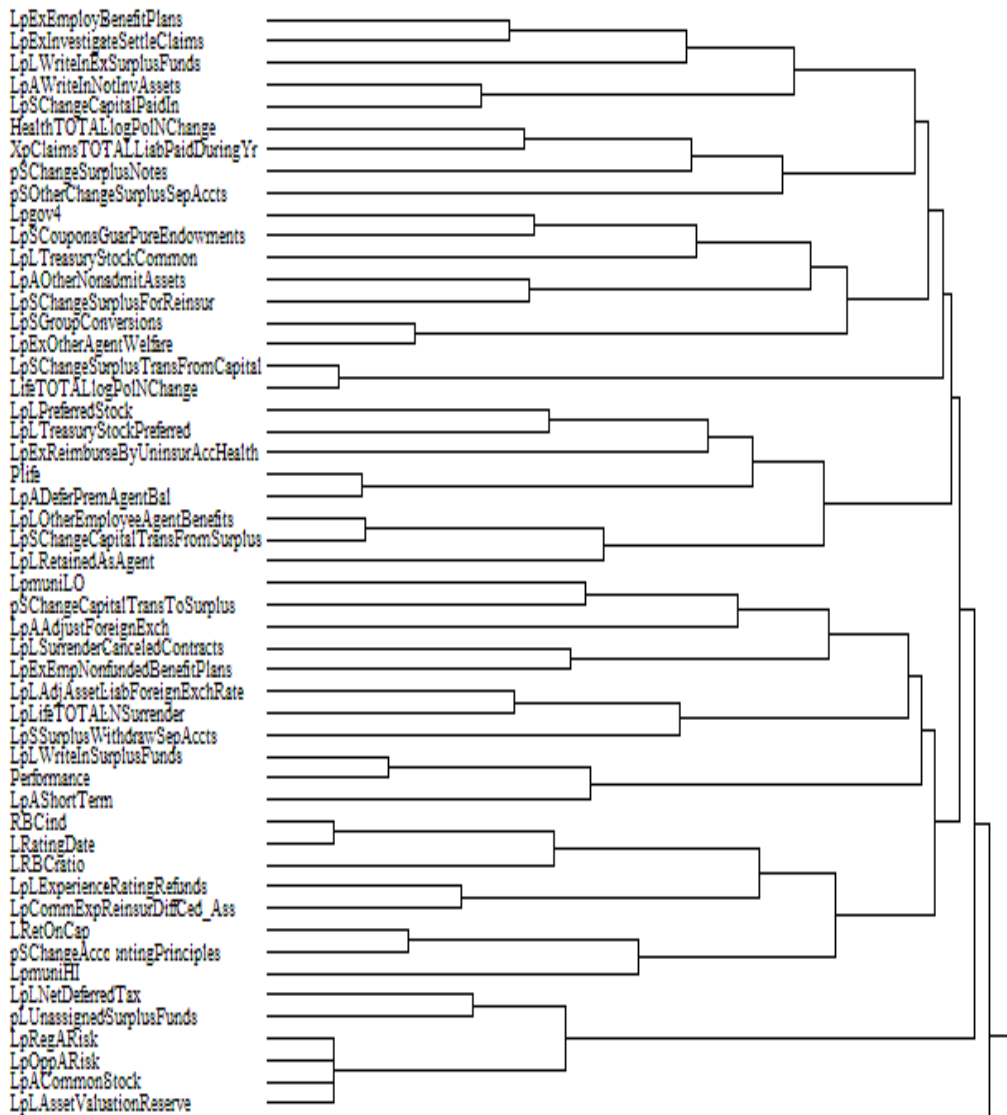
Figure 2 reproduces a dendrogram from the cluster analysis. The dendrogram shows the historical record of cluster mergers from the initial classification of each risk variables into its own separate cluster (at the left of the dendrogram) to the final super-cluster of all risk variables (at the right of the dendrogram). From study of the dendrogram, we selected an eight-cluster solution.

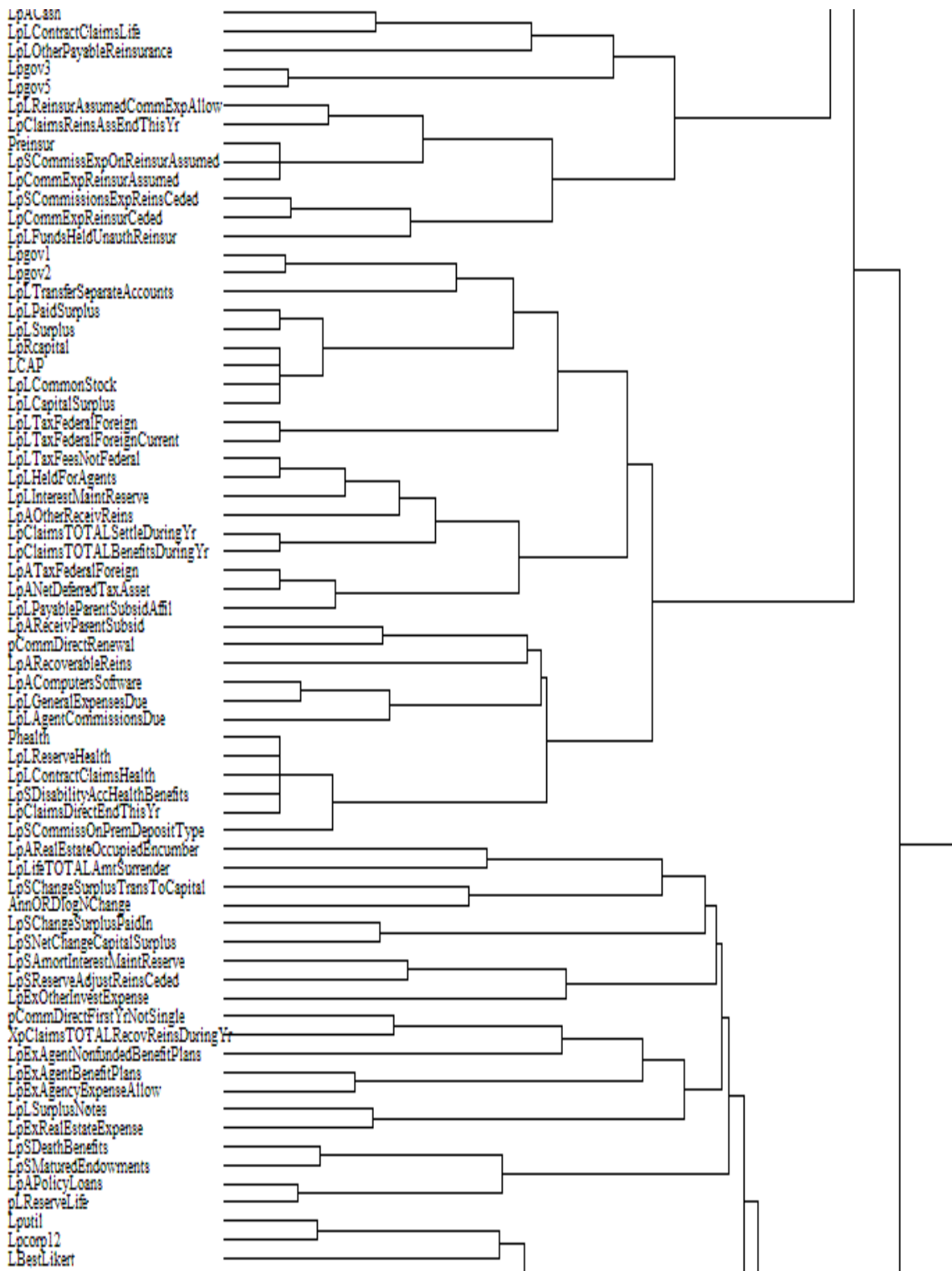
Figure 2 and Table 1 show the cluster assignments of each of the risk variables. The cluster number is an arbitrary label that serves only to identify cluster members and lacks significance in itself. The clusters may contain many different types of categories.

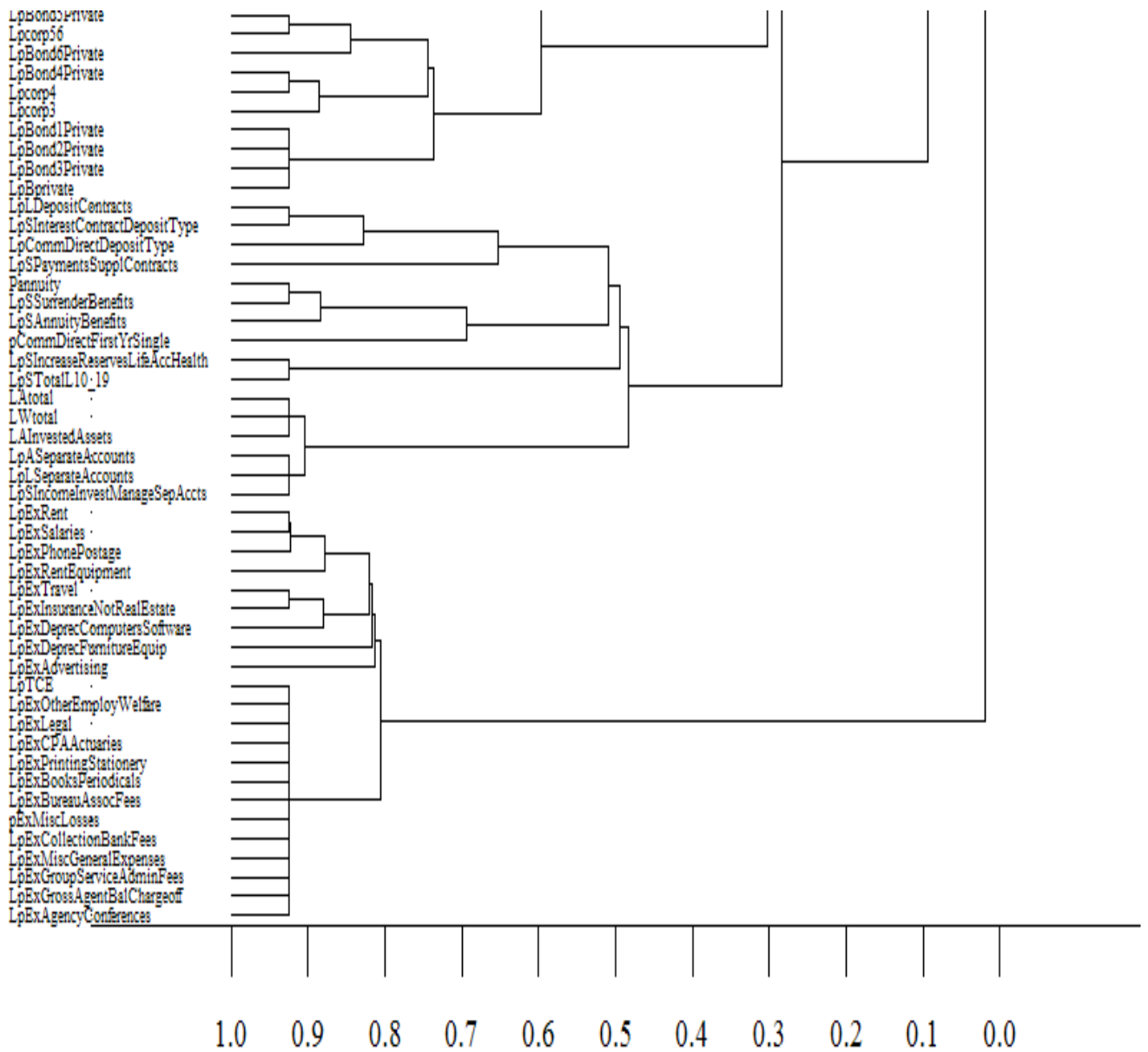
Figure 2 – Eight Main Clusters for the Risk Space

Clustering of Risk Variables

Variable







Proportion of Variance Explained

Table 1 – Clusters of the Risk Variables (summary statistics of all variables are available in the appendix)

RISK VAR	CLUSTER
AnnORDlogNChange	1
LAInvestedAssets	1
LAtotal	1
LBestLikert	1
LpAPolicyLoans	1
LpARealEstateOccupiedEncumber	1
LpASeparateAccounts	1
LpBond1Private	1
LpBond2Private	1
LpBond3Private	1
LpBond4Private	1
LpBond5Private	1
LpBond6Private	1
LpBprivate	1
LpCommDirectDepositType	1
Lpcorp12	1
Lpcorp3	1
Lpcorp4	1
Lpcorp56	1
LpExAgencyExpenseAllow	1
LpExAgentBenefitPlans	1
LpExAgentNonfundedBenefitPlans	1
LpExOtherInvestExpense	1
LpExRealEstateExpense	1
LpLDepositContracts	1
LpLifeTOTALAmtSurrender	1
LpLSeparateAccounts	1
LpLSurplusNotes	1
LpSAmortInterestMaintReserve	1
LpSAnnuityBenefits	1
LpSChangeSurplusPaidIn	1
LpSChangeSurplusTransToCapital	1
LpSDeathBenefits	1
LpSIncomeInvestManageSepAccts	1
LpSIncreaseReservesLifeAccHealth	1
LpSInterestContractDepositType	1
LpSMaturedEndowments	1
LpSNetChangeCapitalSurplus	1
LpSPaymentsSupplContracts	1
LpSReserveAdjustReinsCeded	1
LpSSurrenderBenefits	1
LpSTotalL10_19	1
Lputil	1
LWtotal	1
Pannuity	1
pCommDirectFirstYrNotSingle	1
pCommDirectFirstYrSingle	1
pLReserveLife	1
XpClaimsTOTALRecovReinsDuringYr	1

RISK VAR	CLUSTER
LCAP	2
LpAComputersSoftware	2
LpANetDeferredTaxAsset	2
LpAOtherReceivReins	2
LpAReceivParentSubsid	2
LpAREcoverableReins	2
LpATaxFederalForeign	2
LpClaimsDirectEndThisYr	2
LpClaimsTOTALBenefitsDuringYr	2
LpClaimsTOTALSettleDuringYr	2
Lpgov1	2
Lpgov2	2
LpLAgentCommissionsDue	2
LpLCapitalSurplus	2
LpLCommonStock	2
LpLContractClaimsHealth	2
LpLGeneralExpensesDue	2
LpLHeldForAgents	2
LpLInterestMaintReserve	2
LpLPaidSurplus	2
LpLPayableParentSubsidAffil	2
LpLReserveHealth	2
LpLSurplus	2
LpLTaxFederalForeign	2
LpLTaxFederalForeignCurrent	2
LpLTaxFeesNotFederal	2
LpLTransferSeparateAccounts	2
LpRcapital	2
LpSCommissOnPremDepositType	2
LpSDisabilityAccHealthBenefits	2
pCommDirectRenewal	2
Phealth	2
LpADeferPremAgentBal	3
LpExReimburseByUninsurAccHealth	3
LpLOtherEmployeeAgentBenefits	3
LpLPreferredStock	3
LpLRetainedAsAgent	3
LpLTreasuryStockPreferred	3
LpSChangeCapitalTransFromSurplus	3
Plife	3
LpACash	4
LpClaimsReinsAssEndThisYr	4
LpCommExpReinsurAssumed	4
LpCommExpReinsurCeded	4
Lpgov3	4
Lpgov5	4
LpLContractClaimsLife	4
LpLFundsHeldUnauthReinsur	4
LpLOtherPayableReinsurance	4
LpLReinsurAssumedCommExpAllow	4

LpSCommissExpOnReinsurAssumed	4
LpSCommissionsExpReinsCeded	4
Preinsur	4

RISK VAR	CLUSTER
HealthTOTALlogPolNChange	5
LifeTOTALlogPolNChange	5
LpAOtherNonadmitAssets	5
LpAWriteInNotInvAssets	5
LpExEmployBenefitPlans	5
LpExInvestigateSettleClaims	5
LpExOtherAgentWelfare	5
Lpgov4	5
LpLTreasuryStockCommon	5
LpLWriteInExSurplusFunds	5
LpSChangeCapitalPaidIn	5
LpSChangeSurplusForReinsur	5
LpSChangeSurplusTransFromCapital	5
LpSCouponsGuarPureEndowments	5
LpSGroupConversions	5
pSChangeSurplusNotes	5
pSOtherChangeSurplusSepAccts	5
XpClaimsTOTALLiabPaidDuringYr	5
LpAAdjustForeignExch	6
LpAShortTerm	6
LpCommExpReinsurDiffCed_Ass	6
LpExEmpNonfundedBenefitPlans	6
LpLAdjAssetLiabForeignExchRate	6
LpLExperienceRatingRefunds	6
LpLifeTOTALNSurrender	6
LpLSurrenderCanceledContracts	6
LpLWriteInSurplusFunds	6
LpmuniHI	6
LpmuniLO	6
LpSSurplusWithdrawSepAccts	6
LRatingDate	6
LRBCratio	6
LRetOnCap	6
Performance	6
pSChangeAccountingPrinciples	6
pSChangeCapitalTransToSurplus	6
RBCind	6

RISK VAR	CLUSTER
LpExAdvertising	7
LpExAgencyConferences	7
LpExBooksPeriodicals	7
LpExBureauAssocFees	7
LpExCollectionBankFees	7
LpExCPAActuaries	7
LpExDeprecComputersSoftware	7
LpExDeprecFurnitureEquip	7
LpExGrossAgentBalChargeoff	7
LpExGroupServiceAdminFees	7
LpExInsuranceNotRealEstate	7
LpExLegal	7
LpExMiscGeneralExpenses	7
LpExOtherEmployWelfare	7
LpExPhonePostage	7
LpExPrintingStationery	7
LpExRent	7
LpExRentEquipment	7
LpExSalaries	7
LpExTravel	7
LpTCE	7
pExMiscLosses	7
LpACommonStock	8
LpLAssetValuationReserve	8
LpLNetDeferredTax	8
LpOppARisk	8
LpRegARisk	8
pLUnassignedSurplusFunds	8

We propose the eight clusters as a good cut at a map of the geography of insurer risk space. We experimented with more and fewer clusters, but we could not obtain a much better characterization of the clusters of risks. To understand the meaning of the map, we need to

understand why the variables were clustered as they were. We need to understand the themes that make one cluster of risk variables more related to each other than to another cluster.

Results of Cluster Analysis for ERM Tools

Following the same process of clustering the risk variables, we also create the clusters for the ERM tools variables. Figure 3 and Table 2 show the 8 clusters selected for the ERM space.

Figure 3 – Eight Main Clusters for the ERM Tools Space

Clustering of ERM Variables

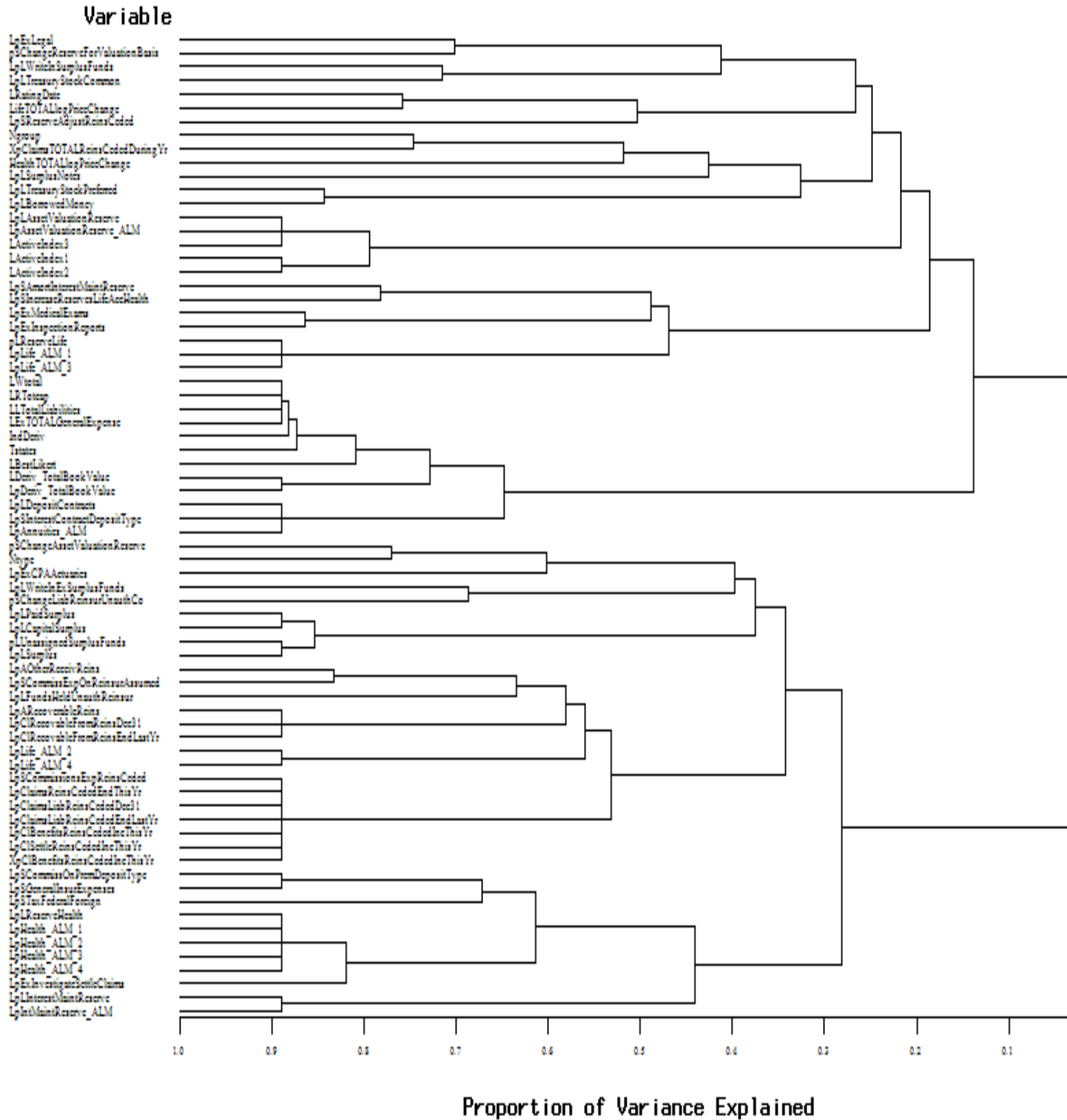


Table 2 - Clusters of the ERM Tools Variables [summary statistics are available in the Appendix]

ERM TOOL VAR	CLUSTER	ERM TOOL VAR	CLUSTER
IndDeriv	1	LpExInspectionReports	4
LBestLikert	1	LpExMedicalExams	4
LDeriv_TotalBookValue	1	LpLife_ALM_1	4
LEXTOTALGeneralExpense	1	LpLife_ALM_3	4
LLTotalLiabilities	1	LpSAmortInterestMaintReserve	4
LpAnnuities_ALM	1	LpSIncreaseReservesLifeAccHealth	4
LpDeriv_TotalBookValue	1	pLReserveLife	4
LpLDepositContracts	1	LpExInvestigateSettleClaims	5
LpSInterestContractDepositType	1	LpHealth_ALM_1	5
LRTotcap	1	LpHealth_ALM_2	5
LWtotal	1	LpHealth_ALM_3	5
Tstates	1	LpHealth_ALM_4	5
LifeTOTALlogPriceChange	2	LpIntMaintReserve_ALM	5
LpSReserveAdjustReinsCeded	2	LpLInterestMaintReserve	5
LRatingDate	2	LpLReserveHealth	5
LpAOtherReceivReins	3	LpSCommissOnPremDepositType	5
LpARecoverableReins	3	LpSGeneralInsurExpenses	5
LpClaimsLiabReinsCededDec31	3	LpSTaxFederalForeign	5
LpClaimsLiabReinsCededEndLastYr	3	LActiveIndex1 ¹	6
LpClaimsReinsCededEndThisYr	3	LActiveIndex2 ²	6
LpCIBenefitsReinsCededIncThisYr	3	LActiveIndex3 ³	6
LpCIRecovableFromReinsDec31	3	LpAssetValuationReserve_ALM	6
LpCIRecovableFromReinsEndLastYr	3	LpLAssetValuationReserve	6
LpCISettleReinsCededIncThisYr	3	HealthTOTALlogPriceChange	7
LpExCPAActuaries	3	LpLBorrowedMoney	7
LpLCapitalSurplus	3	LpLSurplusNotes	7
LpLFundsHeldUnauthReinsur	3	LpLTreasuryStockPreferred	7
LpLife_ALM_2	3	Ngroup	7
LpLife_ALM_4	3	XpClaimsTOTALReinsCededDuringYr	7
LpLPaidSurplus	3	LpExLegal	8
LpLSurplus	3	LpLTreasuryStockCommon	8

¹ The ActiveIndex and Performance formulas. The lag values are available from the previous year's data, which are in the dataset from which these vars are extracted.

ActiveIndex1 = (ABS(rBUY_Bonds - lagrBUY_Bonds) + ABS(rBUY_Stocks - lagrBUY_Stocks) + ABS(rBUY_Mortgages - lagrBUY_Mortgages) + ABS(rBUY_RealEstate - lagrBUY_RealEstate) + ABS(rBUY_OtherInvestedAssets - lagrBUY_OtherInvestedAssets))/5;

² ActiveIndex2 = (ABS(rBUY_Bonds - pCF_Bonds) + ABS(rBUY_Stocks - pCF_Stocks) + ABS(rBUY_Mortgages - pCF_Mortgages) + ABS(rBUY_RealEstate - pCF_RealEstate) + ABS(rBUY_OtherInvestedAssets - pCF_OtherInvestedAssets))/5;

³ ActiveIndex3 = (ABS(rBUY_Bonds - pBonds) + ABS(rBUY_Stocks - pStocks) + ABS(rBUY_Mortgages - pMortgages) + ABS(rBUY_RealEstate - pRealEstate) + ABS(rBUY_OtherInvestedAssets - pOtherInvestedAssets))/5;

LpLWriteInExSurplusFunds	3
LpSCommissExpOnReinsurAssumed	3
LpSCommissionsExpReinsCeded	3
Ntype	3
pLUnassignedSurplusFunds	3
pSChangeAssetValuationReserve	3
pSChangeLiabReinsurUnauthCo	3
XpCIBenefitsReinsCededIncThisYr	3

LpLWriteInSurplusFunds	8
pSChangeReserveForValuationBasis	8

Factor Analysis Methodology to Uncover the Themes of the Risk and ERM Tools Clusters

Factor Analysis uncovers the hidden themes of the clusters. As you will see below, the factor analysis uncovered the first two or three factors in 5 of the 8 risks clusters only and also in 5 of the 8 ERM tools clusters.

Factor analysis attempts to determine the underlying (latent, unobserved, or common) factors that account for observed variables X_1, X_2, \dots, X_p when it is not possible to directly measure the true underlying causes of X_1, X_2, \dots, X_p . Factor analysis attempts to determine the number of such factors, to estimate them, and to interpret their meaning. The following is a brief sketch of the factor analysis model and assumptions:

- (a) There are m **common factors** ξ_1, \dots, ξ_m that underlie p ($p > m$) variables X_1, X_2, \dots, X_p .
- (b) Each variable X_i is a linear combination of one or more common factors and a **unique factor** ε_i (unique to X_i):

$$\begin{aligned}
 X_1 &= \lambda_{11}\xi_1 + \lambda_{12}\xi_2 + \dots + \lambda_{1m}\xi_m + \varepsilon_1 \\
 X_2 &= \lambda_{21}\xi_1 + \lambda_{22}\xi_2 + \dots + \lambda_{2m}\xi_m + \varepsilon_2 \\
 &\vdots \\
 X_p &= \lambda_{p1}\xi_1 + \lambda_{p2}\xi_2 + \dots + \lambda_{pm}\xi_m + \varepsilon_p
 \end{aligned}$$

Each ξ_j contributes to at least two variables (at least two of $\lambda_{1j}, \lambda_{2j}, \lambda_{3j}, \dots, \lambda_{pj}$ are nonzero), for if only one $\lambda_{ij} \neq 0$, for some $i = 1, 2, \dots, p$, then ξ_j would really be part of the unique factor for that X_i .

- (c) All ξ 's and X 's are standardized to mean 0, stdev 1.⁴
- (d) $\text{corr}(\varepsilon_i, \varepsilon_j) = 0$ for all $i, j, i \neq j$ ⁵

⁴ We will not suppose that the unique term ε is standardized, although we will assume that ε has mean zero. Thus $\text{Var}(\varepsilon)$ need not be 1.

(e) $\text{corr}(\xi_i, \xi_j) = 0$ for all i, j ⁶

(f) [Initially] $\text{corr}(\xi_i, \xi_j) = 0$ for all $i, j, i \neq j$. I.e., the initial extracted factors are uncorrelated (orthogonal).

Results of Factor Analysis within the Risk Clusters and ERM Clusters -- Creation of the Risk and ERM Tools Maps

We look to the first few factors to determine the meaning of the cluster. The first few factors are usually responsible for a substantial proportion of the variability of the cluster variables (denoted by the eigenvalue). And the meaning of a factor can be gleaned from the variables with highest factor loadings. For those clusters with high eigenvalues (high variance explained by each factor), Table 3 shows the loadings for the most significant factors in each of the of these risk clusters. We also provide our interpretation of the resultant themes of the clusters.

Table 3 - Risk Space - Factor Loadings for the Clusters with High Variance Explained by the Factors (Eigenvalues) and their Themes

		<u>Theme</u>
Cluster 1		
Factor Number	Eigenvalue	
1	9.696722	
2	3.746450	
3	2.679885	
Variable	Factor1	Low Liquidity – Asset risk
LAtotal	0.876416	
LAInvestedAssets	0.841905	
LpBond2Private	0.818397	
LpBprivate	0.818267	
LWtotal	0.753522	
LpBond1Private	0.737044	
LpBond3Private	0.715046	
Variable	Factor2	Life product risks
LpAPolicyLoans	0.523196	

⁵ This is a natural assumption: If two ε 's could be correlated, then part of their effects would be in common to their two X-variables and not unique to their separate X-variables.

⁶ This is a natural assumption: If a common factor correlates with another unique factor, then that other unique factor is not unique to its X-variable, but also shares in the explanation of the X-variable of the common factor. And if a common factor correlates with its own unique factor, then that unique factor necessarily correlates with another X-variable (because the common part is, after all, in common to the X-variables), and so is also not unique.

pLReserveLife	0.497873
LpSDeathBenefits	0.456245

Variable	Factor3	
LpSIncreaseReservesLifeAccHealth	0.640158	Reserves risk – Product risk
LpSTotalL10_19	0.595813	
pLReserveLife	0.522153	

Cluster 2

Factor Number	Eigenvalue
1	8.83019
2	3.62399

Variable	Factor1	Claims settlements – Product risk
LpClaimsDirectEndThisYr	0.895912	
LpClaimsTOTALSettleDuringYr	0.872350	
LpClaimsTOTALBenefitsDuringYr	0.825972	
LpLContractClaimsHealth	0.799585	
Phealth	0.757487	
LpLCapitalSurplus	0.739532	

Variable	Factor2	Product (health)/Operational (Commission)
LpSCommissOnPremDepositType	0.599825	
LpSDisabilityAccHealthBenefits	0.552968	

Cluster 4

Factor Number	Eigenvalue
1	3.259321
2	1.479996

Variable	Factor1	Reinsurance assumed (commission and claims)
Preinsur	0.854684	
LpCommExpReinsurAssumed	0.813689	
LpSCommissExpOnReinsurAssumed	0.802858	
LpClaimsReinsAssEndThisYr	0.702083	

Variable	Factor2	Commission on Reinsurance ceded
LpSCommissionsExpReinsCeded	0.745985	
LpCommExpReinsurCeded	0.515113	

Cluster 7

Factor Number	Eigenvalue
1	6.330915
2	2.166834

Variable	Factor1	Operational expenses
LpExPrintingStationery	0.773015	

LpExOtherEmployWelfare	0.736351	
LpExRentEquipment	0.668938	
Variable	Factor2	
LpExCPAActuaries	0.293973	Operational expenses

Cluster 8

Factor Number	Eigenvalue	
1	3.149836	
Variable	Factor1	Asset Risk
LpRegARisk	0.945318	
LpACommonStock	0.925597	
LpOppARisk	0.856042	

Table 3 shows that the themes of the risk map correspond to various aspects of the risks depicted in Figure 1 – asset, product, and operational risks.

Table 4 replicates the process for the ERM tools map. Again, we focus on the clusters where the factors have high eigenvalues. Table 4 provides the ERM tools map that emerged for the life insurers in 2003. We see that asset/liability matching for each line of life insurance is part of the map as well as capital management and reinsurance. We included special proxies for active/passive asset allocation strategies and they also emerge as a theme of cluster 6. Reinsurance as a tool and inspection also emerge as part of the ERM tools map.

Table 4 – ERM Tools Space - Factor Loadings for the Clusters with High Variance Explained by the Factors (Eigenvalues) and their Themes

		Themes
Cluster 1		
Factor Number	Eigenvalue	
1	4.777433	
2	1.919287	
Variable	Factor1	Size and derivatives
LLTotalLiabilities	0.886553	
LWtotal	0.782013	
LRTotcap	0.708080	
IndDeriv	0.706148	
Variable	Factor2	Annuities ALM
LpLDepositContracts	0.760578	

LpAnnuities_ALM 0.748365

Cluster 3

Factor Number Eigenvalue
6.097146
2.694351

Variable Factor1 **Reinsurance ceded**
LpClaimsLiabReinsCededDec31 0.900162
LpClaimsReinsCededEndThisYr 0.900162
LpClaimsLiabReinsCededEndLastYr 0.862172
LpClSettleReinsCededIncThisYr 0.840958
XpClBenefitsReinsCededIncThisYr 0.826632

Variable Factor2 **Capital management**
LpLSurplus 0.853020
LpLCapitalSurplus 0.826342
LpLPaidSurplus 0.822995

Cluster 4

Factor Number Eigenvalue
1 2.591291
2 1.502502

Variable Factor1 **Life ALM**
LpLife_ALM_1 0.936286
LpLife_ALM_3 0.894617
pLReserveLife 0.878939

Variable Factor2 **Inspections and exams (Operational)**
LpExInspectionReports 0.860757
LpExMedicalExams 0.829734

Cluster 5

Factor Number Eigenvalue
1 4.156133
2 1.887307

Variable Factor1 **Health ALM**
LpHealth_ALM_1 0.897746
LpHealth_ALM_3 0.866827
LpHealth_ALM_4 0.844573
LpLReserveHealth 0.844375
LpHealth_ALM_2 0.830254

Variable Factor2 **Maintenance reserve**
LpLInterestMaintReserve 0.915656
LpIntMaintReserve_ALM 0.883388

Cluster 6

Factor Number	Eigenvalue
1	2.879384

Variable	Factor1	Asset allocation strategies and asset valuation reserves
LpAssetValuationReserve_ALM	0.812446	
LActiveIndex3	0.794990	
LpLAssetValuationReserve	0.764336	
LActiveIndex1	0.742731	
LActiveIndex2	0.671897	

The Relationship Between Risk and ERM Tools Maps

As noted above, the objective of this paper is to examine the interrelationship between the map of risk space and the map of ERM tool space. In order to do this, we used the factors of each of the risk and ERM tools clusters shown in Tables 3 and 4 and also included the first one or two factors of the mixed clusters that did not emerge as having a clear theme during the factor analysis step. We use 18 factors selected from risk space and 14 from ERM tool space. With these two sets of factors to represent their respective spaces, we then interrelated them using the canonical correlation methodology.

Canonical correlation is a generalization of multiple regression in which multiple response variables are permitted, in addition to multiple predictors. Moreover, the direction of the relationship need not be specified. In the case at hand, we view that as an advantage. One can argue plausibly that the ERM tools employed by an insurer are a function of the risks assumed. But one could argue just as plausibly, in our view, that the risks assumed are a function of and limited by the tools available to mitigate them. Some would therefore argue for a simultaneous equations approach, with both risks and tools expressed as functions of each other and of other predictors. However, there are so many risks and tools that the proliferation of equations might overwhelm human ability both to specify and to make sense of them. Moreover, the simultaneous equations approach would define both risks and ERM tools implicitly as functions of a common set of instruments in reduced form. We are not yet persuaded of the truth of such an assumption. Following is a brief description of the canonical correlation methodology.

Canonical Correlation Analysis Methodology

In canonical correlation, we are interested in the interrelationship between one group of variables Y_1, Y_2, \dots, Y_q and another group X_1, X_2, \dots, X_p . Note that multiple regression is a special case of canonical correlation in which the Y -group contains only one variable. Formally, in canonical correlation models, after standardizing both the X 's and the Y 's, the model finds a pair of linear combinations

$$\begin{aligned}W_1 &= \alpha_{11} * X_1 + \alpha_{12} * X_2 + \dots + \alpha_{1p} * X_p \\V_1 &= \beta_{11} * Y_1 + \beta_{12} * Y_2 + \dots + \beta_{1q} * Y_q\end{aligned}$$

that have maximum correlation with each other. Thus W_1 best represents the X 's in explaining the Y 's, and V_1 best represents the Y 's in explaining the X 's. And together, (W_1, V_1) best explain the relationship between the Y 's and the X 's.

Once the first pair (W_1, V_1) have been chosen, the search begins for a second pair:

$$\begin{aligned}W_2 &= \alpha_{21} * X_1 + \alpha_{22} * X_2 + \dots + \alpha_{2p} * X_p \\V_2 &= \beta_{21} * Y_1 + \beta_{22} * Y_2 + \dots + \beta_{2q} * Y_q\end{aligned}$$

chosen to have maximum correlation with each other, subject to W_2 being uncorrelated with W_1 and V_1 , and V_2 being uncorrelated with W_1 and V_1 . The idea is that (W_2, V_2) should do the best possible job of explaining what *remains* to be explained of the relationship between the Y 's and the X 's, after the first pair have had their say. The process of finding pairs of linear combinations continues until $m = \min(p, q)$ pairs have been found. Interpretation of the linear combinations is informed by principles similar to those involved in interpreting factors in factor analysis.

Canonical Correlation Results

To apply canonical correlation, we selected the $q = 14$ important factors from ERM tool space to use as Y_1, Y_2, \dots, Y_{14} and the $p = 18$ important factors from Risk space to use as X_1, X_2, \dots, X_{18} .

Table 5 shows the first five canonical variate pairs (ERM1-ERM5 and RISK1-RISK5). ERM1 is

paired with RISK1, ERM2 with RISK2, etc. These five canonical pairs explain 41%, 26%, 16%, 5%, and 5% of the total interrelationship between the selected risk factors and ERM tool factors, respectively, and have canonical R-squares of 0.88, 0.82, 0.75, 0.50, and 0.47.⁷ The table displays the correlations of each canonical variate with the ERM or RISK factors that it represents. These loadings are used as in factor analysis to obtain the meanings of the canonical variates. Shading indicates the most important loadings for interpretation, in our view.

Table 5A. Correlations Between the ERM Tool Factors and Their Canonical Variates

<u>Factor</u>	<u>Theme</u>	<u>ERM1</u>	<u>ERM2</u>	<u>ERM3</u>	<u>ERM4</u>	<u>ERM5</u>
ERMclus1F1	Sophistication (size and derivatives)	0.6879	-0.1155	0.6450	-0.0631	0.1461
ERMclus1F2	Annuities ALM	-0.0024	-0.2872	-0.2070	0.1231	0.0097
ERMclus2F1	Mixture	0.0903	0.0035	0.0421	-0.0472	0.1167
ERMclus3F1	Reinsurance ceded	-0.4959	0.5127	0.0413	0.3091	0.5803
ERMclus3F2	Capital management	-0.7470	-0.4706	0.2031	-0.3146	-0.2107
ERMclus4F1	Life ALM	0.3505	-0.3994	-0.6143	0.3632	0.0942
ERMclus4F2	Monitoring (inspections and medical exams)	0.1448	-0.0282	-0.2146	0.2499	-0.1243
ERMclus5F1	Health ALM	-0.2410	0.7747	0.2156	-0.0500	-0.3546
ERMclus5F2	Maintenance reserve	-0.3208	-0.2089	0.2089	-0.0454	0.1230
ERMclus6F1	Asset allocation and reserve strategy	-0.1884	-0.2794	0.5089	0.7208	-0.2118
ERMclus7F1	Mixture	0.2725	-0.0284	0.1377	-0.0894	0.0275
ERMclus7F2	Mixture	0.0526	-0.1689	0.1795	-0.2429	0.1332
ERMclus8F1	Mixture	-0.1447	-0.1391	-0.0050	0.0136	0.0271
ERMclus8F2	Mixture	-0.0094	0.0632	-0.0370	0.0468	0.0139

Table 5B. Correlations Between the Risk Factors and Their Canonical Variates

<u>Factor</u>	<u>Theme</u>	<u>RISK1</u>	<u>RISK2</u>	<u>RISK3</u>	<u>RISK4</u>	<u>RISK5</u>
RISKclus1F1	Liquidity and credit - asset risk	0.7715	-0.0901	0.5400	-0.2154	0.0888
RISKclus1F2	Life risks: policy loans; reserves; death benefits - product risk	0.1094	-0.0417	-0.2108	0.2750	-0.0240
RISKclus1F3	Reserves risk	0.4563	-0.1071	-0.5074	0.2839	0.1297
RISKclus2F1	Claims settlements	-0.8147	0.4712	0.1173	0.0312	-0.0739
RISKclus2F2	Product (health)/Operational (Commission)	0.1381	0.8868	0.0513	0.0597	-0.3050
RISKclus3F1	Mixture	0.0107	-0.2530	-0.4809	0.3381	0.0113
RISKclus3F2	Mixture	0.0565	-0.0786	-0.0063	0.2725	-0.0690
RISKclus4F1	Reinsurance assumed	-0.1488	0.2988	0.0840	0.3785	0.5163

⁷ For example, $0.88 = \text{corr}(\text{RISK1}, \text{ERM1})^2$, etc.

RISKclus4F2	Commission on reinsurance ceded	0.0186	0.3696	-0.0632	0.3069	0.5735
RISKclus5F1	Mixture	-0.0837	0.1605	-0.0657	-0.0263	-0.2833
RISKclus5F2	Mixture	0.0338	0.0280	0.0091	-0.0635	0.0302
RISKclus5F3	Mixture	0.0433	-0.1208	-0.2136	0.1132	-0.0235
RISKclus6F1	Mixture	-0.1131	-0.1454	0.0957	-0.1971	0.1637
RISKclus6F2	Mixture	0.1571	0.2512	-0.0029	-0.0126	0.0421
RISKclus6F3	Mixture	-0.1312	-0.0891	-0.0628	0.1091	0.1525
RISKclus7F1	Operational expenses	0.1690	0.0732	0.0004	0.1270	-0.3551
RISKclus7F2	Actuarial expenses	-0.3405	-0.1327	-0.1855	-0.0182	0.2639
RISKclus8F1	Asset risks	-0.3419	-0.3705	0.5421	0.5899	-0.2254

Interpretation

The first dimension (ERM1-RISK1) explains 41% of the interrelationship, and the associated canonical pairs are closely related (R-square = 0.88) as the plot in Figure 2 demonstrates.

Insurers with high scores on RISK1 tend to be large with large holdings of illiquid privately placed assets and low levels of claims. Insurers with low scores on RISK1 tend to be small, with high liquidity and high bonds credit but also high claims exposures through risky products. On the ERM1 side, high scorers tend to be sophisticated (use derivatives), larger in size and employ lower financial leverage in capital management, and cede less reinsurance to manage risk. Low scorers on ERM1 have opposite characteristics. The pairing of these risk and tool characteristics on the ERM1-RISK1 dimension suggests a dimension characterized by reliance upon sophistication both in capital and derivatives management with exploitation of size on the ERM side while taking more asset risk and less product risk on the risk map side.

The second dimension of the Risk-ERM interrelationship (ERM2-RISK2) emphasizes health Asset/Liability Matching, reinsurance, and capital management (more leverage) tools paired with a mix of product risk and operational risk in commissions. Insurers that score high on RISK2 have high disability benefits and commissions on deposit funds (which is the only place where operational risk appears in this interrelationship).. Insurers that score high on ERM2 deploy health ALM and reinsurance tools, but use more leverage. The second dimension of the Risk-ERM interrelationship appears to be a product dimension on the risk side, with small operational contributions, while on the ERM side it overlaps all functions in both health ALM and capital management.

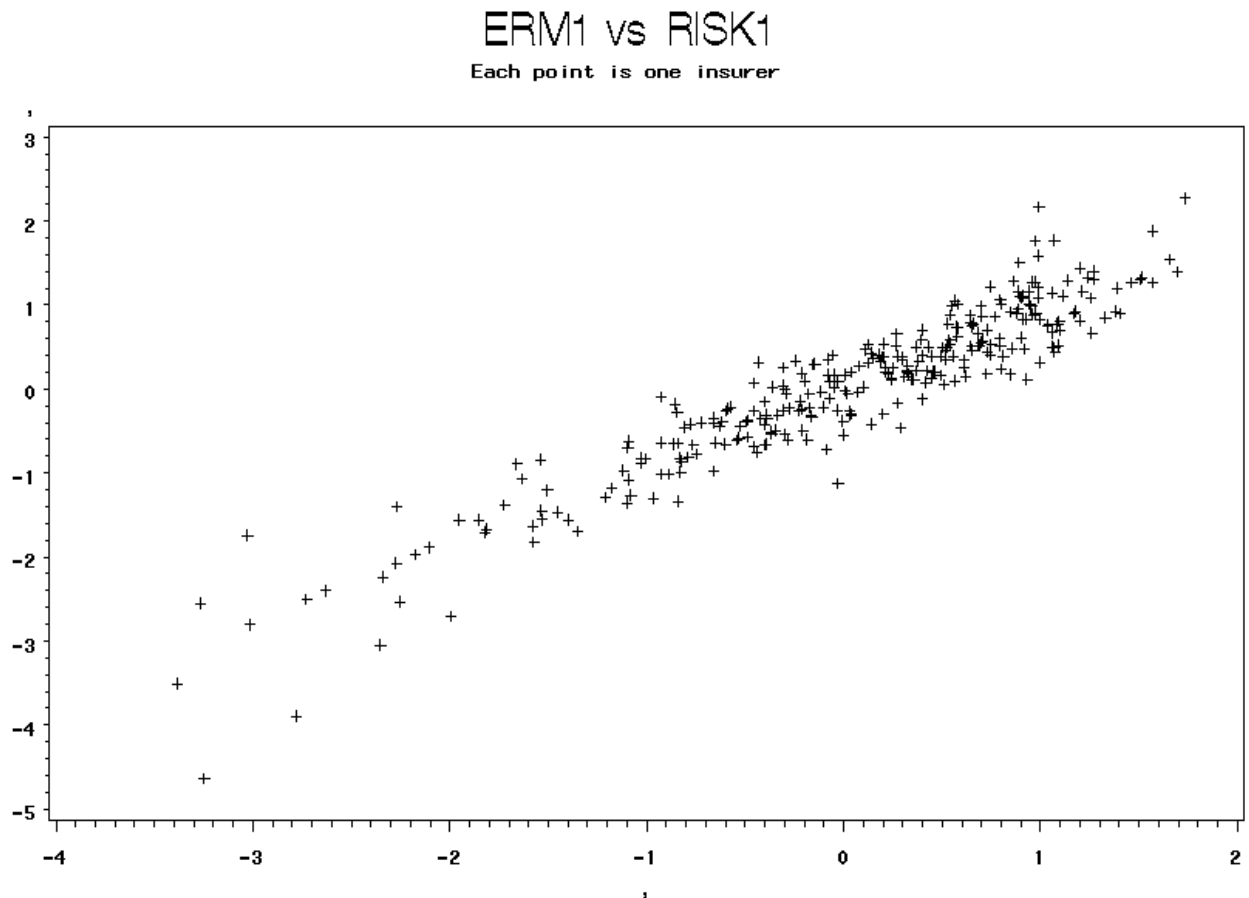
The third dimension (ERM3-RISK3) emphasizes asset risks on the Risk side and asset risk management tools on the ERM side. We find a recurrence of firms with illiquid private placements and asset risk overall on the high side of RISK3, together with size and sophistication on the high side of ERM3. But on the high end of RISK3, we also find firms with high overall asset risk and some product risk, together with low reserves. And on the high side of ERM3, we add firms with significant asset allocation and reserve measures (product risk) coupled with low ALM for life products.

The fourth and fifth dimensions each explain about 5% of the RISK-ERM interrelationship. Their interpretations are fairly straightforward. The fourth dimension pairs asset risks with asset allocation and reserve strategies. The fifth relates reinsurance risks (assumed) with reinsurance tools (ceded).

We emphasize that each canonical pair (dimension) of the interrelationship is orthogonal to every other pair and therefore provides a separate and distinct perspective on a different aspect of the interrelationship. Together, these five dimensions explain about 93 percent of the interrelationship. To be sure, each side of the RISK-ERM interrelationship has been simplified through the selection of the most important factors on each side (14 for ERM and 18 for RISK). Conceivably, a different picture could emerge through the inclusion of more, or different, factors. However, the themes that emerge from the analysis are satisfyingly consistent. The theme of the most important dimension, ERM1-RISK1, is characterized by size, leverage and sophistication on the ERM side against high asset risk and low product risk. Insurers are placed along its risk dimension by their assumption (or not) of assets risks, and along its ERM dimension by their employment of sophisticated tools, including derivatives. Insurers are also placed on a second dimension that represents a mix of product and asset risks and corresponding tools. The third and fourth dimensions correspond to different aspects of asset risks and tools. And the fifth is a specific type of product risk and tool – reinsurance. Noteworthy is the presence on the ERM side of ALM tools for two of the 3 main products sold by this industry – life and health (ALM for annuities did not emerge in the relationship). Noticeable by its absence is any presence for operational risks (except in one factor) or tools. Although many operational risk

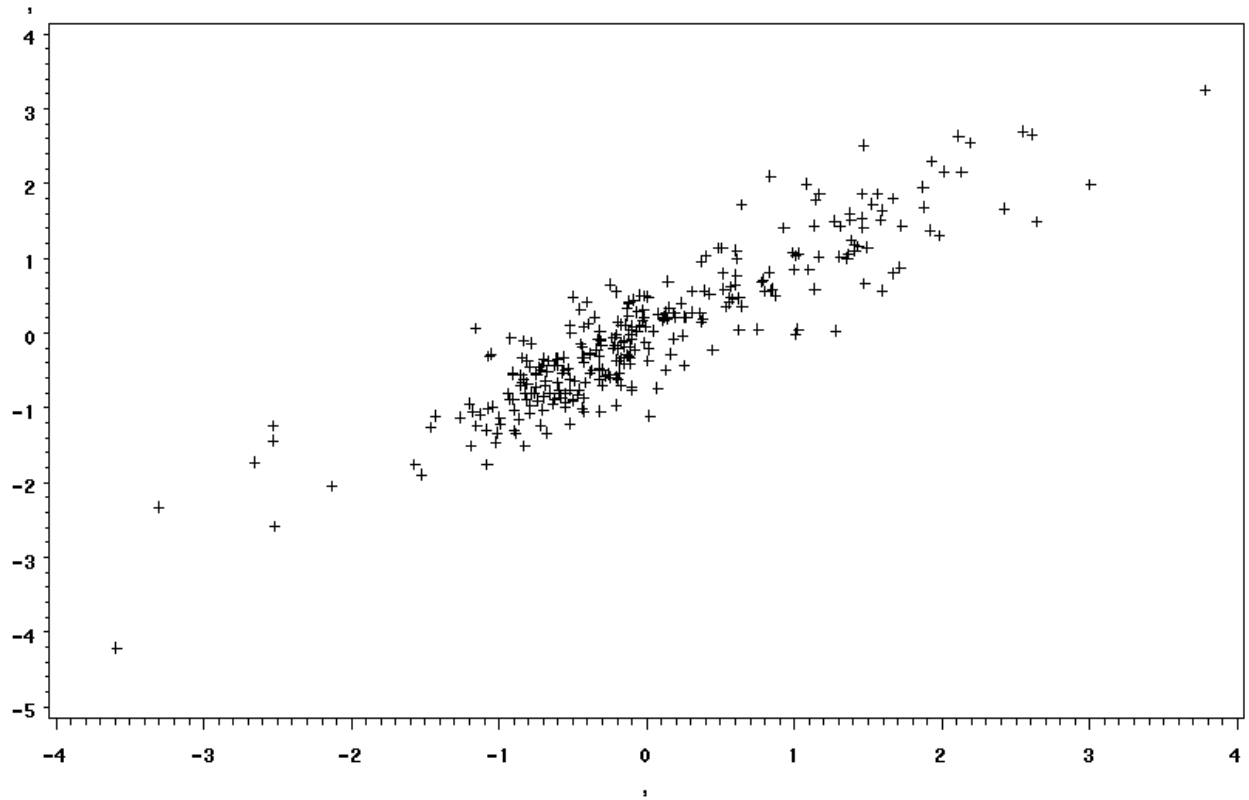
variables and tools were included in the study, and operational risks/tools do play roles in certain clusters and factors, none emerges to assume control of a significant aspect of the ERM-RISK interrelationship, except in minor roles. Figure 4 below provides the visual mapping of insurers in each of the interrelationships described here. As the reader can see, the maps and the relationships are spectra. Each insurer is positioned at a point in every Risk-ERM dimension. Thus, an insurer may use the plots in Figure 4 as a benchmark tool.

Figure 4- Interrelationships Between the Risk Spectrums and ERM Tools Spectrums -- Each Graph Represented Some Themes of the Risk Map in Relationship to Some Themes of the ERM Tools Map



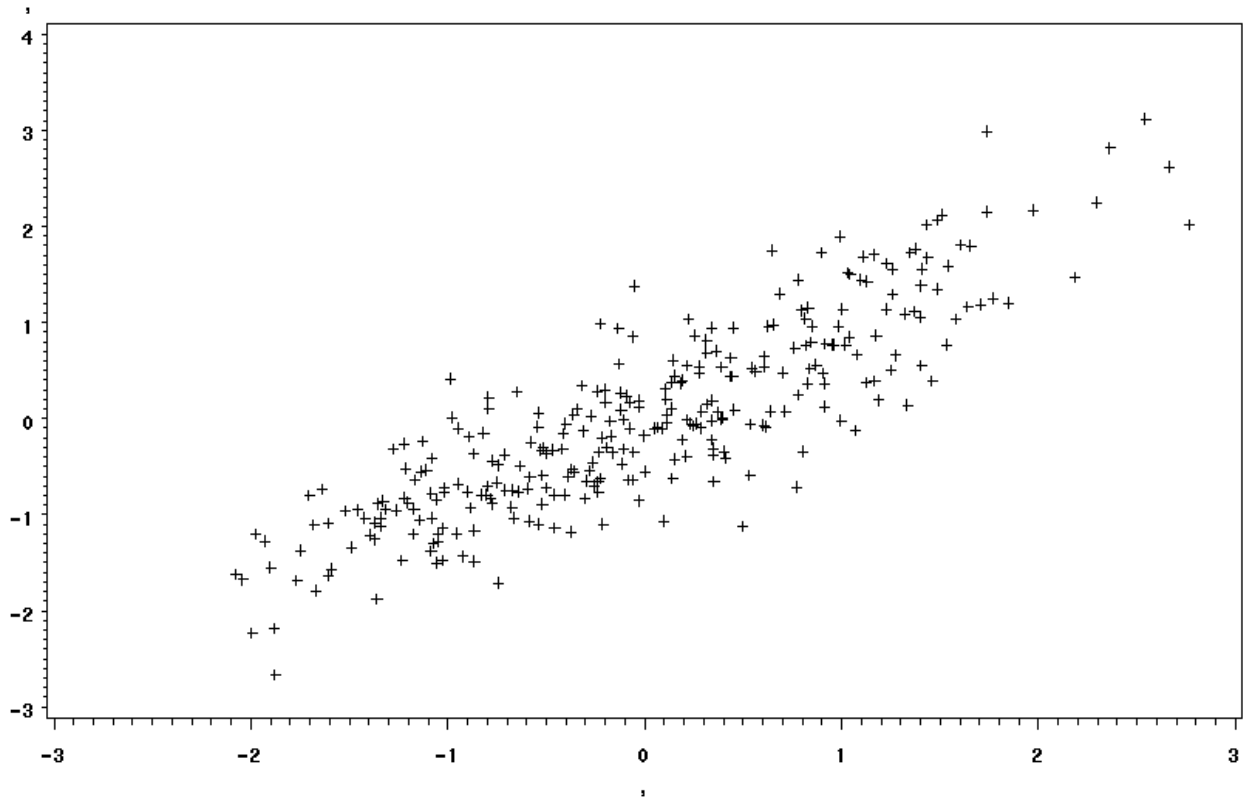
ERM2 vs RISK2

Each point is one insurer



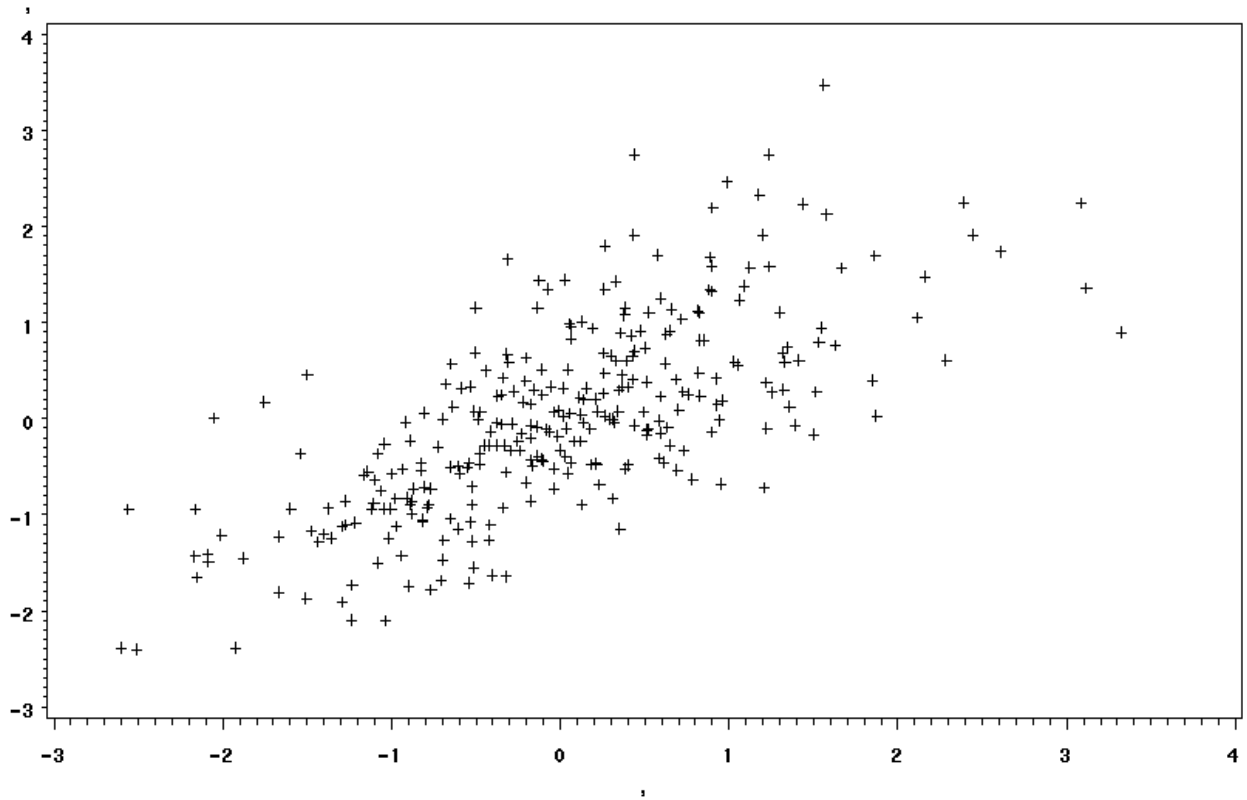
ERM3 vs RISK3

Each point is one insurer



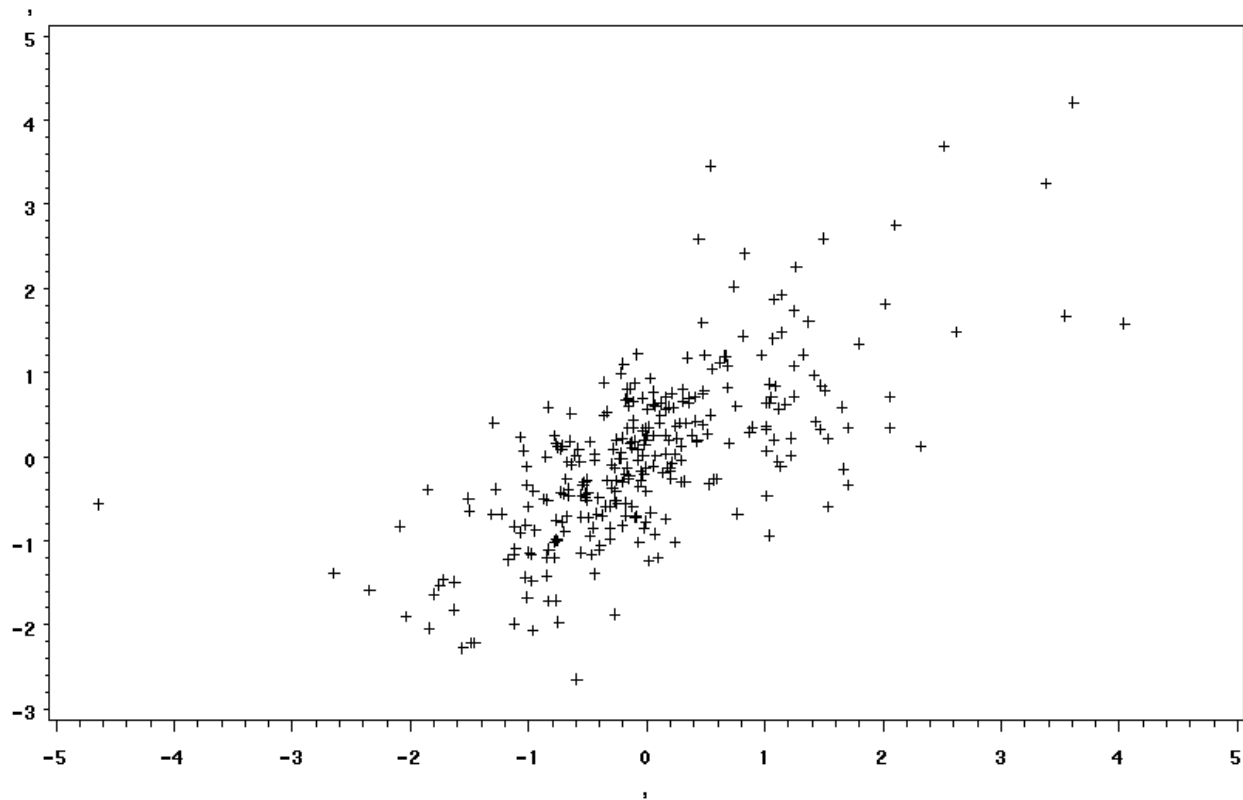
ERM4 vs RISK4

Each point is one insurer



ERM5 vs RISK5

Each point is one insurer



Summary and Significance of this Research

In this work, we expand Baranoff and Sager (2006) in two respects. Most importantly, we study the interrelationship between the structure of the risk universe of life insurers and the structure of their ERM tool universe, both as reflected in the objective data of their financial statements. Secondly, we expand the risk and tool spaces by including additional risks and tools. We use the same methodology to map risks and tools: cluster analysis to group similar risks together and similar ERM tools together, followed by factor analysis of each cluster to characterize the themes of the clusters. Then we study how the risks and ERM tools correspond to each other. Both sides, risks and ERM tools, are multivariate. So we employ canonical correlation to study the interrelationship between the universe of risks and the universe of ERM tools. Other methodologies require directionality in the relationship (regression) or implicitly define both

variable sets as functions of a common set of predictors (simultaneous equations). In addition, other methodologies could be overwhelmed by the number of relationships to specify. Canonical correlation avoids these difficulties. We selected 18 of the most important risk factors and 14 of the most important ERM tool factors to represent their respective maps and applied canonical correlation to the factors. The first five dimensions (canonical variates) captured 93% of the RISK-ERM interrelationship. All yielded satisfying interpretations. The interrelationship is dominated by various aspects of asset risk and tool themes and by product risk and tool themes. Notably, the role of operational risk and tools is relatively minor and diffused among less important dimensions.

References

- Baranoff, Etti G. "Mapping the Evolution of Risk Management" feature article in *Contingencies*, July/August 2004C pp. 22- 27
- Baranoff, Etti G. "Risk Management – A Focus on Holistic Approach: Three Years After September 11" *The Journal of Insurance Regulation*, July 2004B
- Baranoff, Etti "Risk Management and Insurance" 2004A, John Wiley & Sons, NJ.
- Baranoff, E. G., and Sager, T. W., 2006. "Integrated Risk Management in Life Insurance Companies" July 2006 Special Issue of *the Geneva Papers*
- Baranoff, Etti G., Thomas W. Sager and Thomas Shively "Managing Capital Structure: The Case of Life Insurers – A Semiparametric Simultaneous Equations Approach" presentation at the 2004 Risk Theory Seminar
- Baranoff, E. G., and Sager, T. W., 2003. "The Interrelationship among Organizational and Distribution Forms and Capital and Asset Risk Structures in the Life Insurance Industry" *Journal of Risk and Insurance*, 70(3), 375-400.
- Baranoff, E. G. and Sager, T. W., 2002, "The Relations among Asset Risk, Product Risk, and Capital in the Life Insurance Industry." *Journal of Banking and Finance*, 26, 1181-97.
- Bowers Barbara, an Interview for A. M. Best publications: "In the Spotlight: Professor Says New Risk Management Textbook Connects With Holistic Problem Solving" *BestWeek*, the week of Sep. 2, 2003, *BestDay News* on Sep. 2, 2003 and "Greater Than the Sum of the Parts," *Best's Review*, November 2003

Cummins, J. D., and Sommer, D. W., 1996, “Capital and Risk in Property-Liability Insurance Markets.” *Journal of Banking & Finance*, 20, 1069-1092.

Santomero, Anthony M.; David F. Babbel (1997) “Financial risk management by insurers: an analysis of the process” *Journal of Risk and Insurance*, v64 n2 p231(40).

Shrieves, R. and Dahl, D. “The Relationship Between Risk and Capital in Commercial Banks,” *Journal of Banking & Finance* 16 (1992): 439-457.

Appendix

Summary statistics of all variables used in this study

Variable	Label	N	Mean	Median	Std Dev
LAtotal	Total assets (p.3)	703	17.7851	17.3479	2.5889
LWtotal		703	16.2014	16.3632	3.1889
LAInvestedAssets		703	17.5810	17.1364	2.4661
LpBond1Private		703	-4.0905	-4.6052	0.8519
LpBond2Private		703	-4.2260	-4.6052	0.7341
LpBond3Private		703	-4.4994	-4.6052	0.2894
LpBond4Private		703	-4.5452	-4.6052	0.1937
LpBond5Private		703	-4.5568	-4.6052	0.1846
LpBond6Private		703	-4.5909	-4.6052	0.0879
LpBprivate		703	-3.9033	-4.6052	1.0753
LpRcapital		703	-3.4047	-3.5933	0.7923
Plife	Life writings / Total writings	703	0.3793	0.1898	0.4029
Phealth	Health writings / Total writings	703	0.2828	0.0005	0.3942
Pannuity	Annuity writings / Total writings	703	0.1418	0.0000	0.3014
Preinsur	Reinsurance writings / Total writings	703	0.1961	0.0000	0.3634
Lpgov1		703	-3.4127	-3.8238	1.2614
Lpgov2		703	-3.1042	-3.1933	1.2877
Lpgov3		703	-0.9395	-1.0087	0.2154
Lpgov4		703	-3.9298	-4.5070	1.0023
Lpgov5		703	-2.1688	-2.2759	0.2804
LpmuniHI		703	-2.9888	-2.9229	1.4351
LpmuniLO		703	-4.6005	-4.6052	0.0355
Lputil		703	-3.7547	-4.0581	0.9433
Lpcorp12		703	-1.8210	-1.1950	1.5084
Lpcorp3		703	-4.2241	-4.6052	0.5913
Lpcorp4		703	-4.3822	-4.6052	0.4339
Lpcorp56		703	-4.4822	-4.6052	0.3067
LpTCE		695	1.5496	1.5390	0.2643
LRBCratio		672	6.5162	6.1962	1.3421
RBCind	Indicator for RBCratio > 125	672	0.9643	1.0000	0.1857
LRetOnCap		673	1.3176	1.3294	0.2532
LCAP		703	-1.3625	-1.0654	1.1415

LRatingDate	696	7.2935	7.3032	0.4745
LBestLikert	374	-0.7281	-1.1019	1.4066
LpRegARisk	703	-3.6791	-3.9469	0.7755
LpOppARisk	703	-4.3267	-4.3980	0.2455
LpACommonStock	703	-3.6577	-4.5946	1.3088
LpACash	703	-0.7595	-0.8845	0.3520
LpAShortTerm	703	-4.2282	-4.6052	0.8448
LpARealEstateOccupiedEncumber	703	-4.5942	-4.6052	0.1289
LpAPolicyLoans	703	-4.2245	-4.6052	0.6856
LpARecoverableReins	703	-4.1735	-4.3355	0.4245
LpAOtherReceivReins	703	-2.8230	-2.8805	0.2126
LpAComputersSoftware	703	-4.5523	-4.6052	0.1469
LpATaxFederalForeign	703	-3.4623	-3.5604	0.2875
LpANetDeferredTaxAsset	703	-3.5292	-3.6133	0.2105
LpADeferPremAgentBal	703	-3.6412	-3.8038	0.3840
LpAAdjustForeignExch	703	-4.6013	-4.6052	0.0814
LpAReceivParentSubsid	703	-4.3507	-4.6051	0.5977
LpAOtherNonadmitAssets	703	-4.4753	-4.4753	0.0057
LpAWriteInNotInvAssets	703	-3.7667	-3.9893	0.5433
LpASeparateAccounts	703	-4.2050	-4.6052	1.1641
pLReserveLife	703	0.4659	0.4831	0.3753
LpLReserveHealth	703	-3.5580	-4.6052	1.4560
LpLDepositContracts	703	-4.1525	-4.6052	0.9246
LpLContractClaimsLife	703	-3.8913	-4.1922	0.8599
LpLContractClaimsHealth	703	-3.5242	-4.5653	1.4672
LpLSurrenderCanceledContracts	703	-4.5763	-4.5889	0.1521
LpLExperienceRatingRefunds	703	-3.9839	-4.0803	0.4127
LpLOtherPayableReinsurance	703	-4.2346	-4.3702	0.5191
LpLInterestMaintReserve	703	-3.5910	-3.8343	0.5996
LpLAgentCommissionsDue	703	-3.6995	-3.8384	0.3287
LpLReinsurAssumedCommExpAllow	703	0.0608	0.0644	0.1772
LpLGeneralExpensesDue	703	-3.6298	-3.9570	0.7026
LpLTransferSeparateAccounts	703	4.0696	4.1143	0.1851
LpLTaxFeesNotFederal	703	-0.8260	-0.8382	0.1586
LpLTaxFederalForeign	703	-2.8498	-3.0545	0.4997
LpLTaxFederalForeignCurrent	703	-2.2086	-2.3066	0.3192
LpLNetDeferredTax	703	-4.4897	-4.6052	0.4815
LpLRetainedAsAgent	703	-3.9220	-4.0139	0.3161
LpLHeldForAgents	703	-4.0045	-4.0495	0.2215
LpLAdjAssetLiabForeignExchRate	703	-4.6018	-4.6052	0.0530
LpLOtherEmployeeAgentBenefits	703	-4.5716	-4.6020	0.1757
LpLAssetValuationReserve	703	-3.9440	-4.2256	0.7870
LpLFundsHeldUnauthReinsur	703	-4.4902	-4.6049	0.5734
LpLPayableParentSubsidAffil	703	-3.3214	-3.6143	0.6521
LpLSeparateAccounts	703	-4.1896	-4.6052	1.2031
LpLCommonStock	703	-2.6064	-3.0081	1.8788
LpLPreferredStock	703	-4.5298	-4.6052	0.4588
LpLWriteInExSurplusFunds	703	-3.5019	-3.5763	0.4975
LpLSurplusNotes	703	-4.3280	-4.6052	1.0310
LpLPaidSurplus	703	-0.8103	-1.3700	1.3910

LpLWriteInSurplusFunds	703	-1.4485	-1.4736	0.2665
pLUnassignedSurplusFunds	703	0.9034	0.1087	16.9689
LpLTreasuryStockCommon	703	-4.5390	-4.6052	0.4502
LpLTreasuryStockPreferred	703	-4.6043	-4.6052	0.0200
LpLSurplus	703	1.7887	1.6176	0.5682
LpLCapitalSurplus	703	-0.5169	-0.5995	1.7833
LpSAmortInterestMaintReserve	703	-1.8092	-1.8264	0.1307
LpSCommissionsExpReinsCeded	703	-0.9688	-1.1768	0.4668
LpSReserveAdjustReinsCeded	703	1.3317	1.3358	0.2528
LpSIncomeInvestManageSepAccts	703	-4.3742	-4.6040	0.7872
LpSDeathBenefits	703	-1.7859	-2.0801	0.8679
LpSMaturedEndowments	703	-4.0654	-4.0932	0.1381
LpSAnnuityBenefits	703	-2.3673	-2.7098	0.7185
LpSDisabilityAccHealthBenefits	703	0.0775	-0.2158	0.6144
LpSCouponsGuarPureEndowments	703	-4.5533	-4.5609	0.1028
LpSSurrenderBenefits	703	-2.7900	-3.5856	1.3227
LpSGroupConversions	703	-4.2095	-4.2128	0.0311
LpSInterestContractDepositType	703	-1.0461	-1.0671	0.1681
LpSPaymentsSupplContracts	703	-4.4442	-4.5290	0.3000
LpSIncreaseReservesLifeAccHealth	703	3.3678	3.3729	0.3045
LpSTotalL10_19	703	3.2159	3.2010	0.3064
LpSCommissOnPremDepositType	703	-2.4278	-2.3541	1.4480
LpSCommissExpOnReinsurAssumed	703	-0.9606	-1.0795	0.3682
LpSSurplusWithdrawSepAccts	703	-1.9967	-1.9984	0.0436
pSOtherChangeSurplusSepAccts	703	-0.0004	0.0000	0.0073
pSChangeSurplusNotes	703	0.0012	0.0000	0.0839
pSChangeAccountingPrinciples	703	-0.0019	0.0000	0.0290
LpSChangeCapitalPaidIn	703	-1.1431	-1.1529	0.1042
LpSChangeCapitalTransFromSurplus	703	-4.5963	-4.6052	0.1484
pSChangeCapitalTransToSurplus	703	-0.0002	0.0000	0.0044
LpSChangeSurplusPaidIn	703	1.2227	1.2221	0.2245
LpSChangeSurplusTransToCapital	703	4.5961	4.6049	0.1484
LpSChangeSurplusTransFromCapital	703	4.2334	4.2435	0.2023
LpSChangeSurplusForReinsur	703	-0.9501	-0.9574	0.2100
LpSNetChangeCapitalSurplus	703	-0.2226	-0.2324	0.2825
LpCommExpReinsurCeded	530	-0.2094	-0.6902	1.0078
LpCommExpReinsurAssumed	530	-0.2676	-0.6180	1.1706
LpCommExpReinsurDiffCed_Ass	530	-7.0746	-7.0861	0.5230
pCommDirectFirstYrNotSingle	530	0.3247	0.1752	0.3553
pCommDirectFirstYrSingle	530	0.1769	0.0000	0.3445
pCommDirectRenewal	530	0.4790	0.3928	0.4020
LpCommDirectDepositType	530	-4.3927	-4.5402	0.6966
LpExRent	695	-2.6827	-2.6550	0.6168
LpExSalaries	695	-1.5291	-0.9371	1.5055
LpExEmployBenefitPlans	695	1.4672	1.4681	0.2497
LpExAgentBenefitPlans	695	-3.9003	-3.9638	0.2745
LpExEmpNonfundedBenefitPlans	695	-4.1381	-4.1688	0.1814
LpExAgentNonfundedBenefitPlans	695	-3.8907	-3.8941	0.0368
LpExOtherEmployWelfare	695	-2.4634	-2.5650	0.3122
LpExOtherAgentWelfare	695	-3.9963	-4.0182	0.1297

LpExLegal	695	1.5241	1.5272	0.2344
LpExCPAActuaries	695	-1.7352	-1.9269	0.5616
LpExInvestigateSettleClaims	695	-2.1186	-2.1716	0.1714
LpExTravel	695	-3.8316	-3.8834	0.7243
LpExAdvertising	695	-3.7111	-4.0486	0.7355
LpExPhonePostage	695	-3.4050	-3.3365	0.8233
LpExPrintingStationery	695	-1.6022	-1.6536	0.2712
LpExDeprecFurnitureEquip	695	-3.7636	-3.9612	0.6665
LpExRentEquipment	695	-3.9073	-4.1838	0.6370
LpExDeprecComputersSoftware	695	-2.7873	-3.0377	0.5012
LpExBooksPeriodicals	695	-4.4139	-4.5192	0.3828
LpExBureauAssocFees	695	-3.8396	-3.9536	0.3872
LpExInsuranceNotRealEstate	695	-3.3068	-3.4619	0.4511
pExMiscLosses	695	0.0010	0.0000	0.0246
LpExCollectionBankFees	695	-2.8374	-2.9547	0.3719
LpExMiscGeneralExpenses	695	0.0602	0.0367	0.2327
LpExGroupServiceAdminFees	695	1.6509	1.6423	0.2750
LpExReimburseByUninsurAccHealth	695	4.2250	4.3832	0.7415
LpExAgencyExpenseAllow	695	-2.8889	-2.9841	0.3639
LpExGrossAgentBalChargeoff	695	-1.3977	-1.4053	0.2116
LpExAgencyConferences	695	-3.8263	-3.9607	0.4454
LpExRealEstateExpense	695	-3.1985	-3.3421	0.3863
LpExOtherInvestExpense	695	-1.2453	-1.3445	0.2727
LpClaimsDirectEndThisYr	703	-3.1153	-3.7642	1.5460
LpClaimsReinsAssEndThisYr	703	-4.0127	-4.5112	1.0071
LifeTOTALlogPolNChange	603	-0.0392	-0.0328	0.5397
HealthTOTALlogPolNChange	363	-0.0512	-0.0419	0.6999
AnnORDlogNChange	262	-0.0023	-0.0029	0.4772
LpLifeTOTALAmtSurrender	611	-3.7079	-4.1155	1.1096
LpLifeTOTALNSurrender	610	-3.7044	-4.0915	1.1047
Performance	703	0.0656	0.0557	0.0984
LpClaimsTOTALSettleDuringYr	703	-0.2836	-0.7013	0.9476
XpClaimsTOTALLiabPaidDuringYr	703	0.0316	0.1016	0.4107
XpClaimsTOTALRecovReinsDuringYr	703	0.0050	0.0000	0.1809
LpClaimsTOTALBenefitsDuringYr	703	0.8042	0.5881	0.5883
LpExMedicalExams	695	-3.4669	-3.6599	0.5247
LpExInspectionReports	695	-4.4565	-4.5828	0.3925
LpClaimsReinsCededEndThisYr	703	-3.8997	-4.5366	1.1596
LpClaimsLiabReinsCededDec31	703	-3.9037	-4.5367	1.1569
LpClIRecovableFromReinsDec31	703	-4.2991	-4.5269	0.5885
LpClaimsLiabReinsCededEndLastYr	703	-3.9282	-4.5420	1.1560
LpClIRecovableFromReinsEndLastYr	703	-4.3536	-4.5821	0.5957
LpClIBenefitsReinsCededIncThisYr	703	0.5297	0.4427	0.3508
LpLBorrowedMoney	703	-4.5060	-4.6052	0.5048
LpSGeneralInsurExpenses	703	-0.5611	-0.6348	0.4349
LpSTaxFederalForeign	703	0.2315	0.2248	0.1958
pSChangeLiabReinsurUnauthCo	703	0.0003	0.0000	0.0104
pSChangeReserveForValuationBasis	703	0.0006	0.0000	0.0358
pSChangeAssetValuationReserve	703	-0.0092	-0.0006	0.0362
LRTotcap	703	15.7201	16.2515	4.7381

Tstates	# states of licensure	703	18.2589	5.0000	20.3965
LDeriv_TotalBookValue		703	15.3875	15.3515	0.8456
LpDeriv_TotalBookValue		703	-4.5092	-4.5260	0.1215
LLTotalLiabilities		703	16.9996	16.6927	3.2075
LEXTOTALGeneralExpense		703	17.3112	17.0729	1.0247
IndDeriv	Indicator of derivative activity (1=Yes)	703	0.0910	0.0000	0.2879
Ntype	Org type (1=stock)	703	0.9346	1.0000	0.2475
Ngroup	Indicator for member of group (1=yes)	703	0.7041	1.0000	0.4568
LifeTOTALlogPriceChange		519	-0.0265	-0.0093	0.4723
HealthTOTALlogPriceChange		304	0.0118	0.0293	0.8357
LpLife_ALM_1		668	-1.4610	-0.7350	1.9803
LpLife_ALM_2		668	-3.8663	-4.1671	0.9453
LpLife_ALM_3		547	0.3853	1.1020	2.7397
LpLife_ALM_4		547	-2.7534	-3.1018	1.7960
LpHealth_ALM_1		684	-3.0410	-4.6052	2.1762
LpHealth_ALM_2		684	-3.0823	-4.4338	1.9518
LpHealth_ALM_3		610	-2.6750	-4.6052	2.6262
LpHealth_ALM_4		610	-2.7310	-3.8991	2.2863
LpAnnuities_ALM		619	-3.9797	-4.6052	1.1582
LpIntMaintReserve_ALM		662	-3.5909	-3.7593	0.4946
LpAssetValuationReserve_ALM		703	-4.1333	-4.3427	0.5339
LActiveIndex1		624	-3.6839	-3.9895	0.9909
LActiveIndex2		640	-3.7026	-3.9893	0.9625
LActiveIndex3		644	-3.5567	-3.8294	1.0254
LpClSettleReinsCededIncThisYr		703	-0.8590	-1.0974	0.6069
XpClaimsTOTALReinsCededDuringYr		703	0.0082	0.0000	0.2495
XpClBenefitsReinsCededIncThisYr		703	0.3164	0.2491	0.3822
LAtotal	Total assets (p.3)	302	20.8083	20.7677	2.1864
LWtotal		302	19.1653	19.1313	2.0236
LAIvestedAssets		302	20.6122	20.5326	2.0759
LpBond1Private		302	-3.2804	-3.1298	0.8922
LpBond2Private		302	-3.4588	-3.4007	0.9314
LpBond3Private		302	-4.2413	-4.4184	0.4235
LpBond4Private		302	-4.4123	-4.5628	0.2642
LpBond5Private		302	-4.4715	-4.6052	0.1998
LpBond6Private		302	-4.5480	-4.6052	0.1246
LpBprivate		302	-2.7934	-2.5461	1.1302
LpRcapital		302	-3.6227	-3.7553	0.4287
Plife	Life writings / Total writings	302	0.3950	0.3296	0.3156
Phealth	Health writings / Total writings	302	0.2835	0.1048	0.3236
Pannuity	Annuity writings / Total writings	302	0.2391	0.0774	0.3019
Preinsur	Reinsurance writings / Total writings	302	0.0825	0.0160	0.1639
Lpgov1		302	-3.8793	-4.1322	0.7518
Lpgov2		302	-3.5199	-3.5987	0.7714
Lpgov3		302	-0.9696	-1.0011	0.0930
Lpgov4		302	-3.9003	-4.1384	0.7489
Lpgov5		302	-2.1895	-2.2542	0.1619
LpmuniHI		302	-2.2302	-2.0434	0.9149
LpmuniLO		302	-4.5943	-4.6052	0.0522

Lputil		302	-2.9949	-2.9075	0.7405
Lpcorp12		302	-0.8332	-0.6885	0.5790
Lpcorp3		302	-3.6845	-3.5599	0.5732
Lpcorp4		302	-4.0473	-4.0359	0.4524
Lpcorp56		302	-4.2777	-4.3313	0.3206
LpTCE		302	1.5416	1.5377	0.0164
LRBCratio		302	5.9917	5.8888	0.5542
RBCind	Indicator for RBCratio > 125	302	0.9934	1.0000	0.0812
LRetOnCap		302	1.3368	1.3363	0.0474
LCAP		302	-1.9939	-2.0839	0.7065
LRatingDate		302	7.3252	7.3119	0.1022
LBestLikert		302	-0.3619	-0.6981	1.7569
LpRegARisk		302	-3.5691	-3.6783	0.5073
LpOppARisk		302	-4.3689	-4.4010	0.1401
LpACommonStock		302	-3.5546	-3.7542	1.0332
LpACash		302	-0.9065	-0.9268	0.0754
LpAShortTerm		302	-4.2649	-4.6052	0.6453
LpARealEstateOccupiedEncumber		302	-4.6025	-4.6052	0.0284
LpAPolicyLoans		302	-3.4998	-3.5354	0.7396
LpARecoverableReins		302	-4.1984	-4.2931	0.2400
LpAOtherReceivReins		302	-2.8445	-2.8761	0.0977
LpAComputersSoftware		302	-4.5703	-4.6025	0.0844
LpATaxFederalForeign		302	-3.4190	-3.4806	0.2049
LpANetDeferredTaxAsset		302	-3.4585	-3.5107	0.1702
LpADeferPremAgentBal		302	-3.5210	-3.6621	0.3681
LpAAdjustForeignExch		302	-4.6051	-4.6052	0.0007
LpAReceivParentSubsid		302	-4.4198	-4.5742	0.3397
LpAOtherNonadmitAssets		302	-4.4732	-4.4753	0.0228
LpAWriteInNotInvAssets		302	-3.8763	-3.9748	0.2739
LpASeparateAccounts		302	-3.5386	-4.6052	1.5110
pLReserveLife		302	0.6210	0.6795	0.2644
LpLReserveHealth		302	-3.3993	-3.9142	1.3027
LpLDepositContracts		302	-3.4071	-3.5088	0.9694
LpLContractClaimsLife		302	-4.0527	-4.1632	0.4681
LpLContractClaimsHealth		302	-3.8600	-4.4269	1.0362
LpLSurrenderCanceledContracts		302	-4.5853	-4.5889	0.0277
LpLExperienceRatingRefunds		302	-4.0438	-4.0803	0.1411
LpLOtherPayableReinsurance		302	-4.2557	-4.3702	0.3218
LpLInterestMaintReserve		302	-3.6600	-3.7312	0.2953
LpLAgentCommissionsDue		302	-3.7499	-3.8183	0.1871
LpLReinsurAssumedCommExpAllow		302	0.0650	0.0644	0.0033
LpLGeneralExpensesDue		302	-3.8159	-3.9440	0.3702
LpLTransferSeparateAccounts		302	4.0238	4.1143	0.2214
LpLTaxFeesNotFederal		302	-0.8340	-0.8376	0.0119
LpLTaxFederalForeign		302	-2.9797	-3.0464	0.2020
LpLTaxFederalForeignCurrent		302	-2.2756	-2.3030	0.0916
LpLNetDeferredTax		302	-4.5615	-4.6052	0.2752
LpLRetainedAsAgent		302	-3.9074	-3.9924	0.2455
LpLHeldForAgents		302	-3.9929	-4.0466	0.1794
LpLAdjAssetLiabForeignExchRate		302	-4.5894	-4.6052	0.1371

LpLOtherEmployeeAgentBenefits	302	-4.5235	-4.6020	0.2300
LpLAssetValuationReserve	302	-4.0365	-4.1442	0.4971
LpLFundsHeldUnauthReinsur	302	-4.4553	-4.6049	0.5927
LpLPayableParentSubsidAffil	302	-3.5024	-3.5927	0.2476
LpLSeparateAccounts	302	-3.5009	-4.6052	1.5481
LpLCommonStock	302	-3.9847	-4.3123	0.7442
LpLPreferredStock	302	-4.5450	-4.6052	0.2980
LpLWriteInExSurplusFunds	302	-3.5643	-3.5763	0.1056
LpLSurplusNotes	302	-4.4612	-4.6052	0.3518
LpLPaidSurplus	302	-1.5173	-1.6955	0.5092
LpLWriteInSurplusFunds	302	-1.4645	-1.4736	0.0726
pLUnassignedSurplusFunds	302	0.1243	0.0559	0.3807
LpLTreasuryStockCommon	302	-4.5820	-4.6052	0.1479
LpLTreasuryStockPreferred	302	-4.6050	-4.6052	0.0024
LpLSurplus	302	1.5744	1.5495	0.0891
LpLCapitalSurplus	302	-1.9453	-2.1057	0.9873
LpSAmortInterestMaintReserve	302	-1.7876	-1.8004	0.0671
LpSCommissionsExpReinsCeded	302	-0.9356	-1.0954	0.4559
LpSReserveAdjustReinsCeded	302	1.3388	1.3358	0.0833
LpSIncomeInvestManageSepAccts	302	-4.1467	-4.6040	0.9002
LpSDeathBenefits	302	-1.3508	-1.4057	0.7241
LpSMaturedEndowments	302	-3.9800	-4.0691	0.2137
LpSAnnuityBenefits	302	-1.9754	-2.2035	0.7670
LpSDisabilityAccHealthBenefits	302	0.1058	-0.1564	0.4845
LpSCouponsGuarPureEndowments	302	-4.5469	-4.5609	0.1041
LpSSurrenderBenefits	302	-1.5095	-1.5457	1.2866
LpSGroupConversions	302	-4.2109	-4.2128	0.0419
LpSInterestContractDepositType	302	-0.9995	-1.0494	0.1353
LpSPaymentsSupplContracts	302	-4.2111	-4.4589	0.4898
LpSIncreaseReservesLifeAccHealth	302	3.3870	3.3812	0.0331
LpSTotalL10_19	302	3.2490	3.2388	0.0578
LpSCommissOnPremDepositType	302	-1.7399	-1.7081	1.0905
LpSCommissExpOnReinsurAssumed	302	-1.0073	-1.0766	0.1794
LpSSurplusWithdrawSepAccts	302	-2.0023	-1.9984	0.1559
pSOtherChangeSurplusSepAccts	302	0.0000	0.0000	0.0096
pSChangeSurplusNotes	302	-0.0026	0.0000	0.0850
pSChangeAccountingPrinciples	302	0.0000	0.0000	0.0028
LpSChangeCapitalPaidIn	302	-1.1578	-1.1529	0.2076
LpSChangeCapitalTransFromSurplus	302	-4.5999	-4.6052	0.0645
pSChangeCapitalTransToSurplus	302	-0.0001	0.0000	0.0012
LpSChangeSurplusPaidIn	302	1.2334	1.2221	0.0363
LpSChangeSurplusTransToCapital	302	4.5955	4.6049	0.0983
LpSChangeSurplusTransFromCapital	302	4.2279	4.2435	0.2714
LpSChangeSurplusForReinsur	302	-0.9592	-0.9574	0.0148
LpSNetChangeCapitalSurplus	302	-0.2029	-0.2022	0.1395
LpCommExpReinsurCeded	302	-0.1126	-0.3489	0.9837
LpCommExpReinsurAssumed	302	-0.3375	-0.6074	0.8100
LpCommExpReinsurDiffCed_Ass	302	-7.0703	-7.0860	0.2789
pCommDirectFirstYrNotSingle	302	0.4063	0.4271	0.2867
pCommDirectFirstYrSingle	302	0.1202	0.0048	0.2382

pCommDirectRenewal	302	0.4539	0.3949	0.3158
LpCommDirectDepositType	302	-4.2939	-4.5402	0.7810
LpExRent	302	-2.6068	-2.6118	0.4082
LpExSalaries	302	-0.9702	-0.8850	0.5767
LpExEmployBenefitPlans	302	1.4760	1.4735	0.0145
LpExAgentBenefitPlans	302	-3.7682	-3.9638	0.4312
LpExEmpNonfundedBenefitPlans	302	-4.0991	-4.1688	0.2730
LpExAgentNonfundedBenefitPlans	302	-3.8790	-3.8941	0.1211
LpExOtherEmployWelfare	302	-2.4637	-2.5181	0.1577
LpExOtherAgentWelfare	302	-3.9758	-4.0182	0.1826
LpExLegal	302	1.5311	1.5283	0.0113
LpExCPAActuaries	302	-1.9847	-2.0519	0.1799
LpExInvestigateSettleClaims	302	-2.0990	-2.1552	0.2310
LpExTravel	302	-3.6414	-3.6756	0.4660
LpExAdvertising	302	-3.4980	-3.7682	0.7798
LpExPhonePostage	302	-3.1773	-3.1847	0.5479
LpExPrintingStationery	302	-1.6368	-1.6533	0.2034
LpExDeprecFurnitureEquip	302	-3.6591	-3.7529	0.5386
LpExRentEquipment	302	-3.7099	-3.8555	0.5556
LpExDeprecComputersSoftware	302	-2.7294	-2.8292	0.3949
LpExBooksPeriodicals	302	-4.4359	-4.4902	0.1693
LpExBureauAssocFees	302	-3.8677	-3.8880	0.1558
LpExInsuranceNotRealEstate	302	-3.3113	-3.3852	0.2740
pExMiscLosses	302	0.0021	0.0000	0.0122
LpExCollectionBankFees	302	-2.8570	-2.9057	0.1730
LpExMiscGeneralExpenses	302	0.0576	0.0422	0.0648
LpExGroupServiceAdminFees	302	1.6509	1.6423	0.0335
LpExReimburseByUninsurAccHealth	302	4.1524	4.3832	0.9103
LpExAgencyExpenseAllow	302	-2.7561	-2.9841	0.4748
LpExGrossAgentBalChargeoff	302	-1.3965	-1.4053	0.0340
LpExAgencyConferences	302	-3.6183	-3.7742	0.4225
LpExRealEstateExpense	302	-3.0608	-3.2863	0.4278
LpExOtherInvestExpense	302	-1.2598	-1.3197	0.1508
LpClaimsDirectEndThisYr	302	-3.4040	-3.7670	1.0377
LpClaimsReinsAssEndThisYr	302	-4.2409	-4.4741	0.5081
LifeTOTALlogPolNChange	302	-0.0313	-0.0306	0.2559
HealthTOTALlogPolNChange	302	-0.0720	-0.0633	0.6567
AnnORDlogNChange	302	0.0426	-0.0124	0.6990
LpLifeTOTALAmtSurrender	302	-3.5818	-3.6846	0.6981
LpLifeTOTALNSurrender	302	-3.6187	-3.7069	0.7080
Performance	302	0.0673	0.0664	0.0205
LpClaimsTOTALSettleDuringYr	302	-0.6862	-0.8705	0.4582
XpClaimsTOTALLiabPaidDuringYr	302	0.0351	0.1302	0.2684
XpClaimsTOTALRecovReinsDuringYr	302	0.0011	0.0000	0.1673
LpClaimsTOTALBenefitsDuringYr	302	0.6189	0.5459	0.1792
LpExMedicalExams	302	-3.2251	-3.4039	0.4965
LpExInspectionReports	302	-4.3413	-4.4563	0.3165
LpClaimsReinsCededEndThisYr	302	-4.0436	-4.3808	0.7420
LpClaimsLiabReinsCededDec31	302	-4.0436	-4.3808	0.7420
LpCIRecovableFromReinsDec31	302	-4.3424	-4.4723	0.3143

LpClaimsLiabReinsCededEndLastYr		302	-4.0268	-4.3811	0.7627
LpCIRecovableFromReinsEndLastYr		302	-4.3800	-4.5328	0.3662
LpCIBenefitsReinsCededIncThisYr		302	0.4775	0.4479	0.0940
LpLBorrowedMoney		302	-4.4427	-4.6052	0.4955
LpSGeneralInsurExpenses		302	-0.4579	-0.5260	0.3462
LpSTaxFederalForeign		302	0.2446	0.2394	0.0744
pSChangeLiabReinsurUnauthCo		302	0.0003	0.0000	0.0069
pSChangeReserveForValuationBasis		302	0.0011	0.0000	0.0233
pSChangeAssetValuationReserve		302	-0.0142	-0.0082	0.0399
LRTotcap		302	18.7157	18.6716	1.8373
Tstates	# states of licensure	302	39.2815	49.0000	17.6222
LDeriv_TotalBookValue		302	15.7183	15.3515	0.9735
LpDeriv_TotalBookValue		302	-4.4652	-4.5260	0.2043
LLTotalLiabilities		302	20.6122	20.5053	2.3014
LExTOTALGeneralExpense		302	18.0777	17.7043	0.9926
IndDeriv	Indicator of derivative activity (1=Yes)	302	0.3344	0.0000	0.4726
Ntype	Org type (1=stock)	302	0.8709	1.0000	0.3359
Ngroup	Indicator for member of group (1=yes)	302	0.8675	1.0000	0.3395
LifeTOTALlogPriceChange		302	0.0378	-0.0065	0.4995
HealthTOTALlogPriceChange		302	0.0606	0.0359	0.9943
LpLife_ALM_1		302	-0.4236	-0.1780	0.7131
LpLife_ALM_2		302	-3.9923	-4.1103	0.4845
LpLife_ALM_3		302	1.5643	1.5479	1.0955
LpLife_ALM_4		302	-2.7318	-2.9084	1.1477
LpHealth_ALM_1		302	-1.5152	-1.6385	2.2262
LpHealth_ALM_2		302	-2.5073	-2.9852	1.9138
LpHealth_ALM_3		302	-0.8509	-0.8597	2.6572
LpHealth_ALM_4		302	-1.8903	-2.1391	2.2985
LpAnnuities_ALM		302	-3.2666	-3.3823	1.0546
LpIntMaintReserve_ALM		302	-3.5904	-3.6407	0.2686
LpAssetValuationReserve_ALM		302	-4.0578	-4.1019	0.3826
LActiveIndex1		302	-3.6363	-3.8200	0.8000
LActiveIndex2		302	-3.7013	-3.7983	0.6535
LActiveIndex3		302	-3.3555	-3.3563	0.7713
LpCISettleReinsCededIncThisYr		302	-0.9722	-1.0716	0.2698
XpClaimsTOTALReinsCededDuringYr		302	-0.0226	0.0000	0.2066
XpCIBenefitsReinsCededIncThisYr		302	0.3603	0.3318	0.2059