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The Global ERM designation:

Establishing a local ERM education programme

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The Business of Change: 2010 and Beyond

A local ERM education programme

1. ERM in South Africa
2. ASSA and ERM
3. The BMI Quantitative Risk Management Curriculum
4. The BMI Training and Research Philosophy
5. Need for ERM skills using BMI students as benchmark
6. The BMI Risk Analysis Research Programme
7. Strategic Issues in Tertiary Education
8. Concluding Remarks

ERM in South Africa

- Industry: Banks, Insurers, Consulting Houses, Eskom, …
- Government & Regulators : Reserve Bank, FSB, Bank Seta, …
- Professions: Accountants, Actuaries, Engineers, …
- Societies: Institute of Risk Management (SA), GARP, PRMIA , ACTSA, ASSA, …

ASSA and ERM

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- Several actuaries involved in ERM
- ASSA Enterprise and Financial Risk Committee
- ASSA and ERM education
- ERM education programmes at universities

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BMI Quantitative Risk Management
Some background

- Centre for BMI founded in 1998 (Absa, VU and PU)
- First students enrolled in 1998 for MSc Quantitative Risk Management (QRM)
- 4 related training programmes (Risk Management, Actuarial Science, Financial Mathematics, Business Analytics)
- All programmes designed from B to M level
- Actuarial programme accredited by Institute of Actuaries
- QRM programme accredited by PRMIA
- Custodian of GARP FRM examination
- Industry partners (Absa and SAS Institute)

BMI Quantitative Risk Management

Benchmarking against PRM (Level I and II)

CT1	Financial Mathematics	X
CT2	Finance and Financial Reporting	X
CT3	Probability and Mathematical Statistics	X
CT4	Models	
CT5	Contingencies	
CT6	Statistical Methods	X
CT7	Economics	
CT8	Financial Economics	X
CT9	Business Awareness	
CA1	Core Applications	
BMI	Financial Risk Economics	X
BMI	Mathematics	X
BMI	Informatics and Programming	
BMI	Multivariate Statistical Methods	

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BMI Quantitative Risk Management
Benchmarking against PRM, FRM and CERA

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Enterprise-wide Risk Management

Define Enterprise Risk Management. Risk Management Culture, Risk Governance, Basel II, Solvency II, COSO, Sarbanes-Oxley, Regulators, Rating Agencies, Ethics, Standards, Case Studies, Risk identification, Defining and categorizing risk, Qualitative risk assessments, Risk quantification, Risk metrics, Scenario development / types of scenarios. Defining risk appetite, Managing enterprise risk exposure towards risk appetite, Internal reporting, Performance measurement, Performance management and incentive compensation, Shareholder value creation.

Market Risk Measurement and Management

Interest Rates and Bond Pricing; Interest rate, Foreign Exchange, Equity, and Commodity Risks; Derivatives and Fixed Income Securities, Interest Rates, Foreign Exchange and Commodities; Valuation and Risk Analysis of Futures, Forwards, Swaps, and Options; Identifying and measuring Risk Exposures; Value-at-Risk; Stress Testing; Emerging Markets Risks including Currency Crises; Measuring and Managing Corporate Exposures; Cash Flow Risk; Earnings-at-Risk

Credit Risk Measurement and Management

Bankruptcy and Default, Credit Spreads, Probability of Default, Loss Given Default and Recovery Rates, Expected and Unexpected Loss, Credit Scores, External and Internal Credit Ratings, Contingent Claims and KMV's Model, Default and Default-time Correlations, Portfolio Credit Risk, Credit Risk Management Models, Risk Mitigation Techniques, Credit Default Swaps, Securitization, Special Purpose Vehicles, Collaterised Debt Obligations, Counterparty Risk.

Operational and Integrated Risk Management

Types of Operational Risk, Workflow in Financial Institutions, Insuring and Hedging in OR, Severity and Frequency Distributions, Aggregated Loss Distributions, Firm-wide Risk Management, Correlations across Market, Credit and Operational Risks, Definition of Risk Capital, Basel II, Evaluating Performance of Risk Systems, Legal and Liquidity Risks

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BMI Quantitative Risk Management

The post graduate programme

BSc Honours Programme

- Statistical Data Analysis I: Modeling
- Statistical Data Analysis II: Time Series Analysis
- Multivariate Statistical Analysis
- Econometrics
- Financial Engineering I and II
- Bank Risk Management
- Investment Theory I and II
- Quantitative Risk Analysis I and II

BMI Quantitative Risk Management
The post graduate programme

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The Master's programme

- Numerical Techniques in Finance
- Retail Credit Risk Modeling
- Advanced Topics in Risk Analysis
- Practical Risk Analysis
- Industry directed research project

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BMI Quantitative Risk Management
The post graduate programme

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Selected Course Material in Risk Management Subjects:

- Risk Management (2001, Crouhy, Galai and Mark)
- PRM Handbook Volume III (2006)
- Quantitative Risk Management (2005, McNeil et al.)
- Risk Management in Banking (2001, Bessis)
- SAS Risk Dimensions Course Notes
- SAS Credit Scoring Course Notes
- Selected papers from the literature

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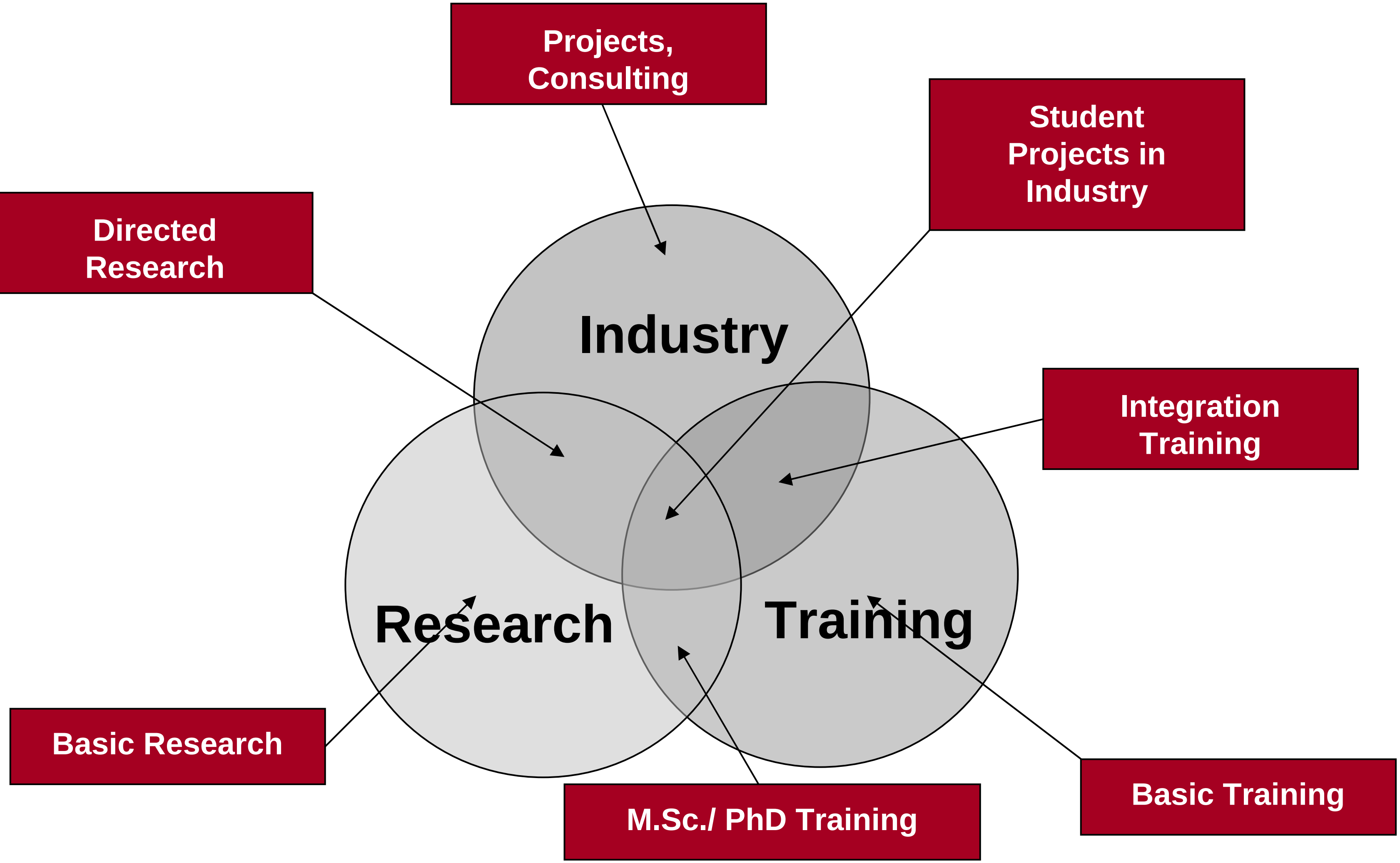
BMI Training and Research Philosophy



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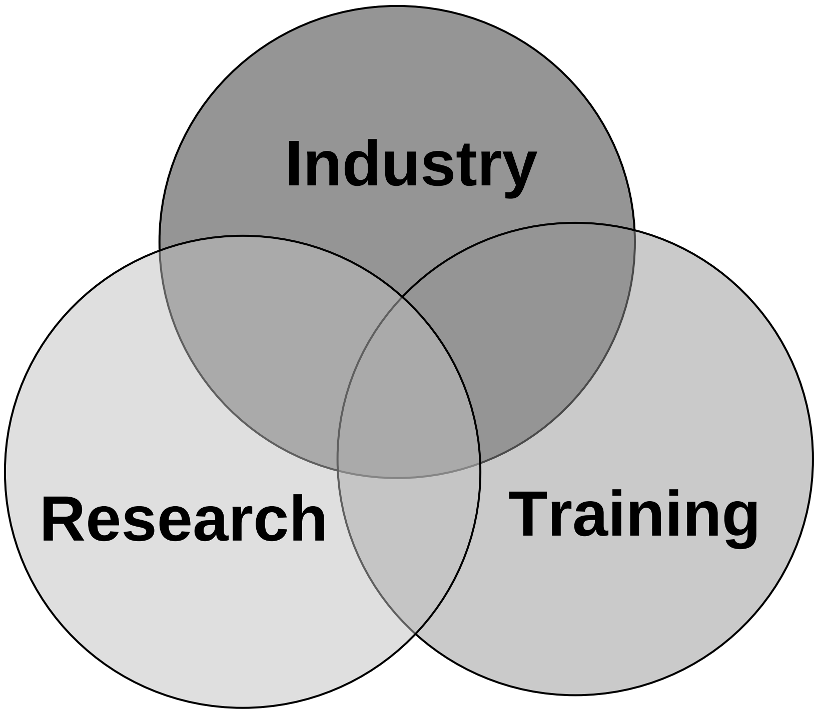
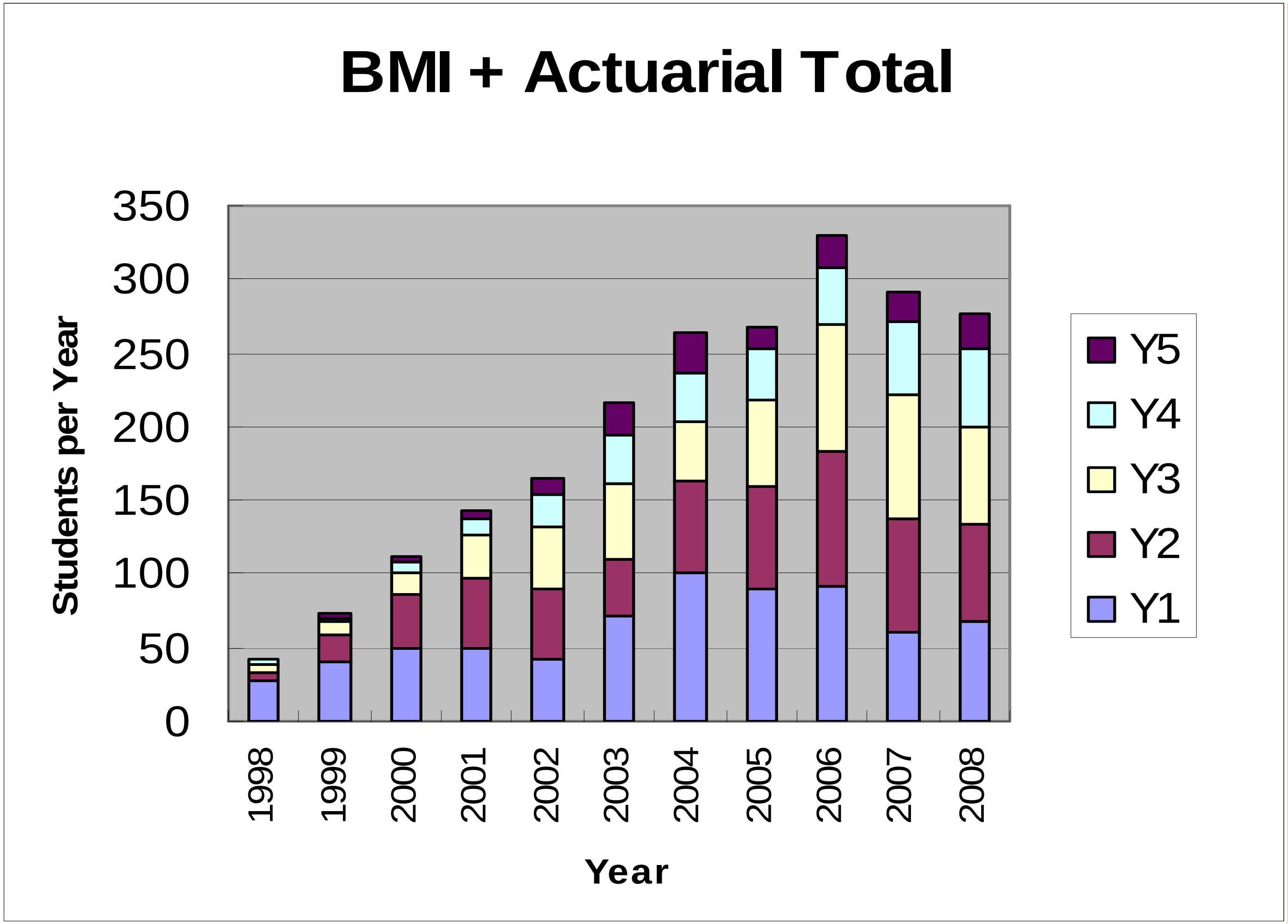
BMI Training and Research Philosophy



- Focus on the needs of industry
- Appoint faculty having industry experience
- On-the-job training in industry through BMI student projects
- Dissemination and commercialisation of research

The need for ERM skills: Enrollments



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The need for ERM skills: Jobs

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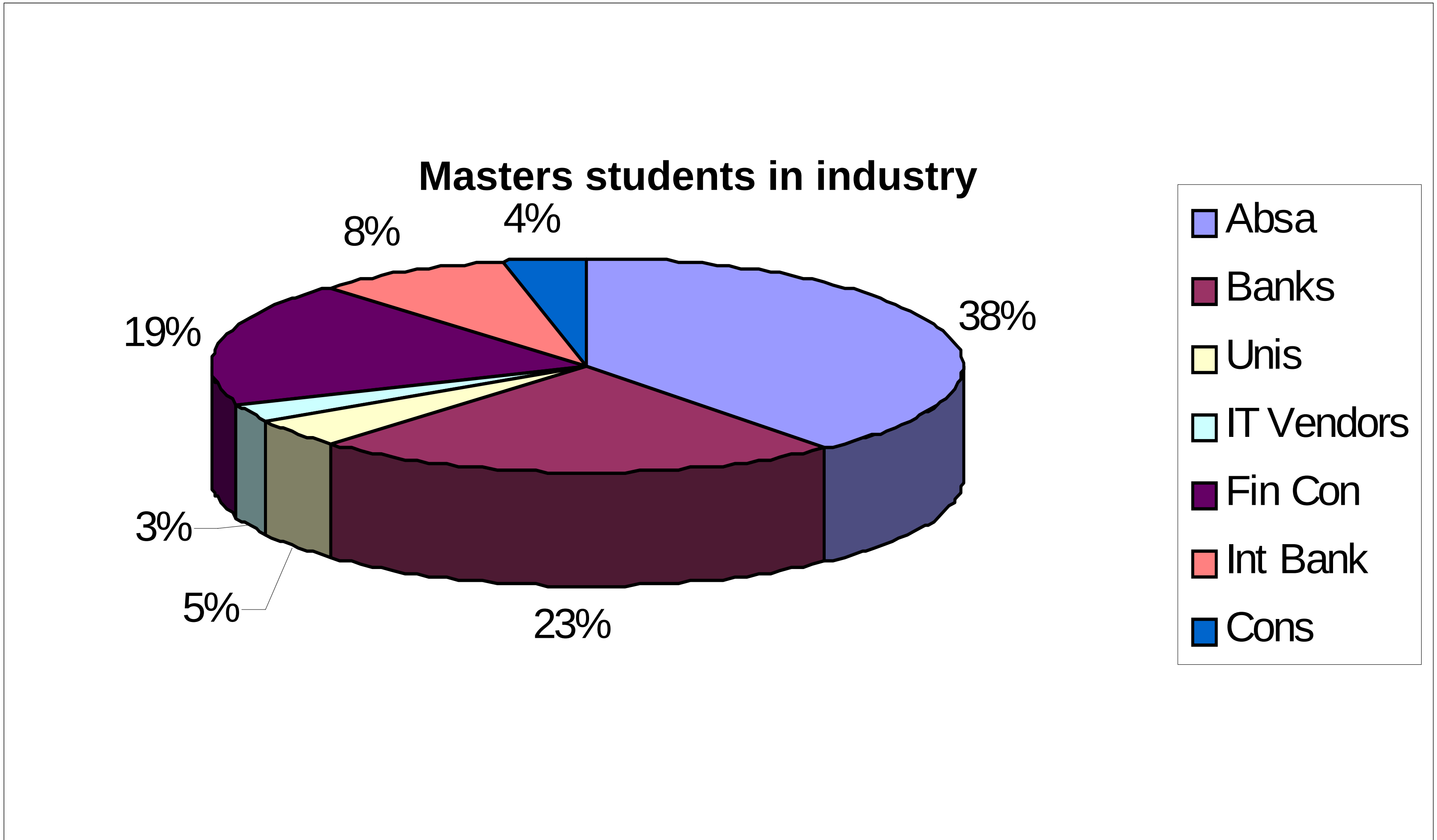

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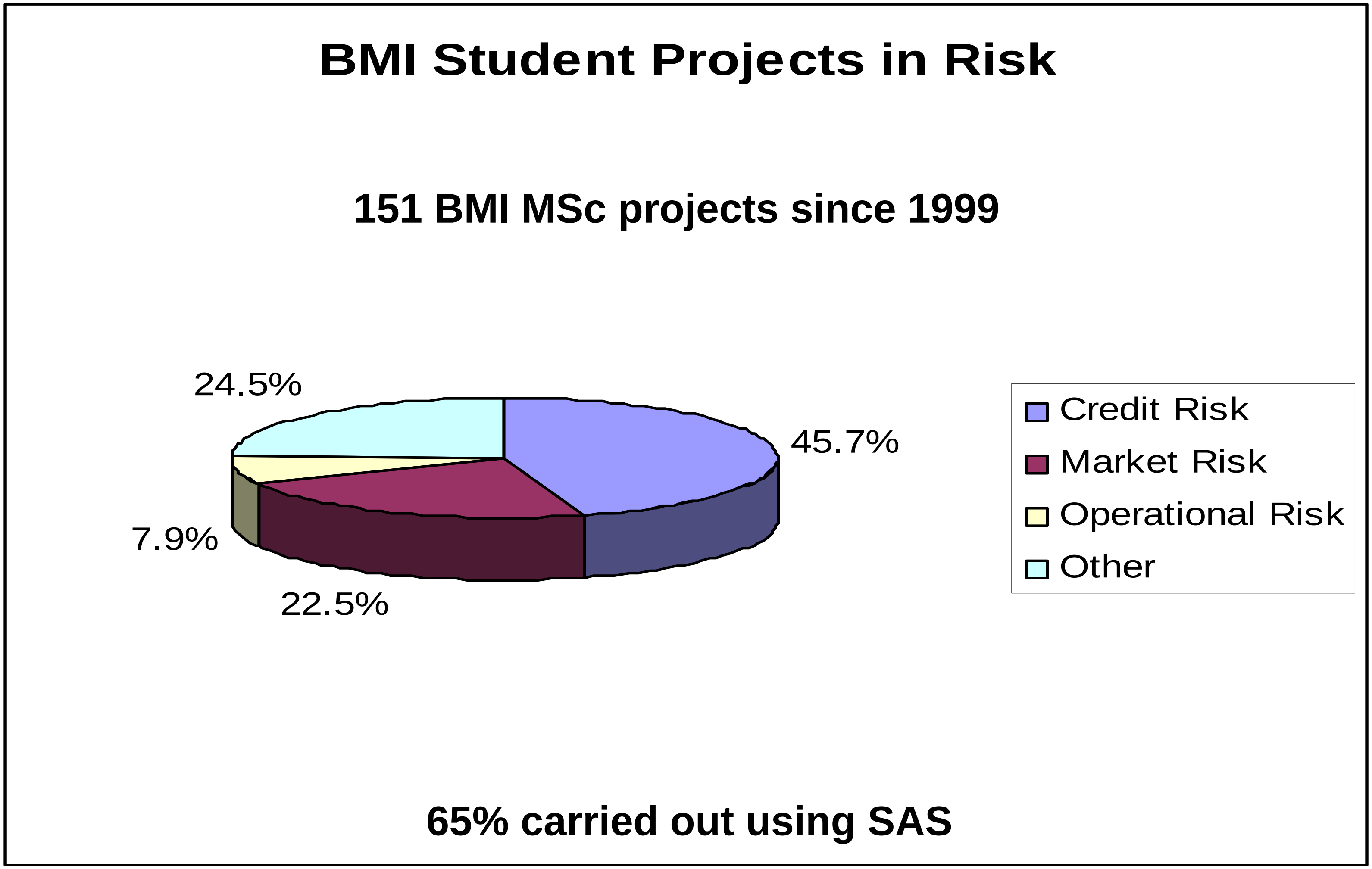
The need for ERM skills: Industry projects



BMI Risk Analysis Research

MSc projects in industry (Some examples)

Market Risk

- Economic capital for investment portfolios of listed and unlisted equities
- Measuring market risk in defined benefit pension funds
- Proposal for a market based valuation of long term pension fund liabilities
- Comparison of the Hull-White and historical simulation methodologies

Credit Risk

- A predictive model for a retail bank's bad debt using macro-economic variables
- Estimating Current Market Value of Residential Real Estate on a Mortgage Book
- Development of a Basel II compliant model to calculate market and loss given default (LGD) values.

Operational Risk

- The Development of operational risk scorecards for capital allocation
- Building an insurance discount model for Basel II - Operational Risk
- Development of a system that monitors fraud trends through key risk indicators

BMI Risk Analysis Research

Applied Risk Research Projects: Some examples

- Assessment of adequacy of level of an exchange's guarantee fund
- A Country credit risk model
- A methodology for modelling earnings-at-risk
- Calculating economic capital for interest rate risk in the banking book using EVE
- Prepayment risk for fixed interest rate loans
- A methodology for managing and measuring concentration risk
- Investigating the sufficiency of a large bank's capital buffer
- Balance sheet optimization using stochastic programming

BMI Risk Analysis Research:
Selected papers and books

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The Value-at-Risk Reference: Key Issues in the Implementation of Market Risk (ed Danielsson)
Innovations in Risk Management: Seminal Papers from the Journal of Risk (ed Jorion)

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Strategic Issues in Tertiary Education

- Quality of school education in mathematics
- Management of universities
- Aging top researchers
- Poor remuneration of faculty
- Decreasing State subsidies

1) Pressure on universities to earn extra income
(Mode II university: Michael Gibbons)

2) Research and consulting in conflict e.g. confidentiality issues

Some closing remarks on ERM education

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Beware of Greeks bearing gifts

The Trojan Horse

Beware of geeks bearing formulas

Warren Buffet

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