

Can Universities hit the mark with specialist actuarial education? An initial ERM Case Study

Abstract

This article reports on the introduction of courses in Enterprise Risk Management to a postgraduate university program in Australia. The methodology used to develop the courses, and their benchmarking against an international syllabus is considered. Interviews with students and reflections from the lecturers involved in the courses were used to gain insight, and a consideration of the future of these courses and their place in university and more broadly actuarial education is presented.

Keywords: Enterprise Risk Management (ERM), Actuarial education, Part III, case study

Introduction

In this article we report on the Australian National University's (ANU) introduction of courses in Enterprise Risk Management (ERM) in 2015. These courses sit within postgraduate programs in actuarial studies, and for high-achieving students an exemption from the Part III, professional ERM exam is granted, which in turn can lead to the professional designation of Chartered Enterprise Risk Actuary/Analyst (CERA). Various other case studies of risk management education exist in the literature (for example, Acharyya and Brady, 2014; Okura and Yanase, 2014), but as far as we are aware, none have the professional and designation-related implications of ERM within the actuarial context.

The motivation to present ANU's experience as a case study arises from multiple angles. Firstly, for any professional body the issue of education is highly significant because it both reflects as well helps define what that profession is about. As Daykin (2005) states, "actuarial education is at the heart of the profession. It is an essential requirement for a profession that it maintains the level and quality of knowledge of its members." Secondly and reflecting actuarial practice in terms of reviewing one's experience, this paper is one avenue to present a case and seek feedback as how to improve to better practice over time, particularly in lieu of the associated professional implications. Indeed, as Daykin (2005) also states (albeit in the UK context), an important development in recent years has been to "provide better assurances of quality for the public" in terms of both initial and continuing education of actuaries. In other words, nothing in the actuarial education sphere should be beyond review. Thirdly, some studies are emerging in terms of the perceptions of professional exams, but as Butt et al. (2014) state, such research is scarce. The overall motivation is also enhanced by the increasing role that Universities are having in some elements of professional education, both in Australia and elsewhere. Hence, this case study assists the transparency of such educational offerings.

As such, in this case-study article we have three goals:

1. To give feedback to the profession as to the credibility and robustness of the ANU pathway for awarding a professional, part III exam exemption;
2. To reflect on our initial experience of offering this course in 2015, for both our own learning and improvement, and in the process giving information and insights to future students taking ERM at ANU or elsewhere;
3. To present a case study of whether a greater level of University involvement at the Part III level has potential to improve the Australian actuarial education system, and by extension, to other jurisdictions as well.

For each of these three areas above, we give insights based on three main sources: observations of and descriptions of the 2015 experience; interviews with a small cohort of students taking ERM in 2015; and through the independent reflections and annotations of the ERM teaching faculty. We then conclude with an overview of the main points made.

Actuarial Education

Readers may be aware of the overall 3-part structure of the education system for actuaries in Australia, which closely resembles that of the UK Institute and Faculty of Actuaries (see appendix A for details). Following the attainment of Part I (technical), Part II ('transition to practice'), and Part III (specialist) exams, a short course on professionalism confers the designation of FIAA (Fellow of the Institute of Actuaries of Australia). The FIAA designation has mutual recognition with nine other actuarial bodies, including the FSA designation through the Society of Actuaries¹. Many readers will no doubt have their own views of the strengths and weaknesses of either the overall education system under the Australian model, or of specific elements within the system. Indeed, a variety of critiques have been made about actuarial education, based on surveys of students and/or employers, and experience and observations of academic faculty.

Major critiques have focussed on the large quantity of technical content at the expense of "contextual elements of education" (Butt et al., 2014), and the lack of development of "the whole set of professional capabilities" (Shepherd, 2010), particularly in Part I education. This contrasts with what we might consider a good education to be, which should "explicitly foster the development by students of a range of generic (or transferable) skills" (Shepherd, 2005)². As such, Shepherd (2005) claims that "Australia's actuarial qualification process could be an excellent educational program... (but needs) to be more firmly grounded in sound educational practice", and the shortfall of only focussing on knowledge content is highlighted (Shepherd, 2009). Consequently, calls for some reform and changes have been made over time (for example, Chu et al., 2011; Shepherd, 2010).

Of particular note are various published perceptions and findings on the Part III, professional exams. Although there is obvious and direct relevance of Part III study to many areas of employment for actuaries, a survey by Butt et al. (2014) suggests that general dissatisfaction exists with the "lack of organised teaching and feedback", with many respondents believing that "Part III is more a hoop to be jumped through than a genuine attempt at education". Chu et al. (2011) similarly report issues within Part III education, with "only minor satisfaction with the fairness of the assessment", and identification that "course materials and assignments... were not particularly helpful in their examination preparation."

University education rather than Institute-provided education is naturally also not immune to legitimate critique, but it is informative to examine the role that Universities can play within the actuarial education process. Daykin (2005) provides several insights of interest, in that:

- Historically the main way to become an actuary in continental Europe and some parts of Central and South America was via lengthy university courses;
- The [2005 Morris] Review in the UK recommended moving towards a more university-based education system (with the profession concentrating on Fellowship examinations) with universities having flexibility to "teach and assess the basic actuarial education in whatever way they wanted";
- If the actuarial profession were to expand beyond traditional areas, then "a more university-based education can provide a good foundation for this expansion";
- Australia is an example of where University involvement in actuarial education is the most advanced.

Furthermore, although the US Society of Actuaries (SOA) offers a very different qualification process to Australia in terms of formal university involvement for professional exam exemptions, the value of partnership between the SOA and universities / professional educators is recognized. For example, Eadie (2016) highlights 'a solid partnership with the academic community' and the SOA working with 'professional educators to improve our Education system' as being successful initiatives. None of the above points suggest that greater University involvement is a silver bullet for the aforementioned issues within the education system, but it does provide context for the discussion that follows.

Enterprise Risk Management

Enterprise risk management differs to a traditional understanding of risk management in that it explicitly considers both upside and downside impacts of certain events or decisions, and it considers risk at an organization-wide level so as to capture dependencies and links between various functional areas; that is, it stresses the 'holistic' nature of risk. This contrasts with the state of play of risk management education more broadly, within which

¹ See <https://www.actuaries.asn.au/becoming-an-actuary/becoming-a-member/becoming-an-accredited-member> for details.

² These includes communication skills (written, oral, listening), personal skills (self-management, independence, ethical thinking and behaviour, flexibility, reflective practice), interpersonal skills (negotiating, teamwork, peer assessment), creative (divergent) thinking, IT skills, research skills, and so on (Shepherd, 2005).

Acharyya and Brady (2014) state that silo- based rather than holistic approaches tend to dominate³. Perhaps however, such silo-based approaches can be understood from the perspective that some types of risks have particular features which demand specialist skills, and some organisations take conservative approaches to some risks in order to concentrate on managing other more critical risks to their business. For example, an insurer who takes a conservative approach to credit risk so that they can focus on the underwriting of insurance risk. Nevertheless, in seeking a more holistic understanding of risk, ERM also gives particular attention to factors that may have previously been considered less obvious or critical, such as the risk culture within an organization (Roeschmann 2014). It also gives significant attention to the explicit quantification, allocation and utility of capital.

A major development for actuarial practice and education in recent years arises from the awareness to consider risk ‘holistically’ rather than in a segmental or piecemeal fashion. By combining quantitative and qualitative methods relating to ERM, this has expanded the traditional actuarial toolkit into wider applications, as well as looking to strengthen existing roles in traditional areas⁴. The formalisation of these developments has occurred through the worldwide ERM-related designation of Chartered Enterprise Risk Actuary (CERA), arising from the creation of the international CERA body. Under a Global CERA Treaty, various international education pathways exist to the CERA designation⁵ and as at early 2016, there were approximately 3,000 CERA designation holders worldwide⁶.

The SOA describes the CERA designation as “the most comprehensive and rigorous demonstration of enterprise risk expertise available”⁷. The Actuaries Institute similarly describes the CERA holder as someone who is:

Trained through a rigorous examination process to identify, measure and manage risks and opportunities within complex enterprises;
... equipped to develop models that reflect the real world and can inform strategic decisions;
... (capable in) applying qualitative and quantitative insights to risk management; and
...bound by a code of professional conduct to act with integrity, care and competence.⁸

The issue of integrity and its associated requirement of professionalism is important for professional bodies to infuse throughout the CERA qualification process, as it confers responsibilities upon the designation-holder, as well as the education pathways towards that designation.

University ERM Course Development

There are four professional exams within the Part III examination process of the Actuaries Institute. Two exams must be within one specialist subject area⁹, and one exam is an 8-hour case-study exam (Commercial Actuarial Practice), all of which are examined through the Actuaries Institute. A range of choices exist for the remaining part III exam¹⁰, including the subject of ERM. Up until recently, Australian ERM candidates have relied on the UK Faculty and Institute of Actuaries ST9 (Specialist Technical) material and examination process, supported by an Australian one day workshop. However, accredited Universities are now also able to offer ERM courses to provide exemption from the professional exam, with the University of New South Wales the first University in Australia to introduce ERM as an exemption subject. The ANU followed suit in 2015, through offering two new courses within the postgraduate programmes in actuarial studies.

³ Furthermore, in reviewing risk management education, Okura and Yanase (2014) state that little attention has been given to educational efforts outside the North American context, and Acharyya and Brady (2014) describe how case studies of best-practice in risk management education are far and few between.

⁴ This mimics much of the rationale and motivation for the development of the actuarial control cycle subjects, which aimed “to adopt a more holistic approach... with examples being taken from a variety of traditional actuarial practice areas and also from novel areas, rather than teaching the concepts of each practice area separately... particular attention is devoted to... understand the interests of different stakeholders and to have an enhanced awareness of risk, from the perspectives of the different parties involved” (Daykin, 2005).

⁵ For example, members of the German Actuarial Association have a pathway to the CERA designation through training courses and exams (See <https://actuarial-academy.com/cera/seminar?No=E0072>, accessed 12 March 2016), which differs to other European associations, and to the pathways for UK and US actuaries.

⁶ See <http://www.ceraglobal.org/statistics-cga>. Accessed 12 February 2016.

⁷ See <http://www.ceranalist.org/>. Accessed 12 February 2016.

⁸ See <https://www.actuaries.asn.au/studying-with-the-institute/becoming-a-cera>. Accessed 12 February 2016.

⁹ Life insurance, general insurance, global retirement income systems, or investment management and finance.

¹⁰ See <http://actuaries.asn.au/studying-with-the-institute/part-iii> for more details.

- ACST8060: Enterprise Risk Management 1 (ERM1) – Semester 1 (February-June)
- ACST8061: Enterprise Risk Management 2 (ERM2) – Semester 2 (July-November)

The split of ERM courses was predominantly (but not exhaustively) along the lines of qualitative and semi-technical (ERM1), and quantitative and highly-technical (ERM2). These courses covered the learning objectives of the CERA Education Syllabus¹¹, with course material based on the Actuarial Education Company (ActEd) ST9 Course Notes and the related ERM textbook (Sweeting 2011). Extensive use was also made of additional material relating to class exercises, discussions and case studies. In 2015, sixty postgraduate students studied ERM1 and 48 studied ERM2. The overall course offering was reviewed by the Actuaries Institute, and in 2015 the ANU pathway to the CERA designation was approved. In order to gain exemption from the professional ERM examination, an average mark of 75% across both ERM1 and ERM2 and a minimum of 65% in each course was required.

Methodology adopted to gain ERM Course insights

The sources for the discussion that follows are our observations and description of the 2015 experience; interviews with a small cohort of students taking ERM in 2015; and reflections of the ERM teaching faculty.

In terms of interviews, human ethics approval was granted in August 2015 which allowed two ANU researchers to conduct interviews with ERM students in September 2015¹². The timing of interviews midway through the ERM2 course was deliberate for logistical as well as academic reasons¹³. Furthermore, a focus on ERM1 provides a closer alignment to the emphasis of the UK Institute and Faculty of Actuaries ST9 course, whereby approximately 90% of marks in final examinations correspond to qualitative questions involving judgement rather than calculation¹⁴.

Four ERM students volunteered for an interview about their experiences. A combination of time pressure, and embarrassment / awkwardness in giving feedback that might involve positive and negative perceptions were the likely reasons for a relatively low response rate. Although various avenues to recruit additional interviewees were pursued, we did not force the issue, but note that in other recent papers in prominent journals, a limited number of interviews are nevertheless still judged as sufficient to generate useful insights¹⁵. And, as interview findings are just one of the perspectives presented, the reader is not hindered in being able to draw their own insights.

Interviews were electronically recorded and transcribed, with only the two interviewers having access to these transcriptions. All interviewees were happy to disclose their ERM1 grade, with all four achieving highly in the course (three had grades above 80%, one had a grade between 70% and 79%). Despite the likely bias in terms of being favourable towards the course, we considered that if high performing students demonstrated appropriate insights that match what a high grade would suggest, then this is informative in itself.

All ERM lecturers also provided their reflections on the 2015 experience, independently of one another, to the two researchers who carried out the interviews with students.

When presenting insights in this article, we follow the well-established practice of scholars who deal with qualitative research (for example, Eisenhardt and Graebner, 2007), by demonstrating a close adherence to the underlying data. We show such adherence through examples of raw data such as narratives and quotes, which is

¹¹ ERM concept and framework; ERM process; risk categories and identification; risk modelling and aggregation of risks; risk measurement and assessment; risk management tools and techniques; capital management. See <http://www.ceraglobal.org/syllabus>.

¹² Neither interviewer taught ERM, and both had previous experience in personal and/or supervised research involving the use of interviews as a methodology. Personal interviews have various benefits, and are adopted by many studies in the realm of financial services. For example, see FSA (2009), Into (2003), Patton (2002).

¹³ In terms of logistics, at the end of the calendar year most students have left Canberra and even Australia. Academically, we observe from Control Cycle courses that a major challenge for students relates to contextual (loosely, ‘qualitative’) aspects, and making informed judgements about open rather than closed problems. Thus, whilst the heavily contextual/qualitative content of ERM1 was fresh in their minds, it was seen as more useful to pick up on this element rather than the statistical, quantitative content that was emphasized more in ERM2.

¹⁴ This 90% figure comes from an analysis of 12 ST9 exams over 2010–2015. See Appendix B for further detail.

¹⁵ For example, Foster and Warren (2015) conducted ten interviews into expert investment decision making, and although “the sample size may be modest”, this was considered sufficient “for identifying those aspects where decision processes and views were highly consistent, and where they differed” (p. 9).

a mechanism that can demonstrate and build confidence that the underlying message(s) being portrayed are reliable and consistent with what has been observed and studied (see, for example, Shank 2002).

Findings for each of the three goals of this article are presented in the following pages.

Credibility and Robustness of the ANU ERM courses

Given that some concerns may exist with Universities awarding exemptions from professional (Part III) exams, we discuss three areas here to inform of the credibility and robustness of the ERM courses offered. These areas are [1] the mechanisms in place to develop professional rather than just academic attributes, [2] an indication of whether key learning outcomes were attained, and [3] an overview of results in 2015.

Mechanisms to develop professional attributes

Awarding exemption from a professional ERM exam requires that skills and capabilities attained by high-achieving ERM students are commensurate with the desired attributes of the CERA designation. Five explicit mechanisms are in place to assist this.

1. Close adherence to the professional, CERA syllabus.
2. The credentials of the ERM teaching faculty. As Acharyya and Brady (2014, p.129) state, tutors need to have “interdisciplinary knowledge in designing session topics and texts... (they) should have practical knowledge from working as a risk management professional in the industry or... attached to the professional risk management institutes to ensure an awareness of contemporaneous risk management issues”. For ANU’s three lecturers in ERM (one in ERM1 and two in ERM2), a summary of their credentials is as follows:
 - i. All three are qualified Fellows, with membership across four different professional actuarial bodies: Australia, United Kingdom, France and the United States;
 - ii. Two of the three have PhDs; and two of the three are qualified CERAs;
 - iii. Overall tertiary teaching experience totals 20 years;
 - iv. Overall professional working experience totals 36 years.

These credentials give some credibility to any claim that the ERM courses are more likely to have rigour, substance, relevance and a healthy balance of theoretical and applied perspectives.

3. The role of the Actuaries Institute’s external examiner from industry, who [1] reviews the suitability and relevance of all major assessment pieces, and [2] reviews the exam scripts for candidates who are close to the critical grades for exemption purposes.
4. Two assessment pieces were closely related to industry and professionally-related issues and developments. One, a 30 minute group presentation to the ERM1 class worth 10% of the final grade, was based on each group summarising and presenting a recent ERM seminar presentation or paper, and providing their own insights and judgement on the material. Another assessment worth 15% required each student to interview an industry expert, and then submit an assignment which suggested improvements and/or recommendations about the theoretical issue, concept, or practical application that the interview had focused on.
5. The use of key guest speakers from industry, as well as the use of case studies, in order to supplement the coverage of some topics. One lecturer commented on the benefit of these lectures, in that they “were effective in exposing students to ERM in practice and from wider fields”.

Key learning outcomes

The attainment of key learning goals was commented on by the lecturer for ERM1, who pointed out the challenges that exist for students with backgrounds which were technically-oriented in terms of study, and often without significant work experience:

I had always identified it as a challenge to be teaching Part III courses to students with limited work experience... (ERM1) is primarily qualitative and requires some understanding of how companies and people work in the real world... some of the challenges are similar to those in the transition to Part II – decisions need to be made, information

is imperfect, reasoning for choices needs to be explained. The fact that there is rarely a single answer is challenging for some students.

Nevertheless, for those students who could provide practical insights and solutions, the reflection of the above lecturer was that the course did provide for key learning goals:

I found the course overall effective in achieving the aims I had for student learning... I was pleased that the more successful students understood the standard required and were able to think practically, drawing on internships or other life experiences to move beyond the bookwork approach.

In slight contrast, one of the ERM2 lecturers was less assured of the potential learning outcomes, as “it was difficult to tell whether students are able to apply the technical skills within a practical context, although they did okay on applying the technical skills on simplified examples”. In this vein, it is therefore of interest to know what interviewees think ERM is actually about, and what were the main things that they learned. All interviewees picked up on the holistic nature of risk, with one excerpt given as a typical response.

It’s kind of like managing risks holistically, so in a way that you’re not just looking at each individual risk, but making sure you understand the interaction between different risks. (Interviewee D)

This understanding was supplemented by additional comments about what they saw as key and specific learning points about ERM. Such points included capital, culture, the value of determining a ‘risk appetite’, and the utility of ERM as a framework for understanding risk. The consideration of upside and downside elements of risk was also highlighted, with two interviewees contrasting this feature of ERM with other courses and work experience, which predominantly saw risk management as managing the downside. An exemplar is below.

In (my internship) company there is an ERM department... maybe they need to do a bit more to improve their department, to (understand) the difference between just the general risk management and the ERM... because in risk management (all) they will show you is those risks, those downsides they need to control. So in those traditional risk management departments, in my opinion they’re just like policemen; they don’t care, maybe the risk will give you both the upside or downside, but they will only focus on the downside... maybe the claim department or the underwriting department... they only focus on (downside)... maybe that’s their main responsibility that their leader just give them. (Interviewee C)

Interestingly, one student who ultimately gained an exemption from the ERM professional exam, commented on the relative ease of ERM1, in contrast to their expectations of a Part III course. They stated that “I thought Part 3s were supposed to be really hard and my first semester wasn’t as hard as I had anticipated”, and furthermore:

I think I kind of had anticipated... I would have a bit of a better understanding of how it might actually work in practice... part III’s was like the final stage, so that’s when you’re supposed to have a really good understanding of how things work in the real world, and I’m still not 100 percent sure how good my understanding is. (Interviewee D)

This is not a major pedagogical concern to us, as it reflects both their performance as well as displaying a key element of learning – achieving learning outcomes does not mean you know all things but more that you are aware of your limitations, and how much else there is to learn. This is a healthy outcome for a high-achieving student, and in combination with their comment that the overall course wasn’t as difficult as they imagined it could be, potentially reflects a mastery of the basics as well as a healthy awareness to develop judgement even further, in line with future experience.

Overview of Results

For those students sitting both ERM courses at ANU in 2015, 19% achieved grades that allowed an exemption from the professional ERM exam. In comparison, the historical pass rates for Australian Part III candidates sitting the UK ST9 ERM exam since its inception in April 2010, as well as for all Part III subjects, are below.

Table 1: Pass rates for Australian Part III candidates*

Exam	ERM Pass rate (for non-fellows)	Pass rate for other part III subjects
2010 Semester 1	19%	44%
2010 Semester 2	34%	41%
2011 Semester 1	21%	39%
2011 Semester 2	26%	34%
2012 Semester 1	37%	37%
2012 Semester 2	33%	40%
2013 Semester 1	40%	42%

2013 Semester 2	40%	33%
2014 Semester 1	22%	36%
2014 Semester 2	36%	41%
2015 Semester 1	37%	41%

* All pass rates sourced from examiners reports at <http://actuaries.asn.au/studying-with-the-institute/part-iii/past-assignments-examinations-and-board-of-examiners-reports>

It is noteworthy that generally ERM pass rates are lower than those for all other Part III subjects combined, and that the exemption rate for students sitting ERM as part of their studies at ANU in 2015 is well below the historic pass rates for ERM sitting ST9 directly.

The 2015 experience

In light of earlier discussion regarding perceived weaknesses of Part III education, in this section we briefly highlight perceptions of [1] the course materials, [2] class structure and activities, and [3] the assessment. We then discuss the need for deep rather than superficial familiarity with industry issues and context, and insights as to how to do well in ERM.

Course materials

The ST9 lecture notes and textbook were commented on favourably by interviewees and the ERM1 lecturer. One interviewee described their use of ST9 notes as a first port of call for forming study material later on, due to the structure and breath of coverage within those notes. The ERM1 lecturer also made use of additional slides and lecture notes, to summarise and emphasise the main points made. Some students saw this as useful, but others did not consider this additional material as helpful as other class activities.

The slides were okay but – I think it’s a bit different in this situation. So some courses, you rely on the slides to provide you with a good written coverage of the course material... (the) approach to the lecture was to just cover the most essential features of the notes and there was an assumption we were reading the other material where there were things that were less critical. (Interviewee B)

Putting aside the mixed views on the summary slides, the ST9 course notes nevertheless provided a solid and useful set of base material, allowing various additional material and case studies to be used more than otherwise.

Class structure and activities

A range of class activities were a feature of ERM1, including case studies, a variety of discussion questions in groups, and other tasks that enabled greater social interaction than occurs in traditional lectures. This contrast was highlighted by one interviewee.

It was definitely more participation based rather than other courses... (the lecturer) encouraged a lot more participation because that was what was expected of a Part 3 course... involvement in group work as well is much more compared to other courses. (Interviewee A)

Such opportunities were generally seen as advantageous for engagement and learning. Reasons for this included:

- the opportunity to ‘do’ rather than ‘listen’, for example when for different organisations trying to “come up with the risk appetite statement... actually going through the process I think was quite useful” (Interviewee D); and “we’re practically applying what she’s just covered... that was very helpful... much more enjoyable than sitting there absorbing risk management for two hours” (Interviewee B);
- having the lecturer “right in front of you, so in case you’re not sure of something you can immediately get feedback” (Interviewee A);
- such forced socialisation gave rise to benefits traditionally associated with group work, such as “on the whole everybody contributed equally and we played off each other’s strengths” (Interviewee B); and “someone can come up with an idea that’s totally different from what you’ve got and you probably would never have heard about that if you didn’t do it in a group, so definitely helpful” (Interviewee A).

The two ERM2 lecturers saw some challenges with students mastering the technical components in their course, as well as the key qualitative insights. To make these key learnings more tangible, further reliance was given to material additional to the ST9 notes including real-life data and examples, more hands-on use of some modelling applications (for example, R), making explicit links to current regulatory guidance, and as discussed earlier, the use of industry speakers.

When possible I related what we were teaching to legislation and actuarial practice. As an early example, at the start of week 1 lectures when introducing deterministic approaches to incorporating risk, I linked to APRA GPS 114 and 115¹⁶ from the slides to illustrate the practical application of notional and factor sensitivity approaches..... some of the technical material (e.g., copulas) is quite dense and students found it difficult to follow. Supplementing the course notes with slides that expanded on the material (and in some cases, provided a simpler introduction than the course notes) seemed to work well... students appeared to be more engaged and responsive when ‘learning by doing’, particularly when I provided R code and examples.... for virtually every lecture, R was used to demonstrate the concepts through the application of functions to data (sometimes made up, sometimes based on real examples). (ERM2 lecturer)

Qualitative materials are better learned with extended elaborations on real life examples. (ERM2 lecturer)

Assessment

The use of examinations was required in ERM for exemption reasons. Although the ERM1 lecturer commented that “it is not always the best way to assess student accomplishment”, nevertheless “our students are very familiar with this format so it didn’t present them with particular challenges”. Interviewees commented relatively favourably on the exam component of assessment, highlighting benefits such as [1] it motivates to keep up to date with materials, [2] it focusses one’s learning, [3] it gives a yardstick for progress, and [4] it provides ancillary benefits such as effective time management.

The assignment components of ERM1 and ERM2¹⁷ were considered beneficial by the lecturers due to the engagement with industry figures and issues. Although some logistical issues existed, such as “problems in accessing company information since the technical details of risk management practices are not publicly available for many financial services companies” (ERM2 lecturer), what was highlighted was the “opportunity to connect the classroom material with the real world” (ERM1 lecturer). As well as this, interviewees also highlighted the need to know the material very well, in advance of the interview.

The ERM professional... has all this experience so some of the questions I was able to get better insights... just a simple thing like interviewing I think just gives you a bit better worldly experience because you’re not just going to be sitting an exam all the time, you know, you’re in a workplace, you’re going to have to do these different activities. (Interviewee D)

For the required student class presentation(s) in ERM1, the lecturer viewed the results as mixed. Although “some students did do an excellent job of summarising and adding to the material”, it was also apparent that “some students struggled to put what they were hearing in context.” From the student perspective, a major advantage again concerned the need to be up to date and really understand the material, given that students would be presenting to peers.

I need to mention the assessment is quite helpful... because if you are forced to make a presentation just before your classmates... you do need to prepare a lot. (Interviewee C)

One negative concerned the logistical challenge of managing a high number of presentations, a point picked up by both the lecturer and interviewees. All interviewees highlighted that learning from peers was sometimes limited, due to reasons such as:

- A lack of engagement with some presentations, as for example some groups were “very difficult to actually follow what they were trying to communicate” (Interviewee B);
- A sense that more could be learned from the lecturer rather than peers, because “it’s not the lecturer who is telling you... (someone else) might be wrong, so you don’t know whether what they’re saying is actually accurate” (Interviewee A);
- A preference for the use of time to be more productive, even if moving away from the social aspects of learning. For example, “I almost got the feeling I would have been better just listening to the (industry) presentations myself” (Interviewee D).

¹⁶ GPS (General Prudential Standards) 114 and 115 are the Australian prudential standards regarding asset risk charges and insurance risk charges for general insurers, respectively.

¹⁷ ERM1’s assignment required students to interview an industry practitioner and write a report on the findings of the interview; ERM2’s assignment required students to [1] research how one of the specific quantitative techniques introduced in the course are used by existing companies as part of their ERM processes, [2] discuss the limitations of the techniques taught, and [3] discuss how these limitations are addressed in practice.

Overall, having a number of assessment pieces was commented on favourably, as “I was getting a lot of feedback on how I was going throughout the course” (Interviewee B). This highlights that assessment can (and should) serve as a feedback (and hence learning) mechanism, rather than merely as a hurdle to clear.

The need for familiarity

A consistent point raised in interviews concerned the role and usefulness of prior study and/or experience. Familiarity with the context in which ERM would be applied, is an important base for gaining a deep understanding of the goals and applicability of ERM. The general framework and utility of ERM was fully recognized as important, but knowing the detail and landscape of the particular industry or area in question was also equally important, in order to give the framework some tangibility and accessibility. That is, concepts and approaches matter, but so does detail and knowledge. It was raised frequently in interviews that prior or current work experience is an obvious source of this familiarity and that without it, some of the learnings remain more intangible than desired.

Most of the time you needed to read up about knowledge that you would have probably had come naturally if you were working, I guess... terminology, frameworks, standards and stuff like that. (Interviewee A)

When we had group assignments and things to do, the other people in the group I had none of them had any professional work experience (or) insight to be able to draw on, and I suspect they valued the fact that they could draw on mine. But I didn't have that coming back to me, so that was a weakness for me. (Interviewee B)

Interviewees also commented that a way to generate familiarity with the contextual detail is via prior and/or current study. This is particularly relevant to actuarial education within a University setting, as most students were doing the part II (control cycle) subjects concurrent with and not prior to the ERM subjects. Furthermore, with some students doing ERM as part of a transitional 2 or 2.5 year Masters program from another subject area rather than coming from an undergraduate actuarial degree, not all had yet attempted all Part I subjects. Nevertheless, all ERM students would have attempted most Part I subjects and done well enough to meet the pre-requisites for entry into the ERM courses, and of course those with a non-actuarial background bring a perspective that may be just as insightful as those with an actuarial background. Nevertheless, the following interview excerpt is of interest.

I'm a postgraduate and my background was nothing really to do with actuarial at all, now even I'm still doing some of the Part 1 courses and that is assumed knowledge in ERM... from my perspective it's just some of the industry knowledge that we needed to know early on in the class – so the only thing that I did not like was that I could not complete some of the control cycle components before doing that course... it's just a lot of the content in there assumes some knowledge that you would have had if you were working or if you've done your control cycle or the Part 1s. (Interviewee A)

The reflections of the ERM1 lecturer presented earlier, under ‘Key learning outcomes’, also echo these concerns. The limited work experience among ANU ERM students may be one of the reasons for the low ANU exemption rate when compared to the historic pass rates for Australian Part III candidates sitting the UK ST9 ERM exam. For those with little or no work experience, this naturally places the onus upon students themselves to read widely, be pro-active in their learning, and keep up to date with industry issues.

Doing well in ERM

Given the preceding discussion about the benefits of strong familiarity with industry and the contextual setting of ERM, it is no surprise what the feedback was from interviewees in terms of how to do well in ERM. The most concise summary would be to truly ‘immerse’ oneself into the readings, activities, and social learning opportunities, which was more or less the universal recommendation from all interviewees, all of whom achieved well.

Read widely... just having a good understanding of the industry was really important and you could have done that by just being a member of the Institute of Actuaries and read some of the bulletins and stuff like that... or just talking to people. Coming around and talking to lecturers for example... read widely, get as much understanding of the industry beforehand, what are the types of policies that exist out there, because that will give you an idea, an understanding what risk actually is and how the industry has a part to play in taking on risk. (Interviewee A)

I did as much as the reading as I could and I did the assessments and I sat there in class thinking about how does this apply, how could I apply this in my job or in my organisation or how would this play out, or is my organisation doing this. (Interviewee B)

ERM is a subject where we do need a lot of discussion... you cannot be (holistic) without other help because everyone has totally different and specific ideas about ERM and when you discuss with others you will give us advice to correct maybe our misunderstanding or errors and meanwhile they will give you some new ideas... I do find that of course it is a Part 3 course, we do need to make our own efforts more and when I just realised this idea, I do spend quite a lot of time for those ST9 readings... if you read those books (several) times, and you can remember quite deeply and it is useful for us to answer those questions and to face those practical questions... I cannot understand or cannot remember quite deep rather than reading for myself. (Interviewee C)

Just making sure that you do all the reading, then you're putting yourself in a pretty good position. Asking any questions in areas that you don't understand; sometimes that was just reinforcing with other students my understanding or going to talk to (the lecturer) during consultation if there was something you don't understand. (Interviewee D)

Part III involvement of Universities

This article is not pushing a case that Universities should have a greater involvement in the professional, Part III elements of actuarial education. It may however inform any thoughts about this possibility, if that possibility were to arise. In this vein, three areas of discussion are presented: [1] has the provision of a part III subject within the University system motivated students to further study and development?, [2] does this case study demonstrate the ability for an education system to respond and adapt to experience?, and [3] does the University ERM offering suggest a niche role for the profession more widely?

Motivation of students

If a goal of education is to inspire and motivate further learning and achievement, it is also worthwhile then to ask whether ANU's ERM courses provide for this. Interesting insights were given that suggested a relatively positive picture of a future as an actuary – which notably, we would hope for given the high achieving cohort of interviewees.

It definitely lifts me up. I do want to be an actuary; I do want to complete all of my Part 3s if I'm successful, in time. (Interviewee A)

That's my goal... I like taking challenges and being an actuary is commonly regarded as the biggest challenge you could find in a business world. (Interviewee C)

I'm pretty keen to become (an actuary)... I've personally really enjoyed my studies much more than I'd really anticipated when I first signed up to actuary studies. To be honest, I didn't really know what it was when I first signed up... (now) I find it really interesting. The applications I guess of statistics in particular, but then combining that with like finance. (Interviewee D)

Interviewees were also asked whether a Chief Risk Officer (CRO) or an explicitly ERM role may appeal in the future, compared to alternatives. Responses were less positive in this, partly because the CRO role is seen as quite senior, carrying significant responsibility, and perhaps unattainable and too specialist for those at the start of their careers. A more positive spin for the profession is that there are many opportunities for the actuary of the future, so there is no compelling rationale or ambition to place a CRO or ERM role above other options at this stage.

I see (CRO) it as a very senior role and a lot of responsibility is rested on your shoulders... it depends. (Interviewee A)

If there are opportunities I won't reject those opportunities. I don't think that there is (a big) gap between those traditional fields and the ERM because I think the principal is quite similar... (but) if I really choose ERM to be my subject it will actually shrink my field and let my future working field even tighter. (Interviewee C)

I do really like the idea of enterprise risk management, the idea of being able to look at all the risks together and how they work... it would potentially be something good to do at some point just in terms of I feel like I would want some variety as my career development. (Interviewee D)

Responding to experience

In lieu of reflections on the 2015 experience, four main areas of the ERM courses have been targeted for improvement into the future. Firstly, restructuring some material in terms of:

- order and timing, “so that students are not thrown into technical financial institution related material too early” (ERM1 lecturer); and

- adding more background material, as “historical incidents and extra readings on modelling techniques are good learning materials” (ERM2 lecturer).

Secondly, increasing further the opportunities for interaction for both in-class activities and some assessment activities in ERM2, as some assessment “didn’t provide an opportunity for students to communicate and learn from each other... the ability to co-operate with others is essential” (ERM2 lecturer).

A third area of improvement is to enhance the real world applicability of key learnings and techniques, primarily through greater use of real data and application(s). For example, “introducing students to R codes is a good idea, but one possible improvement is to get them to work on assignments on real/synthetic data sets... I hope to design a (relevant) group assignment” (ERM2 lecturer).

Fourthly, focussing more on ‘doing’ rather than ‘absorbing’, primarily through more practice problems and activities.

After I introduce ARCH/GARCH modelling I’ll provide them with some specific asset return data and ask them to fit a time series model in order to estimate a 95% VaR (or another appropriate risk measure) over a specific time interval. The purpose of this approach is two-fold: it will help consolidate the concepts and techniques taught, and will also (hopefully) give students a better appreciation of how the material taught can be used to answer practical questions in ERM... the plan for 2016 is to include more questions. (ERM2 lecturer)

To accommodate the additional interactive and hands-on activities highlighted above, lecturers from both ERM1 and ERM2 plan to increase the amount of lecture time from three hours a week to four. Overall, although Universities by no means provide the panacea of perfection in education, these points do highlight a willingness and ability to adapt and respond to experience and lessons learned, in order to seek better practice over time.

Niche role of ERM education

In many ways, the developments in ERM education mirror earlier moves with the educational development of the control cycle framework, which itself moved “towards teaching the application of actuarial techniques in a more generic framework”, to emphasise principles, and consider context and application in a holistic manner (Daykin, 2005). And encouragingly, some interviewees picked up on the similarly broad applicability of ERM, and by extension, highlighted how [1] the connection of actuarial with ‘risk’ in its broader sense is effectively a defining characteristic of what the profession is about, and [2] the actuarial approach to ERM can deliver a service of real worth, and the education thereof itself can be a central cog of this valuable and important service.

I can’t imagine an actuary not doing ERM. I think it’s very important. I mean after doing it, it’s supplementing what I’ve learned in the control cycle. Everything just works. If you don’t do ERM you’re sort of missing one aspect, you’re not able to exercise some way of thinking. (Interviewee A)

I simply kept thinking about what we were being presented, thinking about it more broadly than just financial services... obviously (the banking prudential requirements) are very specific, but beyond that I could just see the broader context of how this would play out into any organisation, it didn’t need to just be financial services... everything I read these days in business literature, risk is being mentioned everywhere in terms of managing risks... so far I have not seen it covered in any substantive way anywhere. (Interviewee B)

Indeed, the introduction of ERM as a professional actuarial Part III exam assists in formalizing the skill set offered to clients in this area. If shortfalls in effective ERM remains in industry, then the continuing education of those to meet that shortfall itself provides a niche role for the profession, of which one potential pathway for CERA candidates can be through accredited Universities.

Conclusion

In this article we have summarised ANU’s offering of ERM courses in 2015, which provide exemptions for high-achieving students from the Part III, professional ERM exam. Such exemptions also lead to the CERA designation for the appropriately credentialed candidates. By presenting insights from observations, interviews with students, and reflections from ERM lecturers, this provides a case study regarding the credibility and robustness of a University pathway for a Part III exam, and is also part of our own process to seek better practice in education over time.

In particular, this offers some insight into the role of Universities more widely in Part III education. Some of the benefits of a University-based provision of professional exams include the opportunity for students to be engaged to something akin to a 'community of learning' through appropriate material, group activities, interactive and engaged assessment, direct links between all three of these, and having direct access to lecturers. In addition, the ability of universities to quickly adapt and respond to experience over time gives significant advantage to any learning environment (and indeed aligns with the actuarial approach to any problem), even within the bounds of exemption requirements and standards. Notably, all these benefits are significantly enhanced through greater interaction with industry.

Some weaknesses to be worked through are also apparent, including the logistics of managing some group activities including assessed presentations, and also the likelihood that many entering the ERM course are not yet sufficiently equipped in terms of experience and skills to benefit as much as they otherwise would from the course. However, we are encouraged that those students who have done well have displayed the attainment of key ERM learnings and skills, and we are confident that various mechanisms in place will continue to uphold the credibility of the exemption pathway.

Anecdotally, the Actuaries Institute final part III, specialist course (Commercial Actuarial Practice (CAP)) course is generally perceived as relatively effective in meeting its desired learning outcomes. In part this is due to its actual provision of teaching and interactive learning opportunities through the residential course, and assessment which is clearly linked to those learning opportunities. If other elements of Part III education are not similarly endowed with these strengths, as has been suggested by some studies and observations of others, then perhaps something similar to the CAP model is one to consider more widely within Part III education. Universities, in conjunction with Industry, may be well placed to deliver such education, if the strengths evident in this article can be harnessed and the weaknesses managed.

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Appendix A: Overview of formal education requirements of actuarial education in Australia.

In order to qualify as a Fellow of the Institute of Actuaries of Australia (FIAA), a candidate undergoes the following qualification process of 3 sets of exams:

Qualification Process for Actuaries in Australia

Professional exams		Description	Exams available through:	
			An accredited University program*	The Actuaries Institute directly
Part I	8 exams	‘Core Technical’ (CT): a strong technical focus	Yes (all)	Yes (all)
Part II	3 exams	2 ‘Control Cycle’ exams + 1 Investments exam: focus on ‘transition to practice’	Yes (all)	No
Part III	Module 1: 1 exam	1 exam from a range of options / applied areas**	Yes (ERM only)	Yes (most options)
	Modules 2/3: 2 exams	Both exams in one of four specialist areas	No	Yes (all)
	Module 4: 1 exam	An 8-hour case-study exam (“Commercial Actuarial Practice”)	No	Yes
Total	15 exams			
<p>* Exemptions are awarded on an exam-by-exam, subject-by-subject basis with a pass in an academic subject giving credit towards an academic degree, but a higher grade being required to obtain exemption from the equivalent professional exam.</p> <p>** A range of options, including ERM, fulfil the requirements of Module 1 - see http://actuaries.asn.au/studying-with-the-institute/part-iii for more details.</p>				

Further details are available at <https://www.actuaries.asn.au/studying-with-the-institute/pathway-to-fellowship>.

Appendix B: Analysis of ST9 exams offered through the Institute and Faculty of Actuaries.

Exam¹⁸	Percentage of examination relating to qualitative material
2010 Specimen exam	91%
April 2010	100%
October 2010	91%
April 2011	97%
October 2011	88%
April 2012	92%
October 2012	90%
April 2013	94%
October 2013	96%
April 2014	96%
October 2014	77%
April 2015	92%
October 2015	84%

Note

Qualitative material is identified by reference to the following verbs in an exam question: comment, compare, contrast, define, describe, discuss, explain, evaluate, give [examples], illustrate, justify, list, outline, propose, recommend, sketch, state, suggest, write down.

Quantitative material is identified by reference to the following verbs in an exam question: Calculate, determine, estimate, fit, interpret, plot, show, verify.

The following verbs could indicate a qualitative or a quantitative response is required: Analyse, assess. Additional analyses of each relevant question determined whether the context predominantly related to quantitative and/or qualitative argument and reasoning.

¹⁸ UK ST9 ERM exam papers and examiners reports are sourced from <http://actuaries.org.uk/studying/prepare-your-exams/past-exam-papers-and-examiners-reports>.