

FINANCIAL PLANNING RESEARCH JOURNAL

Journal of the
Financial Planning
Association
of Australia

A review of ethics education in financial
planning courses in Australia

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Aims and objectives

With an evermore complex financial system, an increasing emphasis on self-funded retirement for Australians, the expanding size of Australia's managed funds pool, and persistent evidence of financial illiteracy, the importance of financial planning is growing. The financial planning profession needs an academic platform for discourse on the issues of individual personal financial planning and wealth management, where issues of practice and policy can be debated with rigour, independence and evidence. Prior to the *Financial Planning Research Journal* (FPRJ), no journals fitted into this niche to provide a forum for dissemination of research in the specific area of personal finance and investments in the Australian context.

The context of personal finance and investments for Australia is different from the rest of the developed economies because of the presence of mandatory superannuation, a large managed funds pool and a strong social security system. Because of these factors international journals in the area of personal finance and/or investments may not suit an Australian audience. In addition, the rapid developments in regulatory and professional standards within the context of personal finance suggest there should be some interest in, and need for, independent, peer-reviewed research in this area.

The *Financial Planning Research Journal* (FPRJ) publishes high-quality, original, scholarly, peer-reviewed articles from a wide variety of personal finance, investment and taxation disciplines. These include, but are not restricted to, economics, finance, management, accounting, marketing, taxation, behavioural finance, financial literacy, financial education and law. The issue is that they are of interest to the practice and policy of financial planning in Australia.

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FPRJ is published by Griffith University (Brisbane, Queensland, Australia) on behalf of the Financial Planning Association of Australia.

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Books: Pyle, David J. (1997) *China's economy – from revolution to reform*, Macmillan, Hampshire & London.

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Journal articles: Knight, J. and Shi, L. (1996) 'Educational attainment and the rural-urban divide in China', *Oxford Bulletin of Economics and Statistics*, 58:1, pp. 83-118.

Internet source: Henry, K. (2004) Australia China Economic Directions – Long Term Trends in the Australian Economy (unpublished speech at the Australia China Free Trade Agreement Conference, Sydney, 12 August), http://www.treasury.gov.au/documents/875/PDF/Australia_China_FTA.pdf (accessed on 04/01/2005).

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From the editors

Financial advice in Australia is continuing its path to professionalism. In mid-2017 we saw the establishment of the Financial Adviser Standards and Ethics Authority (FASEA) which will set the education, training and ethical standards of financial advisers, licensed under Australian law, as stipulated in the *Corporations Amendment (Professional Standards of Financial Advisers) Act 2017*. The purpose of these changes is to raise the professional, education and ethical standards in financial advice, and ultimately improve the trust and confidence in the advice sector and engage more (and a more diverse range of) clients and consumers in financial planning.

The opportunities and challenges for financial planners are, of course, well beyond education standards. Technology continues to evolve and reshape client-adviser interface, and issues such as cybersecurity remain a key concern for all finance organisations. The emergence of cryptocurrencies in the main stream as an investment asset and means of transaction in a broader sense poses different set of challenges for the advisers. In the same context increased focus on the use of technology for money-laundering has gained greater attention and concern in recent times. Exciting opportunities are emerging from advances in connected devices as part of the Internet of Things (IoT); big data, machine learning and artificial intelligence (AI). The challenge is for financial planning organisations to respond to the challenges and opportunities in an agile way during a time of great change in the industry generally.

Global politics still make their share of headlines, with Brexit still unfolding and banks and other finance institutions preparing to adapt as more details of the UK's departure from the EU become clear. Other localised challenges may result from the interaction between major political powers, as well as continuing and potential conflict resulting in humanitarian and other crises. Opportunities exist in terms of economic growth, albeit with speculation about when markets will peak again now that it has now been 10 years since the all-time market peak was achieved in November 2007.

In Australia, housing has remained a focus of interest into 2018 with speculation regarding corrections in areas that have had large housing price increases over recent years. There has also been continuing policy debate regarding support for first home buyers and more broadly in examining the options available to millennials compared to other generations in entering home ownership, building wealth and in intergenerational wealth transfer.

In this context, we are pleased to present Volume 4, Issue 1 of the *Financial Planning Research Journal*, the journal of the Financial Planning Association of Australia. This issue contains four articles from domestic and international contributors ranging in scope from applied linguistics through to sector diversification analysis.

The headline article in this edition of the Financial Planning Research Journal from Dr Michelle Cull regarding the challenges of ethics education in financial planning aligns well with the major work that is under way across the financial planning environment.

The second article in this issue by Dr Stephen Moore presents a unique analysis of the language and linguistics components of the risk profiling questionnaire and interview.

The third paper by Tania Driver, Mark Brimble, Brett Freudenberg and Katherine Hunt examines the complexity in consumer decision-making regarding personal insurance in the context of an underinsurance problem in Australia.

The final paper in this edition by Suneel Maheshwari, Rakesh Gupta, Jinze Li investigates the benefits of sector diversification compared to international diversification across the Australian, Indian and Chinese stock markets.

As announced earlier this year, in 2018 we will also be publishing our first themed edition on diversity in financial planning. Numerous submissions have been received for this special edition covering a range of important and challenging topics for an emerging profession.

We would once again like to thank the FPRJ editorial board, our reviewers and the production team for their contribution to this edition. The time and effort required to deliver a journal edition is significant and without all your efforts the FPRJ simply would not happen. Particular thanks to Dr Di Johnson, Joy Lin, Laura Phoenix and Sian Jones.

We hope you enjoy the sixth issue of the *Financial Planning Research Journal*.

Professor Mark Brimble and Dr Rakesh Gupta

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A REVIEW OF ETHICS EDUCATION IN FINANCIAL PLANNING COURSES IN AUSTRALIA

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ARTICLE INFORMATION

Article History:

Submitted: 2 August 2017

Revision: 17 October 2017

Acceptance: 31 October 2017

Key words:

Curriculum, education, ethics,
financial advice, financial planning

ABSTRACT

This study includes a literature review of differing approaches to ethics education and utilises publicly available information to investigate the current climate of ethics education across Financial Planning Association accredited degrees. Findings from a content analysis of curriculum data and a comparison against Bloom's taxonomy reveal only two ethics related learning outcomes from all institutions to be at the deepest level of learning.

With new legislation requiring financial planners to be degree qualified and to abide by an approved code of ethics, this study proves valuable in highlighting gaps within ethics education in financial planning courses in Australia

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Acknowledgement: This research is assisted by a grant from the Financial Planning Education Council through its Academic Research Grant Scheme, sponsored by the Financial Planning Association of Australia. The authors also wish to express their thanks to academics attending the CQU Accounting Discipline Research Seminar Series in May 2017 for their useful feedback provided for this paper.

Introduction

The post Global Financial Crisis (GFC) environment in Australia has been anchored on restoring the financial markets and rebuilding confidence within the financial planning industry. Ongoing investigation into the financial planning industry over the past decade, however, has challenged the presence of a strong ethical framework. According to Cull (2009, p. 30);

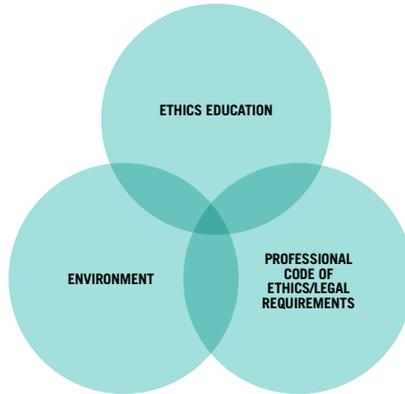
Such examples include the damning Australian Securities and Investment Commission (ASIC) /Australian Consumers Association (ACA) survey on the quality of financial advice (2003), the collapse of Westpoint, (after many financial planners had recommended it to investors and received commissions) and the scheme that saw AMP switching clients to different super funds for no specific reason.

Further issues have arisen from high profile collapses of financial product and services providers such as Opes Prime in 2008, Storm Financial in 2009 and more recently the perceived profit-driven culture driven by commissions and self-interest in the banking sector of the financial planning industry (Ferguson and Masters, 2014; Cull and Sloan, 2016; Ferguson, Christodoulou and Toft, 2016; McConnell, 2016; Robertson, 2016). As a result, there has been a greater spotlight placed on ethics within the profession of financial planning.

In addition, research conducted by Cull (2015) found that ethical values were more important to consumers than competence when it came to choosing a financial planner. While this shows the importance of ethical values of financial planners, Cull (2015) also found that the moral development of a sample of financial advisers in Australia was lower than adults in general, and of high-school students. Furthermore, financial planners with a higher level of education have also been found to have higher levels of moral development (Bigel, 2000; Cull, 2015). These findings call for further research on what can be done to improve the ethical development of financial advisers in Australia and the role of educators.

In response to challenges presented in the post-GFC environment, and the recent findings of Cull (2015), possible solutions to improving the ethical development of future financial planners may include increased education and/or curriculum redesign to encourage principled thinking and ethical behaviour. Rest (1986) found from a 10 year longitudinal study that formal education is a powerful predictor of moral judgement development which is a precursor for ethical behaviour. However, there is currently much debate surrounding whether ethics can really be taught (Park, 1998; Ryan and Bisson, 2011; Ponemon, 1993), with further controversy surrounding how to do this and whose responsibility it is (Giacalone and Thompson, 2006; Langenderfer and Rockness, 1989; Isaksson, 1979). Dosch and Wambsgans (2006) places this onus onto businesses as the primary cause of ethical failure – not education. “Just as fraud classes do not educate students to commit fraud, ethics education does not educate students to act ethically,” (Dosch and Wambsgans. 2006, p. 254). This shows a separation, rather than an integrated responsibility of education and workplaces to teach ethics. Figure 1 highlights the collaborative efforts needed to produce ethical financial planners.

Figure 1: Factors that contribute to producing an ethical financial planner.



Efforts to combine these three elements can be seen within the recently drafted *Corporations Amendment (Professional Standards of Financial Advisors) Bill 2015* to amend the *Corporations Act 2001* (Commonwealth of Australia, 2016) which has now received Royal Assent. The amendments will require a financial advisor to be a member of a Professional Standards Council approved professional association, bound by a code of ethics and be degree qualified (Commonwealth of Australia, 2014, 2016). This forms a benchmark for ethical practises for financial planners. To abide by a code of ethics, however, individuals must first be educated on ethics. The current Financial Planning Education Council (FPEC), sponsored by the Financial Planning Association (FPA) have offered their existing curriculum to the government (Waterson, 2017) which provides the government with an existing and functioning set of education standards that are highly regarded within the industry; the curriculum includes an ethical component.

Although FPEC has set education standards for financial planning courses that are certified by the FPA as satisfying industry recognised requirements of financial planners, the integration of ethics within both bachelor and postgraduate degrees for financial planners is currently not regulated. The FPEC National Financial Planning Curriculum (FPA, 2012) includes 55 core learning outcomes across eight key knowledge areas. Six of these core learning outcomes explicitly include an ethics component, as displayed in Table 1, with one learning outcome of the 32 'additional desirable financial planning knowledge areas' also including an ethics component.

Table 1: Learning outcomes from FPEC requirements of an accredited financial planning degree that involve ethics.

Learning outcomes	
1	Describe the Australian legal framework within which financial planners operate and their legal, social and <i>ethical</i> responsibilities.
2	Undertake research, construct and present a limited scope Statement of Advice (SOA) to meet client requirements in an <i>ethical</i> and professional manner.
3	Identify and understand <i>ethical</i> considerations and professional conduct requirements in the giving of financial planning advice
4	Use sound judgment when engaging in <i>ethical</i> practice and display professional standards reflecting responsible and sustainable practices.
5	Act with integrity and <i>ethical</i> practice in communicating risk management strategies through the provision of comprehensive and appropriate advice to clients.
6	Apply the 6-step financial planning process in accordance with Financial Planning Standards Board (FPSB) standards and <i>ethical</i> practices.
7	Develop strategies and provide recommendations to advise clients on investment planning, reflecting socially responsible and <i>ethical</i> practice.

Source: FPA (2012)

As a method of reviewing the way that ethics is incorporated into financial planning courses in Australia, the learning outcomes in Table 1 are compared with Bloom's taxonomy, a classificatory framework that has been used for over 60 years in the development of curricula, based on a scaffolded approach, with complex learning built upon simpler components.

In the remainder of this article, we examine how the learning outcomes contained in FPA-accredited courses fit within the framework of Bloom's taxonomy, and how ethics is currently being applied within these courses. The paper begins with a literature review covering the importance of ethics education for financial planners, different approaches for teaching ethics, challenges of teaching ethics and the relationship between learning outcomes and Bloom's taxonomy. This is followed by the methodological approach to the research and then the results and discussion. Limitations of the research and opportunities for further research are considered before presenting the conclusion.

Literature review

The rapidly changing nature of society requires response to emerging ethical issues from all key stakeholders within the community; most notably by educators who hold a key role in fostering the professional and social development of students. By placing an importance on ethics education, universities seek to produce financial planners who are able to counterweigh the profit seeking and self-interest driven nature of contemporary businesses (Slocum, Rohlfert and Gonzalez- Canton, 2013). It is essential that a financial planner's specialist knowledge is supported by a strong grounding in ethical reasoning and decision-making due to their position of trust (Forster, 2012). Through responding to this challenge, it is expected that financial planners who are more conscious of ethical issues will practise these in coincidence with the interests of corporately responsible businesses. Ethics education and awareness is seen as a way to mitigate the potentially avoidable burden on organisations and/or society at large of employees making unethical decisions.

Research within the fields of business, accounting, teaching, psychology and medicine has shown prior research into ethics education (Armstrong, 1993; McPhail, 2001; Maxwell *et al.* 2016; Jonson, McGuire and O'Neill, 2015; Davidson, Garton and Joyce, 2003; Savulescu *et al.* 1999); however, there is currently very little research into the planning and implementation of ethics within financial planning education in Australia. Prior research by Gold, Pryor and Jagolinzer (2004) in the United States saw a significant lack of ethics education within financial planning courses accredited by the American Association of Collegiate Schools of Business (AACSB) and furthermore, while the AACSB requires learning experiences in ethical understanding and reasoning abilities, the process is left to individual universities (AACSB, 2011; Kidwell *et al.* 2013; Swanson and Frederick, 2005). This paper will explore the current climate of ethics education in financial planning in Australia, and make possible recommendations based on these results.

Approaches for teaching ethics

It has been argued that current business education presents a fragmented approach to ethics education with little emphasis on the best interests of society and other key stakeholders, but rather education focused on organisational success and increasing wealth (Giacalone and Thompson, 2006).

We teach students to perpetuate business' importance and its centrality in society, to do so by increasing wealth, and to assume that by advancing organizational interests, they advanced their own and society's overall best interests (Giacalone and Thompson, (2006, p. 267).

For financial planners, consideration of all stakeholders is required in order to align the interests of the organisation with those of clients, other businesses, and society at large. Furthermore, financial planners are bound by the best interests duty (Commonwealth of Australia, 2016) whereby financial planners are required to make decisions that are in the best interests of the clients. This brings forth the need for a well-developed sense of moral judgement and decision-making, relevant to financial planning. In order for students to achieve moral and ethical awareness, education institutions hold a responsibility to educate prospective financial planners throughout their development stages (Giacalone and Thompson, 2006; Langenderfer and Rockness, 1989; Isaksson, 1979).

The process of planning ethics education relies heavily on an idealisation that students are fully engaged and have the incentive to relate to the content. For individuals to fully engage in ethics education, they must first be willing to reflect on the process and engage with the various consequences of their decisions. It is therefore essential that the purpose of ethics is highlighted in its implementation to ensure students gauge an understanding of not just what they are learning, but why. Illeris (2009) further discusses that through this learning process, individuals should understand the functionality of the content through establishing a personal sensitivity. The implementation of ethics education has thus been widely discussed, with questions of whether an integrated method or stand-alone course should be offered (Campbell and Zegawaard, 2012; Slocum, Rohlfer and Gonzalez- Canton, 2013; Armstrong, 1993; Painter-Morland *et al.* 2016).

Sterling (2004), cited in Painter-Morland *et al.* (2016) identified a level of implementation known as 'capacity building', which transforms students from a rigid, theoretical perception of business interactions to the ability to effect change in a transformative social context. This development is further supported by Truscheit and Otte (2007), cited in Painter-Morland, *et al.* (2016) who argue for the collective importance of content and 'soft skills'. Painter-Morland, *et al.* (2016) adapted a table from Godemann *et al.* (2011), based on the work of Rusinko (2010), which summarises various approaches for implementing ethics into the curriculum and the challenges and opportunities it presents. Table 2 below shows these approaches to implementing ethics into the curriculum, with the additional approach of using a stand-alone unit and the inclusion of further scholarly opinions. It has been argued that sound pedagogy involves using a range of approaches with a stand-alone unit used as a cornerstone for integrating ethics throughout the course (Kidwell *et al.*, 2013). FPEC does not stipulate an approach for ethics education in financial planning but supports an integrated approach, with learning outcomes relating to ethics throughout the core knowledge areas of the curriculum.

Table 2: Approaches for implementation, challenges and opportunities in ethics education

Approach of implementation	Examples	Challenges or opportunities
Piggy backing	<ul style="list-style-type: none"> • Inclusion of visiting lectures by leading business people about CSR • Curriculum content on Business Ethics devised by ethics specialists • Add subject-specific financial planning knowledge to an existing module 	<ul style="list-style-type: none"> • May be viewed as supplementary • Relatively seamless integration • Focus on teaching students 'soft-skills' (Truscheit and Otte, 2007)
Digging Deep	<ul style="list-style-type: none"> • No change in the existing structure required • Use optional modules with a focus on financial planning 	<ul style="list-style-type: none"> • Unlikely to be selected (Baden, 2013) • May be perceived as an add-on (Holt, 2003)
Mainstreaming	<ul style="list-style-type: none"> • Integrate financial planning into common core requirements • Offering students placements within social enterprises or charities 	<ul style="list-style-type: none"> • Approach should go along with emphasis on a broader cross-curricular perspective ('soft skills') (Godemann, Herzig and Moon, 2011, Stibbe, 2009) • Provides a capacity to act on this knowledge (Campbell and Zegawaard, 2012)
Focusing	<ul style="list-style-type: none"> • Set up a new programme • New transdisciplinary module in all programmes 	<ul style="list-style-type: none"> • Can be included across the whole curriculum, adding interdisciplinary perspectives (Roome, 2005) • Business schools are too much focused on well-designed problems rather than 'messy' real-world problems (Schoemaker, 2008). • Internships would be beneficial to counter this

Table 2 continued

Approach of implementation	Examples	Challenges or opportunities
Stand alone	<ul style="list-style-type: none"> Unit solely focused on ethics education 	<ul style="list-style-type: none"> Lack of time (Maxwell et al. 2016;) Educators unsure of their own morals Perceived completion of ethics education (McCarthy, 1997), cited in Slocum, Rohlfer and Gonzalez-Canton, (2014); Mcdonald and Donleavy, (1995), cited in Jonson, McGuire and O'Neill, (2015) Jonson, McGuire and O'Neill (2014) showed that those completing a stand-alone course were more pragmatic and realistic than those undertaking integrated learning – attributed to its condensed nature

Source: Adapted from Painter-Morland et al., 2016 (as adapted by Godemann et al., 2011; based on Ruskino, 2010).

Challenges of teaching ethics

Ethics education should not intend to indoctrinate students with preconceived notions of ethics, but rather promote consideration of their own moral values and how they align with society's moral values. Campbell and Zegwaard (2012) argue that it is almost impossible to teach moral behaviours, but rather education should facilitate the exploration of the existing moral and value frameworks of students. Analysing the ethics of an individual is far less tangible than outcomes of literacy or numeracy. "Students need to develop as critical moral agents (actively making choices whilst critically evaluating their moral implications) whilst developing their understanding of professionalism and professional obligations" (Campbell and Zegawaard, 2012, p. 20). Ideally, this development is the overall aim of ethics education. Determining whether someone is merely aware of ethics or actually engaging in ethical practices, however, poses a challenge for educators and the profession itself. Education institutions need to divert from a 'banking model' of memorisation with little regard for context and promote consideration of the implications of the actions of an individual (Golub, 1993), cited in Moeller, (2005). Planning of ethics education should therefore coincide with the retention of information with regard to dilemmas financial planners will encounter within the workplace.

Langenderfer and Rockness (1989) identify three key challenges in teaching ethics; an ethical-legal dilemma, a philosophical-practical dilemma, and a moral-amoral dilemma. Central to the issue of ethics education is the application of this knowledge. Knowles (1977) identifies principles of adult learning in which their perspective of time shifts from postponed to immediacy of application of knowledge, and from subject-centredness to problem-centredness. If ethics is taught to financial planners from a philosophical point of view, students may fail to recognise the immediacy of application of this ethical reasoning, and thus limit their ethical awareness. Alternatively, a shift from subject orientated learning to learning through responding to real-life problems faced by the financial planning industry is needed. Slocum, Rohlfers and Gonzalez-Canton (2013) places an emphasis on the importance of ‘real-life’ examples of ethical dilemmas to ensure students are reactive to the nature of ‘practical reasoning’; supported by O’Boyle and Sandonà (2014); Campbell and Zegawaard (2012).

Further challenges arise for institutions with perceived barriers for the implementation of ethics within their courses. Golub (1993), cited in Moeller, (2005, p. 77), however, stated that “when one must cover items – and usually there are far too many items in the curriculum anyway to be covered adequately – one tends to focus on teaching content instead of teaching students.” These obstacles to the application of ethics within financial planning courses are further outlined in Table 3.

Table 3: Results of perceived ‘institutional obstacles to implementation’ of ethics education

Obstacles	Supporting scholars
Lack of time in program schedules	Maxwell <i>et al.</i> (2016); Gandz and Hayes (1998); Golub (1993), cited in Moeller, (2005); Ketz (2006); Strong, Connelly and Forrow (1992); Diekema and Shugerman (1997)
Faculty members unavailable	Maxwell <i>et al.</i> (2016)
Financial resources unavailable to hire qualified instructors	Maxwell <i>et al.</i> (2016)
No established curriculum to follow	Maxwell <i>et al.</i> (2016); Mintz (1990), cited in Baetz and Sharp, (2004)
No financial resources available to develop new courses or curriculum	Maxwell <i>et al.</i> (2016)
Resistance from faculty	Maxwell <i>et al.</i> (2016); Strong, Connelly and Forrow (1992); Diekema and Shugerman (1997)
Resistance from administration	Maxwell <i>et al.</i> (2016)

Obstacles	Supporting scholars
Resistance from third-party trustee institutions (e.g. professional association)	Maxwell <i>et al.</i> (2016)
Resistance from students	Maxwell <i>et al.</i> (2016); Baden (2013), cited in Painter-Morland, (2016); Sims and Felton (2006)
Faculty members not qualified or confident in teaching ethics	Baetz and Sharp (2004); Gandz and Hayes (1998); Langenderfer and Rockness (1989); Park (1998); Ketz (2006); Strong, Connelly and Forrow (1992); Diekema and Shugerman (1997)
Lack of educational material available to educators	Baetz and Sharp (2004); Ketz (2006)

Source: constructed from the work of Maxwell *et al.* (2016)

Maxwell *et al.* (2016) found that 81 per cent of academic unit heads justified the lack of stand-alone courses to be the product of an integrated approach to ethics education. However, the extent to which ethics is being integrated within classroom learning in practise, and how closely educators follow the unit documentation is questionable. These barriers to implementation present challenges that need to be addressed in order to ensure financial planning students transition into the industry well equipped to deal with real-life problems ethically. It is important that there is an institutional commitment to teaching ethics within financial planning that is nurtured by students, educators and within the institution as a whole (Painter-Morland *et al.* 2016).

Bloom's Taxonomy

Bloom's taxonomy (Anderson and Bloom, 2001), is a well-established model for understanding levels of learning and can be used in developing learning outcomes for ethics. The taxonomy has been used in closely related disciplines such as accounting (Debreceeny and Farewell, 2010; Davidson and Baldwin, 2005), economics (Karns, Burton and Martin, 1983), human resource management (Brewer and Brewer, 2010) and marketing (Warren, 1992).

Bloom's taxonomy, as revised by Anderson and Bloom (2001), consists of six major levels of learning: remember, understand, apply, analyse, evaluate, and create. Figure 2 shows a visual representation of these 6 levels in the form of a pyramid. The foundation of learning – 'remember', is at the bottom of the pyramid, and involves recall, associated with definitions, lists, identification, and matching (Davidson and Baldwin, 2005). For example, learning outcome 1 in Table 1 requires the learner to "Describe the Australian legal framework...and ethical responsibilities."

The second level in the taxonomy is 'understand'. This includes the ability to classify, describe, discuss, explain, identify, locate, recognize, report, select or translate (Armstrong, n.d.). For example, learning outcome 3 in Table 1, "Identify and understand ethical considerations".

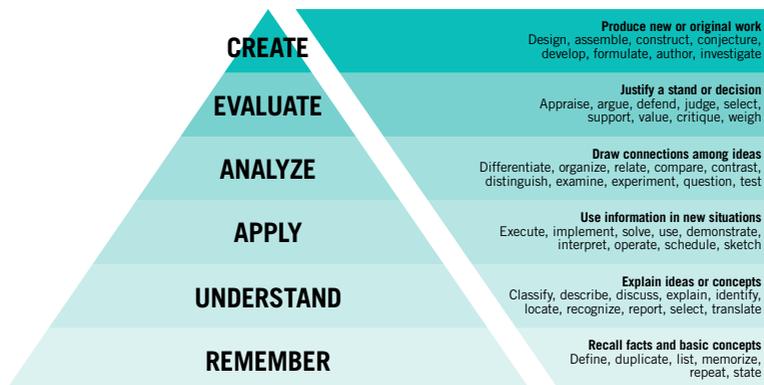
The first two levels of the Bloom's taxonomy pyramid tend to be associated with lower levels of learning or what is referred to as 'surface learning' where students are able to simply memorise learning materials and accept the ideas and information given without question (Entwistle and Ramsden, 1983). Learning activities that require learners to use new information in new situations to execute, implement, solve, demonstrate, interpret are associated with the third level of learning which involve 'applying' knowledge. For example, learning outcome 6 in Table 1, "Apply the 6-step financial planning process...".

'Analyse' is the fourth level of the hierarchical pyramid, involving the ability to connect ideas, and distinguish between differing arguments, facts or opinion. In order to analyse, the student must first have the knowledge of the previous three levels. Moving up the pyramid, the levels of learning comprise a deep approach which is associated with comprehension and the ability to relate ideas and use evidence (Beattie, Collins and McInnes, 1997).

The next level of the pyramid is 'evaluate' which is a higher level of learning requiring the learner to be able to justify a position based on judgement and critique. 'Create' is at the top of the pyramid, representing a deep level of learning where learners are able to synthesise material and create or formulate a solution to a unique problem, such as the construction of a statement of advice for a client (see learning outcome 2 in Table 1).

Bloom's taxonomy shown in Figure 2 below illustrates a separation of the complexities of verbs, and the extent to which they promote a superficial or in-depth level of learning. Three of the seven learning outcomes in Table 1 are at the 'create' level, with the assumption that FPA accredited courses promote a deep-level of learning.

Figure 2: Bloom's Taxonomy



Source: Armstrong, P. (n.d.), 'Bloom's Taxonomy', Vanderbilt University Center for Teaching, accessed 11 January 2017 from <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>

Methodology

Sample Selection

The sample for this research includes all institutions offering Financial Planning Association (FPA) accredited bachelor and postgraduate degrees from 2016 onwards, as listed in the '*CFP® Certification Program: Approved Degree List*' in October 2016 (FPA, 2017). The exception is degrees from the University of New England that are currently on teach-out and degrees from Curtin University where no publicly available data was available. This scope allowed for the analysis of degrees which have achieved FPA approval; an accolade and benchmark within the industry. To hold an FPA approved degree, universities must adhere to a strict set of guidelines for the teaching and delivery of these financial planning courses.

After excluding the degrees from University of New England and Curtin University (refer above), the sample included 17 courses (11 undergraduate and 6 postgraduate) across 11 institutions. A total of 279 undergraduate units and 80 postgraduate units formed part of the initial sample, with most undergraduate courses comprising of 24 units (other than double degrees) and postgraduate courses comprising 12 or 16 units.

Data Collection

Data was collected for each sample from publicly available information. This was achieved by accessing institution websites to obtain information about their course requirements (see Appendix 1 for institution details). Data was collected from December 2016 – January 2017. The 'learning outcomes' of the units in each approved course were most frequently available from institutions, while some provided a brief description of the unit. The learning outcomes were used to determine if ethics was incorporated in the unit along with the description of teaching activities.

Data Analysis

A content analysis was conducted to examine the units within the FPA accredited courses. A spreadsheet was used to record the units required within the courses; indicating the stage (the level of study in which the unit is to be completed), the type of the unit (e.g. core, major or professional elective required to satisfy FPA accreditation), and whether or not it included ethics. The classification of the units within these degrees proved difficult with varying amounts of information available to the public to determine whether the units were inclusive of ethics education. For this reason, units noted as including ethics are only those that undeniably possess ethics within their learning outcomes. This was determined in a number of ways:

- Analysis of the learning outcomes of the units to determine those that could possibly include an ethical component. This resulted in an initial list of 66 learning outcomes (51 undergraduate and 15 postgraduate) for review.
- Analysis of the learning outcomes that contain the word 'ethics'.
- Analysis of the learning activities to determine the coverage of ethics.

- Classification of each unit to determine if it was a ‘stand-alone’ (S), integrated (I) or undefined (U) ethics unit.
- Categorising the stage (year of study) that each ‘ethics’ unit was taught.
- Classification of ethics units as core, major or elective units.

Further analysis of these outcomes was conducted of the units which included ethics, using Bloom’s Taxonomy. Codes were applied based on the relevant level of learning that units represented as reflected in Bloom’s Taxonomy. These results were then collated into tables in Microsoft Excel and analysed using mathematical calculations to obtain descriptive statistics and frequency distributions.

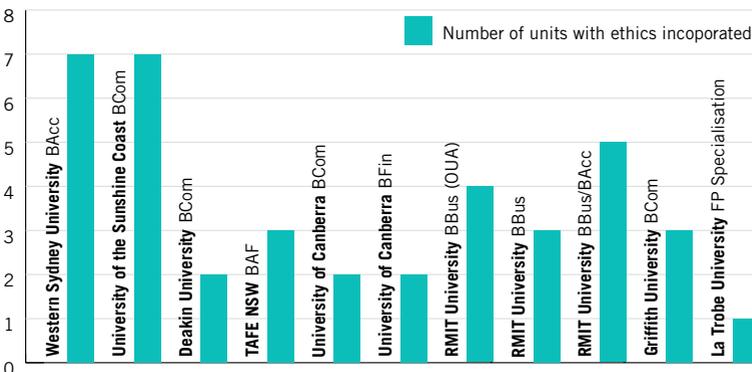
Results / Discussion

Analysis of the FPA undergraduate and postgraduate degrees across institutions provided valuable insight into the current climate of ethics education in financial planning. The findings are presented and discussed below.

Bachelor degrees

The extent to which FPA accredited bachelor degrees at 11 institutions in Australia have incorporated ethics education is shown in Figure 3. There were a total of 39 units that incorporated ethics. Of these 39 units, 23 were core units, 15 were major units and one was a professional elective unit.

Figure 3: Comparison of the presence of ethics in FPA accredited bachelor degrees (2016/17)



Note: based on publicly available information

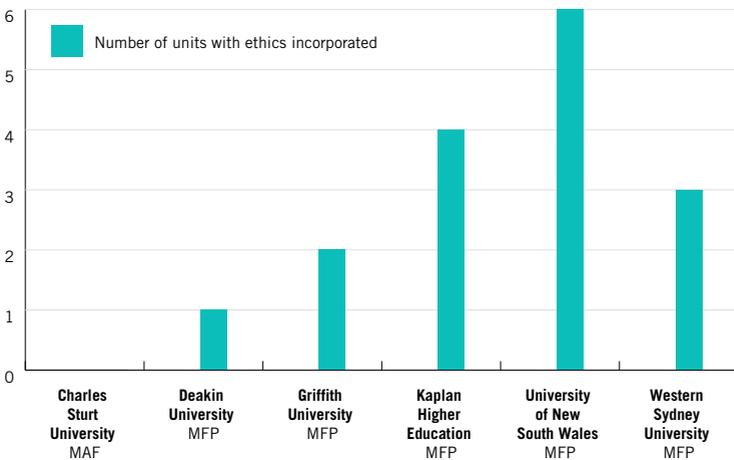
Western Sydney University and the University of the Sunshine Coast possess the most units (7) within their degrees that include ethics in their learning outcomes. Holistically, the bachelor degrees have on average 3.55 units with ethics (14.8% of a standard 24-unit degree with ethics).

La Trobe University was accredited based on their financial planning specialisation with any bachelor degree. As a result, the level of ethics provided to students undertaking a full degree with this specialisation was unable to be determined as it is highly variable. This information, however, does satisfy FPA accreditation, despite only having one unit clearly showing as inclusive of ethics. Furthermore, RMIT University's Bachelor of Business/Bachelor of Accounting has more units available to offer ethics than the single degrees and offers 5 units including ethics, with four of these as major units but in total, this is a proportionally lower number of ethics units than if it were a single degree.

Postgraduate Degrees

There were 16 units overall in the postgraduate course offerings that included ethics. This averaged out at 2.67 units of ethics for each FPA accredited postgraduate degrees, slightly lower than the bachelor degrees. Results, however, indicated on average 19.1 per cent of the postgraduate degrees were inclusive of ethics, greater than that of the bachelor degrees (14.8%). Figure 4 displays the presence of ethics within units of FPA accredited postgraduate degrees, with the University of New South Wales possessing the most units with ethics (6), and Charles Sturt University not showing evidence of any ethics within their units (0).

Figure 4: Comparison of the presence of ethics in FPA accredited postgraduate degrees (2016/17)

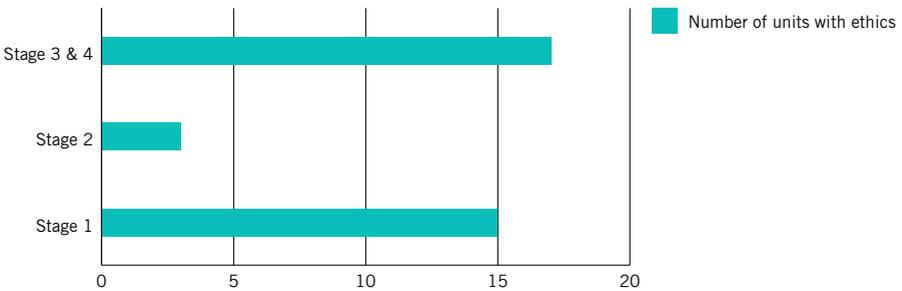


Note: based on publicly available information

Ethics units by stage of study

Units from all accredited bachelor degrees containing ethics were analysed by stage of study of an equivalent full-time student load (EFSTL) with stage 1 = first year, stage 2 = second year and stage 3 and 4 = third and fourth year (stage 4 was only relevant to the double degree, ‘Bachelor of Business (Financial Planning)/ Bachelor of Business (Accountancy)’ at RMIT University). Significantly more units with ethics were found to be at stages 1, 3 and 4 while learning outcomes in stage 2 units lacked ethical components. Figure 5 below shows that only three of the total 39 units that included ethics were taught at stage 2, with the largest number (15) at stage 1. Combining stages 3 and 4 show a greater concentration of ethics taught at the later stages of study (17). The stage for four units was not able to be determined from the publicly available data and omitted from figure 5. In addition, the stages for units in postgraduate courses were unavailable and/or flexible.

Figure 5: Number of units within FPA approved bachelor degrees with ethics by stage.



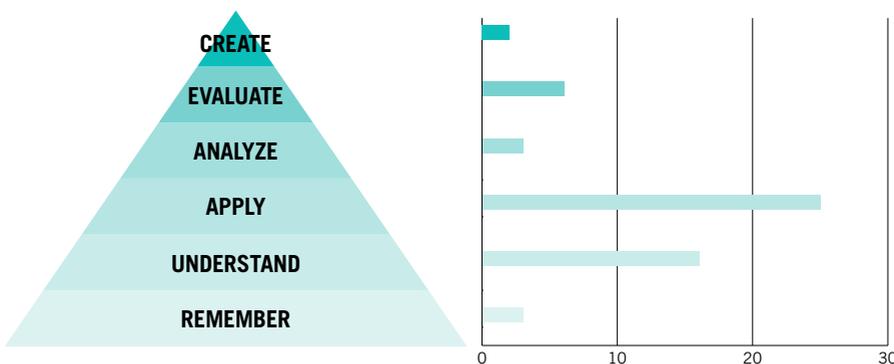
Note: Four units that were undefined were omitted from this graph. Postgraduate data excluded as data was unavailable.

These findings are comparable to an Australian study conducted by Davidson, Garton and Joyce (2003) which found that less than one quarter of the syllabi identified ethics in the first half of a degree and ethics was included in over 90 per cent of cases in the later part of the degree. The current study also found a greater focus on ethics within the later stages of study (stage 3). In considering student capacity to retain information and shape their opinion, is expected that stage 1 would provide a conceptual understanding of the content. This may be too early to heavily introduce ethics for students who are gaining an introductory understanding of financial planning. Later stages, however, provide the perfect opportunity to densely incorporate ethical considerations into students learning, as they already have an understanding of the topic and thus can be shaped by ethics education.

Bloom's Taxonomy and learning outcomes

Figure 6 shows the level of Bloom's taxonomy for learning outcomes containing ethics that were found in FPA accredited courses. Findings revealed the learning outcomes across all FPA accredited courses (both undergraduate and postgraduate) containing an ethics component to focus on the 'apply' level of Bloom's Taxonomy (25), while very few (2) were at the top of the Bloom's Taxonomy pyramid ('create') and only 3 at the bottom or foundational level of the pyramid ('remember').

Figure 6: Bloom's Taxonomy analysis for FPA approved degrees



In Bloom's taxonomy 'apply' means to use information in new situations. In the context of teaching ethics, this only moderately promotes an understanding of the application of ethics and its integration into decision-making. A more appropriate learning outcome would target students needing to justify a stand or position – to 'evaluate'; or produce new or original work – to 'create' (Armstrong, n.d.). This could also include an evaluation of 'real-life' financial planning scenarios. The learning outcomes from the FPEC requirements (seen in Table 1) set the standard for accredited institutions to incorporate ethics into their degrees. While the FPA accreditation requirements include three out of their seven ethical outcomes at the 'create' level of learning, it was found in this study that only two ethical outcomes from all institutions examined were at this level, falling short of the higher level learning expected by the FPA standards. The remaining outcomes required an 'evaluate', 'analyse' and two 'apply' levels of learning. Our study has shown that there are, however, universities complying with this aspect of the FPA accreditation with the greatest number of units (25) at the 'apply' level. In order to improve the level of ethics education so that it encourages deep learning and the ability to formulate and justify a moral stance, a collaborative effort from universities and professional bodies is needed. Such collaboration should involve not only the standard setting process but also the compliance and maintenance issues surrounding the teaching of ethics in financial planning courses.

Limitations / Opportunities for further research

As this study is based on publicly available information, there is the chance that ethics is being included in courses but not captured by this study because the level of detail is not publicly available. Thus, while this study is important in identifying explicit teaching of ethics, further research involving detailed discussion with educators who are incorporating ethics education would be beneficial.

Throughout the process of the content analysis, there were free-elective units offered as part of Financial Planning Association's (FPA) accredited courses. This brings forth complications in analysing the true extent to which ethics is integrated within the courses as there are optional stand-alone ethics courses. Baden (2013), cited in Painter-Morland, et al. (2016), however, states that despite having these available, they are unlikely to be selected by students. This discrepancy provides further support for the integration of ethics education into compulsory units for financial planning courses. Ethics is not an option for practising financial planners, and nor should it be for those learning the profession. An opportunity exists for further research into elective units provided by universities and the enrolment rates for stand-alone ethics units.

Hesitation arises in teaching ethics with concerns that educators are not being trained in ethics, or that they are not certain of their own moral stances (Langenderfer and Rockness, 1989). Park (1998) proclaims that for business ethics education to be effective, business ethics educators need more training. Further research on this topic by the authors in the second phase of this research will provide greater insight into who is responsible for planning the curriculum and their level of qualification to do so (as questioned by scholars in Table 3).

Furthermore, the extent that classroom teaching in practice follows the guidelines outlined in course and unit documentation is also in question. Further research is required to assure what is taught in practice.

Conclusion

The results presented show much room for improvement when it comes to ethics education in financial planning degrees. Although efforts from some institutions can be seen, overall there is a need for ethics to be incorporated at a higher level that allows for a deep level of learning and the formulation of sound ethical advice. Financial planners hold a key responsibility to work ethically for all stakeholders, who often have competing interests. It is for this reason that students' awareness of ethical issues within financial planning be further developed through the implementation of ethics across the curriculum. With new legislation requiring financial planners to be degree qualified, and to abide by an approved code of ethics, this study proves valuable in highlighting gaps within the current climate of ethics education in accredited financial planning courses in Australia. Through ethics education, institutions hold a responsibility to prepare future financial planners to serve in the best interests of their clients and make a positive contribution to society.

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COMMUNICATION TASK DIFFICULTY IN INVESTMENT RISK PROFILING: A LINGUISTIC PERSPECTIVE

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ARTICLE INFORMATION

Article History:

Submitted: 31 May 2017

Revision: 11 September 2017

Acceptance: 1 November 2017

Key words:

Financial planning, risk profiling, communication task difficulty, discourse analysis

ABSTRACT

This paper reports a preliminary study of one Australian financial planning firm's investment risk profile questionnaire, and how it was used by planners in consultations. Five authentic 'one-issue' telephone-based consultations which were audio-recorded for quality control purposes have been analysed by the researcher using applied linguistic theory to investigate communication task difficulty. The theory proposes three key factors as contributing most to communication task difficulty: (1) language code complexity; (2) cognitive complexity of task; and (3) communicative stress. The paper explicates how these three factors are implicated in, and can impact the determination of, a client's investment risk profile.

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Introduction

Applied linguists have studied the factors that contribute to difficulties for language learners in performing communication tasks. Interestingly, their theories are also highly relevant to, and instructive for, other contexts such as professional/client interactions. This paper reports preliminary exploratory research that demonstrates how the language used by financial planners in telephone-based interactions can impact on their clients, and what they can do to minimise difficulties related to communication tasks. The data are part of a study investigating the discourse of telephone-based financial planning consultations (Moore, 2013). The goal is to raise awareness of language use in the professional practices of financial planners in order to improve their communication skills and enable better outcomes.

In telephone-based financial planning consultations there are several 'critical moments' (Candlin, 1987) in which what is said next will have a significant impact on the direction of the ensuing interaction: certain options open up, while others are closed off. Accordingly, such critical moments pose a considerable challenge to the communicative resources of the participants. Critical moments common to consultations concerned with investment choice occur in three key phases of the consultation: (1) determining the client's needs at the outset¹; (2) determining the client's investment risk profile; and (3) determining what follow-up service would be relevant for the client. Any miscommunication or misunderstanding at critical moments in any of these phases could lead to serious long-term financial consequences for the client. This paper will focus on communicative difficulties arising from point (2), the task of evaluating a client's risk profile, through a linguistics-informed discourse analysis.

The reality of inappropriate risk profiling is reflected in advice from the Financial Ombudsman Service cited by Hunt (2016, p.51), that "70 per cent of the cases that are escalated through them are because of inadequate or incorrect risk profiling of the client (FOS, 2015)". And, as Hunt further notes, "Financial planners need to establish ethics at the core of their business practices, and the greatest opportunity for this right now, is the risk profiling process..." (p.59). As risk profiling is realised through language, an investigation of the language used in risk profiling is fundamental to better understanding the process. This paper draws on authentic data collected from telephone-based consultations between financial planners and clients. The clients are referrals by an Australian superannuation fund to its contracted financial planning firm. The data analysis will show exactly what contributes to making this task communicatively difficult for clients, and then provide recommendations for financial planning service providers and planners on how to adjust their professional practices in order to mitigate some of these difficulties for the benefit of their clients. In the following sections, risk profiling in financial planning is reviewed; the link between risk profiling and linguistics is introduced; the methodology of the current study is presented; how financial planners use questionnaires in risk profiling is outlined; the risk profiling data are analysed; recommendations for financial planning firms and planners are suggested; and concluding comments are given.

¹ See Moore (unpublished) for an investigation of this issue.

Risk profiling in financial planning

This section reviews literature on risk profiles, risk tolerance, regulation and risk assessments, and risk tolerance questionnaires, all which will help to contextualise the present study.

Risk profile

Working out a client's appetite for risk is an essential role for financial planners in determining appropriate asset allocations for investment decisions. A client's risk profile is "broadly defined as a person's emotional and financial capacity to take on risk" (Brayman, et al. 2017, p.71), and it is assumed to comprise both objective and subjective attributes having relatively stable parameters.

Objective factors are those elements that can be measured quantitatively. Examples include an individual's capacity to incur financial losses and the time horizon associated with the accomplishment of a financial objective. Subjective factors include concepts such as risk perception and risk preference, both of which are based on a client's idiosyncratic evaluations of the riskiness of a situation or choice. Historically, financial advisors have emphasised objective attributes of a client's risk profile when making investment recommendations. (Brayman, et al. 2017, pp.72-3)

In surveying the ways a client's risk profile can be measured and assessed, Brayman, et al. 2017 (pp. 75-76) found that there are three 'marketplace' approaches in common use among financial advising firms and their planners: (1) a comprehensive risk profile tool providing objective and subjective questions, which is psychometrically designed and adapted to match each financial adviser's need; (2) subjective risk tolerance questionnaires which are psychometrically designed to measure a client's willingness to take financial risk; and (3) an asset allocation calculator based on subjective and objective measures, and designed ad hoc by financial consultants or in-house within a financial advising firm. This third model is an economic approach based on income and investment gamble preferences and adviser experience. Brayman, et al. (2017) note that while the first two approaches provide a platform for further relevant discussions with the client before finalising their risk profile, the third approach provides a single-step solution with minimal professional judgement input by the adviser. One-issue telephone advice, as we shall see in the data analysis below, fits the criteria of this third approach.

Risk tolerance

'Risk tolerance' is the term most widely used by financial advisers when talking about client risk taking (Nobre and Grable, 2015, p.19) and refers to "an individual's willingness to engage in a financial behaviour in which the outcome is both unknown and potentially negative" (Brayman, et al. 2017, p. 75. As Nobre and Grable (2015, p. 19) note, "accurately measuring financial risk tolerance is the most important task a financial adviser faces when thinking about risk profiling". However, it is often unclear which aspect of risk a planner is actually dealing with. Nobre and Grable (2015) systematically address the issue of confusion surrounding risk terminology (i.e. the interchangeable and/or inconsistent use of terms such as risk tolerance, risk preference, risk need,

and risk perception) and provide clear definitions of each type. Moreover, they integrate risk profile parameters (i.e. risk composure, capacity and preference) with a model of financial risk taking behaviour (i.e. risk profile, perception and need which directly influence risk tolerance which in turn leads to risk behaviour) resulting in improved clarity for financial planners trying to make sense of the various terms and how they are related to one another.

Regulation and risk assessments

In parallel with confusion clouding a clear understanding of financial risk terminology is some confusion regarding the regulatory demands on financial planners in relation to how they handle a client's risk profiling and risk tolerance assessment. According to Brayman, et al. (2017, p.72), nearly all advisory regulators worldwide have refrained from prescribing how financial advisers should measure and evaluate a client's risk profile and/or risk tolerance. The reason for this is that

...nearly all worldwide advisory regulators already place a professional responsibility on financial advisory firms and advisors to gauge a client's risk profile...even those [regulators] with the most prescriptive guidelines...use a principles-based approach that requires the advisor, dealer, representative, or financial advisory firm to determine how a client's risk profile should be assessed. (Brayman, et al. 2017, p.72)

Thus the fiduciary duty placed on financial planners to put their clients' interests first would appear to include conducting an appropriate risk tolerance assessment. Such assessments are commonly performed in whole or in part by means of a questionnaire instrument, the topic of the next section.

Risk tolerance questionnaires

The first published risk tolerance questionnaire dates back to 1984 (Droms and Straus, 2003). MacCrimmon and Wehrung (1986, p.65) note the relative advantages of a questionnaire instrument compared to other assessment instruments: (1) they exclude any subtle influences in the assessment by the assessor (although this is perhaps only true for written-mode instruments and not spoken-mode ones, as we shall see in the data analysis below); and (2) they provide flexibility to concisely include a range of complementary question items. In subsequent breakthrough research in risk evaluation, Grable and Lytton (1999) presented a model risk assessment instrument in the form of a questionnaire comprising 13 items in a multiple choice format. The authors detail the development of the questionnaire, including verification of its validity and reliability, and propose that it form the basis for creating an index that could be widely accepted in the field of financial planning.

Subsequent reports of further validation studies of their instrument support its continued usability as a sound measure for determining a client's risk profile (Grable and Lytton, 2003; Kuzniak, et al. 2015) and its wide uptake amongst consumers, financial advisers and researchers (Kuzniak, et al. 2015). This questionnaire has a positive correlation with the widely used yet unsophisticated Survey of Consumer Finance (SCF) risk assessment item, and adheres to requirements suggested by MacCrimmon and Wehrung (1986) that the instrument (1) cover a variety of risky financial

situations in a multidimensional manner; (2) be consistent and non-redundant; (3) be interesting; and (4) not be too time consuming to complete. Yet, despite its validity and reliability, the Grable-Lytton questionnaire has not been universally adopted; many financial advising firms and planners seem to demand more flexibility and seek bespoke instruments that they feel are better suited to their individual needs.

Risk profiling and linguistics

Linguistics, the study of language, can inform the task of risk profiling in ways unlikely to have been considered by financial planning researchers or practitioners, but which stand to improve current professional practices. Skehan (1996, pp. 52-53), drawing on the work of Candlin (1987) and Nunan (1989), proposes that three key factors contribute most to communication task difficulty: (1) code complexity (i.e. concerned with grammar and vocabulary difficulty and range); (2) cognitive complexity, affected by cognitive processing and cognitive familiarity; and (3) communicative stress, including time pressure, stakes (i.e. high versus low), and the control a person exercises over completing a task. The research reported below shows how a linguistics-informed perspective can benefit telephone-based financial planning consultations.

Table 1: Overview of Five Client Profiles

Financial Planner	Client	Gender	Age	Income p.a. \$	Super balance \$	Duration of consultation (mins/secs)	Duration of risk profiling portion (mins/secs)
1	A	F	56	24,000	117,000	18.10	7.35
2	B	F	42	31,000	27,000	32.55	5.50
3	C	F	20	N/A	5,000	43.10	16.00
4	D	F	31	N/A	27,000	33.45	9.45
5	E	M	59	35,000	37,000	16.30	4.30

The five recordings were professionally transcribed by a third party and then the transcripts were checked for accuracy and completeness by the researcher. Some adjustments were made wherever errors were noted (e.g. un-deciphered words; misheard words; misallocated turns). Each consultation covered a range of topics but the risk profile assessment activity was the object of study for this research. The researcher used various linguistic theories related to communication task difficulties (detailed below) to analyse the discourse of the risk-profiling segments within each of the five consultations.

How financial planners use questionnaires in risk profiling

As noted above, financial advisers appear to use one of three main approaches to determine a client's risk profile. All three involve the use of an assessment instrument (often a risk profile questionnaire), which might typically be administered as follows:

1. Establish that a risk assessment is needed
2. Convey this information to the client
3. Provide a preview of how the assessment is carried out (i.e. by means of a written or orally administered multiple choice questionnaire)
4. Conduct the risk assessment (i.e. by giving the client a written questionnaire to complete, or by reading aloud the question items and optional responses, and recording the client's selected responses)
5. Convey to the client when the assessment has concluded
6. Provide the risk assessment result (i.e. client's risk profile) by reference to some predetermined scale
7. In the case of the first two approaches (i.e. comprehensive and subjective), use this risk profile as the basis for further discussions with the client; in the case of the third approach (i.e. the asset allocation calculator), recommend asset allocations on the basis of this risk assessment and the time horizon available to meet client-specified objectives.

The data investigated in the present study fall within the 'asset allocation calculator' approach, in which the risk profile questionnaire forms the basis of the client's risk tolerance assessment. Table 2 sets out the risk profile questionnaire used by the financial planners in this study².

Table 2: Investment risk profile questionnaire

Question 1: What experience have you had with investing in shares, bonds and managed funds which rise and fall in value over time?

- A Never invested
- B Held investments once or twice
- C I'm a regular investor and saver
- D I'm actively involved in the markets

Question 2: How would you rate your knowledge of investing?

- A Excellent
- B Fairly good
- C Basic, I know a little bit
- D I don't know anything about investing

² This script is imputed, based on the highest frequency usage among five planners in the researcher's dataset. The assumption is that where most planners use the exact same wording then this must be the scripted wording.

Table 2. continued

Question 3: Inflation can erode the buying power of your investments over time. How important to you is it to ensure your investments are protected from inflation?

- A Not at all
- B Somewhat important
- C Very important
- D Critical

Question 4: Investing requires choices about the level of return relative to risks. Which of the following investment options would you feel most comfortable with?

- A An average return of 6% per annum and little or no chance of a negative year
- B Average returns of 7 to 8% per annum and a chance of one negative year in a 10-year period
- C Average returns of 9 to 10% per annum and a chance of two negative years in a 10-year period
- D Average returns greater than 10% per annum and a chance of three or more negative years in 10

Question 5: How would you feel and react if your investments fell in value by 15% this year?

- A Distressed. You'd seek to sell the investment and get your remaining money back
- B Concerned. You'd look at what other options you may now have
- C Relaxed, as you're prepared to wait for markets and investments to rebound
- D Excited, as this may present new buying opportunities

Question 6: A risk-free rate of 4% might be appealing but it wouldn't be much good if your goals required a 10% return. Which of the following statements best represents your views?

- A Achieving my financial goal is paramount. I would put at risk all I have to achieve my goals
- B I would feel happier keeping what I have rather than achieving my goals
- C I would risk a small amount of what I have to achieve my goals
- D I would risk a large amount of what I have to achieve my goals

Question 7: If you are investing for retirement, please select the following answer which best describes your situation.

- A I have more than 20 years to retirement
- B I have five to 20 years until I retire
- C I'm within five years from retirement
- D I have already retired

Table 2. continued

Question 8: Which of the following timeframes best suits your financial objectives or retirement horizon?

- A Less than one year
- B One to three years
- C Three to seven years
- D Greater than seven years

In the following sections, the linguistic features of code complexity, cognitive complexity and communicative stress are introduced in turn, along with an analysis of the risk profiling data in relation to these three features.

Code complexity

In this section, code complexity of financial planning consultations will be considered as it pertains to three complementary aspects of discourse: vocabulary, grammar (spoken versus written English) and modes of talk.

Vocabulary

If planners or clients were asked which language issues make dealing with a financial planner difficult, both would likely mention financial jargon. This specialised vocabulary is salient and therefore easily detectable as an issue of potential importance in planner/client interactions. However, it is not simply a matter of knowing what a financial term such as “negative year” means³. There is also the matter of planners using terms that are interchangeable (synonyms) to them, but not necessarily understood as synonyms by their clients. For example, “investment choice”, “investment options” and “investment structure” might be understood by a client to mean three different things. Furthermore, there is the matter of words that have everyday meanings but also more specialised meanings in financial planning discourse. For example, “returns”, “risk” and “debt” (as in “debt asset”). Such terms may be taken for granted by planners, but pose considerable problems for clients who do not anticipate them and are unfamiliar with their specialised meanings.

Beyond the obvious issue of understanding vocabulary and common expressions used in financial planning consultations, there are less visible but equally important code complexity issues impacting on communication at the ‘higher’ meaning levels of grammar and discourse. Differences between spoken and written English are manifest and to some extent conflicting in telephone-based consultations, and hybridised modes of talk also complicate planner/client interactions. These will now be explained and exemplified from this study’s data.

³ The examples given throughout this paper are drawn directly from the five planning consultations.

Grammar: Spoken vs written English

It is important for planners to be aware that although English grammar is the same whether it is spoken or written, the patterns of spoken and written English are in fact distinctive (Paltridge, 2006; Gotti, 2011), and this can be consequential. Grammar can best be thought of as a 'meaning-making' system comprised of grammatical 'function' words (e.g. "the", "his", "by", "with" etc.) and 'content' (lexical) words (e.g. "invest", "shares", "markets", "value" etc.). It is the content words that carry explicit meaning in interactions, while the function words enable meanings to be made efficiently. One key difference between spoken and written English is shown by a ratio known as 'lexical density', which is simply the number of lexical words in a sentence divided by the total number of words (Ure, 1971, p. 445). Spoken English is typically less lexically dense than written language because the latter is more carefully crafted since there is usually more time to prepare what is communicated. When written language is spoken, as when a planner reads aloud from a risk profile questionnaire, there are comprehension consequences since its grammar makes it more difficult to process aurally (i.e. in listening mode) than by reading. In other words, language that a client might find comprehensible to read, could be much less comprehensible to them if they hear it rather than read it. So this issue becomes quite relevant when planners follow any sort of script by reading aloud. There are two key aspects to be considered: (1) has the task designer written the questions to be read or to be spoken? (see Example 1), and (2) when a planner speaks the script to the client, do they adhere closely (verbatim) to the script, or do they make modifications such that the script becomes more 'spoken' in nature? (see Example 2). These issues raise implications for how clients might be better prepared in advance for consultations with their planners, a point taken up in the Recommendations section of this paper.

Example 1.

What experience have **you** had with investing in shares, bonds and managed funds which rise and fall in value over time?

- A Never invested
- B Held investments once or twice
- C I'm a regular investor and saver
- D I'm actively involved in the markets

The question here (Question 1 from the risk profile questionnaire set out in Table 2) addresses the listener as "you", which is natural when asking someone a question. So, despite the question being read aloud from a written source, it is perfectly clear and accepted by the listener as 'normal' spoken language. The options, however, are not all consistent with the stem question, nor consistent with one another. Options A and B have omitted the subject of the question "you", so the listener *infers* it when hearing the planner ask the question. Thus, for option A, they infer "(you've) never invested"; and for option B ("you've) held investments once or twice". When the planner subsequently reads aloud options C and D, with their inclusion of a different subject, "I", this immediately generates a need for the listener to adjust their understanding of "I" as referring *also* to them, and not to the planner. The point being illustrated here is that the written form of

Example 1 causes no problem, but as soon as it is read aloud to someone who can only hear it and not read it, the inconsistencies of the grammar, innocuous though they may seem, increase the level of difficulty in processing and responding to the question.

Appendix 1 illustrates in detail the variation among five financial planners asking this same standardised question from the risk profile questionnaire. It shows that variation from script is common among the planners. Example 2 shows how one planner has modified a scripted question (Question 4 in Table 2) by inserting additional language (highlighted in bold). The additional language serves two purposes: (i) it makes otherwise formal language sound more informal, which helps build rapport with the listener; and (ii) it allows the planner to clarify and educate, as in the explanation given for a “negative year”. Taken together, these modifications are essentially converting written language to spoken language that is easier for the client to process.

Example 2.

FP: **So** question four. **I'd say** investing requires choices about the level of return **that's relative** to risk. **So** which of the following investment options would you feel most comfortable with, **and bear in mind when I provide you with the answers to these responses a 'negative year' actually means that your balance goes backward in value.** **So:**

- A **Would you prefer** an average return of 6% per year and a little or no chance of a negative year; or
- B Average returns of 7% to 8% per year and the chance of one negative year in 10; or... etc.

Spoken and written English also differ in other significant ways. While the common unit of analysis in written English is a sentence, in spoken English it is a clause (i.e. a unit that is typically smaller than a sentence, and often a constituent of a sentence). So, when we speak, we tend to use grammar that connects lots of clauses. When we write, by contrast, we use a more sophisticated or complex grammar that allows us to make meanings more efficiently, i.e. using fewer words. One common means of achieving this is the process known as ‘nominalisation’ (Halliday and Matthiessen, 2013), in which verbs in spoken English are changed into nouns in written English (e.g. “the rate at which inflation *grows*” becomes “the inflation *growth* rate”). This nominalisation process allows the packing of more information into each sentence (and, thereby, increases lexical density). Example 3 illustrates how nominalised statements have been used in the risk profile questionnaire in this study.

Example 3.

Question 4 (See Table 2)

“Investing requires choices about the level of return relative to risks.”

A non-nominalised rendition of this statement might be:

“When **you** buy investments, **you** need to make choices about whether **you** are comfortable to take higher risks for higher returns.”

The word count between the two versions is striking (11 versus 21), as is their lexical density (0.64 versus 0.52) respectively⁴. By including the “you” in the non-nominalised version, we can clearly see who is responsible for the action (i.e. the client as agent), which is hidden in the more condensed nominalised version.

Modes of talk

If we consider spoken English above/beyond the level of vocabulary or grammar we are talking about the ‘discourse’ level. At this level in spoken interactions there are different “modes of talk” occurring at different points in the interaction. Roberts and Sarangi (1999) identify three modes: institutional, professional and personal. For example, in financial planning consultations, some institutional talk always occurs near the beginning of consultations where the planner informs the client that the phone call is being recorded “to ensure the highest level of service” and seeks their consent to continue. This is standard institutional practice in the financial services industry. Professional talk is a different mode of talk in which planners display their knowledge or skills. For example, when a planner explains different investment categories such as “secure assets” or “growth assets”, they are speaking in professional mode. Personal talk features in professional/client interactions where the planner speaks as a friend. Example 4 illustrates this point as the professional voice of the planner is augmented by a personal comment about being in the same situation as the client (i.e. “people our age”), with reference to the compulsory 9% employer superannuation contributions.

Example 4.

FP: I’m just going to tell you how much you need to be working towards having in super at age 67 so that you can live off (\$)25,000 a year ... so a very basic income for your whole retirement life. Okay? It’s just to give you an idea of how it works. It’s not ... it’s not an exercise in scaring you or anything because **it was never going to work for people our age...** you just... **it never came in soon enough** but you need to have (\$)398,000 in super.

⁴ Lexical density calculations are 7/11 and 11/21 for nominalised and non-nominalised versions, respectively.

The common use of these different modes of talk leads to a hybridised discourse that is more textured and richer in meanings. The client expects the planner to engage in professional talk, after all, that is why they have sought the planner for advice. Moreover, the client also implicitly understands that there are institutional impositions on the talk, perhaps through regulatory requirements. And, the client anticipates that they are talking to a person who is interested in engaging with them in a friendly, less formal way. Depending on how skilfully these modes are executed by the planner, processing the blend of different modes of talk can present challenges that are more communicatively demanding than processing any single mode on its own. This is especially the case when a client is from a different language or cultural background since hybridised discourse patterns of this type may be quite unfamiliar to them.

Cognitive complexity

The second factor identified by Skehan (1996) as impacting on task difficulty in communication is cognitive complexity. This is comprised of two aspects: cognitive processing and cognitive familiarity. Where cognitive processing is simple/easy and cognitive familiarity is high, the cognitive load is relatively light and manageable for clients. By contrast, where cognitive processing is complex/difficult and cognitive familiarity is low, the cognitive load is relatively high and difficult for clients to manage.

Cognitive processing

Cognitive Load Theory (CLT) (see Sweller, 1988 and 1989) deals with the relationship between short-term “working memory” and long-term memory. CLT states that by using schema acquisition (i.e. learning how to structure relevant information to deal with a particular task) combined with automation (i.e. practising until the process becomes virtually effortless), people are able to learn and store information efficiently in long-term memory for future recall, and thus substantially reduce working memory load (important because working memory is much smaller than long-term memory). It is worth reflecting on the considerable gap between what financial planners understand about financial information and what average lay people know about it, as well as the substantial gap in their respective abilities to process financial information with ease and at speed. Although experts and clients converse in the same language (e.g. English) what is understood by each party in the same interaction can be substantially different.

Let us now consider some examples from the investment risk-profile task to investigate whether cognitive complexity for clients is low, medium or high in this task. The eight questions used by the financial planning firm to determine a client's risk profile (see Table 2) are all in a multiple choice question (MCQ) format (i.e. a statement/question stem followed by, in this case, four options to choose from). This question type is well-known and widely used in Australian schools and other organisations to assess a particular subject matter. Thus, the MCQ format is easily understood and poses no real cognitive processing challenge to clients. The content of MCQs, by contrast, is potentially difficult or even very difficult depending on the familiarity the client has with relevant information and their ability to process and evaluate it efficiently. For example, a client may understand the concept of inflation (see Question 3), but may never have experienced it other than at a very low rate. For them to contemplate a high rate of inflation is an abstraction, moving away

from their lived experience; and for them to contemplate how a high level of inflation might impact their retirement savings (which to many young people is a goal so far into the future as to be completely unreal) is itself a further abstraction. To process this information and evaluate their personal feelings about the scenario and reach a conclusion on which much of their future wealth could depend, all in the space of a few seconds, requires a very high level of cognitive processing. Accordingly, it is quite difficult.

Questions 2 and 4 (see Table 2) provide a stark contrast in their cognitive demands of short-term memory. The former is 24 words in total, including an average option length of 4.0 words. The latter, by contrast, is 101 words in total, including an average option length of 19.5 words. Coping with the latter is much more cognitively challenging. However, the repetitive structuring of Question 4's options illustrate how a schema works: if the client recognises the pattern of a rising rate of return being linked with a rising chance of a negative year, the focus can be on the numbers and not on all the accompanying verbiage.

Question 5 (see Table 2), which asks "How would you feel and react..." presents a different cognitive challenge in blending two questions and options with compound answers (e.g. "Distressed. You'd seek to sell the investment and get your remaining money back."). The first question is "How would you feel?" and second is "How would you react?". Rather than give the client the simple choice of answering how they would feel, the question also associates one reaction with each type of feeling. Thus, the coupling of option A, just mentioned, between 'distressed' and 'seek to sell the investment'. The client cannot be "distressed" and "look at what other options you may now have" because that reaction is part of option B. Recognising the closed sets for each option, therefore, requires more cognitive processing, perhaps even requiring the reconciling of somewhat mismatching couplets within each option set.

Example 5 illustrates the cognitive demands of a complicated question, and how a client has to process a lot of information, some of it illogically presented, before immediately deciding and reporting their strength of feeling towards achieving their financial goals.

Example 5.

Question 6 (see Table 2): A risk-free rate of 4% might be appealing but it wouldn't be much good if your goals required a 10% return. Which of the following statements best represents your views?

- A Achieving my financial goal is paramount. I would put at risk all I have to achieve my goals
- B I would feel happier keeping what I have rather than achieving my goals
- C I would risk a small amount of what I have to achieve my goals
- D I would risk a large amount of what I have to achieve my goals

This question is different from the other seven MCQs in the arrangement of its four options, which are out of sequence in terms of ascending or descending order. Also, option A alone has

a pre-option statement while the other options do not. (It seems to serve to emphasise the strong commitment being made by any client who selects this option). A very important issue arises from the sequencing of options A and B. They each refer to extremes of a continuum of risk tolerance: option A is the most tolerant of risk; option B the least. This juxtaposing here foreshadows that options C and D are either on a different continuum or are out of sequence for this same continuum.

The client's initial expectation prior to hearing the four options for Question 6 is that they would logically be presented sequentially in an ascending or descending order. However, when one processes the meanings of each option (given enough time and memory of what each option was) it becomes clear that they are out of sequence. If option A were placed last, then the whole series of options would be presented in ascending order of risk. Given that lay clients may need to be positioned to see solutions that are most likely to be in their best interests, one can perceive Question 6 as being a two-part question sequence. The first part comprises the two extremes of the highest and lowest risk-taking attitudes (i.e. options A and B), both of which are unlikely to be appropriate for the superannuation fund's clients; while the second part deals with more 'sensible' options, risking either a small amount (i.e. option C) or a large amount (i.e. option D). In other words, clients are positioned by the framing of Question 6 to answer with either option C or D. Should they select options A or B, the planner might well probe this choice further to ensure the client has properly understood its implications. The main point to be taken here is that from the client's perspective this MCQ is markedly different from all others and, as a result, more cognitively challenging.

Cognitive familiarity

Cognitive familiarity concerns the extent to which a task draws on ready-made or pre-packaged solutions already held in a person's brain by way of schemata stored in long-term memory. Risk profiling is easy for planners because of their familiarity with the concepts and their profiling questionnaire, which are practically second nature to them through schema acquisition and their practical experience of performing numerous risk profile assessments. However, for the client, who may never have thought much about how they perceive financial risk, the risk-profiling questionnaire might feel quite unfamiliar for the statements and options it uses to determine their appetite for risk. (They might actually prefer to discuss financial risk by other means, for example, by asking their own questions about various aspects of risk). This lack of familiarity means the task is cognitively more challenging and, therefore, more difficult for the client.

Communicative stress

The third factor contributing to communication task difficulty is communicative stress, which relates to the context of the communication, rather than the language used or cognitive processes involved. According to Skehan (1996), it comprises five aspects of context: time pressure; modality; scale; stakes; and control. Let us consider each of these by turn, and in relation to their impact on clients in financial planning consultations.

Time pressure

Time pressure, or the sense of urgency, is a key feature of telephone-based financial consultations. Clients are mindful that planners can only devote a limited amount of time to their needs; planners are under pressure to service as many clients as possible each day. In spoken interactions as opposed to written correspondence, everything takes place in 'real time'. Clients are under pressure to explain the reason for their contacting the planner, and then to process the information given by the planner, and ultimately to make decisions about their financial future, all within a period of about 30 minutes in one-issue consultations. Clearly, this pressure of time increases the stress of the interaction. Remarkably, the five clients involved in the investment risk profile assessment in this study all responded within a few seconds to each MCQ. How they did this (i.e. were they absolutely clear about each question and its options? Or were they sometimes guessing?) is unknown due to limitations in accessing them for subsequent interviews.

Modality

The modality of the interaction for financial planning advice is also an important feature of communicative stress. Listening to a planner is more stressful than reading a financial advice brochure. The client is dealing with unfamiliar content and being asked questions about matters they may never have given much thought to previously. If they do not understand something they may feel reluctant to query it to avoid losing face and sounding ignorant or foolish. They are positioned more as 'recipients' of knowledge rather than as collaborators or generators of knowledge, so a passive disposition works relatively well in questionnaire-based risk profiling interactions of this sort. Speaking to a planner is similarly more stressful than writing a message in an online dialogue box. The real-time interaction poses constant threats to a client's public face. In sum, the client's ability to process unfamiliar specialised financial information is cognitively challenging, and this is made more difficult if the mode is listening rather than reading.

Scale

Scale concerns the number of participants in an interaction and the number of different relationships involved. In telephone-based financial consultations, there are only two people directly involved, the planner and the client, so it is small-scale and the communicative stress is low in this respect. However, as most telephone-based planning takes place between strangers having no prior relationship, this can raise the communicative stress for both client and planner.

Stakes

The stakes involved in a communication task are also a potential source of communicative stress. The issue here concerns how important it is to do the task correctly. In the case of financial planning and in particular the determination of a client's risk profile, the stakes are very high. If the risk profile is incorrectly calculated, then there could be long term negative financial consequences for the client and possibly legal consequences for the planner, as noted by Hunt (2016). Thus, communicative stress is increased for the client who is aware that getting appropriate financial advice is a high-stakes event, and this is likely to be the case for most clients.

Control

The final aspect of communicative stress related to context is concerned with the issue of control, and the extent to which the participants in an interaction can exert an influence on the task or how it is done. As we have seen above, a financial planning firm's investment risk-profile questionnaire is a highly prescribed instrument and, therefore, not one which the planner or client can alter in terms of the task itself. In other words the planner asks set questions, and the client provides their answers by nominating one of four options. How the task is done does vary slightly from planner to planner, as exemplified in Appendix 1, where some planners embellish the questions by introducing additional talk which serves to make the task feel less formal, as shown above in Example 2.

Clients, for their part, have even less control over how the task is done since they are recipients of information rather than producers of it. Nevertheless, there is evidence of some degree of exercising control when clients answer the questions by reference to the wordings of an option rather than the option label (A, B, C or D). Example 6 illustrates this point by reference to one particular client in the dataset.

Example 6.

Client's responses to:

- Question 1: *None.*
Question 2: *Never considered.*
Question 3: *Oh, I'd say 'critical'*
Question 4: *The last one.*
Question 5: *Uhm, B.*
Question 6: *Uhm, I'd go on a sort of 50/50 there.*

These responses are substantially different from the options stated for the questions (see Table 2), but provide evidence of how the cognitive load felt by this client may have inhibited their short-term memory from storing the precise wordings of the various options.

Recommendations

It is now possible to outline some useful recommendations that address the 'so what?' question about the value of the linguistic analyses and the academic argument presented in this paper.

I. For financial planning service providers:

- Review investment risk profile questionnaires and adjust them for consistency within and between questions. The less variation, the easier it will be for clients to comprehend. Multiple choice question (MCQ) stems should use a common tone, and not switch between formal and informal; multiple choice options should only be listed in ascending or descending order and, preferably, not both; each MCQ should ask a single question, rather than conflate questions such as "how would you feel and react".

- Consider whether the MCQs could be made available to clients in written form in advance of the consultation, as this would enhance understanding and allow a client sufficient time to contemplate and revisit questions prior to the consultation.
- Review whether the questionnaire script should be read verbatim or allow for some variation when read aloud by planners. If some variation is acceptable, clarify the parameters.
- Review other scripted messages besides the investment risk profile questionnaire for clarity of grammar and vocabulary.
- Review planner professional development training practices to ensure that ongoing language awareness is integrated.

II. For financial planners:

- Always keep in mind that although planners and clients converse in the same language (i.e. English), what is understood by each party in the same interaction can be substantially different. The planner needs to be sensitive to what the client is saying or trying to say, particularly when they appear to misunderstand an issue.
- Anticipate any likely communication task difficulties prior to engaging in consultations with clients.
- Practise reading aloud written scripts in a naturally sounding speaking voice. (This may require some adjustments to the script, if this is permissible).
- Long MCQs should be flagged to the client in advance regarding their length, and they should be read twice to ensure the client has sufficient time to process and understand their distinctions.
- Avoid using evaluative language (e.g. “excellent”) in response to acknowledging a client’s responses to the MCQs as it may imply that although ostensibly “there are no right or wrong answers”, some are more favoured than others.

Conclusion

Investment risk profiling is central to the work of financial planners. Determining the risk profile of a client is a high-stakes task, made all the more challenging in one-issue telephone-based financial consultations which lack an ongoing (or preceding) engagement between a particular planner and client. In this context, it is typically a 30-minute relationship, and language, therefore, plays a very important role in how the business is conducted. Although this study’s sample of five risk profile assessments is small, and thus to some extent limiting, it is sufficient to show patterns of language usage that are problematic for clients, and some ways that planners can address them relatively easily if they are aware of potential difficulties in advance of holding their consultations. Financial planners are under more public scrutiny than ever and, as Hunt (2016) emphasises, the issue of ethics is core to the need to lift and maintain standards of conduct to the highest level of service. Understanding and being sensitive to the role of language in professional/client interactions is an integral part of this process.

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Appendix 1 – Actual performance of five financial planners asking MCQ 1

NB Variations from the standard script are highlighted in bold.

Financial Planner	Question 1 'stem'
FP1	Question one it's asking what experience have you had with investing in bonds and managed funds and shares which rise and fall in value over time? Is it:
FP2	The first question is what experience have you had with investing in shares, bonds and managed funds which rise and fall in value over time?
FP3	Question one. What experience have you had with investing in shares, bonds and managed funds [which rise and fall in value over time] personally?
FP4	So question one. What experience have you had with investing in shares, bonds and managed funds which rise and fall in value over time?
FP5	So [question one] what experience do you have of investing in shares, bonds and managed funds [which rise and fall in value over time]?

NB [] = part of expected scripted utterance has been omitted by the planner

Question 1 'options'

	FP1	FP2	FP3	FP4	FP5
A	Never invested	You've never invested	Never invested	You've never invested	[None*] Never invested. Okay.
B	Held investments once or twice	You've held investments once or twice	Held investments once or twice	You've held investments once or twice	-
C	[]A regular investor or saver; or	I'm a regular investor and saver; and	I'm a regular investor and a saver	You're a regular investor and saver; or	-
D	You are actively involved in the market[]	I'm actively involved in the markets	I'm actively involved in the markets	You're actively involved in the markets	-

NB [] = part of expected scripted utterance has been omitted by the planner. *The client here pre-empted the options by immediately stating 'none' in response to the stem question.

INSURANCE LITERACY IN AUSTRALIA: NOT KNOWING THE VALUE OF PERSONAL INSURANCE

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ARTICLE INFORMATION

Article History:

Submitted: 31 March 2017

Revision: 23 August 2017

Acceptance: 27 November 2017

Key words:

Insurance, financial planning,
financial literacy

ABSTRACT

Underinsurance and low financial literacy have been shown to be key issues impacting the effectiveness of personal financial management. Both issues are made more important by the complex financial system, an ever moving array of financial products and services, and the progressive move towards self-reliance in retirement. These factors suggest a greater degree of financial independence and more effective financial decision-making is required over the long-term, both of which may be undermined by low financial literacy and underinsurance. Little is known, however, about the impact of financial illiteracy on the propensity to seek and retain insurance.

Using an interview methodology, we obtained the views of informed and non-informed participants to examine insurance literacy in Australia. We find evidence that insurance literacy of consumers is generally low and exacerbated by factors such as low product knowledge, low trust of providers, low awareness of risk mitigation strategies, and behavioural decision-making biases. These factors can culminate in a perception of low value and subsequent underinsurance. Furthermore, this appears to be more acute for personal insurances as opposed to general insurances.

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Introduction

Financial literacy has attracted the attention of government, academia and industry as it is increasingly perceived as playing a vital role in consumers' financial decision-making in relation to retirement saving, investment, borrowing and the management of debt and insurance (ASIC, 2011). Financial literacy is seen as having a significant impact on long-term financial outcomes at the individual and community level. A key component of this is the variety of financial products available to consumers, and the growing superannuation savings for which more power has been given to consumers in terms of decision-making in relation to these funds (Bambrick, 2014). As the number of different financial products increases, so does the need for the general public to be knowledgeable about those products. However, it is often the case that not all groups in society have the necessary literacy to understand information about different financial products, which may be vital for their financial wellbeing (Gerrans, Clark-Murphy and Truscott, 2009). One such financial product is personal insurance. The types of personal insurance include life insurance, total and permanent disability cover (TPD), income protection (IP) and trauma cover.¹

The insurance industry in Australia has grown, and covers many types of insurances. The primary role of insurance is to help alleviate the financial burden caused by adverse events² by transferring losses of the individual to the insurance company (Scriven, 2008). The importance of this can also be seen when taking into account the economic cost of inadequate amounts of personal insurance. Kelly and Vu (2010) stated that in 2008, there were 6,540 deaths of married parents of working age (20 to 64 years) in Australia. This equates to 18 families per day losing an income-earning parent. In addition, the 2008 Household, Income and Labour Dynamics in Australia (HILDA) survey data suggests that 17,040 employed people aged 20 to 64 years (who were living as a member of a couple with children) had been unable to continue working due to illness, disability or injury over the previous year. This means an additional 47 families with children per day face both a health crisis, and the possibility of financial hardship. Such events can cause financial distress to those involved, and those who depend on them. Many of these people will rely on government disability payments, yet the extent to which publicly provided payments are sufficient or tailored to individual needs is questionable (Guest and Wilke, 2012). Personal insurance would potentially provide financial resources to support the claimant and/or their dependants. While this would not allay the physical or emotional impact of the event, at least the economic aspects of the situation may be mitigated.

1 For the purposes of this paper, personal insurance covers life insurances (except business expenses insurance) for individuals as opposed to general insurance which largely covers physical assets. Types of general insurance include house and contents insurance, motor vehicle insurance, business insurance. Life insurance – provides a payment to a beneficiary when the insured individual dies. TPD – a lump sum payment to the insured when he/she is totally or permanently disabled or has cognitive inadequacies. Trauma cover is paid to the insured when he/she is diagnosed with a traumatic medical condition, such as cancer, stroke, heart attack, etc. Income protection is paid to the insured when he/she is unable to work due to illness or disability.

2 Events include: premature death, terminal illness, inability to work due to injury or disability and total incapacity where policies provide income and capital replacement in the event of death, illness or injury to assist either the insured or the insureds dependants to avoid the circumstance where the family of the deceased person may find it difficult to meet those obligations and continue to enjoy familiar lifestyle.

Given the importance of insurance to so many Australians, it is of concern that there is persistent evidence of underinsurance. 'Underinsurance' refers to situations when there is a gap between the insurance level that is needed to provide a comfortable living after a loss event takes place, and the level that is actually available through insurance policies (Kelly and Vu, 2010)³. Even when examining the multiplier approach to insurance needs analysis – a very rudimentary form of needs analysis – such as that outlined by Scriven (2008), the insurance needs of average full-time working couples in their mid-thirties with young children should range from around 10 times to 13 times their taxable income; and then for full-time workers in their mid-forties with older children the range should be between six and nine times taxable income. This is, however, often not reflected in insurance rates with the TPD underinsurance level in Australia in 2015 estimated to be \$10,870 billion. Australians are also estimated to be underinsured by \$471 billion for basic life cover and \$3,435 billion for income protection (Rice Warner, 2015).

In terms of reasons for underinsurance, the Investment and Financial Services Association (IFSA) (2005) concluded that most people believed life insurance is too expensive, too complicated and a hassle to obtain, and preferred general insurance over personal. The IFSA note that many Australians insure their motor vehicles but fail to protect themselves or their families from accident, injury, disability or death. This preference for general insurance over personal insurance may reflect a greater value for physical capital rather than personal capital.

The aim of this research is to gain a greater understanding of the impact of financial literacy when it comes to personal insurance decision-making. It is argued that the more insurance literate a person is, the more likely he or she is to take an active and responsible role in considering the appropriate levels of personal insurance coverage (or seek professional advice to this affect). Using an interview methodology we investigate the drivers of insurance decision-making with a focus on insurance literacy. We find that the majority of people have poor knowledge of personal insurance with many not seeing the value and importance of those policies. We confirm the preference for general insurance, but highlight the resultant lack of trust and impact of behavioural decision-making biases. Therefore, this article contributes to both the insurance and financial literacy literature, and introduces the concepts of insurance literacy. We provide evidence of the drivers of insurance decision-making which is relevant to financial advisors, insurance product developers and regulators. The article also provides the foundation for further research into insurance literacy.

The remainder of the article is organised as follows. The next section provides an overview of the literature regarding financial and insurance literacy. We then outline the data and method used in this study, followed by the findings of the study in section four. The final sections provide suggestions for future research before the article concludes. It is argued that improved insurance literacy in relation to personal insurance could be part of the solution to the underinsurance problem.

³ The Insurance Council of Australia (2013) defines underinsurance as when a policyholder that does not have sufficient insurance to cover potential loss and thus cannot resume their same standard of living in the event of a crisis. For example, estimated coverage the average full-time workers in their mid-30's with young children require life insurance coverage equal to 10 to 13 times their annual pre-tax income, implying policy cover approaching three-quarter of a million dollars. Actual coverage of this group of citizens is around \$70,000 (Pulis, 2010).

Background Literature

To understand the context of the current study, below is a discussion about financial and insurance literacy, as well as the data available about underinsurance.

Financial and Insurance Literacy

Financial literacy is broadly defined by Australian Securities and Investment Commission (ASIC) as 'knowing how to make sound money decisions', and states that making good financial decisions is a core skill in today's world, because it affects quality of life, opportunities people can pursue, their sense of security and the overall economic health of society (ASIC, 2011). Furthermore, Worthington (2008) argues that financial literacy means different things for different people. For some people it is a broader concept, involving understanding of economics and how household decisions are affected by economic conditions and circumstances. For others, the concept solely focuses on budgeting, saving, investment and insurance (Hogarth, 2002). Furthermore, any definition of 'personal' financial literacy differs from the 'professional' financial literacy levels expected of directors and audit committee members (McDaniel, Martin and Maines, 2002; Worthington, 2006).

In the United States of America (USA) the Jumpstart Coalition for Personal Financial Literacies conducted a study on high school seniors (Hogarth, 2002). The study concluded that the level of financial literacy was low, and financial literacy varies across socioeconomic and demographic groups each year. Mandell carried out two surveys in 1999 and in 2008 and found that by 2008 financial literacy had declined since the 1999 survey (Mandell, 1999 and 2008).

Large scale surveys in the United Kingdom (UK) were conducted by Schagen and Lines (1996) and Schagen (1997), and concluded that that most people were confident with their financial affairs, though this was lower for some groups, especially single parents and to a lesser extent, students. Although financial confidence differs to financial literacy, they are often correlated.

Australia's first national survey of financial literacy was conducted in 2002, and found that 75 per cent of respondents had home and contents insurance, 57 per cent held private health insurance and 33 per cent held life insurance (ANZ, 2003). In 2005, another report found that 82 per cent of respondents held home and contents insurance, 79 per cent held comprehensive vehicle insurance, 60 per cent held private health insurance, 35 per cent held life insurance and 12 per cent held income protection insurance (ANZ, 2005). Only 51 per cent of respondents who held insurance stated that they were aware that they needed to disclose information accurately and if they failed to do so the insurance company has the right to decline their claim. Overall, it is suggested that even though levels of insurance were increasing slightly, that on average people have very poor understanding of their obligations about accurate and truthful disclosure with regard to insurance.

The findings of the third ANZ survey were similar to the 2005 report, with only 54 per cent aware that a claim could be refused if the policyholder did not meet their duty of accurate disclosure (ANZ, 2008). Similar results were also reported in the fourth ANZ survey with small increases in policy uptake and a further deterioration (to 47%) of respondents who were aware that a claim could be refused if they did not disclose all relevant information (ANZ, 2011). The fifth and most recent ANZ survey was conducted in 2014 and published in 2015, and found that 76 per cent of respondents held home insurance, 81 per cent held contents insurances, 88 per cent held comprehensive motor vehicle insurance, 58 per cent held private health insurance, 33 per cent held life insurance and 35 per cent held income protection insurance (ANZ, 2015). Only 42 per cent of respondents were aware that a claim could be refused if they did not disclose all relevant information, continuing the deteriorating trend in this item and indicating that people are becoming less aware of their responsibilities to disclose information accurately. Complicating this further, it was found that 79 per cent of respondents used a 'trial and error' approach to managing their finance and relying primarily on personal experience rather than quality information.

This previous research illustrates that while most people are familiar with simple financial terms and concepts, they are not always able to understand more difficult issues involving investments, superannuation, retirement and insurance. In the past the focus has been on superannuation, investments and general concepts of financial literacy, with comparatively little detailed consideration of insurance. It can also be seen throughout the surveys that insurance coverage was high for general insurance, with little attention paid to life insurance and income protection, while trauma and total and permanent disability insurance was rarely investigated. This could suggest that awareness and understanding of personal insurance is low, leading to low take up of it.

Looking at decision-making from a theoretical perspective, the classical model assumes that human beings are rational and will make decisions which will maximise their long-term worth and financial wellbeing (Tversky and Kahnemann, 1986; Simon, 1955). The person deciding whether or not to buy insurance analyses the options in terms of the expected utility and chooses the option with the largest utility (Mitchel and Holzworth, 2005). Maximisation of expected utility is an essential tool in decision-making (Lindley, 1985). As stated, classical theory assumes that all decision-makers are rational, but in reality people are not always rational and as a result do not always make rational decisions (Kahneman, 2003). Therefore, it was suggested by behavioural finance that the insurance decision-making process has not been explained adequately in traditional neoclassical economic theories. It is behavioural economics which provide some insight about the decisions regarding whether to buy or not to buy insurance products (Laury and McInnes 2003; Tversky and Kahneman, 1991). Behavioural economics helps explain the decision-making processes of those individuals who can act non-rationally in terms of neoclassical economics. One theory in behavioural economics is prospect theory, which was developed by Tversky and Kahneman (1992). It is an alternative to classic utility theory. In formulating cumulative prospect theory, Tversky and Kahneman (1992) note that the probability weighting function is not well-behaved near zero. While probability weighting allows for overweighting of small probabilities, very small probabilities appear to be either "rounded down" to zero or greatly overweighted (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992; Laury, McInnes and Swarthout, 2009).

Behavioural finance literature also identifies that decision-making processes can be subject to biases and non-rational outcomes (Kahneman and Tversky, 1984). Insurance purchase decisions are no different, with overconfidence bias evident⁴. When individuals are overconfident and too optimistic, they are less likely to assess the risks fully and as a result will leave themselves exposed to risks. They are also unlikely to take out any preventative strategies, such as insurance, to protect from risks, especially low-probability, high-impact ones (Trevelyan, 2008).

A key tenet of behavioural finance is that individuals lack an adequate understanding of probability and risk concepts (Kahneman and Tversky, 1984). As a result, people can be scared of an event more than of the potential financial and emotional impact of the event (Shanteau, 1992). In the case of insurance, the decision to purchase may not be driven by the impact of the potential loss, but the frequency with which the loss is likely to take place (Kunreuther, 1978). As a result, people have a tendency to pay much for insuring themselves against high-frequency risks even if financial impacts are low (eg. general insurance events), whereas they fail to insure against low-frequency risks, but with high financial impacts (eg. personal insurance events).

Underinsurance

Underinsurance is a very real issue in Australia. For example, while many Australians may have some level of life insurance cover in their superannuation fund (ANZ, 2015), default levels are often considered inadequate, potentially leading to greater reliance on government support (ANZ, 2015). A Rice Warner report also states that the median level of life cover held in superannuation meets about 61 per cent of basic needs for average households and 37 per cent for families with children (Rice Warner, 2015). These numbers indicate that insurance within superannuation funds is not adequate.

Underinsurance can lead to greater pressure on government finances in terms of the 'safety net' for those who are vulnerable in our society. Underinsurance has also been shown to impact government through less tax revenue, and increased reliance on government payments where insufficient insurance is held to maintain an income after tax, mortgage repayments and childcare (Kelly and Vu, 2010). The cost to the government of social security expenses as a result of underinsurance is estimated to exceed \$1 billion per annum, which consists of; \$840 million for TPD, \$140 million for income protection and \$60 million for death cover (Rice Warner, 2015). Given that three in four Australians are likely to be diagnosed with a serious illness in their working life, Lifewise (2012) argues that underinsurance would result in people being forced to rely on their savings, government welfare, or selling their assets. IFSA (20010) concurs, suggesting that 53 per cent of Australians over 30 suffered from at least one of the government's seven priority conditions identified under its National Health Priority Areas. These conditions can lead to long-term disability and consequently, a long-term loss of income. IFSA (2010) argues that without appropriate insurance, families could suffer severe financial hardship during chronic illness, injury or the death of an income earner or stay-at-home parent.

⁴ Where people demonstrate unwarranted faith in their own intuitive reasoning, judgments and/or cognitive abilities.

It has been argued that factors impacting insurance take up include the high price of premiums (Deposit Power/Real Estate Institute of Australia, 2007; IFSA, 2005; Pulis, 2010); lack of trust in the insurance sector (Feinman, 2010); not seeing the need for the insurance (IFSA, 2005; Pulis, 2010), and availability of life insurance within superannuation funds (Pulis, 2010). Factors related to literacy also appear to influence insurance take-up, including insurance policies being difficult to understand such as the difference between product types (IFSA, 2005; Pulis, 2010); and the lack of skills in evaluating risk (Capuano and Ramsay, 2011). While the literature about this may appear comprehensive, the majority of this work appears in publications that are not peer-reviewed and thus, the reasons for underinsurance appear to be under-researched. Insurance literacy has also received little attention in the literature, particularly in terms of a comprehensive examination of the different types of personal insurance compared to general insurance.

This study aims to further our understanding of insurance decision-making and insurance literacy, and their impact on underinsurance. The primary research question we seek to address is: What are the reasons for Australians purchasing or not purchasing personal insurance products? In particular, this study examines if insurance literacy undermines insurance purchase decisions. We posit that having a better understanding of consumer purchase decisions, and the impact of insurance literacy on these will assist practitioners, product providers and regulatory authorities respond to underinsurance concerns.

Data and Method

We adopt a qualitative approach, interviewing financial planners (informed participants) and consumers (uninformed participants), in order to obtain a preliminary understanding about the reasons why people take out personal insurance products and what psychological aspects drive their decision-making. Obtaining the views of both professionals and consumers provides a more comprehensive view of consumer behaviour and provides insights that may be of use to the advice and insurance product communities.

The interviews adopted a semi-structured approach in order to facilitate investigation while still maintaining a degree of consistency (Walliman, 2011). The literature review informed the construction of both discussion guide questions which contained two parts: client perceptions of insurance and drivers of client decision-making. Both closed and open-ended questions were included; closed questions enable shorter responses, thus allowing more to be covered during the allotted time frame, while open-ended questions add breadth and allow for clarification, overcoming the interpretation threat to validity (Maxwell, 1996). A standard briefing on the topic and purpose of the research was also provided to all participants.

Informed participants were sourced through industry contacts in financial advice practices (43%) and Australian banks (57%), resulting in 30 financial planners being interviewed. Respondents consisted of 18 males and 12 females and the age range was between 25 and 50.

Consumer participants were sourced using convenience sampling⁵ from the workplace and personal networks of the research team with 40 consumers being interviewed from a range of different industries, employment types and categories including the self-employed. Respondents were 52.5 per cent male, 52.5 per cent had a higher education qualification (Bachelor level and above), with 30 per cent in the 35-44 age bracket, and 8 per cent in the over 60 age bracket. The sample was also diverse in terms of marital status, those with and without children, recent immigrants to Australia, gender, age groups and educational backgrounds. In terms of policy ownership, 57.5 per cent of consumers reported holding life insurance, 45 per cent TPD and 35 per cent IP, the vast majority of which (75%) was within superannuation⁶. In terms of general insurance, 90 per cent had car insurance, 77.5 per cent contents insurance and 58 per cent home insurance (100% of those who reported owing a home reported owning home insurance). The sample was seen to be generally representative and able to provide an initial understanding of consumer attitudes toward personal insurance. Thus, overall for an interview protocol, we suggest the sample is generally representative.

Interview questions were similar for both groups of participants, being designed to gauge understanding, importance and perceptions of personal insurance, both focusing on the consumer perspective. The first group of questions (see Table 1) examined consumer perceptions of insurance with questions exploring value and importance, knowledge, and general versus personal insurance. The second group of questions examined the drivers of consumer decision-making with questions examining consumer motivations to purchase/cancel insurance, and the external drivers/inhibitors of these decisions⁷.

Table 1: Discussion Guide Questions

Informed Participant	Consumer
<i>Consumer perceptions of insurance</i>	
In your opinion, do Australians think that personal insurance is valuable and important?	Do you think that personal insurance is valuable and important?
Do you think Australians have adequate knowledge of personal insurance products?	How much do you know about personal insurance products?

5 Convenience sampling involves drawing samples that are both easily accessible and willing to participate in a study (Teddlie and Yu, 2007). One of the strongest rationales for this method is when the group or phenomenon under study is generally difficult to access but the researcher is able to establish a sufficient degree of contact or trust with particular participants to conduct a viable project (Lynch, not dated).

6 This is also broadly in line with the ANZ (2015).

7 Research ethics clearance was obtained for the research protocol and the instruments including the briefing, the two discussion guides, and information sheet (regarding informed consent) and permission sheet regarding the interview being recorded. Interviews were recorded, transcribed, validated and then thematically analysed.

Table 1 continued

Informed Participant	Consumer
Do you think that people perceive personal insurance products differently to general insurance products, such as house and contents insurance?	When considering personal insurance products and general insurance products, such as house and contents insurance, how do you perceive them both? Are they similar or different and which type would you be willing to purchase first?
<i>Drivers of consumer decision-making</i>	
What factors do you think make a person to be self-driven to purchase personal insurance products?	What would make you self-driven to purchase personal insurance products?
In your opinion what drives or influences people to purchase personal insurance products?	Please tell me what drives or influences you to purchase personal insurance products?
What factors do you think make a person cancel their existing personal insurance products?	If you have personal insurance, what factors would influence you to cancel your existing personal insurance products?

Results

Perceptions

In relation to consumer perceptions of insurance, there was a general consensus by informed participants on the importance of insurance by our participants, and two key factors emerged from the data being: perceptions of value (lack of), and knowledge (lack of). In the sections below, direct quotes from interviews with consumers and informed participants is provided as a supporting tool.

Lack of value

While there was strong consensus on the importance of insurance, all informed participants stated that in their opinion many Australians do not perceive ‘value’ in personal insurance products, and as a result choose not to purchase such policies. They argued, however, that there is value in insurance, and consumers should see appropriate insurance policies as money well spent. Informed participants also thought that once consumers understand the importance of personal insurance, they would see the value in it, with value explained in the context of the consequences consumers could face if something unfortunate would take place and they did not have appropriate cover. All informed participants stated that they thought the general public does not see value in personal insurance. Below are some of the examples of responses:

I think the perception of a lot of people is that insurance is just another thing to pay for and they don't see the value in having the insurance unless they have had a personal experience with a family member or even themselves where they had a serious illness and they can't get insurance and they wanted it. And unless they had decent fright, they don't see value in having insurance (Informed participant 7, female).

I see people who take more persuasion; or they need to be disturbed a little bit more to see to realise the value..... People don't see the value, maybe they are not disturbed enough (Informed participant 10, female).

People need to be disturbed enough for them to see the value in personal insurance, otherwise they don't realise how important it is (Informed participant 21, male).

Informed participants raised the idea that sometimes consumers need a 'disturbing' event to occur to highlight the value of personal insurance. To this end, it appears that informed participants informally engage their clients through telling impactful stories of previous claims made by other clients. On the other hand, the consumer participants were generally of the opinion that personal insurance was not very important, and as a result they did not see the value in it. This view appears to be driven by a belief that government support would replace the need for insurance, including that the government would provide support after a major trauma. Other reasons raised for not needing personal insurance included the ability of family and friends to assist, and perceived quick recovery time from serious illness. Most interviewed consumers thought that personal insurance was not important for them due to the above discussed reasons and some of the examples of responses are provided below:

I don't see much value in personal insurance, because the chances that I will be sick with cancer or heart attack are not that great (Consumer 21, male).

Centrelink is always there and pays disability pension, which combined with some savings we have, should be enough for us to survive on if something bad happened (Consumer 30, female).

I have a lot of family members, if something bad happens, they will be able to help out. (Consumer 39, female).

These reasons were supported by comments made by the informed participants. All informed participants were of the opinion that people relied too heavily on the government support:

People also think they will be covered by government (Informed participant 8, male).

Many people still have this idea that Centrelink will pay them a sufficient amount of money in case they were to get sick or disabled (Informed participant 22, female).

For the majority of consumers, 'value' was positively connected with preparedness to pay premiums, while some related it to life stages, suggesting it was only relevant when they had dependents:

With that insurance, even though it is hard to pay for the insurance, it's better to have it than not. I am definitely covered for anything we can now [have]. I believe it's very important (Consumer 7, female).

We have adequate personal insurance covers pretty much for everything, trauma, TPD, income protection, life, private health insurance, so our premiums are high, but we believe it is very important and valuable for us (Consumer 32, male).

I am young and healthy, so I don't think insurance is important for me at this stage, if I had children, then I would probably consider getting something (Consumer 11, female).

It is just me and my partner, we both work, so we don't think personal insurance is important for us at this stage. If we have children, then I think it would be more valuable (Consumer 15, female).

Personal insurance was also perceived by most respondents as secondary in importance to general insurance. The tangibility of an insured physical asset (house, car), and the value at stake was clear to consumer participants, while personal insurance was seen as more of an investment, and optional or luxury item. Furthermore, there was a cultural or familial norm with general insurance which appears to support its up-take. Here are some of the examples of what participants said:

People would be more inclined to insure a \$5,000 car than they would to insure their income and that [has] been the case forever... very few people will have their income or lives insured (Informed participant 9, male).

I think they see general insurance as more important. I think it is because they see their car and house as tangible assets and see more value in them, whereas they don't see the same value in themselves (Informed participant 15, male).

I see them as the same thing...I think I would be choosing general insurance first... Personal insurance seems like added extras, whereas general seems like I really actually need, whereas personal seems to be like ordering fries with your burger, it is just an extra add-on you don't necessary need (Consumer 11, female).

I see them as different. House and contents and car insurance you absolutely have to have...Personal insurance is optional (Consumer 15, female).

Their parents always said, get car, get house and contents insurance, but never said when you get a job go and get income protection, which is again part of our culture (Informed participant 9, male).

I purchase general insurance, because that's what my parents always did. (Consumer 34, male).

Insurance Literacy

All interviewed informed participants unanimously agreed that most consumers have poor knowledge about personal insurance products with a particular lack of knowledge (if any) about trauma cover. While income protection insurance was noted as having a higher awareness level, informed participants argued that there was still confusion and misunderstandings about it, including the circumstances under which such policies are claimable. When it comes to total and permanent disability insurance, many people have this cover within their superannuation; however, this does not mean that they have a very good understanding of it. Below are some examples of what informed participants said:

I think most people don't have a good understanding of insurance (Informed participant 7, female).

I think a lot of people know about life insurance...it's fairly easy to understand, you are either dead or alive. Income protection ... some people will have a bit of an idea about it, but it's more around when they can claim that I find they don't have any idea about it. A lot of people seem to think that income protection will just pay out if they lose their job, but it is not there for that....I think they have some idea about TPD, with trauma it is very rare for people to know it actually existed (Informed participant 8, male).

Consumers largely concurred with this view and appeared to have limited knowledge in relation to personal insurance. It seems evident that for some consumers they have a degree of awareness, but most of these admit they have little understanding of personal insurance. Here are some of the examples of what consumers said:

I generally know what they are about, but not completely informed....Life insurance is in case of death...until today I was not familiar about TPD....I know about income protection, it's a cover just in case a person would lose work due to sickness or injury, but don't know more details.... I have never heard of trauma cover (Consumer 1, male).

I have very limited knowledge about personal insurance, to be completely honest, I have not heard of trauma and TPD before (Consumer 2, female).

In terms of trauma insurance, 63 per cent of consumers were not familiar with it, some stating that this kind of insurance could not possibly exist, while others confused it with private health insurance. Of the few consumers that were aware of it, all believed they should hold it, but few (15%) actually did as per the indicative respondent quotes above.

With regard to life insurance, all consumers reported they have heard of life insurance and knew that it pays a certain amount of money upon the insured's death. However, most consumers admitted their knowledge of life insurance was limited, and they could not provide further details about this cover. For those with superannuation accounts, they would have some level of cover, but few could detail why this cover was held within superannuation. Furthermore, of the respondents who did understand the importance of life insurance, and the limitations within superannuation, few had detailed knowledge of the policies held.

TPD cover also had a low level of awareness of 37.5 per cent, with the group who had not heard of trauma cover also very confused about TPD and what conditions it covers. In particular, 40 per cent of consumers thought that TPD was an addition to life insurance, and did not see this cover as a necessary one, explaining that there is very little chance they would be totally or permanently disabled. Consumers who had TPD insurance also believed that they did not have an intricate knowledge about it, which appeared to be because it was provided within their superannuation fund.

In regards to income protection insurance (IP), most consumers (65%) had heard of this cover. Once again, however, knowledge about this type of insurance was generally very limited with the main misconception being that they thought such policies would pay when they are unable to work for any reason, including dismissal and redundancy. Of the 35 per cent of consumers who held IP insurance, only about half were able to explain the circumstances under which they would be paid funds if they made a claim (waiting and benefit periods).

Thus, it appears insurance literacy is generally low, with many consumers not being aware of all forms of policies, and even those who hold policies having a low understanding (and in some case a misunderstanding) of the benefits provided by the policies. There also seems to be a suggestion that insurance within superannuation is somewhat opaque to consumers, and not well understood. Interestingly, the highest level of understanding seemed to be from those who held insurance outside superannuation (income protection (IP) in these cases), and five of the seven of these consumers had it organised through a financial planner. This higher level of literacy could be due to these consumers being more proactive or involved in the decision to take out IP insurance. Despite this, there also appears to be low recognition of the role of a financial planner in relation to risk advice. Coupled with the suggestion of low value, and being seen as a luxury/optional item in comparison to general insurance, tackling underinsurance in terms of personal insurance has its challenges.

It seems clear that insurance literacy needs to be addressed but how this can be achieved effectually is questionable. When asked how to improve consumer insurance literacy, informed participants pointed to mass media campaigns to raise awareness, independent sources (government, educational institutions) to provide more detailed information, and financial planners to educate clients as part of their role in giving financial advice. Consumers also referred to media campaigns, and 'independent' information; however, most did not refer to the role of the financial planner in improving insurance literacy. This is disturbing because financial planners should in theory be the first point of call for people to increase their financial literacy. The fact that financial planners were not recognised as an education source is somewhat telling and could relate to lack of trust and/or lack of knowledge/understanding regarding the information financial planners can provide. It could also relate to not seeing financial planners as independent and unbiased service providers and educators, but as 'pushy sales people' who receive commissions. This notion will be explored in a future study to get a better understanding of why ordinary people do not see financial planners as educators. Consumers expressed concerns about advertisements from

insurance companies that sought to 'sell' insurance to them. Both informed and consumer groups commented on the importance of financial literacy education in high school that could incorporate insurance, as well as the potential role of employers in relation to free seminars in workplaces.

Motivations and deterrents

Informed participants and consumers put forward a range of issues that influence insurance purchase decisions including a lack of trust, life events, character traits, complexity and behavioural factors. In addition to these factors, both perceptions of lack of value and knowledge (as discussed above) are factors that appear to deter the personal insurance purchase decision.

Lack of trust

The Majority of informed participants and consumers commented that there is a pervasive lack of trust in insurance companies, which is reinforced by negative stories in the media in relation to policy outcomes, and in particular denial of claims:

I think really that insurance as a whole has a bad reputation in my opinion. People often think that life insurance will never pay out, they take your money for a long period of time and you get nothing back (Informed participant 8, male).

In a number of cases, consumer respondents provided personal accounts of being made to feel like 'fraudulent claimants' when going through the claim process. This feeds the consumer view that insurance companies will always try to avoid paying claims:

I think insurance companies are not honest in general and when it comes to personal insurance it becomes easier for them to deny claims (Consumer 25, male).

It was the whole thing; I could just feel like I was under suspicion of making a dodgy claim (Consumer 9, female).

Insurance contracts require both the insurer and the insured to act with 'utmost good faith', which includes the need for full disclosure. Informed participants noted that when insurance companies deny a claim it is often the insured individuals who are at fault. They explained that when people apply for personal insurance products and they fill out their medical history, they may sometimes fail to disclose accurately their previous medical conditions. If this inaccuracy was an intentional misrepresentation or omission (which breaches their disclosure obligations) then it potentially has a consequence when consumers come to make a claim, there can be a refusal to pay out the claim or a reduced claim. This highlights that insurance literacy needs to include the importance of full and frank disclosure, as this can undermine the personal insurance contract itself.

Life events

Informed participants saw consumer life stage and events as key drivers of consumer decision-making, particularly starting a family, taking on personal debt (typically the first mortgage) and personal/family experiences. The latter refers to unfortunate life-changing personal experiences

that highlight either the value of, or need for personal insurance, resulting in consumers becoming self-driven to purchase personal insurance. People who are not in these circumstances were generally seen to take the view that they will get personal insurance policies later in life, 'when they need it'. This was extended by some participants to an overconfidence bias where consumers took the view that bad or unfortunate events, such as cancer or severe accidents 'won't happen to me'.

Consumers largely confirm these views, with those who did not have dependants, children in particular, arguing they did not need personal insurance as they did not have anyone to leave money to. This notion could suggest that people would be more likely to take out other forms of personal insurance, for example TPD or trauma, because even if they do not have dependants, they would still need a payout in case they got diagnosed with medical conditions for which they would be covered.

Culture and personality types/character traits

It was suggested by some informed participants that purchase of personal insurance could be influenced by cultural backgrounds. For example, immigrants from the United Kingdom, the United States of America, South Africa and New Zealand were seen as more likely to seek insurance, due to familiarity with insurance given the use of these products in their country of origin. Others referred to personality types and intellectual traits such as those who are more 'intelligent', 'conservative', 'more responsible' are more likely to purchase insurance regardless of their family status, number of dependents and the presence of liability. This included discussion of the Australian culture of being very relaxed, with many Australians not believing that an unfortunate event could happen to them. Below is the example of what most informed participants said during the interviews:

It's just a culture in Australia really... [Australians] are very relaxed and they've got this attitude that it will not happen to them (Informed participant 8, male).

Complexity of the process

Informed participants also argued that the general public thought that purchasing personal insurance was a lengthy and complex process which acts as a deterrent. Indeed the possibility of medical checks and voluminous paperwork would be a significant 'hassle'. Consumers affirmed this position and used this to further delay take-up of insurance, and/or to rationalise their decision not to purchase it. Of course, it is important to acknowledge that this 'paperwork' is a critical part of the personal insurance process, especially given the disclosure obligations involved.

Behavioural factors

Analysis of the consumer interview data suggests a range of other biases may be influencing consumer insurance decisions. For example, the reference to the influence of media stories and experiences from family and friends may suggest confirmation bias⁸, particularly given the commentary by experienced investors that rejected claims are often due to policyholder errors or omissions.

⁸ When facts are gathered in such a way as to support our pre-conceived conclusions.

Furthermore, given comments by consumers in relation to the lack of trust in the insurance system (advisers and insurance companies), evidence that consumers often rely on family, friends and websites for information rather than professional advice, it is possible that both the bandwagon effect⁹ and herding effect are present. The former suggests that one's view and beliefs are formed based on the number of people that hold that view. In the latter case, one follows the decisions of others because they believe they have better information. Given that the strong consensus among consumers was a lack of trust, the perception of low chance of a successful claim, low levels of insurance literacy and the contrary view of informed professionals, we conclude that these biases are also influencing insurance decisions.

With the strong focus on 'value' in terms of both the cost of premiums and perception of low payout rates, it is also possible that regret aversion bias¹⁰ is present. Coupled with underinsurance, even within those that are aware of the policy types, and the attitude that 'this will never happen to me', this suggests there is tension over facing the reality of what could occur, and also struggling with understanding the efficacy of insurance policies in managing these risks. This could be one of the reasons why people procrastinate making important decisions. Extending on the point in relation to likelihood of 'loss', it is clear from our consumer group that insurance literacy is low, confounded by consumers not appreciating the possibility of illness, injury or premature death. Thus, it appears from the commentary that availability heuristics¹¹ are being applied to support the no purchase decision.

In terms of people's lack of understanding of probability and risk concepts that was evident in relation to general insurance versus personal insurance take-up rates, consumers appeared to be motivated to purchase general insurance as a high frequency risk even if the financial impacts can be low. This highlights the behavioural challenges consumers face when making (or avoiding) insurance purchase decisions.

Policy Cancellations

The main factor informed participants believed influenced the cancellation of personal insurance was cost. Other reasons included a switch to another superior policy and/or because consumers no longer required the cover. Informed participants also noted that clients often fail to contact their financial planners when they make a decision to cancel their existing personal insurance policies, further undermining the utility of their insurance cover and contributing to underinsurance.

9 The probability of one person adopting a belief increases based on the number of people who hold that belief.

10 This is where one avoids making decisions for fear the decision will lead to a bad outcome.

11 People take a rule of thumb approach to estimating the probability of an outcome based on how easily the outcome comes to mind.

When consumers were asked this question, their responses were in line with those of the informed participants. The main reason was the inability to pay the cost of premiums due to adversely changed financial circumstances, and/or the increased cost of premiums over time. A few consumers admitted to switching funds mainly due to finding a better product or having problems with the insurance company. When asked if they were in a situation where they needed to cancel their policies what policy would they cancel first and why, the answers were the consistent for all respondents: the first insurance type to be cancelled would be personal insurance, because they could not imagine driving their car or living in their house without general insurance cover.

Discussion and future research

Insurance is important both at an individual level and also for the society as a whole. The more individuals with appropriate personal insurance coverage, the less the impact on publicly funded support schemes, and the better financial position the insureds are in due to receiving the benefits of the policies. This can also place consumers in a better position to deal with the physical and emotional impacts of the crisis they have suffered. Despite this, underinsurance is persistent and pervasive. Research to date suggests that financial literacy especially in relation to insurance is very low, with many Australians not comprehending the basic principles of insurance. This is driven by factors such as a lack of understanding of the importance of insurance, lack of knowledge about insurance products, lack of trust associated with insurance companies and not understanding the need to have appropriate cover. Of particular focus for this article, is literacy in terms of personal insurance in Australia.

We find that people are rarely self-driven to purchase personal insurance and thus can remain underinsured. Factors such as lack of trust in the insurance industry, a perceived lack of value in personal insurance and the impact of a range of behavioural biases undermine propensity to seek and maintain personal insurance. Furthermore, most consumers have very limited knowledge when it comes to personal insurance products. If there is a low level of literacy in terms of personal insurance, then it is hard to see how effective and adequate decisions can be made about it. Perhaps even worse, in terms of tackling the underinsurance problem, is that there also appears to be a reticence to explore and better understand insurance, or even seek advice from professionals in this regard. This is further confounded by negative media and negative consumer experiences that consumers report.

Interestingly, it appears that when consumers obtain a deeper understanding of personal insurance, they realise the value of it, and thus can make more informed decisions. This appears to be particularly the case when a professional advisor is involved in that process. Part of this process for advisors is to inform their consumers with stories of the consequences of underinsurance. Furthermore, it can be argued that lack of knowledge can also lead to a lack of trust, especially when the general public is exposed to other information/media that confirms their perceptions. The inability to see value also increases the chances of procrastination and decision paralysis (Mitchel and Holzworth, 2005).

In summary, we argue that insurance literacy is a key element of the underinsurance problem. Dealing with this, however, is not as simple as producing websites and flyers. Rather, we suggest, it requires a sustained program of information and advice that educates consumers about the value of insurance, their obligations in the process, and highlights cases (and broad statistics) of successful policy outcomes. Such improvements to insurance literacy should challenge behavioural biases, while also attempting to reposition the industry. Of course, the industry would be well served to do its utmost to eliminate any poor behaviour on its behalf also. Finally, it must be recognised that insurance literacy in and of itself will only go so far. Rather, a higher order outcome of 'insurance capability', most likely delivered in conjunction with an advice relationship, is the optimal outcome given the underlying complexities in the financial and insurance systems in line with Brimble and Blue (2010). This, in addition to providing knowledge, will influence behaviours and maintain support for consumers leading to more effective financial decision-making.

Finally, we note once again the exploratory nature of this work and the qualitative approach, with a relatively small sample size, which should be taken into account when considering the conclusions of this article. The study opens up various avenues for further research including a larger scale survey approach to further examine the findings, further examination of the behavioural issues identified, and an examination of differences within different demographic groups.

Conclusion

The move to greater self-reliance in retirement has made the issue of financial literacy and the related concept of underinsurance an acute issue for governments to address. However, it is not only self-reliance in retirement that needs to be considered. The issue of financial literacy and the related concept of underinsurance is also very important throughout the life cycle and related exposure to risk. If people have low levels of financial literacy, they could be less likely to purchase appropriate personal insurance products. Without adequate financial literacy the extent to which people will be able to adequately provide for themselves (in retirement and throughout the life), and hence lower their reliance on government benefits (pension and various government payouts) is inhibited.

A particular issue addressed in this article was Australians' personal insurance literacy and factors that influence their motivation to purchase personal insurance.

This article first outlined the available evidence of Australians' financial literacy levels and the limited empirical evidence there is in relation to personal insurance. This included a discussion of the knowledge and behavioural factors that could influence the purchase decision. Data and concerns about Australians' underinsurance were canvassed, which was largely from non-peer reviewed research sources.

This article then discussed the current method of the study that involved interviews with informed participants (advisors) and consumers, which was designed to address the research question regarding the reasons why (and why not) people take out personal insurance, as well as their insurance literacy levels. The results demonstrate that 'perceptions' appeared to be an important factor in the personal insurance decisions, including the perceptions of value and knowledge about it. Also the data appeared to demonstrate a low level of literacy by consumers in relation to the various types of personal insurance products available. In terms of motivations and deterrents, the notions of trust, life events and behavioural factors appeared to have a role in personal insurance decision-making.

Overall it is argued that if personal insurance literacy could be improved then this may in part address the underinsurance problem. This preliminary research lays the foundations for further research to build our knowledge about Australians' personal insurance decision-making processes and faults. Continued empirical research in this area will serve to further our understanding of insurance literacy and decision-making and inform better policy, product and advice approaches and outcomes. These outcomes will be of use to insurance companies, financial advisers, superannuation funds, policymakers and researchers.

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A COMPARATIVE ANALYSIS OF SECTOR DIVERSIFICATION IN AUSTRALIA, INDIA AND CHINA

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ARTICLE INFORMATION

Article History:

Submitted: 22 August 2017

Revision: 17 October 2017

Acceptance: 22 December 2017

Key words:

Sector diversification, equity holdings

ABSTRACT

Over time, research has looked at different aspects of international diversification; such as emerging and frontier markets, use of time-varying framework and more recently at sector diversification within the emerging market and/or developed markets. The diminishing benefit from international diversification led investors to seek new diversification sources especially in the emerging markets that have low integration. The idea of sector diversification, although not directly related to international diversification, has gained renewed attention with the decline in benefits of international diversification (Gupta and Basu, 2011). Our study aims to test the benefits of sector diversification in the Asia-Pacific area using the stock indices in Australia, India, and China. The results from the study suggest that the sector diversification benefits all three markets. It also suggests that the sector diversification is not affected by political background or economic structure.

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Introduction

After the introduction of the modern portfolio theory by Markowitz (1959), the study and the application of diversification was pervasively around both academic and practice aspects of investing. Although the diversification strategy keeps evolving with new theories and models, scholars find the benefits of diversification are diminishing in recent years due to the integration of the global market. Over time, research has looked at different aspects of international diversification; such as into emerging markets, into frontier markets, use of time-varying framework, and more recently sector diversification within the emerging market and/or developed markets. The idea of sector diversification is not directly related to the concept of international diversification but has gained renewed attention with the decline in benefits from international diversification.

With declining benefits from diversification into international stock markets and emerging markets becoming more integrated with global markets, a study by Gupta and Basu (2011) explored the idea of diversifying within the market and compared results for Australia and India for the period of 14th April 2004 to 13th April 2012. Our study extends the study by Gupta and Basu (2011) by considering diversification across sectors among markets in India, China and Australia. China has been chosen as the third country in this study not only as it is the second largest economic entity as measured by total GDP and the largest economic entity in emerging markets, but also because it has a different political background and economic structure compared to the other major economic entities. The benefit of exploring sector diversification is not only restricted to the investors' needs in a new market such as China in practice, but also to help better understand sector diversification academically.

In our understanding, this is the first study of this nature that looks at the benefits of diversifying across sectors among different countries, especially emerging markets and developed markets.

A major stock exchange was selected in each of the three countries to proxy for the stock market. These exchanges are Australian Securities Exchange (ASX), the National Stock Exchange (NSE) in India, and the Shanghai Stock Exchange (SSE) in China. Then nine sector indices were chosen from each stock exchange to construct portfolios under different restrictions (World Federation of Exchange, 2014). The weekly price index from 14th April 2004 to 13th April 2012 are included in the study. The time period covers the 2008 sub-prime crisis characterised by unusual market activity and high volatility and therefore increases robustness of the study.

An equally weighted portfolio was constructed based on unconditional correlations as a benchmark portfolio for comparing performance of the portfolios of interest¹.

¹ Portfolios that are constructed considering sectors across three markets using conditional correlations. We apply different restrictions based on prudent man's rule to construct various portfolios. Prudent man's rule is a recognised practice in American fund management wherein arbitrary restrictions are applied in terms of exposure to an asset class or foreign assets.

We use the Sharpe ratio for comparing performance of the portfolios. The Sharpe ratio has been often criticised for its simplicity but has been found to be sufficient for portfolio ranking (Gupta and Donleavy, 2009). For estimating time-varying correlations we use the ADCC GARCH model. ADCC GARCH model has been extensively used for estimation of time-varying correlations in international diversification literature, especially in the context of emerging markets (e.g. Cappiello, Engle and Sheppard, 2006; Engle, 1992; Gupta and Donleavy, 2009; Sukumaran, Gupta and Jithendranathan, 2015; Godfrey, 1978; Jarque and Bera, 1981). The primary weakness of these studies is in providing ex-post analysis and not presenting an ex-ante analysis. Relying on purely ex-post results may mean that the benefits of out-of-sample period may be significantly different from that of in-sample period because the risk, correlations and/or returns in future may be significantly different from the estimated in-sample period. As such, this study also provides an out-of-sample results using a hold out period of 14th April 2012 to 14th April 2014 to improve reliability of the analysis. Findings can be easily adapted in practice to improve risk-adjusted returns by diversifying across international sectors.

Our study extends the existing literature of asymmetric DCC GARCH model into China's market, which is a rarely investigated area of domestic sector diversification level. Besides suggesting that the domestic sector diversification effect exists in China's stock market, this result can also be extended to transitional markets in emerging economies.

The remainder of the paper is structured as follows; the next section reviews related literature followed by description of the data, methodology and analysis. The last section draws conclusions for the study.

Literature Review

Globalisation allowed investors to actively seek diversification benefits from investment in other countries, even though it increased investors' exposure to new risks, such as foreign exchange and political risks. Errunza (1983) found that the correlations among emerging markets are significantly lower than the mature markets, because the emerging markets do not share similar economic factors with major markets. Although investing in emerging markets results in higher country risk², however, investors could mitigate these risks by implementing certain procedures, and the potential benefit exceeds the potential cost (Errunza, 1983). The research shows that even when emerging markets are added to the portfolio, risk does not change much. As a result, the correlation between different countries became the driving factor that influenced international diversification (Lessard, 1976).

² Country risk is defined by Clark and Tunaru (2001) which encompasses different risk factors posed because of the different economic structures, political and other risk factors.

Using the DCC GARCH model, Yang (2005) found that correlations between the returns of selected East and South-East Asian markets changed considerably. Dunis and Shannon (2005) showed that for an unconstrained portfolio of the US and emerging markets (e.g. Malaysia, India, and Taiwan), the Sharpe ratio improved significantly for the time period of September 2003 to July 2004 by including emerging markets in the optimised portfolio. Gupta and Donleavy (2009) used a DCC GARCH model to show that Australian investors could improve their risk-adjusted returns by including emerging markets in their portfolios. Kohers, Kohers and Pandey (1998) discovered that by adding a few of the low correlation emerging markets into a portfolio, an investor could enhance the portfolio's diversification level. They also found that even though the emerging markets have high national risk, it contributes very little to the riskiness of a global portfolio.

The low correlations between emerging markets and mature markets exist because emerging markets are segmented from the developed economies. Since more and more investors shift their global portfolio to include emerging markets, the link between emerging markets and mature markets has significantly increased. As compared with southeast Asia, central Asia shows a closer link with the US market; however, the diversification benefit still exists (Dunis and Shannon, 2005).

Due to integration of economies, the national and geographic indices have shown increasing correlations (Gupta and Donleavy, 2009). The returns on diversified country-based portfolios decline more during Global Financial Crisis (GFC). This is because the benefit that comes from diversification is based on lower correlations, the rise of correlations during GFC diminishes potential diversification benefits (Syllignakis and Kouretas, 2011). Beine and Coulombe (2007) shows that the cross-correlations were highly volatile during the IT bubble period (1987-2003) for the 10 Dow Jones European sector financial indices. Results of the study by Longin and Solnik (2001) using DCC also highlight the importance of considering the crisis period while designing a long-term portfolio as the correlation tends to decline in bull markets and rise in a bear markets.

The diminishing benefit from international diversification led investors to seek new diversification sources especially in the emerging markets that have low integration. This brought the sector diversification into focus because sector indices do not show a trend towards high correlations, suggesting that there could still be gains from diversification across sectors within the country or across multiple countries. We follow previous work of (Gupta and Basu, 2011) and use sophisticated statistical methods. This way we can measure and capture time variations in correlations over time and exploit its benefits.

Cheng (2001) reviewed 10 different sectors in the US stock market for the period of 1996-2001 and showed that there were sectoral differences in performance due to differences in economic cycle for a sector. This indicates that an investment portfolio should include a wide range of industry sectors. Gupta and Basu (2011) suggest that investors can earn higher risk-adjusted returns by constructing a portfolio of assets using different industry sectors compared to a benchmark index. Hargis and Mei (2006) divide returns into three components; cash flow, interest rate, and discount rate. These three variables have higher explanatory power at sector level than at the country level.

Besides the sector level diversification, scholars also focus on how a Global Financial Crisis (GFC) will affect diversification, as some scholars found that the correlation did not hold constant during the crisis. Forbes and Rigobon (2002) suggest the shock of GFC is short-lived and eventually the market will recover. Other scholars find that the crisis will fundamentally change the basic structure of the market, hence having a long-lived influence (Whalen, 2008). A recent study by Zhang, Xindan and Honghai (2013) employed the DCC model to analyse the BRICS (Brazil, Russia, India, China and South Africa) correlations with mature markets, and the result suggests that after four years, more than 70 per cent of BRICS markets' correlations still shift upwards and show a permanent change. Since there are conflicting results on the length of persistence of this change due to crisis, investors should therefore carefully consider the correlation trends.

Huang and Zhong (2006) use four different methods to forecast the correlations with historical observed returns. The result shows that by setting a target return, the optimal portfolio constructed based on DCC GARCH model correlation has the least portfolio standard deviation, rolling 100-days correlation is the second-best one, the third one is the unconditional correlation, and the last one is the constant correlation one with the largest portfolio standard deviation. The result illustrates that the dynamic conditional correlation measured by the DCC GARCH model could lead to a better portfolio performance compared with an unconditional correlation. Yang (2005) employed a DCC GARCH model to test the Asian Four Tigers markets (Taiwan, Singapore, Hong Kong and South Korea) with the Japanese market. The results showed the volatility spills across markets and that increasing correlations reduce the benefit of international diversification.

Baumöhl and Lyócsa (2014) test 32 markets all over the world with weekly returns data from January 2000 to December 2012. Using the asymmetric DCC GARCH model their results suggest the link as measured by conditional correlations between emerging markets and developed markets is increasing, and the asymmetric behaviour of volatility is pervasive in developed markets, whereas less common in emerging markets. This finding illustrates that emerging markets could provide international diversification benefits albeit declining.

A study by Gupta and Basu (2011) employs the asymmetric DCC GARCH model for estimating sector diversification benefits in Australian and Indian stock markets, from 1997 to 2007. The results suggest that the asymmetric DCC GARCH model is appropriate in measuring the dynamic conditional correlations and sector diversification could enhance risk-adjusted portfolio returns. Our study extends Gupta and Basu's (2011) study to include China's stock market and also uses more recent data.

Data and Methodology

Various sector indices that have listings in major stock exchanges have been used as a proxy to the corresponding sector. The stock markets chosen for the study are Australian Securities Exchange (ASX) from Australia, and National Stock Exchange (NSE) in India, and Shanghai Stock Exchange (SSE) from China.

We provide a brief explanation for selection of SSE over Shenzhen Stock Exchange (SZSE). China has two major stock exchanges: the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). Unlike Australian and Indian stock markets, Chinese stock market uses different share titles to distinguish the domestic firm share (A shares) and the share of foreign investment firms listed in China's domestic market (B share). Even though SSE is the dominant stock exchange, all B shares are listed in SZSE, therefore, in order to get a full understanding of the sector diversification in the China stock market, this study should include the sector indices data from both SSE and SZSE. However, after checking the data from the DataStream database, the data from SZSE is only available from 2009, which cannot provide a sufficient sample of observations when employing the asymmetric DCC GARCH model. Consequently, this study focuses only on SSE (Shanghai Stock Exchange, 2014). Even though the B share in SZSE is omitted from the study, the B share only accounts for a small proportion of China's stock market, so the study result will not be fundamentally biased.

Nine sector indices from each of the three exchanges – ASX, NSE, and SSE were chosen for the sample. By April 2014, ASX had 18 sector indices, NSE had 12 sector indices and SSE had 30 sector indices. The classification of sector indices are different in each country. For example, in SSE, 30 sector indices exist suggesting it has the broadest sector category, when actually it has only 10 different sectors. Since sector indices are used as a proxy to various sectors, the sector indices that contain all stocks in each sector are the more appropriate proxy to the sector. As a result, nine of the 10 SSE sector indices were chosen as samples of China's stock market. The financial sector index is excluded from sampling as the data is not fully available for the entire period from the database.

Since nine sector indices were chosen from SSE, in order to maintain consistency of the number of available assets within all markets, the top nine sector indices ranked by market capitalisation were chosen from the ASX and NSX. The rationale for choosing the same number of sector indices is to avoid the superior stock selection opportunity, as a large asset base potentially provides more diversification opportunities within the portfolio.

Our study uses data from April 14th, 2004 to April 13th, 2012. (excluding SSE that starts from 2005) and a two year holding out period for the out-of-sample test. This is done for a number of reasons. First, testing the latest period of data represents a closer linkage to the real world. The data between 2004 to 2012 also contains the whole cycle of 2007-2008 GFC. By including data for the GFC period this study provides results that represents the market dynamics of the recent period. Second, the data for SSE is only available since 2005, and finally, by choosing the starting date on Wednesday, 14th April 2004, this study avoids calendar effects such as the Monday effect or Weekend effect which could potentially affect the test result. Data for sector indices is collected from DataStream, a reliable source of data and the risk free rate is collected from respective central banks.

As the total return index is not available for the full sample period, this study employs the daily closing price index. The daily closing price index is commonly used where total return index data may not be readily available (see Brooks, 2008, p. 8). The daily closing price index of the top nine market capitalisation sector indices is collected for the period 14th April 2004 to 13th April 2012 in all three stock exchanges. Table 1 shows the sampling data coverage of 27 indices from the three exchanges (ASX, SSE, and NSE).

Table 1: Sector indices list

ASX Sector Index	Sector Index	Period	Observation
ASX 200 Consumer Discretionary Index	Consumer Discretionary	2004/4/14-2012/4/13	2087
ASX 200 Consumer Staples Index	Consumer Staples	2004/4/14-2012/4/13	2087
ASX 200 Energy Index	Energy	2004/4/14-2012/4/13	2087
ASX 200 Health Care Index	ASX 200 Health Care Index	2004/4/14-2012/4/13	2087
ASX 200 Industrials Index	Industries	2004/4/14-2012/4/13	2087
ASX 200 Information Technology Index	Information Technology	2004/4/14-2012/4/13	2087
ASX 200 Materials Index	Materials	2004/4/14-2012/4/13	2087
ASX 200 Real Estate Index	Real Estate	2004/4/14-2012/4/13	2087
ASX 200 Telecommunications Services Index	Telecommunications Services	2004/4/14-2012/4/13	2087
SSE Sector Index	Sector Index	Period	Observation
SSE Consumer Discretionary Sector Index	Consumer Discretionary	2005/1/4-2012/4/13	1898
SSE Consumer Staples Sector Index	Consumer Staples	2005/1/4-2012/4/13	1898
SSE Energy Sector Index	Energy	2005/1/4-2012/4/13	1898

Table 1 continued

SSE Sector Index	Sector Index	Period	Observation
SSE Financials Sector Index	Financials	2005/1/4-2012/4/13	1898
SSE Health Care Sector Index	Health Care	2005/1/4-2012/4/13	1898
SSE Industrials Sector Index	Industrials	2005/1/4-2012/4/13	1898
SSE Materials Index	Materials	2005/1/4-2012/4/13	1898
SSE Telecommunications Services Sector Index	Telecommunications Services	2005/1/4-2012/4/13	1898
SSE Utilities Sector Index	Utilities	2005/1/4-2012/4/13	1898
NSE Sector Index	Sector Index	Period	Observation
CNX Automobile Sector Index	Automobile	2004/4/14-2012/4/13	2087
CNX Banking Sector Index	Banking	2004/4/14-2012/4/13	2087
CNX Energy Sector Index	Energy	2004/4/14-2012/4/13	2087
CNX Financial Sector Index	Financial	2004/4/14-2012/4/13	2087
CNX Fast Moving Consumer Goods Sector Index	Fast Moving Consumer Goods	2004/4/14-2012/4/13	2087
CNX Information Technology Sector Index	Information Technology	2004/4/14-2012/4/13	2087
CNX Midea Sector	Midea	2004/4/14-2012/4/13	2087
CNX Metal Sector	Metal	2004/4/14-2012/4/13	2087
CNX Pharmaceuticals Sector Index	Pharmaceuticals	2004/4/14-2012/4/13	2087

Table 2 provides summary statistics of sector indices within the ASX, SSE and NSE. Sector indices in the ASX and NSE both had 2,087 observations between 2004 and 2012. However, SSE sector indices only had 1,898 observations from 2005 to 2012.

Table 2: Summary statistics of sector indices – ASX, SSE, and NSE

ASX Sector	Period	Observation	Mean	Variance	Skewness	Min.	Max.	Range
Consumer Discretionary	2004/4/14-2012/4/13	2087	-0.0062%	0.0295%	-0.0895	-14.3601%	8.8923%	23.2524%
Consumer Staples	2004/4/14-2012/4/13	2087	0.0422%	0.0267%	-1.1054	-17.8561%	9.6798%	37.5360%
Energy	2004/4/14-2012/4/13	2087	0.0615%	0.0483%	-0.8292	-19.8730%	13.0450%	32.9180%
ASX 200 Health Care Index	2004/4/14-2012/4/13	2087	0.0573%	0.0286%	-0.7165	-13.9715%	8.8720%	22.8434%
Industries	2004/4/14-2012/4/13	2087	0.0193%	0.0298%	-0.8702	-15.8409%	8.4423%	24.2832%
Information Technology	2004/4/14-2012/4/13	2087	0.0498%	0.0454%	0.4556	-15.8558%	12.6206%	28.4764%
Materials	2004/4/14-2012/4/13	2087	0.0508%	0.0554%	-0.6826	-16.1608%	11.7786%	27.9394%
Real Estate	2004/4/14-2012/4/13	2087	-0.0118%	0.0411%	-1.1577	-18.4891%	10.1560%	28.6451%
Telecommunications Services	2004/4/14-2012/4/13	2087	0.0006%	0.0298%	-0.7163	-13.2126%	8.2886%	21.5012%
SSE Sector	Period	Observation	Mean	Variance	Skewness	Min.	Max.	Range
Consumer Discretionary	2005/1/4-2012/4/13	1898	0.0653%	0.0438%	-0.6002	-10.1840%	9.2418%	19.4258%
Consumer Staples	2005/1/4-2012/4/13	1898	0.1040%	0.0375%	-0.3588	-10.0824%	8.6832%	18.7656%
Energy	2005/1/4-2012/4/13	1898	0.0733%	0.0504%	-0.1526	-9.7384%	9.2123%	18.9506%
Financials	2005/1/4-2012/4/13	1898	0.0835%	0.0461%	-0.1012	-9.4742%	9.5227%	18.9968%

Table 2 continued

SSE Sector	Period	Observation	Mean	Variance	Skewness	Min.	Max.	Range
Health Care	2005/1/4-2012/4/13	1898	0.0857%	0.0419%	-0.5047	-9.9085%	9.2736%	19.1821%
Industrials	2005/1/4-2012/4/13	1898	0.0453%	0.0392%	-0.4705	-9.6167%	9.5346%	19.1513%
Materials	2005/1/4-2012/4/13	1898	0.0612%	0.0480%	-0.4250	-9.5166%	8.2052%	17.7218%
Telecommunications Services	2005/1/4-2012/4/13	1898	0.0460%	0.0533%	-0.2445	-10.4016%	9.5988%	20.0004%
Utilities	2005/1/4-2012/13	1898	0.0443%	0.0358%	-0.5564	-10.2425%	8.1968%	18.4393%
NSE Sector	Period	Observation	Mean	Variance	Skewness	Min.	Max.	Range
Automobile	2004/4/14-2012/4/13	2087	0.0484%	0.0508%	-0.1788	-13.5417%	17.2685%	30.8102%
Banking	2004/4/14-2012/4/13	2087	0.0543%	0.0565%	-0.1451	-15.3694%	19.8858%	35.2553%
Energy	2004/4/14-2012/4/13	2087	0.1203%	0.0691%	-0.1176	-19.5035%	18.2817%	37.7852%
Financial	2004/4/14-2012/4/13	2087	0.0823%	0.0421%	0.1709	-9.9427%	13.4082%	23.3510%
Fast Moving Consumer Goods	2004/4/14-2012/4/13	2087	0.0603%	0.0220%	0.1068	-6.8357%	9.2418%	16.0775%
Information Technology	2004/4/14-2012/4/13	2087	0.0414%	0.0421%	-0.0185	-13.9893%	14.6993%	28.6886%
Midea	2004/4/14-2012/4/13	2087	0.0847%	0.0633%	0.2265	-11.9898%	20.0595%	32.0492%
Metal	2004/4/14-2012/4/13	2087	-0.0602%	0.0989%	0.3840	-44.3656%	44.0013%	88.3669%
Pharmaceuticals	2004/4/14-2012/4/13	2087	0.0467%	0.0209%	-0.4688	-9.1241%	12.6615%	21.7857%

Since the raw data of the daily closing price index is measured in US dollars within various sector indices, the first step is to convert the price index into continuously compounded returns by using figure 1.

Figure 1.

$$r_t = 100\% \times \ln \left(\frac{p_t}{p_{t-1}} \right)$$

Where r_t represents continuously compounded returns in time period t, and it equals the log of current period price (p_t) divided by price in last period (p_{t-1})

Most sector indices in ASX have a positive mean return except for the consumer discretionary sector and the real estate sector, which have mean returns of -0.0062 per cent and -0.0118 per cent, respectively. While daily variance fluctuated at a 3 per cent level, suggesting that the energy and real estate sectors are more volatile than other sectors, most sectors show negative skewness suggesting that the sampling data may not follow normal distribution.

The statistics of sector indices in SSE reveal that all mean returns are positive, the consumer staples sector has the highest mean return of 0.1040 per cent. Moreover, the overall mean return is higher than the ASX. However, the corresponding variance is also greater than in ASX, as the highest daily variance comes within the telecommunication service sector which reaches 3.262 per cent. The utilities sector has the lowest daily variance of 3.5841 per cent. The negative skewness that exists in SSE confirmed the doubt about sample distribution.

The final stock exchange in the sample is the NSE in India, the daily mean return ranges from 0.12 per cent in the energy sector to -0.06 per cent in the metal sector. The overall mean return is between that of ASX and SSE; however, the daily variance spread is more significant than ASX and SSE. The metal sector daily variance in NSE reaches 9.88 per cent, which is roughly two times more volatile when compared with the most volatile sector in other markets (Library Congress of Country Studies, 2011). However, the skewness statistic discloses mixed information, as five of nine sectors show a negative skewness while the others suggest a positive skewness. We also conduct test of normality and ARCH test for the data and results indicate that data is not normal and presence of heteroskedasticity in the data. As such use of an asymmetric GARCH model is justified³.

This study uses Asymmetric DCC GARCH model of Cappiello, Engle and Sheppard (2006) to estimate time varying correlations. These correlations are then used in construction of portfolios with different restrictions. The model is estimated in a two step process as given in Figure 2.

Figure 2.

$$\rho_{12,t} = \frac{E_{t-1}(\varepsilon_{1,t}\varepsilon_{2,t})}{\sqrt{E_{t-1}(\varepsilon_{1,t}^2)E_{t-1}(\varepsilon_{2,t}^2)}} = E_{t-1}(\varepsilon_{1,t}\varepsilon_{2,t}) \quad (2)$$

³ Detailed results for normality test and ARCH test are omitted for space purpose.

When $h_{i,t} = E_{t-1}(R_{i,t}^2)$ and $r_{i,t} = \sqrt{h_{i,t}}\varepsilon_{i,t}$ for $i = 1, 2$, where $\varepsilon_{i,t}$ is a standardized disturbance that has zero mean and a variance of one.

Using GARCH(1,1) specification, the covariance between the random variables can be written as:

$$q_{12,t} = \bar{\rho}_{12} + \alpha(\varepsilon_{1,t-1}\varepsilon_{2,t-1} - \bar{\rho}_{12}) + \beta(q_{12,t-1} - \bar{\rho}_{12}) \tag{3}$$

The unconditional expectation of the cross product is $\bar{\rho}_{12}$, while for the variances $\bar{\rho}_{12} = 1$, the correlation estimator is:

$$\rho_{12,t} = \frac{q_{12,t}}{\sqrt{q_{11,t}q_{22,t}}} \tag{4}$$

This model is mean reverting if $\alpha + \beta < 1$. The matrix version of this model can be written as:

$$Q_t = S(1 - \alpha - \beta) + \alpha(\varepsilon_{t-1}\varepsilon'_{t-1}) + \beta Q_{t-1} \tag{5}$$

where S is the unconditional correlation matrix of the disturbance terms and $Q_t = [q_{i,j,t}]$.

As this model does not allow for asymmetries and asset-specific news impact parameters, the modified model that Cappiello, Engle, and Sheppard (2006) used for incorporating asymmetrical effects and asset-specific news impacts is:

$$Q_t = (\bar{Q} - A'\bar{Q}A - B'\bar{Q}B - G'\bar{N}G) + A'\varepsilon_{t-1}\varepsilon'_{t-1}A + B'Q_{t-1}B + G'n_{t-1}n'_{t-1}G \tag{8}$$

where A, B, and G are diagonal parameter matrices, $n_t = I[\varepsilon_t < 0] \circ \varepsilon_t$ (with \circ indicating Hadamard product), and $\bar{N} = E[n_t n'_t]$. For \bar{Q} and \bar{N} , expectations are infeasible and are replaced with sample analogues, $T^{-1} \sum_{t=1}^T \varepsilon_t \varepsilon'_t$ and $T^{-1} \sum_{t=1}^T n_t n'_t$ respectively.

$Q_t^* = [q_{ii,t}^*] = [\sqrt{q_{ii,t}}]$ is a diagonal matrix with the square root of the i^{th} diagonal element of Q_t in its i^{th} diagonal position.

In this paper, we only looked for asymmetrical effects and not for asset-specific news impacts.

The final step is an optimisation process with the constraints to minimise standard deviation and maximise returns with the condition that weights of the portfolio equal to 1. This is based on the modern portfolio theory of Markowitz (1959) and an commonly used process provided by Elton, Gruber and Padberg (1976). More recently literature has adopted a model that is less restrictive and uses full variance covariance matrix (e.g. Gupta and Basu, 2009; Sukumaran, Gupta and Jithendranathan, 2015). The following set of equations and restrictions are used in the optimisation process in figure 3.

Figure 3.

Return of a portfolio with N assets can be written as:

$$\bar{r}_p = \sum_{i=1}^N X_i \bar{r}_i \tag{6}$$

where X_i is the weight of the i^{th} security in the portfolio and \bar{r}_i is the expected return of that asset. Mathematically, the optimisation problem can be stated as follows⁴.

$$\text{Min } \sigma_p^2 = \sum_{i=1}^N \sum_{k=1}^N X_i X_j \sigma_{i,k} \tag{7}$$

Results

We constructed three equally weighted portfolios as the benchmark portfolio in each stock exchange. The portfolio return is derived from the weekly price index data from all sector indices, while the portfolio standard deviation is derived from the daily price index, and the daily volatility is multiplied by the square root of five (number of trading days in a week). The benchmark portfolio correlation is measured by the traditional realised (unconditional) correlation.

Table 3 presents the results of nine sector equally weighted portfolios for ASX, NSE and SSE. The performance of each portfolio is summarised by the portfolio mean, annual return and the portfolio standard deviation. Ranking by portfolio return only, the nine sectors equally weighted portfolio in SSE have the highest return at 19.54 per cent, followed by 15.74 per cent for NSE, and 8.35 per cent for ASX. In contrast, if measured by portfolio standard deviation, the portfolio with the lowest risk is NSE. The portfolio standard deviation for NSE is 16.51 per cent while the ASX and SSE have 16.62 per cent and 18.70 per cent, respectively. The two ranking systems derive from two different sequences. In order to solve this inconsistency in practice, most scholars and practitioners use the Sharpe ratio (Sharpe, 1964, 1966 and 1994).

Table 3: Benchmark index

	ASX in Australia	NSE in India	SSE in China
Portfolio mean Annual return	8.35%	15.74%	19.54%
Portfolio standard deviation	16.62%	16.51%	18.70%
Sharpe ratio	0.3517	0.5296	0.7237

Note: Risk free rate for Australia market is 2.5 per cent, 7 per cent for Indian market and 6 per cent for China's market.

4 A standard restriction to equation 1 is placed to make the sum of weights of the proportions invested in different assets equal to one. Other restrictions that are used in this research is based on the 'prudent man rule' commonly practised in the US. Based on this practice we arbitrarily place a maximum of 20 per cent investment in any of the frontier markets and/or minimum of 80 per cent in the Australian (or the US in case of the US investor's perspective) market. We have only presented a standard equation here and omitted restricted variations for space purpose.

In this study, the risk free rate is chosen as the interbank offer rate in each country, which is 2.5 per cent, 7 per cent, and 6 per cent in Australia, India, and China respectively. When Ranking by Sharpe ratio, the nine sectors equally weighted portfolio in China had the highest Sharpe ratio at 0.72, which means an investor would receive a 0.72 per cent return by bearing one unit of risk. India ranks second with a Sharpe ratio of 0.52, and ASX ranks last with a Sharpe ratio of 0.35.

Our study uses an asymmetric DCC GARCH model to estimate the conditional correlation. We also constructed a new portfolio based on the conditional correlation with the identical sector indices within an identical time period and then compared the portfolio return with a benchmark portfolio – the nine sectors equally weighted portfolio in each stock exchange. Since the only difference between the new portfolio and the benchmark portfolio is the choice of correlation, the difference of portfolio performance will be directly contributed to the difference in correlation.

In order to simulate the real world situation when making the portfolio⁵, this study has two sets of restrictions, which are short sell restriction and maximum investment weight restriction for a single sector index. We restrict short selling for a number of reasons, such as; short selling may not be effective in emerging markets due to maturity of the markets and are at times banned by regulators in some countries. Regulators believe that short selling increases the volatility in the market and potentially increases speculative behaviour as borrowing an asset is less costly than actually holding it before the due date (China Securities Regulatory Commission, 2014). Maximum weighted restriction in a single asset is also a pervasive rule in the real world, such as in pension funds and those protective funds that focuses on long-term sustainable growth. This is because those kind of investments have a high level of risk aversion and putting too much weight in a single asset increases the exposure to single asset volatility.

In order to compare which correlation measurement has a better ability to capture co-movement between various sector indices, this study has constructed seven portfolios based on conditional correlation from each of the three stock exchanges. The first portfolio constructed based on conditional correlation is also an equally weighted nine sector indices portfolio, and the portfolio return is the same as the benchmark portfolio. However, the portfolio standard deviation is different from the benchmark portfolio. Therefore, the difference in the standard deviation contributes to the difference in the portfolio Sharpe ratio.

The remaining six portfolios were constructed with the combination of short sell restriction and maximum weighted restriction in the single sector index. The detailed combination are no short sell with no restriction, maximum 50 per cent weight, and maximum 20 per cent weight in the single sector index, as well as allowing 100 per cent short sell with no restriction, maximum 50 per cent weight, and maximum 20 per cent weight in the single sector index. After setting up the restrictions, the optimal portfolio is calculated based on maximising Sharpe ratio.

Table 4 states the optimal portfolio weight in each sector index, the portfolio return, portfolio standard deviation, and the Sharpe ratio in ASX. The benchmark, equally weighted nine sector portfolio in ASX had 16.62 per cent portfolio standard deviation and Sharpe ratio of 0.35.

⁵ These arbitrary restrictions are a common practice in the US and are referred to as 'prudent man's rule'; see Gupta and Donleavy (2009).

Table 4: ASX portfolio with different investment restrictions based on asymmetric DCC GARCH model estimated correlations.

	Consumer Discretionary	Consumer Staples	Energy	Health Care Index	Industries	Information Technology	Materials	Real Estate	Telecommunications Services	Optimal Portfolio Return	Portfolio Standard Deviation	Sharpe Ratio
Investment weights (Equally weighted)	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	8.35 %	16.57 %	0.3528
Investment weights (no short sell)	0.00 %	0.00 %	30.56 %	54.72 %	0.00 %	5.76 %	8.96 %	0.00 %	0.00 %	16.48 %	14.76 %	0.9474
Investment weights (no short sell with max 50% in one sector)	0.00 %	0.00 %	32.15 %	50.00 %	0.00 %	7.81 %	10.04 %	0.00 %	0.00 %	16.43 %	14.70 %	0.9475
Investment weights (no short sell with max 20% in one sector)	0.00 %	0.00 %	20.00 %	20.00 %	20.00 %	20.00 %	20.00 %	0.00 %	0.00 %	13.57 %	13.72 %	0.8069
Investment weights (100% short sale)	-4.98 %	-10.89 %	50.75 %	49.93 %	49.75 %	-5.65 %	28.46 %	-50.08 %	-7.29 %	43.40 %	21.66 %	1.8883
Investment weights (100% short sale with max 50% in one sector)	-4.47 %	-10.90 %	50.00 %	49.82 %	49.78 %	-5.59 %	28.42 %	-49.93 %	-7.13 %	33.38 %	18.27 %	1.8270
Investment weights (100% short sale with max 20% in one sector)	20.00 %	20.00 %	20.00 %	20.00 %	20.00 %	20.00 %	20.00 %	-60.00 %	20.00 %	23.24 %	16.46 %	1.4119

Note: Risk free rate equal to 2.5 per cent (overnight cash rate from Reserve Bank of Australia).

The new equally weighted portfolio based on conditional correlation has a lower portfolio standard deviation of 16.57 per cent and Sharpe ratio of 0.35. It suggests that the conditional correlation has a higher sector diversification benefit, as the new portfolio with the same weight, same sector, and same period has a lower portfolio standard deviation.

In ASX, for the no short sell portfolio group, the portfolio risk, portfolio standard deviation, and Sharpe ratio are similar despite the weight restrictions. The Sharpe ratio decreases from 0.94 to 0.80 with 20 per cent maximum weight in one sector. As for the 100 per cent short sell portfolio group, the portfolio with no restriction has the highest Sharpe ratio of 1.88. Portfolios with restriction of maximum weight of 50 per cent and 20 per cent in one sector is has Sharpe ratios of 1.82 and 1.41 respectively.

The performance of ASX portfolios constructed using the asymmetric DCC GARCH model estimated conditional correlation significantly exceed the benchmark, as the Sharpe ratio varies from 0.35 to 1.88. The highest Sharpe ratio comes with 100 per cent short sell with no restrictions in a single asset. It is therefore not surprising, that both portfolio return and portfolio standard deviation increase significantly. The increase in returns exceeds the increase in standard deviation, which ultimately contributes to the growth of the Sharpe ratio. Other findings include that the Sharpe ratio of a portfolio, that allows 100 per cent short selling exceeds the Sharpe ratio of the portfolio that does not allow any short selling.

Table 5 illustrates the optimal portfolio weight with the portfolio return, standard deviation, and a Sharpe ratio of portfolio constructed using conditional correlations in NSE. The new equally weighted portfolio has a portfolio standard deviation of 13.6 per cent with a Sharpe ratio of 0.6428. In comparison, the benchmark portfolio has a portfolio standard deviation of 16.51 per cent with a Sharpe ratio of 0.5296. There is a decrease in portfolio risk without sacrificing portfolio returns. The Sharpe ratio of the portfolio with no short selling and with maximum 50 per cent in one single sector is 1.3678. Results for portfolios with 20 per cent maximum restrictions are also comparable. After allowing 100 per cent short selling, the portfolio Sharpe ratio increases substantially compared with the benchmark portfolio.

Table 5: NSE portfolio with different investment restrictions based on asymmetric DCC GARCH model estimated correlations.

	Automobile	Banking	Energy	Financial	Fast Moving Consumer Goods	Information Technology	Midea	Metal	Pharmaceuticals	Optimal Portfolio Return	Portfolio Standard Deviation	Sharpe Ratio
Investment weights (Equally weighted)	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	15.74 %	13.60 %	0.6428
Investment weights (no short sell)	0.00 %	0.00 %	39.86 %	28.82 %	14.48 %	0.00 %	16.83 %	0.00 %	0.00 %	28.34 %	15.61 %	1.3678
Investment weights (no short sell with max 50% in one sector)	0.00 %	0.00 %	39.86 %	28.82 %	14.48 %	0.00 %	16.83 %	0.00 %	0.00 %	28.34 %	15.61 %	1.3678
Investment weights (no short sell with max 20% in one sector)	0.00 %	0.00 %	20.00 %	20.00 %	20.00 %	0.00 %	20.00 %	0.00 %	2.00 %	23.21 %	12.70 %	1.2492
Investment weights (100% short sale)	-9.15 %	-5.89 %	50.28 %	49.87 %	49.87 %	-5.80 %	28.53 %	-50.36 %	-7.33 %	49.81 %	23.11 %	1.8526
Investment weights (100% short sale with max 50% in one sector)	-9.12 %	-5.90 %	50.00 %	49.76 %	49.90 %	-5.74 %	28.49 %	-50.22 %	-7.18 %	49.69 %	23.04 %	1.8526
Investment weights (100% short sale with max 20% in one sector)	9.58 %	8.95 %	20.00 %	20.00 %	20.00 %	14.68 %	20.00 %	-33.21 %	20.00 %	32.39 %	16.00 %	1.5872

Note: Risk free rate equal to 7 per cent (overnight cash rate from Reserve Bank of India).

All portfolios constructed based on conditional correlation significantly outperformed the benchmark portfolio. Interestingly one pair of portfolios in the no short selling group has Sharpe ratio of 1.3678. Another pair of portfolios in the short selling group has identical Sharpe ratio of 1.8526. The identical Sharpe ratio comes from the highly similar portfolio weight, as no one sector weights over 50 per cent in the portfolio. Moreover, the Sharpe ratio of all portfolios, using NSE indices, allowing for 100 per cent short selling outperform the portfolio that does not allow short selling.

Table 6 shows the optimal portfolio weight with portfolio return, portfolio standard deviation, and Sharpe ratio in SSE. The new equally weighted portfolio also outperforms the benchmark, as the new equally weighted portfolio Sharpe ratio equals 0.9213 compared with the benchmark portfolio that has a Sharpe ratio of 0.7232.

The Sharpe ratio of the no short selling portfolio group is 1.4080, 1.3968, and 1.1776 with no restriction in weight, maximum 50 per cent weight, and maximum 20 per cent weight in a single sector respectively. The 100 per cent short selling portfolio group also outperforms the benchmark, the highest portfolio Sharpe ratio comes with 100 per cent short selling with no restriction in weight. However, the magnitude of the outperformance is relatively small when compared with the Australian and Indian markets.

Table 6: SSE portfolio with different investment restrictions based on asymmetric DCC GARCH model estimated correlations

	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Materials	Telecommunications Service	Utilities	Optimal Portfolio Return	Portfolio Standard Deviation	Sharpe Ratio
Investment weights (Equally weighted)	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	11.11 %	19.54 %	14.69 %	0.9213
Investment weights (no short sell)	0.00 %	63.13 %	0.00 %	25.21 %	11.66 %	0.00 %	0.00 %	0.00 %	0.00 %	28.87 %	16.24 %	1.4080
Investment weights (no short sell with max 50% in one sector)	0.00 %	50.00 %	0.00 %	29.43 %	20.57 %	0.00 %	0.00 %	0.00 %	0.00 %	28.03 %	15.77 %	1.3968

Table 6 continued

	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Materials	Telecommunications Service	Utilities	Optimal Portfolio Return	Portfolio Standard Deviation	Sharpe Ratio
Investment weights (no short sell with max 20% in one sector)	13.97 %	20.00 %	20.00 %	20.00 %	20.00 %	0.00 %	5.69 %	0.00 %	0.52 %	24.05 %	16.32 %	1.1776
Investment weights (100% short sale)	-7.23 %	97.01 %	14.56 %	42.33 %	28.59 %	-28.70 %	-10.53 %	-18.09 %	-17.96 %	39.69 %	21.84 %	1.5430
Investment weights (100% short sale with max 50% in one sector)	-1.87 %	50.00 %	14.78 %	41.74 %	38.12 %	-15.09 %	-4.86 %	-12.50 %	-10.33 %	32.62 %	18.11 %	1.4697
Investment weights (100% short sale with max 20% in one sector)	17.98 %	20.00 %	20.00 %	20.00 %	20.00 %	-7.55 %	8.87 %	-3.83 %	4.53 %	24.43 %	15.58 %	1.1831

Note: Risk free rate equal to 6 per cent (overnight cash rate from People's Bank of China).

In order to increase the robustness of the findings, this study employs an out of sample test with a two-year time period from 14th April 2012 to 14th April 2014 containing 522 observations, following the sampling period from 14th April 2002 to 13th April 2012.

Table 7 shows the new nine sector indices equally weighted benchmark portfolio. The Sharpe ratio for the three benchmark portfolios are 0.6521, -1.7627, and -0.7006 in Australia, India, and China, respectively. The negative Sharpe ratios of the benchmark portfolios in India and China suggest that the return on the portfolio is less than the return of the risk-free investment. However, it is rare to see any benchmark portfolios generate a negative Sharpe ratio in the real world, as the investor has the flexibility to shift from the stock market to the bond market if the stock market shows an unfavourable trend (Strong, 2009). Since the available assets have been restricted to the stock market only in this study, the negative Sharpe ratio is accepted as a baseline to test the sector diversification performance.

Table 7: Nine sector indices equally weighted portfolio (out of sample)

	ASX in Australia	NSE in India	SSE in China
Portfolio mean Annual return	8.67%	4.94%	-2.19%
Portfolio standard deviation	9.47%	1.17%	11.69%
Sharpe ratio	0.6521	-1.7626	-.7006

Note: Risk free rate for Australia market is 2.5 per cent, 7 per cent for India market and 6 per cent for China market.

Following the same procedure and criteria used for the previous test the portfolio is constructed using different constrictions. However, the new portfolio constructed is based on weekly price index from 14th April 2012 to 14th April 2014 with conditional correlation measured by asymmetric DCC GARCH model, the results are recorded in table 8. The Sharpe ratio of the portfolio based on conditional correlation varies from 1.3271 to 3.1249 in ASX, 0.649 to 2.0509 in India, and 0.0243 to 3.241 in China. When compared with the benchmark portfolio in the out of sample test, the conditional correlation portfolio Sharpe ratio significantly beats the benchmark portfolio Sharpe ratio with 0.6521, -1.7627, and -0.7006 in Australia, India, and China market, respectively. Moreover, the performance of the portfolio allowing 100 per cent short selling substantially beats the portfolio that does not allow for short selling in the same period. However, the portfolio volatility has also increased substantially with the allowance of short selling. Besides the short selling restriction, the portfolio with tight single asset maximum weight restriction suffered a penalty in the portfolio performance.

Table 8: Out of sample test result

	ASX			NSE			SSE		
	Optimal portfolio return	Portfolio standard deviation	Sharpe ratio	Optimal portfolio return	Portfolio standard deviation	Sharpe ratio	Optimal portfolio return	Portfolio standard deviation	Sharpe ratio
Investment weights (no short sell)	19.99%	9.32%	1.8770	16.53%	11.12%	0.8567	21.56%	13.98%	1.1134
Investment weights (no short sell & maximum 20% weights in single sector)	19.54%	9.16%	1.8602	15.03%	12.25%	0.6555	13.35%	12.99%	0.5659

Table 8 continued

	ASX			NSE			SSE		
	Optimal portfolio return	Portfolio standard deviation	Sharpe ratio	Optimal portfolio return	Portfolio standard deviation	Sharpe ratio	Optimal portfolio return	Portfolio standard deviation	Sharpe ratio
Investment weights (no short sell & maximum 50% weights in single sector)	15.32%	9.66%	1.3271	13.53%	10.05%	0.6490	6.28%	11.68%	0.0243
Investment weights (maximum 100% short sell)	84.71%	26.31%	3.1249	79.67%	35.43%	2.0509	95.49%	27.61%	3.2411
Investment weights (maximum 100% short sell & maximum 20% weights in single sector)	48.57%	17.17%	2.6823	51.09%	24.24%	1.8184	54.80%	19.10%	2.5579
Investment weights (maximum 100% short sell & maximum 50% weights in single sector)	21.35%	10.40%	1.8119	20.80%	17.08%	0.8083	12.22%	12.22%	0.9052

Note: Risk free rate for Australia market is 2.5 per cent, 7 per cent for India market and 6 per cent for China market.

The portfolio constructed based on conditional correlation significantly beats the benchmark portfolio, which is highly consistent with the previous test performed on the 2004 to 2012 data, which suggests the model is robust.

Conclusion

This study looks at the sector diversification benefits across three markets that includes two significantly large emerging markets and one developed market. Findings using a computationally efficient and theoretically sound ADCC GARCH model suggest that there can be gains in diversifying portfolios across sectors in emerging and developed markets. Results of the study are robust and the findings can be used for practical benefits when investing.

The results of the portfolio constructed with conditional correlation measured by the asymmetric DCC GARCH model significantly outperforms the benchmark portfolio constructed in the traditional correlation matrix, revealing that the asymmetric DCC GARCH model is a feasible and superior model to measure the conditional correlation regardless of political background and market structure. This finding is significant as three crucial factors that influence portfolio construction are returns, riskiness, and correlation. Since all three factors are decided by the market, the better measurement of any one of the three factors will make a positive contribution for all investors. As a result, use of a theoretically sound model provides better estimation of inputs in portfolio construction. The model is computationally efficient and can easily be used in portfolio construction by investors and fund managers.

Furthermore, the simulation of real world market restrictions also provides practical relevance of the study. Results of unconstrained portfolios are superior to the constrained portfolios. However, in the real world, investors are less likely to heavily short sell a particular sector. Additionally, short selling is restricted (or not available) in emerging markets. As such, the application of these restrictions provide more meaningful findings for practitioners.

The main contribution to the existing literature is extending the sector diversification studies with an asymmetric DCC GARCH model into the China stock market. China, as a leading developing country in emerging markets with unique political and economic structure is relatively under-researched. The results from this study show that the benefits of sector diversification in China are similar to the other emerging markets and developed markets despite unique economic structures in China (People's Daily, 2000).

One of the limitations of this study is the insufficient data source, which is pervasive for studies focusing on emerging markets, particularly because the Shenzhen Stock Exchange (SZSE) cannot provide sufficient observation data to perform the asymmetric DCC GARCH model correlation estimate. Despite these limitations, the data available was sufficient for the research question in the study and appropriate conclusions can be made with the available data.

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