CIFR
Centre for International Finance and Regulation
Towards Financial System Integrity

CIFR Submission to

The Financial System Inquiry

March 2015

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Introductory note from CIFR's CEO

It is my great privilege to provide this submission responding to the FSI Final Report on behalf of the Centre for International Finance and Regulation (CIFR). CIFR was set up by the Government in response to the Johnson Report of 2009 to promote public policy development, research and thought leadership in the Australian financial system. CIFR was established such that our researchers could make significant research and educational contributions to better equip financial regulators and industry stakeholders. We would suggest that publicly-funded, independent research centres, like CIFR, significantly contribute to a financial system that is vibrant, stable, innovative and well-regulated. CIFR performs an important role in Australia by engaging scholarly experts with financial industry regulators and other stakeholders for the benefit of public policy development. Many other advanced economies have similar centres, and the Commonwealth and NSW Governments should be commended for their vision and commitment in funding an organisation such as ours.

FSI Workshops

CIFR has invested in three high quality FSI Workshops addressing each stage of the Financial System Inquiry. This submission summarises the key issues discussed at our third FSI Workshop, held at the Westin Hotel in Sydney on 11 March 2015, and provides feedback on many of the 44 recommendations put forward in the FSI's Final Report. This Workshop included a diverse group of over 150 participants from industry, academe, government and regulatory organisations, and highlighted the important role that high quality scholars can play in a constructive analysis and debate on the key issues impacting the financial system.

Videos from CIFR's third FSI Workshop are accessible via the following link:
http://www.cifr.edu.au/site/Latest_news/CIFR_FSI_Workshop_III_-_The_Final_Report.aspx

Increasing Scholarly Engagement and Alignment in Financial Regulation and Innovation

Australia has developed many world-class scholars, and these scholars undertake financial research of very high quality. One observation however, is that the degree of engagement by academics in Australian institutions could be significantly enhanced. In addition, research outputs could also be improved in that they are directly relevant to current issues and also translatable to a diverse group of stakeholders. The impetus for increased academic engagement with the financial (and business) sector lies in reviewing the incentives that govern academics' participation in the roles they fulfil. In general, Australian academics are professionally evaluated according to three criteria or key performance indicators (KPIs). These are: the quality and quantity of their research (including competitively awarded research funding); their teaching contribution; and their administrative service and contribution to their faculty and the wider university.

It follows that academics seeking to advance their careers will naturally concentrate on these three key measures. Perhaps unsurprisingly, research output is typically a point of particular focus. It is the most visible and quantifiable, and has the most immediate impact in terms of raising the public profile of both the individual academic and the university they represent. Indeed, it could be argued that publication of research is the sole area in which Australian academics are incentivised to perform. This is because the reputation of universities, and their all-important share of government funding, is largely determined by the success that their academics achieve in having their research published in leading scholarly journals.

Recognising the need to foster closer ties with business, UNSW Australia (as one example) now applies a fourth performance indicator that requires its business academics to engage more closely with the commercial sector. This is an important development, which should encourage academics to be mindful of the potential benefits to society when prioritising their work. However, much more should be done.

While CIFR (and other similar centres) operate successfully in coordinating research effort for the benefit of financial regulators, I believe it is also important that regulators and government develop a more formal mechanism by which engagement by scholars can be coordinated. While any requirement for Australian academics to become more closely involved with the financial sector is laudable in theory, there may be practical considerations that make this difficult to achieve. Physical locality is one such consideration. Although electronic communications have brought the world closer together, face-to-face contact remains a critically important element of successful business relationships. This can create a significant hurdle for scholars located outside of Australia's financial capital – the Sydney CBD – and to a lesser extent, the Melbourne CBD, where financial regulators and financial leaders are headquartered.

FSI Text Analytical Research

The FSI's Final Report is extensive in its coverage and has benefited from wide consultation and feedback over the two previous submission rounds. I compliment David Murray, his Panel members and the Secretariat for the quality of their work and the consultative process that was undertaken. CIFR has been privileged to have had many opportunities to directly engage with members of the Secretariat. This included a text analysis of both the Interim and Final Reports published by the Secretariat. The purpose of this work was to provide assistance in summarizing what was contained in the Final Report, in a manner which highlighted key themes, words, and issues identified using algorithms. We trust that this analysis provides a unique insight and is of further help in better understanding the breadth of issues raised in the Final Report.

Financial Data Architecture and Scholarly Research

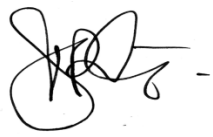
While not explicitly addressed in the FSI's terms of reference, we would like to re-assert the importance of ensuring that all data captured, stored and accessed within the financial system, by regulators and others, is

complete, accurate, readily-usable and, where appropriate, able to be shared by market participants and regulators. Establishing an inventory of all financial data that is captured, and assessing whether such data helps promote a more efficient and healthy financial system, could be of significant importance and benefit to the economy. A data architectural model allowing the safe and efficient sharing of information and intelligence right across the financial regulatory space should be a significant national priority, and involve regulatory organisations (including the ATO, RBA, APRA, ASIC and ACCC), industry and senior scholars. A world-class data architecture model could further enhance regulatory quality by ensuring that policy changes are truly evidence-based. It would also enable researchers to undertake more targeted and high value work relevant to Australia, and Australia's needs. I stress this point further by saying that many scholars in Australian institutions elect to use North American and European datasets for empirical work, not least because these international datasets can be more granular, better designed and also more easily accessible than Australian datasets. Regulators should seriously address this issue and help researchers with domestic data that can be applied to research problems in Australia's own backyard. Leveling the playing field is critically important here, and would more appropriately tie the investment of public funding of research with actual problems experienced within Australia.

Concluding Remarks

Despite the constraints placed on the Inquiry by its terms of reference, resourcing restrictions and tight reporting timeframe, the Inquiry's recommendations make a significant contribution to the development of good public policy outcomes. Importantly, the Inquiry also highlights a number of issues that require further research or analysis. To the extent CIFR has the relevant expertise and resources, we will continue to provide input to these issues and endeavor to add value to the policy formulation process.

CIFR wishes Treasury and the Commonwealth Government every success in their consideration of the submissions received, and implementation of many of the Report's recommendations.



Professor David R Gallagher
CEO, CIFR

Foreword from CIFR's Chairman

I believe the Murray Report is wonderfully comprehensive. It was written by an extraordinarily experienced group of practitioners and academics, supported by a first-class secretariat. The Inquiry's terms of reference were extremely broad and, despite the tight timeframe, the Inquiry was willing to go even further to ensure that all of the key issues were addressed.

We look forward to the Government's response to the Report and are delighted that the Shadow Treasurer, The Honourable Chris Bowen, is committed to being part of a bipartisan approach to the analysis and implementation of the Report's recommendations.

Four important concepts underpin all of the Inquiry's 44 recommendations: efficiency, resilience, fair treatment and competition. Because Australia is reliant on importing capital, we must have a financial system which is trusted internationally.

Most of the Inquiry's recommendations focus on the 'big picture' and require more work before they can be implemented. Some of this work should be done by the regulators, some by industry, and some by academics. One of the issues associated with reports of this nature is that by the time the recommendations are adequately analysed, the next crisis has arisen and it's too late.

It is incumbent on us to make sure that we keep the pressure on industry practitioners, policy makers and politicians to ensure that we either advance the Inquiry's recommendations or dismiss them. It is in the best interests of the industry to take the initiative. Resisting change will not work. The Murray Report has given us clear guidelines, many of which will inevitably be implemented. For example, the recommendations in relation to bank capital are probably going to be adopted. There has already been a lot of work published by banking analysts that shows that the big four Australian banks have the resilience to recapitalise over a sensible period of time and with relatively little potential impact on shareholders. I think the market understands that and it's time to get on with it.

It is important to recognise the significance of the Federal Government's action in stepping in during the GFC to guarantee the bank deposits of most investors and stimulate the economy. This provided an enormous boost to the resilience of the Australian economy. The fact that our banks are well managed and relatively well capitalised certainly helped, but it needed the Government, in the face of enormous pressure, to say "we're in this together". We must also recognise that, when the next financial crisis occurs, our Government might not have the resources to be able to provide such comprehensive assistance.

We are also fortunate to have been blessed with outstanding leadership within our regulators over a long period of time – people who are highly experienced, widely respected, understand the industry and work extraordinarily hard to achieve positive, practical outcomes. They also understand the need for regulators to let industry get on with the job.

I firmly believe we need to raise the level and breadth of financial literacy in Australia because so many consumers fail to comprehend the financial risks associated with their investments, and suffer the consequences. The language we use can be mystifying and yet so many of the concepts are fundamentally simple. We need to get financial literacy into the school curriculum and have been irresponsible as an industry for not pushing harder to achieve this.

It is important to recognise that academia has a significant role to play and, as we have seen at CIFR, can make a major contribution. With this role comes an obligation to ensure that the research work is first class in terms of its academic rigour and its practical application.

CIFR has sponsored about 70 research projects and many of them are now coming to fruition. There has been some first class work done by our researchers and we are working with them to deliver high quality, relevant outputs to stakeholders. One of our key objectives is to translate academic work, so it is not just available for publication in academic journals but is also read by a wider, non-academic audience, including policy makers, regulators and industry.

This report summarises the views of the regulators, academics and industry practitioners who participated in CIFR's third Financial System Inquiry Workshop on 11 March 2015. We trust you will find it useful.

Peter Mason AM
Chairman, CIFR

Chapter 1: Resilience

CIFR Responses to FSI Recommendations

- Leverage should not be used as an investment tool in the management of superannuation funds. The aim of superannuation should be the accumulation of assets to provide income in retirement, not wealth management.
- CIFR supports the recommendation of introducing higher capital requirements for Australian banks.
- Additional capital should be mainly in the form of common equity.
- With regard to bail-in provisions, taxpayers should not be called on to support banks.

Contextual Background

- Academic research demonstrates that the potential tax disadvantage for banks of higher capital requirements is reduced by dividend imputation.
- Empirical research suggests that a larger base will reduce the cost of equity for Australian banks, and mitigate the impact on their overall funding costs.
- The benefits of leverage are significantly dependent on differences in the respective tax rates applicable to borrowing costs and income. Accordingly, although leverage may make sense in the general commercial environment, it becomes less attractive in superannuation, where tax differentials are smaller.
- A bail-in is one of several, admittedly less than ideal, mechanisms to ensure that a bank can continue to meet its obligations.
- One of several practical drawbacks associated with bail-in mechanisms is the achievement of fair treatment across the spectrum of creditors.
- Bail-in provisions may incur an economic cost. This is because many corporate bond holders are foreign investors, who may react to such a scheme by demanding a market premium before placing their funds.
- Regulations related to loss absorption recognise clear trigger points for action. At such points, greater clarity should be provided regarding the purpose of any action, namely whether to implement a bail-in or to commence insolvency.
- Several propositions have been made with regard to a crisis management toolkit. Although potentially attractive at first glance, they would entail significant implementation challenges.
- Concentration within the banking sector may increase the implicit cost of bank guarantees.
- Empirical evidence indicates that the guarantee support provided by the government to the banks during the GFC was worth between 2 and 3 credit rating notches.

- There is broad similarity in the respective approaches taken by the FSI and the Basel Committee to mortgage risk weightings.
- Idiosyncratic risks are relatively well reflected in the current system, however systemic risks are not. This underpins the merit in developing a reporting template for ADIs that is transparent against the minimum Basel III capital framework.

Chapter 2: Superannuation and Retirement Incomes

System Efficiency and Competition

CIFR Responses to FSI Recommendations

- Consumer confidence in the superannuation system would be enhanced if the Government's primary focus was on the system's strategic objectives, and adjustments to the system were removed from the annual budgetary cycle. The key policy framework of superannuation, such as tax rates and preservation age, should be set with at least a five-year timeframe in mind.
- The assertion that the superannuation system is inefficient and that fees are too high does not hold true for the majority of superannuation fund members.
- A targeted approach of identifying and addressing specific inefficiencies or barriers to competition may be more effective than introducing a formal competitive process for default funds, as contemplated by the FSI.

Contextual Background

- The FSI's contention that the superannuation system is inefficient due to a lack of competition, that fees are too high, and that economies of scale are not being passed on to investors, can be disputed.
- The fee debate often draws on inappropriate data in a number of ways:
    - Examining data which reflects fees charged to 'retail' investors - This can obscure some crucial differences that exist between the wholesale and retail segments.
    - Co-mingling of data from choice and default products - Fees for choice products are higher, and those who select them make an active decision to pay higher fees. The focus should be on MySuper default products.
    - Use of simple averages - Simple averages may not reflect what the vast majority of members pay.
- Members of larger MySuper funds effectively invest as wholesale investors, and get the benefit of the scale of their fund provider.
- Most retail investors may be better off investing in passive portfolios, given that retail active management fees often exceed any above-index returns delivered by active managers. This is less of an issue for MySuper members, who pay much lower, wholesale management fees.
- There are 29 MySuper providers with in excess of $5 billion in default assets under management. This group is responsible for 79% of total default asset and 75% of members; and charges an average fee of 0.90% pa on an average balance of $50,000. This group competes vigorously, and is efficient.

- Analysis of the top 10 funds reveals a relation between the level of fees and the use of passive management and alternative assets. Further, funds with higher allocations to these investments have delivered commensurately higher gross returns on average.
- There are several areas where the superannuation industry might be able to reduce costs, without sacrificing net returns. Initiatives in these areas could potentially support a material reduction in annual MySuper fees. These areas include:
    - More discerning use of active versus passive management – Greater scrutiny could be placed on active management to ensure it is used where it adds value. For instance, paying active fees is hard to justify in international equities, where funds have typically struggled to outperform the benchmark.
    - Consolidation – The industry is still too fragmented with too many small funds. Consolidation might reduce overall system costs and increase supervisory efficiency.
    - Cross-subsidisation in the retail sector – Retail fund members are often over-charged, typically paying a rack rate of 120-140 basis points per annum, to support discounts of up to 60-70 basis points for the largest corporate funds.
- Product proliferation and legacy products add to system costs and hence fees paid by members. Also, it is confusing for investors to have a large number of products. However, there are major challenges involved with closing legacy products, including tax implications and the need to ensure that investors are not disadvantaged when they are moved to another product. Addressing these issues might provide further scope to reduce costs and fees.
- While funds set their fees in a largely competitive manner, two notable barriers to competition remain:
    - Nomination of default funds under modern industrial awards; and
    - Approved product lists (APLs) of integrated product providers.

  Easing restrictions on default fund nominations and APLs would lead to broader access for a range of providers, and hence level the playing field. However, this might be best achieved in conjunction with an emphasis on the best-interest duty, and establishing a quality filter on MySuper products.
- Other competitive forces exist that need to be acknowledged. These include the feasibility for investors with larger balances to set up an SMSF; and the emergence of new players (disruptors), who are already offering products at an annual charge of less than 50 basis points.

Comprehensive Income Products for Retirement (CIPRs)

CIFR Responses to FSI Recommendations

- The design of CIPRs requires dealing with the complexity of member heterogeneity.

- The name assigned to these products should provide a clearer understanding of what they are designed to achieve. 'CIPR' is not a user-friendly name, nor does it succinctly convey a meaningful message to consumers
- The challenge is to deliver products that are simple, transparent and well-presented, to ensure they are clearly understood and widely-accepted.

Contextual Background

- Addressing retirement needs is complicated by the fact that peoples' financial circumstances are more heterogeneous in retirement. A suite of products will probably be required.
- Although the FSI did not term CIPRs a 'default' product, they may effectively become such a product. To the extent that this may occur, care needs to be taken in CIPR design, as people, especially the less informed, tend to adopt the default option.
- Designing a CIPR requires balancing trade-offs in combining three components:
  1. Adequate income in retirement;
  2. Risk management (taking account of longevity, volatility, sequencing, inflation); and
  3. Flexibility.
- CIPRs should be regulated, approved and qualitatively rated by APRA. Their regulation should be normative (principles-based), rather than prescriptive. Furthermore, regulation should accommodate innovation.
- Interaction with members at the point of retirement will be essential, creating the need for both members and advisers to be informed about the options available. Accordingly, the aim should be to design CIPRs that are simple and easy to understand. Complexity should be avoided, to engender understanding and limit cost. There should be flexibility to adapt to an investor's needs, and the capacity to opt-out if desired.
- The potential demand for longevity insurance is substantial.

Chapter 3: Innovation

CIFR Responses to FSI Recommendations

- As opposed to a regime of 'buyer-beware', it should be the responsibility of the banks to market appropriate products.
- Bank customers should not incur an interchange fee when accessing their funds via debit cards.
- Interchange fees on credit and charge cards should be set at levels that reflect the ubiquitous nature of these payment mechanisms.
- The drive to become good corporate citizens should come from the banks, as opposed to being prescribed by the regulator.
- The growing tendency among consumers to interact directly with service providers correspondingly increases the need for greater transparency regarding product features.
- At an overall level, the overarching responsibility of regulators is to promote trust in the system.

Contextual Background

- There are three essential features of an efficient and effective regulatory system:
  - Regulators who are actively engaged in the system;
  - An operational structure that is adaptive. This applies not only to the regulators, but to the broad spectrum of system stakeholders; and
  - Participants that bring a pragmatic perspective to their roles.
- The ideal regulatory framework enables and promotes innovation.
- Digital financial services (DFS) have had mixed success in terms of take-up rates in developing countries. The reason for this is the approach taken by regulators. In countries such as India, where regulatory settings have not been adjusted for DFS, take-up rates have been low. In contrast, a more accommodative regulatory stance in Kenya has led to almost 80% of adults in that country having an e-money account.
- In the micro-payments space, where the pace of change is rapid, regulators need to take a patient approach. The full implication of emerging trends should be analysed before regulatory measures are imposed.
- Mobile payments are going to become a large segment of the financial sector in America, where, despite its status as a leading nation, many consumers do not have access to a bank account or credit facilities.
- In Australia, there is greater financial inclusion, as most consumers have access to a bank account, and the contactless methods of payment that go with them.
- The latest generation of smart phones readily facilitate contactless payment.

- With regard to high frequency trading (HFT):
  - HFT may be thought of as having facilitated more widespread access to the financial markets. Over the time that HFT trading has grown, there has been a similar rise in the number of exchanges on which securities are traded.
  - HFT presently accounts for approximately 50% of all public market trading activity in the US, down from more than 70% before the GFC.
  - There is significant academic debate as to whether HFT is a good or a bad thing.
  - Academic studies show that HFT brings added liquidity and volume to the market. This reduces spreads, which represents an improvement in the efficiency of the market.
  - Historically, exchanges have operated with computer systems that have been developed specifically for supervisory functions. However, these systems have not kept pace with the change in technology within the broader marketplace.
- With regard to data management:
  - Data allows people to develop a realistic understanding of what is occurring, rather than relying on their perceptions.
  - A greater volume of relevant data leads to a corresponding increase in the quality of decision that can be made on the basis of that data.
  - Complex system analysis facilitates a series of interactions between a user and their phone, the phone and the network, and the user and the network billing system.
  - In a sense, the system has the ability to perform a real-time credit check on every user accessing a network. In its simplest form, the check determines whether the user can pay for their call to be continued.
  - This type of data facilitates a detailed analysis of customer activity, which can be used to predict future demand trends.
  - Despite the degree of system functionality, firms often have difficulty accessing data. This may be because of disparate record sources or privacy issues.
  - When there is information asymmetry in favour of a small number of companies, the scene is set for disruption.
  - Innovation in the area of data management is going to be tremendously disruptive.
- More broadly, there is significant disruption on the horizon in financial services. The timing of its arrival is uncertain, but it will nevertheless be significant.
- Technology has provided a means of conducting business in the financial services sector for many years, typically taking the form of a business-to-business model.
- The end consumer is now moving closer to the service provider. In this regard, greater transparency regarding products and product features is critical.

- Digital disruption has proceeded at a slower pace in industries where there is a great degree of trust involved between the provider and the end consumer, for example financial services and health.
- Regulators have a key role to play in ensuring that trust in the system remains intact.
- Peer-to-peer (P2P) lending is an online marketplace that connects borrowers with investors. This enables participants to bypass the banks.
- The scale of margins available in banks' consumer lending books makes this business attractive for disruption.
- Increasing customer dissatisfaction represents an early warning signal to relevant stakeholders that the industry is vulnerable to disruption.
- A relative lack of product innovation in the banking sector enhances the scope for disruption.
- The issue of consumer fairness is another area that has disruptive potential. For example, consumers are typically charged a uniform interest rate on their borrowings, irrespective of their creditworthiness. This is profitable for the banks, but is hardly fair on the consumer.
- The object of disruption is not to replace the banks, but to look at a specific area where there is potential to create a better value proposition for customers.
- Once an area of potential service improvement has been identified, the next step is to obtain regulatory approval for a proposed new solution.
- It is difficult for the regulator to evaluate new products or solutions on the basis of existing parameters, as these may not be entirely relevant for the new product or solution.
- Responsibility for being good corporate citizens rests with the individual banks, not the banking sector regulator.
- In terms of the payments system, the regulatory goal is to provide a safe, efficient and competitive system.
- The regulatory system ought to restrain abuses of collective setting of bank interchange fees, and eliminate access barriers for new entrants. However, the banking industry has undermined the achievement of these objectives.
- Banks have increased the complexity of the interchange fee regime in order to increase revenues at system transition points.
- Banks charge more for their card services to smaller companies and low income card holders, relative to more affluent individuals and larger entities.
- Relevant stakeholders should ensure that Australia does not fall behind other countries in its regulation of interchange fees.
- Potential new entrants are denied access to the card payments system by the big four banks.

Chapter 4: Consumer Outcomes

CIFR Response to FSI Recommendations

- The product design and disclosure regime should reflect the wide divergence in financial literacy levels across society.
- Regulatory polices need to reflect the notion of fairness, specifically in the context of ensuring equal and fair treatment of consumers.
- Similar to the philosophical approach taken in section 52 of the Trade Practices Act, product providers should be held liable for consumer losses arising from the sale of inappropriate investment products.
- The financial advice industry should be further encouraged to adopt a code of conduct that is similar to those of other professional bodies, and seek to achieve global best practice outcomes.

Contextual Background

Financial literacy

- Financial literacy programs are important. However, whether the majority of individuals are able to attain sufficient financial literacy is open to debate.
- Achieving financial literacy takes time, and may involve a generation-long learning curve.
- Limited financial literacy among individuals is pitched against the vast marketing resources of product providers, who typically make their offerings particularly complex.
- Limits to financial literacy increase the onus on product providers to make products 'safe'.

Behavioural insights

- It is insufficient to rely only on information disclosure, in light of behavioural influences, which, in turn, can be reinforced by apathy, poverty of time, limited understanding and complexity.
- Intervention may be justified where behavioural influences result in unfair outcomes.
- There is a need to focus on how people make decisions, and how they actually use products.
- There are several techniques to address behavioural effects. These include:
    - Simplification – To ensure the product is understandable in plain language. Choice variables should number no more than three, and start with a set of questions to identify the core issue, which can then be converted into a simple choice set.
    - Presentation and framing - The 'choice environment' is important. Notable choice mechanisms include: opt-out versus opt-in; default settings; controls over advertising; and providing simple rankings.

- Controls over product features - Restrictions on exit fees, teaser rates and free gifts at the point of product entry, as these obscure the realities of the product.

Fairness

- The FSI's 'step-change' in emphasising fairness as one of three building blocks of future regulatory philosophy in Australia, and as a way of building confidence amongst consumers, is welcomed.
- The FSI definition of fairness emphasises the following process values:
  - Integrity, specifically in terms of consistency;
  - Honesty;
  - Transparency, specifically ensuring that relevant information is disclosed; and
  - Non-discrimination.
- Fairness in regulation should also encompass what may be termed substantial values:
  - Client needs, and, in turn, product suitability;
  - Value for money; and
  - Consideration of the least advantaged in society, namely those without access to banking services.
- Fairness is only one yardstick. The FSI also advocates a balance between resilience and efficiency, which may lead to tension with regard to fairness under some settings.
- Fairness is a concept that in some people's minds mainly relates to products, and hence is limited in coverage. However, the obligation of fiduciary intermediaries, such as advisers and investment managers, to put the investor first is a long-established and important concept. It is an illustration of fairness, because the law requires the intermediary to place the client's interests first, especially where the client is dependent on the intermediary.

Financial product governance and product intervention powers

- Financial product governance should demonstrate fairness, and should promote a client-focused culture. The aim is to get product providers to focus on, and take responsibility for, delivering fair outcomes to consumers.
- A possible alternative to giving ASIC a product intervention power is to make product providers liable for losses incurred when supplying products that are unsuitable for particular consumers. This is similar to the liability incurred for deceptive conduct under section 52 of the Trade Practices Act.
- It is desirable to have financial product governance, to promote suitability in design and distribution, and to impose sanctions for distributing unsuitable products.
- Product standardisation is useful, especially for advisers.

Financial advice

- The best-interest duty for financial advisers is of key importance.
- The financial advice business needs to move more quickly towards becoming a 'profession', with standards that are adopted with conviction and strongly enforced.
- With regard to conflicts in financial advice:
    - These have been substantially reduced by the banning of commissions under FoFA, with the notable exception of commissions on life insurance.
    - Complete alignment will remain a difficult target within a system of vertical integration.
    - It is debatable whether investors prefer an independent adviser, or one that has the backing of an institution.
    - Approximately 40% of advisers' income comes from commissions on legacy products. The diminishing market presence of these products will lead to a corresponding change in the business models, and hence income sources, of advisers.

Chapter 5: Regulatory System

CIFR Response to FSI Recommendations

- Independence and accountability should be primary considerations in regard to the framing of financial regulators' roles and responsibilities. Adequate resourcing should be a key consideration in this process.
- Any changes made to the regulatory system, or to regulators' responsibilities, should be done on the basis of a comprehensive body of supporting evidence.
- The power of intervention would enable ASIC to extend its area of operation beyond disclosure. Furthermore, it would allow ASIC to address market-wide problems, rather than simply focusing on specific entities, and enable it to make decisions with a view to benefiting competition.
- Responsibility for fostering responsible corporate culture lies with the corporate sector. It should not be prescribed by the regulator. However, the regulator might consider giving industry participants an annual 'score' as a feedback mechanism to the market about culture as the regulator sees this each year.

Contextual Background

- The philosophical starting point for the FSI was whether there was any strong argument for change, for example whether APRA should be re-incorporated into the Reserve Bank. In the event, no compelling argument was found to support any such change.
- The FSI has produced a balanced package of recommendations. This represents a sound endorsement of the current regulatory model.
- Adequate funding and support for regulators are issues that feature in several areas of the Final Report. There are also a number of recommendations regarding regulators' mandates.
- Recognising the difficulty involved in developing regulations that have universal application, APRA instead contends that the ideal regulatory model is typically unique to its local jurisdiction.
- The FSI has re-affirmed the need for strong, independent, and accountable regulators. Good regulators are not merely a cost burden on the system, but instead are a source of added value. This added value is difficult to measure and often unappreciated by consumers and market participants.
- Notwithstanding the systemic importance of effective regulation, APRA recognises there is a delicate balance between over- and under-regulation.
- There is a necessary correlation between independence and accountability of regulators.
- In the design of any new regulatory body, the question must be asked as to how it might fit into the broader regulatory environment.

- Competition should not be an end in itself. Regulatory measures to boost competition should be designed with a view to fostering sustainable benefits to consumers.
- Competition and stability should not be mutually exclusive outcomes. The regulatory goal of a competitive environment should not be achieved at the cost of undue upheaval, which may in fact harm consumer interests.
- In the period leading up the GFC, excess remuneration was not as evident in Australia as it was in certain overseas countries, such as the US. Nevertheless, ASIC has set out principles to align remuneration with risk and return factors.
- An effective regulatory regime may be characterised by targeted and timely intervention.
- Any changes to the regulatory system should be evidence-based.
- ASIC supports the concept of a well-designed power of intervention, as it would facilitate more timely and targeted action.
- Contrary to suggestion, a power of intervention would not represent a radical departure from ASIC's present field of operations.
- The application of powers of intervention should extend beyond product bans.
- It is important for regulators to have substantial powers, even if these are only rarely used.
- Formal regulation is problematic to design and implement in the areas of organisational culture and executive remuneration.
- Although ASIC cannot, and should not, be expected to remedy all market problems, an effective and pro-active regulatory regime can make a significant contribution to consumer welfare.
- Having in place an appropriate level of penalties for wrongdoing provides a powerful incentive for appropriate market behaviour.
- Industry must play a leading role in improving corporate culture. It cannot rely on regulators to establish sound corporate culture. The alternative to an industry-led improvement in culture is a burdensome regulatory environment.

Regulation and Public Policy

CIFR Response to FSI Recommendations

- The focus on superannuation regulation thus far has been on the accumulation phase, rather than on retirement incomes. It would be timely to address the system's many post-retirement issues, such as the tax treatment of lump sums.
- Policy measures should be framed with a view to promoting competition, as it is the best and most efficient regulator.

Contextual Background

- Having separate regulatory bodies dedicated to competition and consumer protection is an ideal regulatory framework.
- Desired consumer and regulatory outcomes are dependent on the appropriate underlying policy fundamentals.
- Competition within the banking sector may not necessarily always be aggressive, but it is tough. A notable episode of aggressive competition was the tussle between Commonwealth Bank and Westpac Bank in the low-doc loan market.
- Aggressive competition in mortgage lending rates does not encourage consumers to switch banks, it simply erodes bank margins.
- Excess regulation in the banking sector may erode competition.
- It is difficult to envisage how the FSI can implement the notion of promoting competition, as regulators do not have the power to alter the number of entities competing in the market.
- The securities industry has layers of protection for investors. There is no similar protection regime when buying a house, which is typically the single most important and valuable asset acquired by most Australians.
- Efficient competition requires that consumers be informed. The onus of responsibility for providing clear and accurate information should be on the provider of goods / services, not on the consumer.
- It is difficult to incorporate a theme of competition into prescriptive regulation.
- There is no need for a supervisory board overseeing the existing regulators. This would simply add another layer of regulation.
- The field of psychology merits an equal footing with economics and law in the development of regulation. Cross-disciplinary understanding is imperative for improved regulation.

Competition

CIFR Response to FSI Recommendations

- Competition policy should be applied in a uniform manner across the financial and other industry sectors. Exceptions should be made solely on the basis of consumer welfare.
- The FSI has not recommended any structural changes to the banking sector. However, our 'twin-peaks' regulatory approach creates a potential blind spot in the oversight of the banks.
- A lowering of switching costs that makes it easier and more convenient for customers to switch from one bank to another may help promote systemic stability as customers could more readily move from distressed banks. Greater ease of switching by customers would also help to promote competition.
- The protection of consumer interests does not fit seamlessly with ASIC's other responsibilities. More broadly, the various regulatory bodies should co-operate in areas of overlap.
- The use of crowdfunding as a source of corporate financing requires regulation to provide mechanisms to deal with fraudulent raisings, and to address business failures in an orderly manner.

Contextual Background

- In the context of ensuring a competitive market, the vibrancy of competition is more important than the number of competitors.
- Concentration in the financial services sector is high, when measured in terms of the retail presence of service providers.
- When considering potential barriers to entry to the domestic financial sector, it is noteworthy that overseas competitors have generally failed to gain a meaningful foothold in the market.
- The four pillars policy has prompted increased vertical integration within the banking sector, particularly in the area of mortgage products.
- Vertical integration also impacts the degree of systemic risk within the sector.
- The issue of concentration is also linked to oligopolies, namely those entities that are regarded as too-big-to-fail.
- It is possible that the degree of concentration within the financial sector could exacerbate the effects of a domestic crisis. However, it is difficult to envisage, and thus prepare for, such a scenario.
- In terms of competitiveness, Australia's banking sector lies broadly between those of the US and the UK, and is comparable with the global average.
- The industry-standard statistical measure of competition (the Lerner Index) indicates that competition in Australia's retail banking sector peaked in 2004.

- Although the ACCC has primary responsibility for the regulation of competition, other regulatory bodies cannot be absolved of responsibility for aspects of competition that fall within their sphere of influence.
- Stability of the financial system is critical to the provision of effective consumer protection. The focus of policy ought to be on promoting vibrancy within the sector.
- In seeking to strike a balance between competition and stability, it is necessary to determine whether any proposal to increase competition does in fact have an associated stability benefit.
- Effective prudential regulation within a competitive environment should enhance systemic stability.
- With regard to crowdfunding:
    - It is a means of addressing the lack of access to equity funding for small- and medium-sized companies.
    - In setting and establishing appropriate crowdfunding regulation, a balance is required between consumer protection and the ease with which companies can raise finance.
    - Requiring investors to sign an acknowledgement of risk statement represents another means of disclosing the nature of risks inherent in this type of investment.
    - The public company exemption regime, envisioned by the Corporations and Markets Advisory Committee (CAMAC), may prove complex and cumbersome. The regime currently in place in New Zealand appears simpler and more practicable.
    - Instead of applying a $2 million limit on the amount of money that may be raised at any one time, funds could instead be raised according to progressive milestone targets related to the progress of the underlying business.

Tax

CIFR Recommendations

- A thorough review of the tax system should be informed by key data, such as tax revenue and concession breakdowns by age group, the impact of grandfathering provisions, etc.
- There should be a harmonisation of measures in the superannuation and age pension systems.
- Bracket creep is an ongoing issue that needs to be addressed.
- Removing dividend imputation would create a distortion in favour of foreign investors.
- Genuine tax reform requires all tax measures to be considered, including the GST, and consideration of Commonwealth / State relations.

Contextual Background

- The Australian tax system significantly distorts the supply of, and demand for, saving and investment and encourages tax avoidance.
- Given that only one full recommendation and another part recommendation from the 2009 Henry Review have been enacted, comprehensive changes to our tax system are overdue.
- Australia is more reliant on direct taxation, as opposed to indirect taxation, than the average of its OECD peers.
- The tax-free status of the family home has encouraged the growth of McMansions and contributed to the housing price bubble.
- Negative gearing and the CGT discount on assets held for more than twelve months have further contributed to the housing bubble and reduced tax revenue. Australia's stance in relation to negative gearing is out of step with the rest of the world.
- Super tax concessions are overly generous for high income earners. These concessions should be designed to encourage people to use their own savings to fund the cost of their retirement, which will reduce the cost of funding the age pension.
- The current concession cap at $35,000 (about 50% of average earnings) appears reasonable for those with consistent income. The issue is how to deal with those who earn irregular income, or those that want to catch up late in life. Options include having a lifetime cap, or linking contribution caps to the amount already accumulated.
- There should be greater consistency in super tax concessions. For example, small business owners can use their super to buy commercial property, but wage earners can't.
- The superannuation and age pension systems need to be looked at together and any inconsistencies eliminated. For example, there is an inconsistency in the age at which super (60 years) and the age

pension (67 years) can be accessed; and the super system focuses on the individual, while the age pension focuses on the family situation.

- Super fund members need assurance that they will be able to access their super savings when they need it to fund their retirement.
- Non-resident investors are incentivised to provide debt finance, rather than equity finance, because the withholding tax rate applicable to interest income is significantly lower than the company tax rate.
- By 2016, the marginal tax rate of the average employee will again be at the second highest level.
- Any review of the Australian taxation system must consider the GST rate and base. Australia's GST rate is low relative to OECD peers. Adding all food to the GST base would increase tax revenue by $21 billion – a 42% increase on current revenue of $50 billion – and would not impact lower income earners as much as is commonly thought.
- Removing dividend imputation would benefit foreign investors (who don't benefit from imputation credits) at the expense of Australian investors (who do benefit from them); remove an incentive for Australian companies to pay tax in Australia, rather than overseas; and encourage more debt financing at the expense of lower risk equity financing.
- Removal of duties on insurance policies would remove a regressive tax and address a significant problem within the Australian financial system – the fact that Australians are underinsured.
- State-based taxes and duties make life difficult for business because they often involve different rates and calculation methodologies.
- The reintroduction of wealth taxes applied at the time of death should be considered. This could represent a new revenue source for the States, who are currently heavily reliant upon their allocations of GST revenue.

This submission relied on the teamwork of a number of CIFR personnel. These included:

Zhe Chen, James Cummings, Clifford Gadd, David Gallagher, Tim Gapes, Veronique Henrisson, Madeline Johan, Kingsley Jones, Evelyn Mike, Kala Miranda, Rob Nicholls, Camille Schmidt, Emily Stevenson and Geoff Warren.

Appendix 1:

Financial System Inquiry Topical Analysis

Two page summary of research paper.

The full research paper can be found at:

http://www.cifr.edu.au/project/T019.aspx

Financial System Inquiry Topical Analysis

Kingsley Jones Centre for International Finance and Regulation
Richard Lawson Centre for International Finance and Regulation

This research paper describes the merit of developing a text analytics engine to index public submissions to the recent Financial System Inquiry (FSI).

Public inquiries such as the FSI typically involve processing a substantial number of documents, with content that represents a diverse range of opinions. Managing the diverse authorship and viewpoints reflected in a body of submissions presents a unique challenge.

This research demonstrates the use of automated topic analysis to enhance the productivity of panel members who are responsible for reading and analysing a large body of submission material. The result is a heat-map of topic exposure by submissions.

The development of public policy often starts with a public inquiry. This involves setting out the terms of reference, the appointment of an expert panel, and a call for public submissions. The input to a public inquiry typically comprises a substantial volume of textual content, reflecting a widely divergent spread of authors and viewpoints. Effective management of such a large inventory of submission material presents a unique logistical challenge.

This working paper describes a research program undertaken to develop a text analytics tool to assist in the topical indexing of a large body of public submissions. The intention in developing an effective index mechanism is to facilitate the compilation of a topical survey of the overall body of submission content.

This text analytics tool was developed with the immediate aim of providing assistance to the recently completed Financial System Inquiry, chaired by Mr David Murray AO. The program's specific aim was to compile a topical survey of the submissions to the Inquiry's Final Report. The report was released on 7 December 2014, and reflected the input of over 6,500 submissions made to the Inquiry following its interim report in July 2014.

A larger research goal of the program was to understand how topical analysis might be employed to enhance the productivity of panel members, who have responsibility for reading and analysing a large body of submission material.

To guide the computer analysis on the selection of topical material, the text and words of the Inquiry Panel were used to frame a proxy for the editorial input of that expert panel in framing the public process of submission and consultation.

A key task of computer text analysis is to assemble an entire collection of documents into a form where they can be mechanically read, parsed, and indexed. Following the compilation of a database of suitably formatted text, the contributing authors are classified according to their area of representation. The next step entails conducting a frequency analysis of words and word patterns related to popular topics.

A specific advantage of this approach is an inherent ability to stipulate particular topics of focus. This ensures that the text analysis process captures specific issues, in this case those that had been identified as important by the Inquiry Panel. This functionality allows for greater control over the analytical process, facilitating its application in what may be termed a semi-supervised manner.

For the purpose of this analysis, topic labels and categories are generated from an analysis of what had been set out by the Panel Inquiry. These subsequently comprise the framework within which the text analysis is conducted. In this way, the expertise of the Panel members, and their enunciation of the Inquiry's key ideas, is reflected in the collation of the body of submission material.

From a policy formation perspective, this text analysis methodology appears consistent with the general approach taken by a public inquiry process. Public input is sought on a specific set of issues defined in the terms of reference. An expert panel then collates the body of information received and identifies a set of key findings. The publication of these key findings represents an important part of the consultation process, as this feedback sets the agenda for subsequent submission rounds before a final inquiry report.

Developing a new approach to a task is one thing. Appraising the performance of the new approach against more traditional methods is another. The appraisal of this program centres on demonstrating the application potential of machine-learning based methods to the partial automation of the reading and discovery task of a major public policy inquiry. As topics are somewhat subjective by nature, the assessment takes the form of a check against other manual means of topic assignment.

A parallel exercise of manual reading and interpretation of the documents by a different research team produced results that are similar in many respects to the automated approach of this program. There are differences of nuance and emphasis, reflecting the chosen category labels, but the automated methods appear to capture the essential features of the overall body of text.

Accordingly, this paper contends that text analytic tools are valuable aids in the segmentation and labelling of verbal data in research-oriented projects.

Text analytic tools cannot replace the wisdom and experience of those charged with leading and framing the exchange of information involved in public policy development. Where they can contribute is in helping to identify and clarify the topics and viewpoints raised as part of the submission and recommendation process.

Appendix 2: Submission to the Financial System Inquiry on Purchased Payment Facilities

Authors:

Ross Buckley, CIFR King & Wood Mallesons Professor of International Finance Law, UNSW

Louise Malady, Senior Research Fellow, UNSW

Evan Gibson, Research Fellow, UNSW

Submission to the Financial System Inquiry on Purchased Payment Facilities

Introduction

Australia's purchased payment facility (PPF) market is relatively underdeveloped. Ironically the PPF regulatory regime was introduced following the previous financial system inquiry (the Wallis Inquiry) to encourage growth and innovation in new payment methods, yet today a major impediment to the growth of PPFs in Australia is the PPF regulatory regime.

PPFs are growing and innovating rapidly in other developed countries. In Hong Kong, the Octopus stored-value card was introduced in 1997 as a transport ticketing system and led to the implementation of the Oyster card in London some six years later. Octopus now has a penetration rate of 99% in Hong Kong, with over 6,000 service providers, and 15,000 retail outlets.[1] Octopus is one of the world's most universally accepted smart-card payment systems.[2] There is no reason Australia cannot replicate a success story like Hong Kong's Octopus system. This would benefit all Australians by making daily transacting quicker and easier, and should be of great interest to the Government as it moves the economy away from cash and the potential it offers to evade taxation. However, for such important policy goals to be achieved, the existing PPF regulatory regime needs extensive revision.

We support reform of the current PPF regime, however, would recommend a different path to that proposed in the FSI Recommendations.

This submission outlines our recommendations for the PPF regime and explains why we believe the FSI recommendations will not achieve their desired aim.

Complexities in Current Regulatory Regime

The current regulatory regime established in 1998 has developed so that PPFs are subject to supervision by either the Reserve Bank of Australia (RBA), the Australian Prudential Regulation Authority (APRA), and/or the Australian Securities and Investments Commission (ASIC). PPF providers may need to hold an Australian Financial Services Licence (AFSL) and/or an Australian Credit Licence (ACL) under the supervision of ASIC, be authorised or exempted by the RBA, or be an authorised deposit-taking institution (ADI) authorised by APRA.

[1] OCTOPUS, "Company Profile" (October 2014), at 9, available at http://www.octopus.com.hk/web09_include/_document/en/company_profile.pdf

[2] Michelle Li, "OCTOPUS: Making Everyday Life Easier" (October 2008), at 9, available at http://michelleli.ca/wp-content/uploads/writings/octopus.pdf; OCTOPUS, "Company Profile" (October 2014), at 9, available at http://www.octopus.com.hk/web09_include/_document/en/company_profile.pdf

The Australian PPF landscape is currently principally regulated by exemptions. The only authorised PPF in Australia is PayPal. This approach is not ideal as a market characterised by regulatory exemptions is shaped by those exemptions. Our current system adversely influences market development, innovation and growth. With exemptions dominating this regulatory space, supervisors are also not well placed to monitor the PPF market and could be taken unawares by future developments.

Too often today when a foreign payments provider seeks legal advice on establishing a new type of PPF in Australia and is told it will need to apply for a AFSL or ACL straight away and that when its services grow to a significantly profitable scale it will need to be regulated as an ADI, the provider chooses not to enter our market. The payments providers who do enter our market typically have to craft their offering to qualify for an exemption often with the loss of much of the innovative functionality of their service.[3]

No record is available of the potential innovative services lost due to the potential regulatory burden deterring new market entrants or of the lost innovative approaches due to compliance with our exemptions regime but anecdotal evidence suggests both losses are considerable.[4]

For the PPF market to grow safely and freely, and for supervisors to be able to keep abreast of market developments and innovations, the widespread use of exemptions needs to be phased out; simple, expeditious authorisations should become the norm; and market data should be collected by the supervisor from all PPFs. The current authorisation and exemption regime under the *Payment Systems (Regulation) Act 1998* should be significantly amended or repealed. As it stands it does not balance innovation with regulation, market developments are being inhibited and we have no way of quantifying the extent of this inhibition because no data is collected on exempted entities or business ventures not proceeding due to regulatory burdens.

Financial System Inquiry (FSI) Report

The Financial System Inquiry (FSI) Final Report has identified the complexity of the current PPF regulatory regime and recommendations 16 and 39 go some way towards removing the complexities.

Recommendation 16 (R16) of the FSI Final Report directly addresses PPF regulatory reform. R16 suggests that the thresholds for regulation by ASIC and APRA be clarified and enlarged, consumer protection be strengthened by mandating the application of the *ePayments Code*, and a separate prudential regime with two tiers of liquidity and other prudential requirements for PPFs be introduced.

[3] Interview by Ross Buckley of a partner in a major national law firm practising payments sytems law, March 4, 2015.
[4] Ibid.

Recommendation 39 (R39), which concerns technology neutrality, complements R16. R39 states that regulations should allow individuals to select alternative methods of financial service access to maintain fair treatment of all consumer segments. Technology neutrality is important because enabling any mode of technology whereby individuals can select alternative methods of financial service access promotes financial inclusion and competition among providers.

Our Recommendations

1. ***The current licensing/authorisation regimes should be simplified from four to one.***[5]

   Simplifying the current PPF regulatory regime will liberate the market. For example, Hong Kong's Octopus card stored value facility is regulated by one supervisor pursuant to one licensing regime. Octopus has become widely available and accessible, evolving into a multi-purpose stored-value facility that enables customers to pay for goods and services as well as transport. Indeed, over half of Octopus payments are now for non-transport related goods and services.[6] Octopus is also demonstrating its ability to adapt to financial innovation by progressively transitioning its services from smart-cards to smart-phones.[7]

   A single licensing/authorisation regime should be light touch to foster financial inclusion and to promote technological innovations, and because PPFs are not extensive today in Australia the regulatory department initially doesn't need to be large. A single regime also offers greater flexibility and lower compliance costs.

2. ***The number of PPF supervisors should be reduced from three to one.***

   The current regulatory regime is fragmented, complex, and lacks clarity because the three current supervisors' PPF regulatory roles are not functionally aligned with their regulatory design. The RBA is aware of this problem as illustrated in its Supplementary Submission to the Financial System Inquiry (August 2014), which stated that the RBA was not well placed to authorise and supervise individual PPFs as the regulatory functions are markedly different to those in relation to retail payments, which focus more on high-level policy and less on regulatory oversight. Furthermore, the RBA has stated that PPFs require less supervision and regulation than ADIs.

[5] The four regimes being the Credit Licence and Financial Services Licence regimes administered by ASIC, and the regimes of the RBA and APRA.
[6] Ben Fung, Miguel Molico and Gerald Stuber, "Electronic Money and Payments: Recent Developments and Issues", Bank of Canada Discussion Paper 2014/2 (2014), at 27.
[7] Kanis Li, "Octopus takes mobile step to winning more customers", South China Morning Post (9 September 2013), available at http://www.scmp.com/business/companies/article/1306562/octopus-takes-mobile-step-winning-more-customers; See also, OCTOPUS, "Company Profile" (October 2014), at 9, available at http://www.octopus.com.hk/web09_include/_document/en/company_profile.pdf

Under the current regime, none of the supervisors are ideally placed to supervise all PPFs. Furthermore, judging by the predisposition for granting exemptions rather than applying the PPF regulatory regime, it is arguable that none of the supervisors are seeking an expanded supervisory role.

We recommend Australia establish a single new regulator, a "one-stop shop" to regulate PPFs. In our view, this new regulator should be within ASIC as its principal roles are consumer protection. New funding needs to be provided to ASIC to enable it to undertake this task properly. Payments system staff from the RBA will probably need to be seconded to ASIC, at least in the early phase.

3. The ePayments Code's current prescriptive list of transactions should be replaced with a broad provision.

The FSI recommends service providers subscribe to the *ePayments Code* in its current form as a means, inter alia, of extending consumer protection regulation to PPFs. We argue that mandating subscription to the current *ePayments Code* will not capture all innovations in the PPF sphere. The current *ePayments Code* provides a prescriptive list of transactions to which it applies and gives ASIC power to extend the list. It also falls somewhat short in terms of technology neutrality. A better approach would be regulation that is principles-based and functional in design, focusing on outcomes rather than prescribing the method by which these will be achieved. One way to remedy this regulatory design flaw is to amend the Code so it applies to digital financial services generally (involving payments, transfers, withdrawals, and any other transaction). This is simpler and cleaner than having ASIC discretionarily determine which transactions are captured by the Code beyond the prescriptive list.

4. The Data-Mining legislative provisions need to be consolidated and streamlined

Data-mining is a key commercial driver of innovative financial products and services. Data-mining enables companies to profile consumers through their PPF spending patterns and target individualised marketing to them. Collecting and mining data from consumers in the PPF sphere gives rise to market conduct and consumer protection concerns. Currently, there are several key statutes that PPF providers have to consider when mining data: *Spam Act 2003* (Cth); *Privacy Act 1988* (Cth); and the anti-hawking provisions in the *Corporations Act 2001* (Cth). Compliance with these data-mining related legislative provisions places a disproportionate regulatory burden on small PPF providers that may stifle innovation, competition, and market growth.

A proportional regulatory approach should be adopted that streamlines the current PPF data-mining regulatory regime. These data-mining consumer protections and market conduct provisions should all be simplified and consolidated in an *ePayments Code*. Simplifying these provisions is important to allow for innovation, competition, and market growth to flourish.

5. ***Market information needs to be collected for all PPFs***

Market information concerning the turnover, structure and innovations in the Australian PPF market needs to be regularly collected. This information enables market reviews to identify risks, and will underpin future regulatory guidance and policy development.

The PPF regulator should substantially improve the information available on this market sector, both in terms of value and volumes of transactions and methods of access used when paying with stored value.

Conclusion

By international standards Australia's current retail payments system is reliable but expensive. PPFs provide the vehicle through which innovative payments providers are likely to disrupt the current system to the distinct benefit of consumers across the nation yet our current regulatory regime stifles much of this innovation. The five recommendations we have made, particularly the establishment of a consolidated regulatory regime administered by a single regulator within ASIC, will lay the groundwork for innovative disruption to support Australia's prosperity while protecting the interests of consumers.

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Centre for International Finance and Regulation
Towards Financial System Integrity

CIFR Submission to

The Financial System Inquiry:

Financial System Inquiry Topical Analysis

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Research Working Paper Series

Financial System Inquiry Topical Analysis

Application of text analytics to the topical analysis of public inquiry submissions and the classification of contributor opinions

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Table of Contents

Introduction

Objectives of this report

The objective of the *Financial System Inquiry Topical Analysis* project was to provide assistance to the 2013-2014 Australian Financial System Inquiry[1] panel in compiling a topical survey of the overall content of submissions. This involved the statistical analysis of word patterns and the classification of similar submissions by topical content into natural groups.

The analysis described herein was provided to the Inquiry Panel at each stage during the course of their deliberations. This approach provided a valuable opportunity to trial text analysis software as parallel input to the traditional manual exercise of reading documents.

The larger research goal was to understand in what manner topic analysis might be employed as a tool to enhance the productivity of panel members charged with reading and analyzing a very large body of submissions. While we were unable, in the short time frame of the Inquiry, to gather any metrics on the merits of this approach, the method was proven in concept.

Appraisal and outputs

Developing a new approach to a common task is one thing. Appraising the performance of the new approach against more traditional methods is another. Our ability to assess the quality of the results was confined to sense checking against other manual means of topic assignment. Since topics are somewhat subjective by nature, drawing definitive conclusions is difficult.

Nonetheless, a parallel exercise of manual reading and interpretation of the documents, by a different research team[2], was shown to be similar in many respects to the automated approach adopted here. There are differences of nuance and emphasis, reflecting the chosen category labels, but the automated methods appear to capture the essential features the text corpus.

Our appraisal centered on demonstrating the *potential* of machine-learning based methods to the partial automation of the reading and discovery task of a major public policy inquiry. The work may set a useful baseline for further studies in the digital analysis of text for policy analysis.

[1] For the website and final report, go to: http://fsi.gov.au/publications/final-report/. The CIFR results are contained in Appendix 4, Section "Submissions to the Inquiry" pp 287-290.
[2] The Centre for Law, Markets and Regulation also performed a topical analysis of submissions.

Another output of the research was a software *text analytics pipeline* based on state-of-the-art open source software tools for automated text analysis and topic discovery. With a small team of two, we were able to assemble such tools into a working proof of concept.

Key findings

In our view, these tools are ripe for use in research-oriented projects. However, there is a degree of experimentation and tuning to the use of these methods in practice. This means they are far from foolproof when shown entirely new information sets.

The most productive usage scenario is likely those situations where the number of documents to be examined is very large and there is some natural structure imposed on topic selection. Public inquiry processes have such features since there are very many voices raised about what are the dominant issues of the day. Our findings bear out the logic of this assumption.

The Financial System Inquiry Process

The Financial Systems Inquiry (FSI), chaired by David Murray AO, was charged with examining how the financial system could be positioned to best meet Australia's evolving needs and support Australia's economic growth[3]. Such Inquiries have been a feature of policy-making for some decades, occurring at intervals of approximately ten years.

Part of the Inquiry process involved eliciting public submissions from interested stakeholders in a multi-round process framed by the initial terms of reference. This led to the preparation of an Interim Report after the first round of submissions. The Interim Report comprised a summary of the material received up until that point and a framing of key issues by the Inquiry Panel.

The Inquiry Panel then issued a follow-on call for a second round of submissions and on the basis of that, and their community consultations, framed their Final Report to the Treasurer.

The filter for topic analysis in this study was to employ the Inquiry Panel summations of the content of submissions as training text for assignment of topical content to submissions. We chose this design to better assist the panel in their own deliberations.

Although not reported here, we also performed unfiltered topical clustering to the submissions without the use of any prior topical input. This proved to be a useful line of inquiry for placing documents into clusters, but lacked the direct reference to the Inquiry Panel deliberations.

[3] Detailed terms of reference may be found at: http://fsi.gov.au/terms-of-reference/

The Inquiry process (and text analysis inputs) was as follows:

- The FSI called for first round submissions which closed on 31st March 2014. There were over 270 public submissions from a variety of authors, including financial enterprises, regulators, individuals, not for profits, and research bodies. These were clustered for examination of the dataset but were not used in the Inquiry driven topical analysis.
- The FSI then released their interim report on the 15th July 2014. This report identified *28 Observations* about the Australian financial system formulated on the basis of submissions as well as meetings with various stakeholders. These 28 Observations formed one set of *Topic Training Inputs* used in the text analytics project. This design treats the Inquiry Panel as the arbiter of topics of interest to the inquiry as gleaned from the submissions. This means that the automated topic identification process was *supervised* by observation of the textual summaries generated by the Inquiry Panel reading of the initial 270 submissions.
- The Inquiry Panel then asked for comments (i.e. the second round of submissions), and requested stakeholders to focus on the 28 interim observations. This closed on 26th Aug 2014 with over 6,500 submissions, the vast majority of which related to two orchestrated campaigns: 5,173 very similar submissions on the too-big-to-fail observation and another 744 on credit card charges (all by individuals)[4]. The remaining 488 were deemed to be "normal" submissions, and formed our Test Documents (see Figure 1).
- The FSI released their final report on the 7th December 2014. This contained 44 specific policy recommendations for the government to consider. Each recommendation had a detailed textual description. These descriptions were used as another set of Topic Training Inputs to provide an alternate means of classifying submissions.

Input Name	Input Type	# of Inputs
FSI Interim Report 28 Observations	Topic Training Documents	28
FSI Final Report 44 Recommendations	Topic Training Documents	44
488 Second Round Submissions	Test Documents (for topic identification)	488

Figure 1 Input to the text analysis project

In summary, the analysis reported here focused on classifying topics present in the 488 second round submissions according to two forms of prior topic inputs.

[4] Whilst the 5,173 submissions relating to the too-big-to-fail campaign were not made publically available, the 744 submissions on credit card charges were made available on the FSI website.

To understand the meaning of the results, we can say that the topic analysis was framed initially about the position of the Inquiry Panel prior to the second-round submissions and then looking back at those same submissions from the perspective of the final recommendations.

The analysis done with the Interim Report observations is sensitive to the overlap between what the Inquiry Panel thought to be the key issues and the subsequent community feedback.

The analysis done with the Final Report recommendations is sensitive to the overlap between the topics the community raised and the degree to which these were reflected in the outcomes.

Hence the design of the investigation is in the spirit of a natural experiment, where we look at the feedback relation between what the Inquiry Panel thought was important, how stakeholders responded to that, and then how the Inquiry Panel reflected those responses in their report.

At this stage, we could not find previous examples of such a study of the public inquiry process, but the literature of the digital humanities is quite scattered at this time. Quite possibly there are other works already in this area and it would be welcome to assemble such points of view as are expressed by different research designs about a very complex process of social interaction.

There are many different approaches one could take to analyzing the same text corpus, and so we do not claim the present results to be definitive. Rather they represent a scoping study to appraise how text mining and text analytics might prove useful in refining some common processes of policy development by public inquiry.

Text Analytics Research Design

The key task of a *text analysis pipeline* is to assemble the entire collection of documents into a form where they can be automatically read, parsed, and edited for ignorable punctuation. The goal of such document ingestion, preparation and indexing is to render human readable text into the specific mathematical form necessary for machine-learning analysis.

This may seem elaborate, but is necessary since most web documents today are presented in the form of Adobe[5] Portable Document Format (.pdf) files. The conversion of these files into plain text and the removal of punctuation symbols, special symbols and formatting relics is a major requirement for successful text analytics.

To accomplish this task, we employed a range of freely available open source software tools such as the Apache Tika[6] document parsing toolset and a range of libraries written in the very popular Python[7]

[5] Adobe is a registered trademark of Adobe Systems Incorporated.
[6] Apache Tika is a registered trademark of the Apache Software Foundation.
[7] Python is a registered trademark of the Python Software Foundation.

programming language. Such tools are of increasing importance for research, and are widely used in web-oriented businesses that deal with large quantities of textual data.

A text analytics pipeline was developed to ingest the submissions in their original format, convert that to raw text, clean them up to remove punctuation and layout characters and differentiate the actual words from more complex material such as web-links, footnotes and references.

In addition to forming the database of cleaned text, we captured and classified the contributors according to a number of natural affiliation groups representing the structure of the financial services industry; from private citizens through academics, advisors and institutions.

Thereafter, the cleaned text was submitted for analysis using a state-of-the-art method termed Latent Dirichlet Allocation (LDA). This method characterises the topical content of documents through the statistical pattern of words employed. It is a so-called *generative method*, wherein the frequency of words employed is held to be influenced by the topics discussed. Through the use of Bayesian statistical analysis of the base frequency of words and the variations within and between documents the presence of topic clusters can be inferred.

An advantage of this approach is that we could influence the choice of topics identified through the selection of *prior examples* of topical content. In particular, since the Inquiry Panel had stated clearly their view of the important issues in their own words, and later their recommendations, we could use these texts as training examples to guide the LDA method in what to look for.

Consequently, one should view this form of analysis as a semi-supervised method. Topic labels and categories were generated from analysis of the Panel Inquiry writings. These prototypes for the topics of interest were then used to analyze the text written by the public submitters. This is an important subtlety of the research design. We are using the expert nature of the Panel, and their expression of the key ideas to organise the broader corpus of public submissions.

From a policy formation perspective, we believe this to be consistent with the general approach taken by public inquiry processes. The public is asked to provide input against a very specific set of issues defined in the Terms of Reference. An expert panel is convened to consider opinions expressed and to editorially organise these into a coherent set of issues. The intermediate step of reflecting back the expert panel views to the community then represents an important feedback step to re-focus the next round of submissions against the stated objects of the inquiry. Finally, we consider the recommendations of the inquiry to be the summation of public submissions in the context of the editorial oversight of the expert panel against the terms of reference.

Needless to say, this is a very complex social process of interaction which is why the process of running a public inquiry is so often mediated by persons with deep experience of the issues that are likely to be raised against the terms of reference. While far from perfect, we believe that our research design does at least capture the appropriate separation between the words of the Inquiry Panel as the Authority on "what matters" versus the general Cut-and-Thrust of public opinion, in their own words, of "what ails them". Finding this balance was the key research problem.

The additional analysis of author categories allowed us to answer the specific question as to who was commenting about what topic. Specifically we focused on answering two research questions:

1. Which author(s) clearly addressed any of the 28 Observations in the FSI Interim Report (noting that this report came *before* the second round submissions)
2. Which author(s) submissions resonated most clearly the 44 recommendations in the Final FSI Report (noting that this report came *after* the second round submissions)

One interesting extension of the second question would be to ask which (if any) of the second round submissions influenced the Final FSI Report. However this was beyond the scope of the project as it would have involved not just topic identification (the current focus of the project) but also sentiment analysis. For example, whether any particular second round submission was for or against one of the 44 recommendations in the Final FSI report.

Such extensions of the research are certainly interesting and for this reason we hope to place the report materials and software developed for its analysis in a public repository.

Implementation

The text analytics pipeline was developed in Python, a widely used general purpose high level programming language which is freely available as Open Source Software for a wide range of operating systems. In addition to being open source, which means the source code is available to read and study, Python has enormous extensibility and there is a wide code-base (and support) around such topics as text analysis and machine learning.

To put the adoption of this language in context, Google has for many years conducted its own internal "Boot Camp" training programs for new developers in the Python language. Since that company earns substantial revenue from the real-time text analysis of web-pages for advertising placement, one may infer the suitability of such tools in the present context.

The Python software community has also benefited from close interaction with the High-Energy Physics community, Astrophysics and Supercomputing laboratories. This is down to the extreme importance of high-performance data pipelines for analyzing experimental results. Since many of the same people have switched careers to finance and investment at one time or other, the use of such tools is also very common in the technical branches of High Frequency Trading, Quant Hedge Funds and Commodity Trading Advisors. It is a popular platform for data analysis.

Additionally we integrated the Python pipeline with Apache's Tika software. This is a content analysis toolkit that can extract text from over a thousand different file types, known by their ubiquitous Windows file extensions such as .pdf, .doc, .ppt, and .xls (in our case the second round submissions Test Documents, as well as the Topic Training Documents).

The Apache Tika toolkit is capable of processing large numbers of documents quickly and easily scales to thousands of documents and beyond. It is a very popular front-end for the feeding of text indexing tools such as Apache Lucene and Apache Solr[8]. Such software platforms can provide additional functionality such as full text search and indexing.

To put this in perspective, the advent of cloud computing and automated software deployment has now made it fairly easy to deploy search, index and topic analysis capabilities into a public or private document storage infrastructure. This makes the pipeline and procedures discussed a fairly natural fit for government departments and regulators of any scale.

The ultracompetitive digital services business environment and fast pace of systems development means that researchers can now command extraordinary computing power. However, there is a steep learning curve involved in becoming fluent in this new mode of doing research and so we have paid attention to making the insights here useful to a wider audience.

High-level view of Pipeline

The concept of a "processing pipeline" speaks to the need to prepare and process data through a series of cleaning and processing stages to make it ready for computer analysis. This involves the steps necessary to extract text from the documents and then transform the text into word counts and associations so that the statistical fingerprints of topical meaning are brought to the fore.

At a high-level the text analytics pipeline was split into two parts:

1. Preprocessing Pipeline, (see Figure 2)

[8] Apache Lucene and Apache Solr are registered trademarks of the Apache Software Foundation.

   a. extract text from pdfs using Apache Tika
   b. clean up and prepare for Topic Analysis pipeline
2. Topic Analysis Pipeline (see Figure 3):
   a. train a text model on some topics (either the 28 Interim Observations or the 44 Final Recommendations),
   b. apply this model to the Test Documents (the second round submissions) in order to find exposure of each second round submission to the training topics.

Documents can be thought of as passing through this “pipeline” in assembly line fashion so that the complete analysis is performed with a minimum of human intervention.

The major research steps involved in building such a pipeline are to experiment with the order and composition of different steps. This was done repeatedly, in a flexible workflow, so as to figure out basic issues such as the order in which to strip punctuation and extract web-links.

One the data has been prepared it is passed on for topic analysis. The training step took as input the topics as defined by the 28 interim observations or the 44 final recommendations. These are reduced at the training step to a statistical fingerprint of those words and combinations which best convey the uniqueness of the Inquiry Panel descriptions of that topic.

Once this information is at hand, it can be fed into a final set of procedures which measure the statistical similarity between the topic descriptions and the text body of the 488 second round “normal” submissions (normal in the sense of excluding the two single-topic groups).

At this stage, the result of the topical analysis consists of a Document-Topic matrix which has the documents as rows and topic strength as columns. Read one way this contains the topical content of a document. Read the other way it gives the weight of opinion devoted to topics across the full corpus and by contributor group.

In short, the Document-Topic matrix can be read in several ways and is intended to aid a more traditional reading of the documents. One may think of it as a “topical annotation” of the text.

Figure 2 Preprocessing Pipeline

Process Stage	Process Step	Description
Extract Text From PDF	ExtractText	The pdf is sent to Apache's Tika Server and waits to get response (which is a text file). Note that the input file format could be one of 1000 odd types acceptable by Tika (in our case its pdfs, but Tika can convert ppt, doc and xls, for example)
Remove Capitalisation	ConvertToLowerCase	Typical step in textual analysis (results in more accurate Term-Document matrix)
Remove unwanted characters	RemoveMS1252Chars	Converts all other Microsoft Windows 1252 characters to blanks 1. Microsoft Windows 1252 includes bullet points in their list of 1252 characters which we don't want mapped to a blank (it is punctuation). So instead we map them to full stops (full stops are dealt with later) 2. Converts all other Microsoft Windows 1252 characters to blanks
	RemoveNonBreakingSpaces	Replace non-breaking spaces with blanks
	RemoveExtendedAscii	Replace extended ASCII with blanks
	RemoveOddCharacters	Replace any remaining odd characters with blanks
Remove unwanted content (1)	RemoveLongWords	1. The vast majority of English language words have less than 20 character length (in other languages it's different such as 30 in German). However we set the upper limit to be 30 for safe keeping. Any word longer than this is either an error in the original document or a problem with how Tika has translated the pdf into text (for example by erroneously concatenating two words together). [1] 2. This will also remove some urls which can be very long
Convert n-grams to unigrams	ConcatenateNgrams (see dedicated section below)	n-grams are very useful to identify common themes/topics within the corpus: 1. This code removes all spaces from a pre-identified list of n-grams (bi-grams, tri-grams,

		quad-grams and quint-grams) that are found in the text (it needs to be run after RemoveLongWords). In other words n-grams are converted to unigrams. This must be run before RemovePunctuation. 2. Note that the user can choose to auto-generate this pre-identified list of n-grams. This is auto-generation is done on the entire corpus of documents before the individual text documents are cleaned up and includes n-grams which occur more than once.
Remove unwanted content (2)	RemoveURLs	Many of the URLs would have been removed with the RemoveLongWords Step. This uses regex to replace all the remaining URLs with blanks
	RemoveEmails	Replaces all emails with blanks (using regex)
	RemoveSectionNumbers	Replaces section numbers in the format 1-1, 1-2, 1-3 with blanks
	RemoveDigits	Replace all other remaining digits with blanks (run after RemoveSectionNumbers)
	RemoveMonths	Replaces the words January to December with blanks
	RemoveHeadings	Replaces the following common heading type words with blanks. Examples include: page, section, appendix, exhibit, glossary, summary, figure, source, table, chart, graph
	RemovePunctuation	Replaces punctuation with blanks. Examples include: ,-./:;<=>?@[\\]^_`{|}~
Convert Plurals to Singular	StemPlurals	Uses NLTKs WordNetLemmatizer to convert plural words into singular (we impute plurals using WordNet Lemmatizer in combination with the most common rules for pluralisation in English. This is applied before removing stop words to increase the effectiveness of stop word removal, as well as before removing short words
Remove unwanted content (3)	RemoveStopWords	Remove stop words which have low or no-value (these are common/generic words such as “and” and “the”). We implemented stop word removal based on the scikit learn dictionary which has about 320 word (other choices available are the nltk stop word dictionary of 127 words and MySQL stop word dictionary of 543 words, although the user can also define their own).
	RemoveInfrequentWords	In general you might require a minimum frequency of at least 3 in a document (although if it’s the

		training document that is quite small you may wish to make this 1)
	RemoveShortWords	Remove short words. Short words should be defined as being either one or two characters long as acronyms, such as government agencies and corporates, typically have 3 character abbreviations

Details of the pre-processing pipeline

There are a number of tricks employed in social science text analytics research which are worth covering in a bit more detail. These methods are often couched in jargon phrases such as:

- Tokenizing
- Porter Stemming
- Full Lemmatizing

While such methods are of great interest to the natural language processing expert, they are of limited relevance to our discussion. The primary focus of such techniques is to aid cleanup of text and disambiguate words with respect to parts of speech, singular versus plural forms and words having common root constructions and thus similar semantic content.

Stemming, for example, is a transformation which removes and replaces word suffixes to arrive at a common root form of the word. However, this can easily change the meaning of the word (e.g. "training" becomes "train") and so render it nonsensical in the given context. Experiments with the Porter Stemming approach appeared too harsh and resulted in word meanings being obscured and so decided against applying it.

Lemmatization, on the other hand, differs from stemming in that a lemma is a canonical form of the word, while a stem may not be a real word. That is, a lemma is a root word as opposed to the root stem. We had less of an issue with Lemmatizing, although "training" still becomes "train" as per the stemming example above. However, we found that the main benefit of this method was really in treating plural and singular forms as equivalent. Our pipeline was then constructed to simply perform this form of Lemmatization via the step *StemPlurals*.

Treatment of n-grams

The term “N-grams” refers to a sequence of “N” words which commonly in sequence within a text, such as “good day” or “bad day”. The frequency of these in a text can convey important topical information such as “laptop computer” vs “desktop computer” in two news articles about a newly released computer product.

Counting n-grams that typically occur together can be very useful to identify common themes and topics within a text corpus rather than monograms alone. In the context, of the FSI there were a number of such terms with special meaning such as “impact investing”. This made the tracking of n-grams a useful improvement in the tracking of thematic content.

The main problem with generating n-grams on a text corpus of any size is that the number of possible combinations grows very rapidly with the size of the text. If these are infrequent, the presence of them can

simply add noise and complexity to the analysis. To limit the noise from meaningless n-grams we developed a method to filter for the more meaningful n-grams.

To generate meaningful n-grams we joined the entire corpus into one single text file as the input (i.e. aggregated all documents used in the training set into one file). This large text file was then fed through the preprocessing pipeline. Since the merged file still contains stop words, web-links and other material it generates many n-grams that are not in the output of the same process when applied across the cleaned files, when processed separately. The intersection of the two types of n-gram filtering process naturally cuts down the noise of n-grams due to stop words, line breaks and other punctuation-related sources of meaningless conjunctions of words.

We call this the process a *preserved n-gram heuristic*, and it was reasonably simple and effective in containing the growth of n-gram numbers while cutting down on obviously meaningless cases due to stringing together words across sentence boundaries and stop words. Using this method
We generated n-grams of order 2 (bi-grams), 3 (tri-grams), 4 (quad-grams) and 5 (quint-grams).

Finally, only the in-common n-grams with count Frequency f >= 2 in the merged text corpus were kept[9] . This ensured that the implied phrase occurred at least once in the corpus and had the effect of tracking acronyms of up to five words. Further attention could be given to this procedure, but we found that the steps taken generated reasonable lists of common terms.

Note also that the order of preprocessing operations was adjusted to find the best combination for practical results. For instance, the step of concatenating n-grams was found to be best done after Long Words were removed since doing it in the reverse order tended to strip out some of the most meaningful n-grams. One should expect such tweaks to be part of the process.

Details of the topic analysis pipeline

The two alternative topic analyses centered on how the FSI Interim and Final reports related to the 488 second round “normal” submissions (i.e. excluding the orchestrated campaigns about single-issue topics). The output of each topic analysis is a *Document to Topic Matrix*.

The topic analysis pipeline was set up as outlined in Figure 3.

[9] We did experiment with the choice of cut-off threshold to maximize the precision and recall of meaningful n-grams, as measured in a performance criterion known as the F1 Score, and found that the choice f = 2 gave the best results, at least for the problem at hand.

Process Step	Description
Vocabulary & Vectorization	Ingest Training Documents (28 Interim Observations and 44 Final Recommendations), and Test Documents (488 submissions)
	Vectorise the Training Documents into a Term-Document matrix, including generating a vocabulary based on Training Documents
	Vectorise the Second Round Submissions into a Term Document matrix, based on the vocab of the Training Documents
Topic Analysis	Using LDA (Latent Dirichlet Allocation) via the gensim Python library, train the Training Documents so that they map directly to either the 28 FSI Interim Observations, or 44 FSI Final Recommendations
	Submit the Second Round Submissions to the LDA model to generate a Document-to-Topic Matrix. This output matrix shows how prevalent each of the 28 Interim Observations or 44 Final Recommendations are present in each of the 488 FSI submissions.

Figure 3 Topic Analysis Pipeline

The formation of the output Document-Topic matrix first involved determining the vocabulary of the training document set. This involved performing word counts on each document in the training corpus. These are the Vocabulary generation and Vectorization steps in the table.

This was most efficiently performed using the Vectorizer functionality within a Python library called the *Scikit-Learn package*[10].[11]

Once the vocabulary and word counts had been determined on the training documents (using either the text from 28 Interim Observations or that from the 44 Final Recommendations), the training vocabulary was applied to the second round submissions. All words not in the training vocabulary were ignored, whilst counts were made of all Training vocabulary words within each Test document. This procedure naturally biases the analysis to the task of identifying topical overlap with that provided by the Inquiry Panel text.

The second step of the topic analysis was the actual modelling stage. There are several different models one can use in topic analysis. Initially, we experimented with Latent Semantic Analysis (LSA), which was developed by Deerwester et al [3] and first published it in 1990.

[10] As n-grams had already been dealt with in the preprocessing pipeline, there was no need to utilize the n-gram parameter setting within the Vectorizer functionality of Scikit-Learn.
[11] For more detail on this package see: http://scikit-learn.org

The LSA methodology is closely related to Principal Components Analysis (PCA). This is a very common statistical method for identifying the principal modes of variability in a data set. When similar reasoning is applied to textual data, the natural smoothing operation to apply to the data is to find a low-rank approximation to the term-document matrix of the corpus of text.

The appropriate mathematical operation is called Singular Value Decomposition (SVD).This step enables the term-document matrix to be re-expressed as a particular matrix product. While this method enables one to disentangle documents, topics and terms, or words, the method suffers from a number of drawbacks. These include the possibility of negative weights to topics, the failure to capture polysemy (multiple meanings of a word), and a tendency to allocate topics according to the corpus-wide trends. This means the dominant topic is really an amalgam of everything said, and must really be pruned or otherwise removed.

With this in mind, we employed a more sophisticated topic model, known as Latent Dirichlet Allocation (LDA). This approach to topic analysis has been around since being introduced by Blei, Ng and Jordan [2] in 2001. This is a generative model that allows sets of observations to be explained by unobserved groups (topics). For LDA, each document can be viewed as a mixture of various topics using a Dirichlet prior which results in more reasonable mixture of topics [5].

The implementation of the LDA algorithm we used is that due to Rehurek [4], in the gensim Python package[12]. Using genism the LDA model was trained on the text from the 28 FSI Interim Observations and the 44 Final Report Recommendations. Ideally one would set the number of topics to be 28 for the interim report and 44 for the final report. However this did not result in a clear one-to-one mapping from Training document to LDA Topic[13]. Using a simple heuristic of expanding the topic search space by a factor of five resulted in an effective one-to-one mapping between the training documents and the learnt topics. For the 28 Interim Observations this was achieved by forcing the number of LDA topics to be 28*5=140 topics[14], and similarly in the second case of the 44 Final Recommendations, by using 44* 5 = 220 topics.

Once the model was trained, the submission documents could be processed to assign topical content to each document. In this study, we applied the topic model to the second-round submissions and examined the resulting Document-Topic matrix. The result is a very large matrix of topical content assignments across 488 documents and 28 or 44 topics, depending on which source of Inquiry Panel text was used for training the topic assignment algorithm.

[12] The genism package and documentation are at: https://radimrehurek.com/gensim/
[13] Note that every time the training model was run resulted in slightly different results, unlike LSA. This was due to the probabilistic framework of LDA.
[14] A one-to-one relationship was defined as any document that has more than 70% exposure to any one topic (sometimes the LDA model had to be repeated a number of times until the desired one-to-one mapping ensued. Additional sense checks on topic accuracy were conducted to make sure they lined up with the document text.

This procedure returns the exposure of each document to either of the 28 observation topics or the 44 recommendation topics. In this way, each document in the set can be classified as having a particular fingerprint of statistical exposure to each of the identified topics. This is the end point of the analysis and constitutes a representation of what each document is "about".

Author analysis

In addition to Topic Analysis, each author was also manually classified into one or more of the categories shown at Figure 4, which organised all submission authors into a set of high level Author Groups and sub-level Author Types.

The major groupings identified include:

- Financial Enterprises
- Professional Services Firms
- All Other Authors

This breakdown was driven by the clear presence of several industry interest groups organised on clear lines of topical concern and one mixed group reflecting a wider set of community and public interest concerns.

Ideally one might attempt to automate the Author Analysis, but considering the small number of submissions (and hence authors) as well as the time to gather the metadata needed to train a machine learning algorithm to automatically assign author categories, we did not pursue this.

In addition, 14 authors of submissions to the inquiry fell into multiple categories. These are shown in detail at Figure 5, where complex financial institutions are split across groups in a rough reflection of their imputed business activities and exposures.

This included the four largest banks, Macquarie, AMP, Suncorp, Challenger, as well as three of the four largest accounting firms. Exposure to each category was determined on a case by case basis, applying knowledge of their current lines of businesses of these firms (for example the exposure of the largest banks[15] to the "Bank and ADIs" category was set at 75%, leaving some room for exposure to other categories like Asset Management or Financial Advice).

As can be seen from Figure 5, the major areas for multi-category submission were in diversified groups operating across the areas of Asset Management, Banking and Approved Depositary Institutions, the provision of Financial Advice, and Insurance and Accounting Services. Given the concentration of industry revenues in

[15] The Australia and New Zealand Banking Group Limited (ANZ), The Commonwealth Bank of Australia (CBA), National Australia Bank (NAB) and Westpac Banking Corporation (WBC).

Banking, Asset Management, Insurance the provision of Financial Advice and professional Accounting Services, it is not surprising that these author categories had the biggest concentration of multi-category authorship.

The same is generally true of the breakdown of Authors by share of submissions and pages of submissions.

Figure 6 shows the composition of Authors by percentage of submissions, by number. The three largest groups by number were Financial Enterprises, the Industry Associations and Individuals. The high number of submissions from individual citizen reflects the wide public significance attached to the Inquiry. During the lead-up to the Inquiry, the financial press had given significant coverage to the state of the Financial Advice industry and competition policy with regard to financial services delivery in a relatively concentrated market.

The level of media discussion of such matters clearly motivates some members of the general public to make their views known to the Inquiry. Although we excluded the obvious campaigns from the statistical analysis, one might legitimately say that, with the inclusion of these, the largest group of submissions, by number, came from members of the public.

Another noteworthy group was the Professional Services Firms, who were focused on areas of competition policy and regulation as these affect the goals of cross-border advisory groups who have an interest in promoting Australia as a financial centre. Among the remaining groups, there were some significant submissions by page count and breadth of scope, such as that from the Reserve Bank of Australia[16]. One might expect this from organisations with a policy focus.

Another means to measure the importance authors attached to each topic is via the total number of pages from author groups. Since each submission typically addressed multiple topics, the overall score employed a weighted average of pages per submission by topical weight.

Recognising this, the analysis was repeated using percentage of total pages. The results shown in Figure 7 highlight how submissions from individuals were relatively short. The authors who were up-weighted in share of submissions by page count were: the government; regulatory; academic; and professional associations. This perhaps reflects the greater weight given to broader public policy by such organisations in the general conduct of their day-to-day business.[17]

The other interesting dimension of author analysis is to focus on submissions drawn from the two broadest commercial organisations groups of Financial Enterprises and Professional Services.

[16] The Reserve Bank of Australia is the central bank with responsibility for conduct of monetary policy, financial stability and the payments system. As such, their submission covered a wide range of policy considerations.

[17] One possible refinement of the textual analysis would be to examine measures of the complexity of the language used and the neutrality or otherwise of linguistic tone across the different groups. One might expect there to be significant differences due to the mix of academic, commercial, regulatory and public voices present. One simple analysis using a measure of the "complexity of language" employed highlighted the RBA submission. This would probably not surprise anyone who has listened to Central Bank deliberations on interest rates or the economy.

Figure 8 shows the percentage of submissions by number of the author subcategories within each of these groups. Clearly *Financial Advice* contributors dominated the Financial Enterprises focus, with strong support from *Asset Management* and *Banks and Approved Depository Institutions* regulation. This emphasis is consistent with the visible press commentaries and the ongoing public discussion in Australia about the state of the Financial Advice industry.

Within the *Professional Services* firm contributors there was less clear emphasis on the obvious hot button issues of the day. The *Advisory and Research Services* author sub-category along with the *Legal Services* category were the major contributors to the Inquiry.

Once the focus of contributions is shifted to page counts, then the picture shifted somewhat to give greater emphasis to Banks and Approved Depository Institutions, see

Figure 9. If one were to judge the importance to authors of the Inquiry by pages submitted, then Banks and Advisory and Research Services firms seem to have spent the greatest expenditure of words.

The foregoing analysis highlights the weight of voices expressed by the different author affinity categories, measured by number of submissions and by page counts. The voice of the public was clearly present by number, but the weight of words went to the policy-driven voices of academic, regulatory, government and professional association interests. This finding highlights how public inquiry processes naturally elicit a different depth and texture to submissions, depending on the affinity group of the authors. Certainly, such features are evident in the FSI submissions.

Topical Analysis

The main output of the topic analysis is a matrix showing the exposures of each Text Document to each of the Topics (i.e. the Document-Topic matrix). Unlike the preceding author analysis, the topical analysis is now driven by the topical content of documents as identified by a computer reading of the documents when trained on the word of the Inquiry Panel.

There are a couple of points worth understanding about this analysis. Of course, the computer cannot read the submissions in any ordinary sense of the term when applied to a human reading of the documents. The sense in which the term is used here connotes a statistical pattern that is common to the words and word sequences used by the Inquiry Panel to express an Observation or a Recommendation and the same words when used by any particular author submission.

To use a simple analogy, this is somewhat like classifying a book of recipes by the presence of words connoting ingredients. A recipe for French Onion Soup might reasonably be expected to mention the word “onion” at

some point in the same way that a Texan Barbecue Ribs recipe might well mention “spare ribs” alongside “jalapeno chilies” or some other spicy addition.

One should understand, therefore, that computer analysis of public submissions is unlikely to replace the human legislature anytime soon. Policy makers are not out of a job anytime soon!

However, there is value in considering how a computer reading of the submissions, in this very limited statistical sense, can unearth some of the patterns of concern that exist across the broad community in respect of a very wide range of topics that were touched on by the authors.

With this orientation, a fruitful way to consider the material is to view the statistical analysis as a kind of index into the body of submissions which may guide the interested reader to then dive into any one submission in order to potentially discover points of relevance to that topic.

Mindful of this potential usage of the output, the detailed output to be described will be made available on the public website for anybody who would like to use it in this way.

Document-Topic Matrix

Recall, the entire purpose of the computer analysis of text was to assemble a matrix which shows the proportion of each of a range of topics (the 28 Observations or 44 Recommendations) that was statistically evident in a computer reading of each of the 488 submissions. This is a large matrix and difficult to display in a report, although an extract is included at

Figure 10.

In the Excel version of this matrix, which is available online, one can drill down by any particular topic, or any particular submission. The Document-Topic matrix is simply a table which has each of the 488 submissions arrayed down the rows, and topics across the columns. The cells which lie at the intersection of a document with a topic have a weighting which shows an estimate of the weight of that topic within a given document.

Of course, every document has a total weight of 100% across all of the topics. Since the topics were driven by the Inquiry Panel, the topic allocation can be thought of as an edited version of the submissions, weighted according to topical similarity to the words of the Inquiry.

The results are presented in heat-map form, so that larger numbers have a darker shade on a colour pallete from white through light blue to dark blue and dark green.

Scanning across a row, or down a column, the darker cells indicate a topic which assumed a higher prominence in the document that corresponds to that row.

With such a large matrix of results, the visual display of topic weight is important for finding the patterns inherent in the data. The interested analyst may then go off and download the actual document to read more closely what it actually said about the indicated topic.

In general terms, there is greater statistical significance to be attached to higher topic weights in a given document. However, topic assignment is somewhat subjective at the best of times, and so such computer-driven assignments should be treated in much the same way one uses a search engine online. Search engines have improved a great deal, but they are not foolproof.

Document Exposure Tool

Another tool for investigating the submissions is provided in the form of an Excel explorer for each of the documents. This contains a database of all of the documents together with a Peer comparison and an All Authors comparison. An example is shown at
Figure 11.

In this example, the submission from Allianz is analysed with respect to the 28 Observations of the Interim Report. Summary information on the author of the submission, its classification and the source URL for retrieving the document is shown in the upper panel of this tool.

The lower panel of

Figure 11 shows a simple “exposure chart” giving the relative weighting to each of the 28 Interim Observations across this particular submission, an average of the Peer group of submissions in the same category and across the entire group of submissions.

Noting the run of data points across this chart we can pick out two areas to illustrate how such a tool can be used to investigate the submissions. Firstly, under Observation 3, on the Openness of Australia’s Capital Account, one can see that this had a higher weight in the Allianz document than that of Peers in Insurance, which was higher again than submissions in general. Secondly, the Observation 15, on Underinsurance risk, had a much higher weight in both the Allianz submission and that of Peers in Insurance than the broader group of all authors.

Used in this way, the computer analysis of topical content provides a form of index across the patterns of author interest in respect of the Inquiry Panel topics.

Of course, the tool in question is the product of a research project and not necessarily the most definitive expression of how text analytics might be used to aid a policy inquiry. Nonetheless, it may stand as an invitation for those charged with running policy inquiry processes on the utility of computer-aided analysis in helping to manage the consultation process.

Ideally, such tools might help an inquiry archive and analyse submissions as they were made to better understand the views of different interest groups. Topical groupings and pattern analysis, within and between author affinity groups, could potentially help an Inquiry Panel target their interactions and public consultations to sharpen understanding of the issues raised.

Perhaps the best way to test this vision for future policy development is simply to put the above tools in the hands of the interested public for download and exploration to elicit feedback.[18]

The Most Common Patterns of Interest

The preceding tools are most useful for the analyst intent on discovering their own reading path through the submission documents. At a higher level, it is better to distill the submissions by the most common topics of interest to the author affinity groups.

This form of analysis is much more suited to a policy maker who simply wishes to know:

Who cares about which three topics most, and why?

The final question of "Why" is best answered by a human reading of the situation.

However, to get to that point it is helpful to use the statistical analysis to summarize the three topics of greatest interest to each of the identified author affinity groups.

Since there were two types of topical analysis, reflecting first the 28 Observations of the Interim Report and then the 44 Recommendations of the Final Report, both results are given.

In
Figure 12, the three most important topics among the 28 Observations are shown. There are some noteworthy patterns. Firstly, the state of Banking Sector Competition was a hot topic for seven groups. It was the hottest topic of commentary for Banks and ADIs, but also among Individuals, Small Business Owners and Other. One may judge from this analysis that the state of competition in the banking sector generates a considerable amount of heat, in terms of level of interest.

[18] With this in mind we have placed the tools on the CIFR website.

Perhaps surprisingly, the role of technology in addressing differential insurance pricing and underinsurance risk was the hottest topic for insurers but seemed not to rate for others. This may serve to illustrate how it is possible for one topic to be well-understood by a particular industry segment but perhaps be deemed too arcane or technical to interest others.

On another front, the arcane topic of banking regulation and bank capital ratios seemed to be important across a wide range of submissions. This may be due to the high level of media commentary during the year of the Inquiry on this topic and its likely role.

From a research design perspective, there is a possible confounding factor present in real-life public commentary. Certain "single-topic" issues, like bank capital ratios, may well be "proxies" for a background issue such as the previously identified state of banking sector competition.

Turning to the 44 Recommendations in Figure 13, one can readily see that *Financial Advice and Mortgage Broking* along with *Managed Investment Scheme Regulation* and the *Development of a Retail Corporate Bond Market* were of broad interest across author groups.

A more select hot-button issue was *Interchange Fees and Customer Surcharging* for *Credit Card and Payment* services authors along with *Small Business Owners* and *Other*. One may readily recognise these author groups as representing the two sides of an ongoing public debate on electronic payments, merchant fees and the consumer experience of the payments system.

In other areas, it is noteworthy to read down the columns and discover that *Exchanges and Broking* authors were most interested in the development of a *Retail Corporate Bond Market* along with the principle that regulators should embrace the principle of *Technology Neutrality*.

Summary and Conclusion

The purpose of this investigation was to adapt computer text-analytics tools to the analysis of a set of Public Inquiry submissions for topical content by author affinity groups.

To guide the computer analysis on the selection of topical material we used the text and words of the Inquiry Panel to frame a proxy for the editorial input of that expert panel in framing the public process of submission and consultation.

The Inquiry process is properly regarded as a natural experiment, over which the authors had no control in the specifics of how it was conducted. To control for a possible confounding of topics by submissions that

"wandered" from the stated Terms of Reference, the text of the 28 Interim Observations and 44 Final Recommendations was used to train the text analytics engine to identify material similar to the stated concerns and final conclusions of the Inquiry Panel.

The before and after nature of this analysis can be used to see how the initial observations were reflected in the topical content of the later second-round submissions and how the subsequent recommendations of the Inquiry emphasized a related set of concerns, in the final analysis.

For instance, it is noteworthy that among the 28 Observations of the Interim Report those that had high topical overlap in the following submissions were the state of Banking Competition and close proxies for that, such as Bank Capital Ratios. This can be seen in the general pattern of the heat map for Figure 12. However, when it came down to the similarity between the same body of second-round submissions and the eventual 44 Final Recommendations of the Inquiry, the heat-map is concentrated around *Rec. 42 – Managed Investment Scheme Regulation* and the related area of *Rec. 40 – Financial Advice and Mortgage Broking*. One simple interpretation of this shift in emphasis might be to infer that the Inquiry Panel recognized the *State of Banking Completion* as an important general topic, but further targeted this towards the specific areas of financial advice, mortgage broking and the regulation of managed investment schemes. Of course, the Inquiry process does not generate a priority ranking to recommendations, but the analysis of topical weight within the second-round submissions supports a narrative on imputed relevance.

To draw any sharp conclusions on the importance or implicit community weight that might be imputed to any recommendation is well outside what this research method was designed to accomplish. With that caveat in mind, such a narrative must be treated with caution.

However, for those with an interest in policy development, analysis and implementation, the heat-map of topical interest by author affinity group may at least frame where the important community discussions could be expected to lie against any given recommendation.

This is where we anticipate such tools to be of practical use to experts in public policy. They cannot replace the wisdom and experience of those charged with leading and framing the "Listening Conversation" of public policy development. However, the computer analysis of public submissions might well prove to be helpful in sharpening the to-and-fro process of generating policy feedback on the issues of the day against stated Terms of Reference.

This work has really just scratched the surface of what is possible in using text analytics and the power of computers to inform the understanding of social behavior in public inquiry processes.

Follow-on studies will explore the refinement of such methods for public policy input.

Figure 4 Author-Group and Author-Type Classifications

Author Group	Author Type	Examples
Financial Enterprises	Banks and ADIS	Big 4 Banks*, Regional Banks, P&N Bank
	Insurers	Allianz, IAG, Medibank, QBE, Suncorp*
	Asset Management	Dimensional, IFM Investors, Schroder, UniSuper
	Credit Cards & Payment	AMEX, Visa, Mastercard, eftpos, PayPal
	Financial advice (Financial advisors)	AMP*, Chan & Naylor*, Chant West
	Exchanges/Broking	ASX, Chi-X, Asia Pacific Stock Exchange
	Mortgage Broking	Aussie, Australian Finance Group
Professional services firms	Accounting Services	Deloitte*, EY*, KPMG*
	Actuarial Services	Barton Consultancy, McGing Advisory & Actuarial
	Legal (inc Services)	Clayton Utz, King & Wood Mallesons, Minter Ellison
	Advisory and Research Services	Dixon Advisory, Mercer, Morningstar, Standard & Poor's
	Other Professional services	Ferrier Hodgson, Strategies Plus
All Other Authors	Professional Association	Actuaries Institute, AFMA, CPA, CA, FPA, Law Council
	Industry Association / Advocacy	ABA, ASFA, AFMA, BCA, FSC
	Research Centre / Body	CIFR, CLMR, ACFS
	Research Individual	
	Government / Regulator	AUSTRAC, APRA, ASIC, RBA, AFSA, OAIC, FOS

	Individuals	
	Small Business Owners	
	Other	CSR, Coles*, Microsoft

*Multi-category authors

Figure 5 Multi-Category Author Classifications

Author	Accounting Services	Actuarial Services	Asset Management	Banks and ADIs	Credit Cards & Payment	Exchanges/Broking	Financial advice	Insurance	Legal (inc Services)	Mortgage Broking	Other	Advisory and Research Services	Other Professional services	Government / Regulator	Individuals	Small Business Owners	Professional Association	Industry Association	Advocacy	Industry Association / Advocacy	Research Centre / Body	Research Individual	SUM WEIGHTS	NO SECTORS
AMP	0%	0%	25%	0%	0%	0%	50%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	3
ANZ	0%	0%	25%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
ANZ and Consumer Action Law Centre (CALC)	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%	0%	100%	2
Challenger	0%	0%	50%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
Chan & Naylor	50%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
Coles	0%	0%	0%	0%	25%	0%	0%	25%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	3
Commonwealth Bank	0%	0%	13%	75%	0%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	3
Deloitte	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
EY	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
KPMG	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
Macquarie Group	0%	0%	25%	0%	0%	25%	25%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	4
NAB	0%	0%	13%	75%	0%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	3
Suncorp Group	0%	0%	0%	25%	0%	0%	0%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
Westpac	0%	0%	13%	75%	0%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	3

Figure 6 Composition of Author Categories by Percentage of Total Submissions

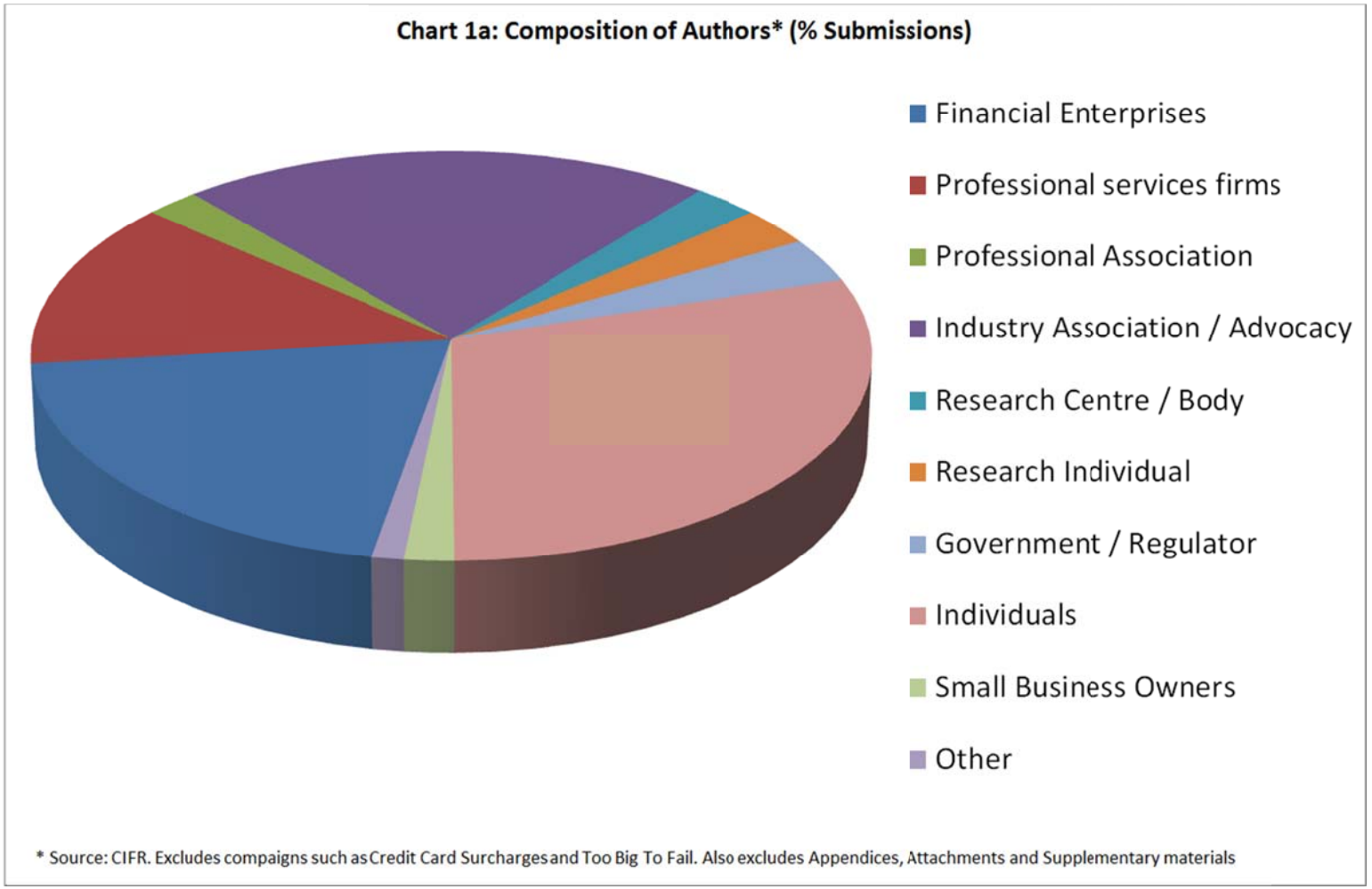

Figure 7 Composition of Author Categories by Percentage of Total Page Count

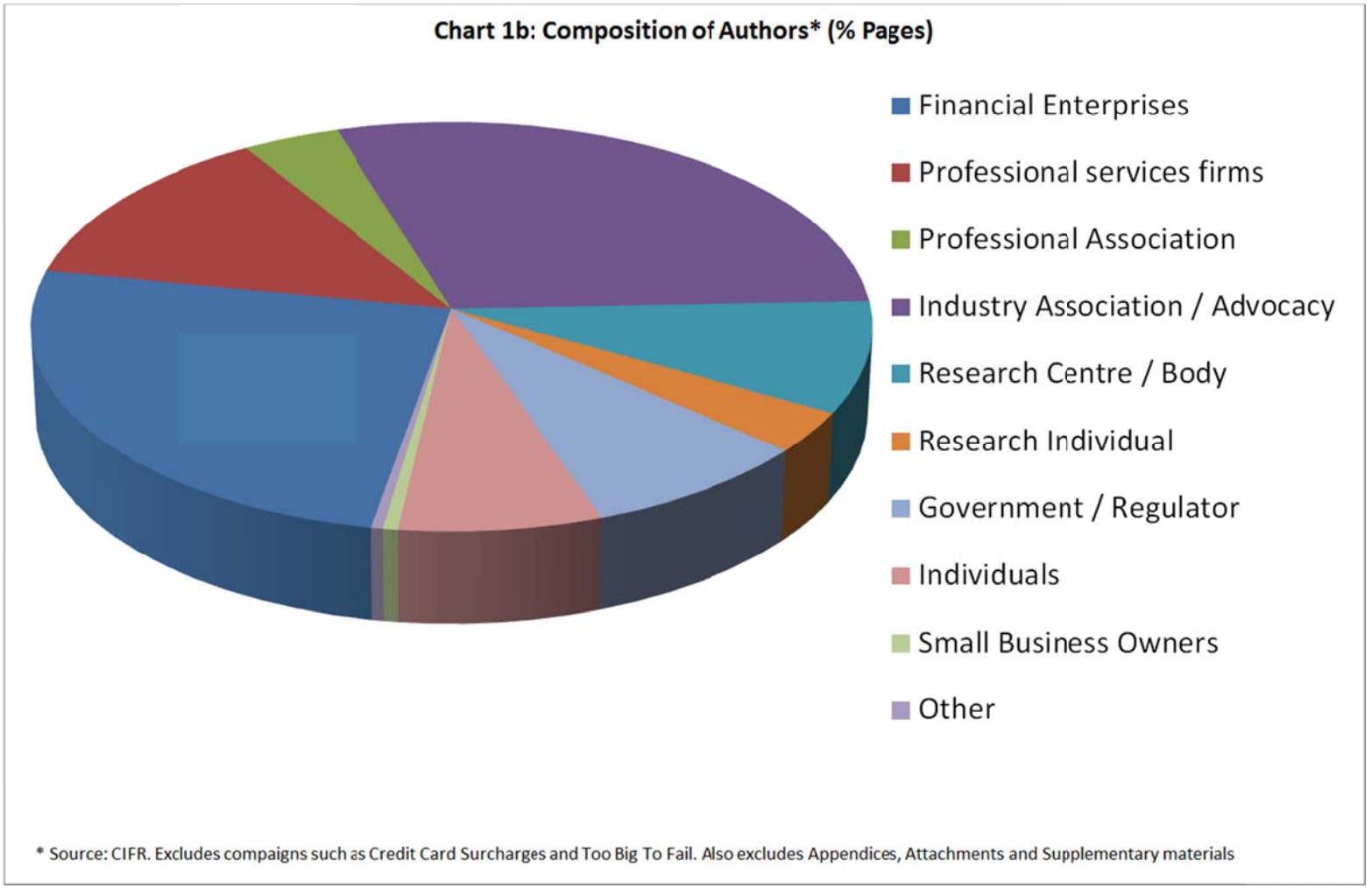

Figure 8 Percentage submissions by number on popular topics across commercial organisations

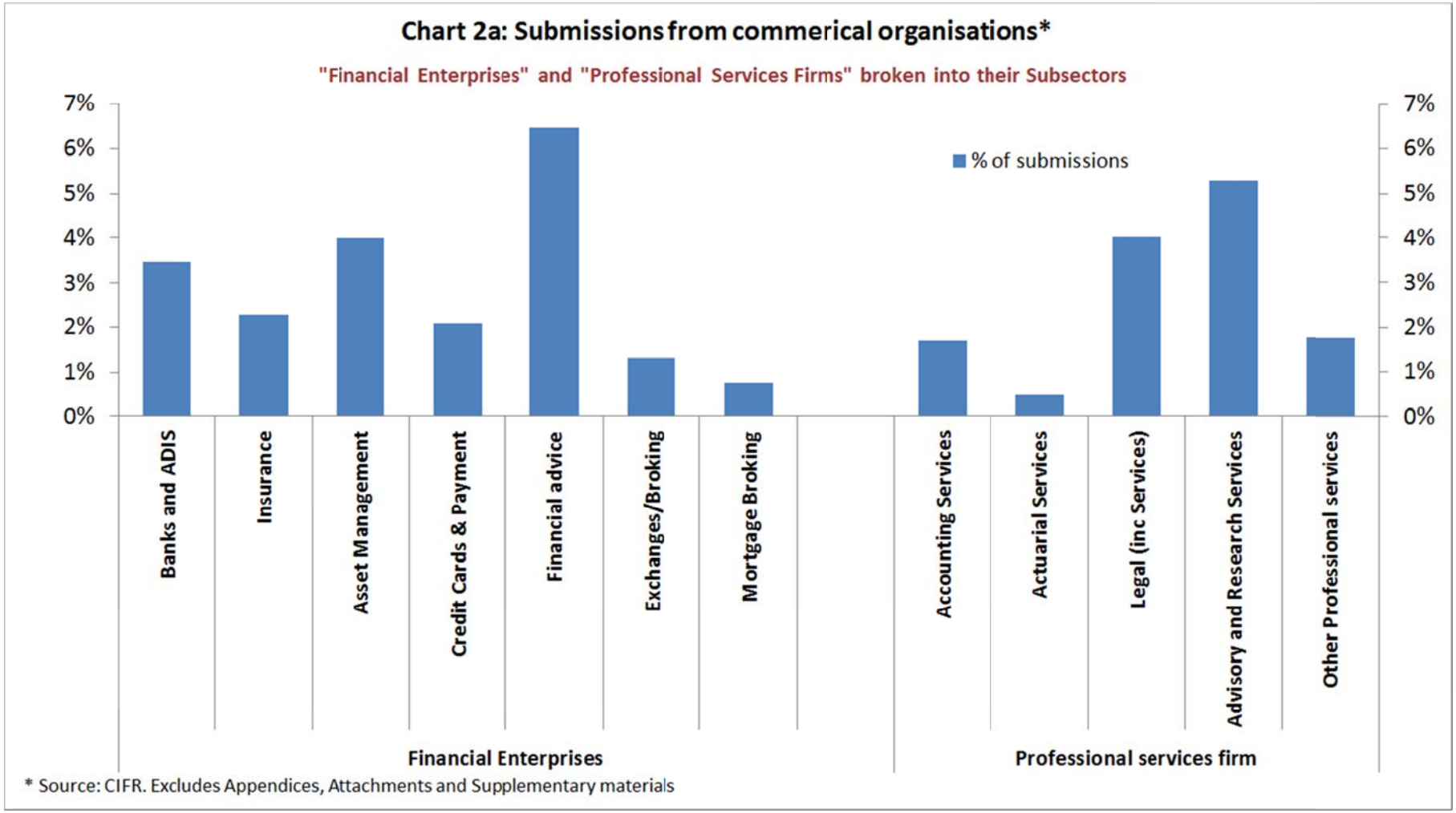

Figure 9 Percentage submissions by page count across popular topics by commercial organisations

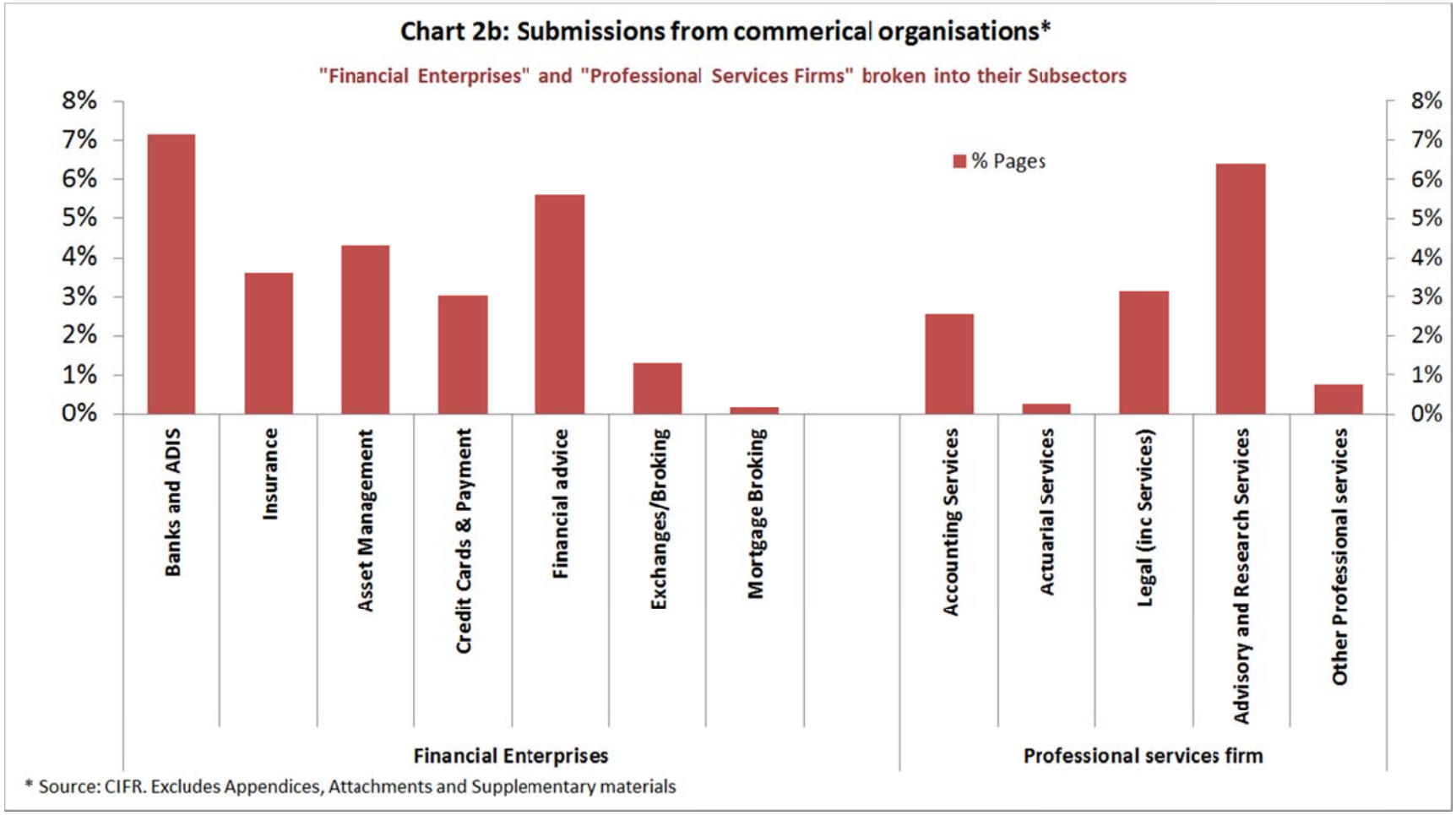

Figure 10 Extract of the Document-Topic Matrix showing Exposures to the 44 FSI Final Report Recommendations

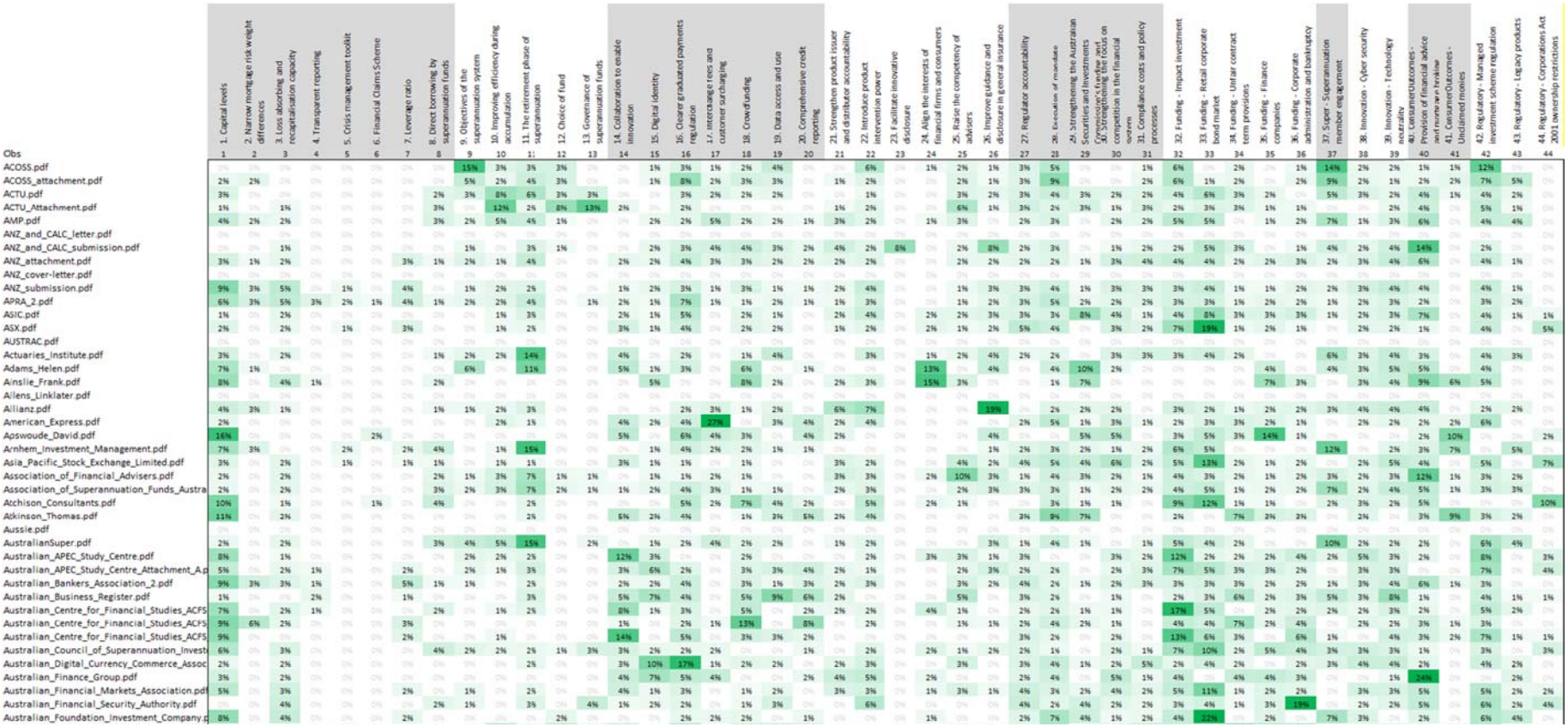

Figure 11 Document Exposure Tool (Excel Interface) showing Document exposure to each of the 28 Interim Report Observations

Author:	Allianz
Submission FileName:	Allianz.pdf
Submission Document Size:	268 KB
Submission URL:	http://fsi.gov.au/files/2014/09/Allianz.pdf
Submission Page Count:	18
Submission Type:	Main Submission
Is Submission a Compaign?	No
No of Submissions by Author:	1
No of Pages in all Submissions by Author:	18
Assigned Author Types:	100% Insurance
Multi Category Authors (No Categories)	No
Largest Author Type:	Insurance

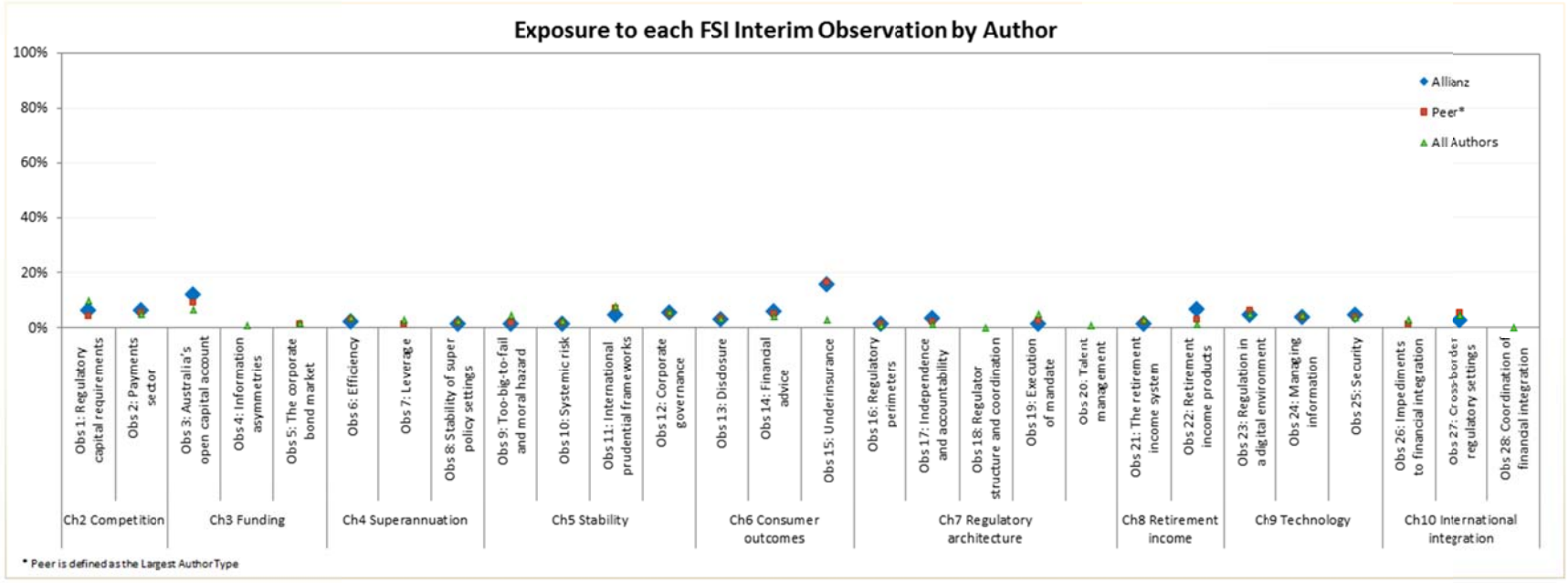

Figure 12 Three most common FSI Interim Report Observations by Author

	Financial Enterprises							Professional services firms					All Other Authors							
FSI Observation	Banks and ADIs	Insurers	Asset Management	Credit Cards & Payment	Financial advice	Exchanges/Broking	Mortgage Broking	Accounting Services	Actuarial Services	Legal (inc Services)	Advisory and Research Services	Other Professional services	Professional Association	Industry Association / Advocacy	Research Centre / Body	Research Individual	Government / Regulator	Individuals	Small Business Owners	Other
Chapter 2: Competition																				
1: Banking sector competition	22%										8%			7%		9%		17%	15%	14%
2: Payments sector regulatory differences				15%																9%
Chapter 3: Funding																				
3: Funding from overseas		9%	9%		9%						8%		7%	7%	8%	9%	6%		11%	
4: Structural impediments for SME Funding																				
5: Factors limiting corporate bond market																				
Chapter 4: Superannuation																				
6: Increasing efficiency in superannuation sector									15%			9%							9%	
7: Leverage in super may create vulnerabilities																				
8: Superannuation policy settings lack stability																				
Chapter 5: Stability																				
9: Too-big-to-fail and moral hazard																		9%		
10: Difficulties managing systemic risk																				
11: Australian banks' capital ratios range	10%	7%	13%		7%	10%				8%	9%	10%		8%	12%	9%	8%	7%		
12: The role of corporate governance in managing financial risk			8%					13%	7%	9%			6%							
Chapter 6: Consumer outcomes																				
13: Disclosure requirements adds costs whilst obfuscating understanding							7%													8%
14: Affordable, quality financial advice					11%		23%	9%				10%	7%							
15: Technology-lead differential risk pricing on insurance and underinsurance		16%																		
Chapter 7: Regulatory architecture																				
16: Re-examining regulatory perimeters																				
17: Operational and budgetary independence of APRA, ASIC and the RBA																				
18: Increasing transparency in Australia's regulatory environment																				
19: ASIC's mandate (eg re explicitly targeting competition)						8%		7%												
20: Regulators talent management																				
Chapter 8: Retirement income																				
21: The retirement phase of superannuation is underdeveloped									9%											
22: Impediments to developing retirement income products																				
Chapter 9: Technology																				
23: Government and regulators: balancing technological innovation vs risks	7%			8%																
24: Customer information to improve efficiency and competition				9%																
25: Cyber security risks and digital identity solutions																				
Chapter 10: International integration																				
26: Impediments to regional financial system integration							11%			7%										
27: International standards and foreign regulation						6%									7%		6%			
28: Improving coordination of Australia's international financial integration																				
Source: CIFR	13	9	14	5	23	5	2	7	2	12	21	7	9	80	11	12	11	104	6	4

Figure 13 Three most common FSI Final Report recommendations by Author

	Financial Enterprises							Professional services firms					All Other Authors							
FSI Recommendation	Banks and ADIs	Insurers	Asset Management	Credit Cards & Payment	Financial advice	Exchanges/Broking	Mortgage Broking	Accounting Services	Actuarial Services	Legal (inc Services)	Advisory and Research Services	Other Professional services	Professional Association	Industry Association / Advocacy	Research Centre / Body	Research Individual	Government / Regulator	Individuals	Small Business Owners	Other
Chapter 1: Resilience																				
Rec01-Capital levels																				
Rec02-Narrow mortgage risk weight differences	6%																			
Rec03-Loss absorbing and recapitalisation capacity																				
Rec04-Transparent reporting																				
Rec05-Crisis management toolkit																				
Rec06-Financial Claims Scheme (FCS)																				
Rec07-Leverage ratio																				
Rec08-Direct borrowing by superannuation funds																				
Chapter 2: Super																				
Rec09-Objectives of the superannuation system																				
Rec10-Improving efficiency during accumulation																				
Rec11-The retirement phase of superannuation		5%	9%		6%															
Rec12-Choice of fund																				
Rec13-Governance of superannuation funds																				
Chapter 3: Innovation																				
Rec14-Collaboration to enable innovation															5%					
Rec15-Digital identity																				
Rec16-Clearer graduated payments regulation				9%																
Rec17-Interchange fees and customer surcharging				13%					7%										7%	12%
Rec18-Crowdfunding																				
Rec19-Data access and use																			6%	9%
Rec20-Comprehensive credit reporting																				
Chapter 4: ConsumerOutcomes																				
Rec21-Strengthen product issuer and distributor accountability							8%													
Rec22-Introduce product intervention power								5%												
Rec23-Facilitate innovative disclosure																				
Rec24-Align interests of financial firms and consumers																				
Rec25-Raise competency of advisers												4%								
Rec26-Improve guidance and disclosure in general insurance		11%																		
Chapter5: Regulatory																				
Rec27-Regulator accountability																				
Rec28-Execution of mandate						6%										5%				
Rec29-Strengthening ASICs funding and powers																				
Rec30-Strengthening competition in the financial system																				
Rec31-Compliance costs and policy processes																				
Appendix 1: Funding																				
Rec32-Impact investment											5%			5%	7%					
Rec33-Retail corporate bond market			8%		7%	10%				5%	6%		6%			7%	6%			
Rec34-Unfair contract term provisions																		6%	12%	7%
Rec35-Finance companies																				
Rec36-Corporate administration and bankruptcy																				
Appendix 2: Super																				
Rec37-Superannuation member engagement									10%											
Appendix 3: Innovation																				
Rec38-Cyber security	6%																			
Rec39-Technology neutrality				6%		6%				5%							5%			
Appendix 4: ConsumerOutcomes																				
Rec40-Financial advice and mortgage broking	6%				8%		18%	8%				7%	7%	5%				6%		
Rec41-Unclaimed monies																				
Appendix 5: Regulatory																				
Rec42-Managed investment scheme regulation		6%	7%				6%	9%	11%	12%	7%	9%	6%	7%	9%	7%	7%	6%		
Rec43-Legacy products																				
Rec44-Corporations Act 2001 ownership restrictions																				
Source: CIFR	12	8	14	5	22	5	2	6	2	11	20	7	8	78	10	11	10	106	6	4

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