



MACQUARIE
University

**APPLIED FINANCE
CENTRE**

FINANCIAL
SERVICES
INSTITUTE
of Australasia



Are profit-based incentives compatible with a risk culture?



EXPERIMENTAL RESEARCH REPORT

This version published August 2017

ACN 066 027 389 ABN 96 066 027 389

FINSIA

FINSIA — the Financial Services Institute of Australasia — is Australasia's leading membership organisation for the financial services industry.

FINSIA's heritage is over 130 years of progressing financial service knowledge and conduct to high standards. More importantly than ever FINSIA is the connector of key stakeholders, industry regulators, government and education providers to help deepen trust in financial services by raising standards of professionalism. FINSIA enables the advancement of competence and integrity for the benefit of professionals, consumers and society.

Macquarie University Applied Finance Centre

Since 1980, Macquarie University Applied Finance Centre (MAFC) has provided cutting edge graduate education for finance professionals. MAFC's programs leverage the collective experience of industry leaders and practitioners to deliver the same academic rigour that's required in the high-pressure context of real-world financial decision making. All MAFC research projects are focused on current industry needs.

With 5,000 alumni in over 40 countries and teaching facilities in Sydney, Melbourne and Beijing, MAFC aims to provide students with life-long connections, friendships and opportunities across global financial markets. www.mafc.mq.edu.au

About the authors

Associate Professor Elizabeth Sheedy is a specialist in financial risk management based at the Macquarie Applied Finance Centre. Email: esheedy@mafc.mq.edu.au

Dr Le (Lyla) Zhang is an experimental economist at the Macquarie Graduate School of Management. Email: lyla.zhang@mgs.m.edu.au

Kenny Chi Ho Tam is a graduate student at Macquarie University. Email: kenny-chi-ho.tam@students.mq.edu.au

Availability

This report is available on FINSIA's website (www.finsia.com), and on the Macquarie Applied Finance Centre's website (www.mafc.mq.edu.au).

Disclaimer

The material in this report does not constitute legal, accounting or other professional advice. While all reasonable care has been taken in its preparation, FINSIA does not make any express or implied representations or warranties as to the completeness, reliability or accuracy of any and all material in this report. The report should not be used or relied upon as a substitute for professional advice or as a basis for formulating business decisions. To the extent permitted by law, FINSIA excludes all liability for any loss or damage arising out of the use of the material in the report. Any links to third party websites are provided for convenience only and do not represent endorsement, sponsorship or approval of those third parties or any products and services offered.

Copyright

FINSIA has endeavoured to appropriately acknowledge the use of all copyright material contained in this report; however, there may be instances where FINSIA has provided insufficient acknowledgement.

If notified, FINSIA will ensure full acknowledgement of the use of copyright material.

© Macquarie University 2017, published with permission.

The report cannot be used for commercial purposes.

This paper provides a summary of research conducted in early 2017. A more detailed paper with full statistical analysis, sample details and reference list can be obtained by contacting Elizabeth Sheedy. Be sure to 'Link In' with the authors to receive ongoing research updates.

Further information and comments

Associate Professor Elizabeth Sheedy — Macquarie Applied Finance Centre

E > esheedy@mafc.mq.edu.au

Anita Poppi SA Fin — Head of Corporate Affairs and Marketing, FINSIA

E > a.poppi@finsia.com

SUMMARY AND RECOMMENDATIONS

Our study is focussed on compliance with risk policy – the minimum standard required of finance professionals.



1. Risk culture is an important determinant of compliance behaviour which is in turn affected by incentives and the behaviour of managers/co-workers. When managers/co-workers are profit-focused, and when incentives are linked to profits, rates of compliance fall. The effect is felt via risk culture.
2. Profit-based incentives are often used in financial services to encourage effort and boost profits. In our study profit-based incentives did not significantly boost the number of profitable investments. Given the significant adverse impact on compliance noted above, the study supports the elimination of profit-based incentives currently being debated within the financial services industry.
3. When we reduced the burden of calculations on participants we noticed an increase in compliance with risk policy. This is probably because people are less able to resist the temptation to breach policy when they are tired. This suggests that to increase risk compliance it is important for the industry to take better account of cognitive load – i.e. to automate analysis where possible and design work patterns in such a way that staff are not unduly depleted when making crucial decisions.
4. Personal attitudes to risk management/compliance are a significant determinant of compliance behaviour. This finding has implications for the screening of job candidates, such as considering candidates' attitudes towards risk management in recruitment/promotion decisions.
5. Workers from the superannuation sector were less likely than others in financial services to comply with risk policy. This finding should be treated with caution due to the small sample but it warrants further investigation. If confirmed, it may mean that additional work is need to improve risk culture in this sector.
6. The research project has demonstrated that 'culture' experiments can be usefully conducted in the lab. Subject to obtaining funding, we hope to extend the research to investigate how risk culture may be improved in financial institutions.

1. INTRODUCTION

In financial services these days, there is broad agreement that risk management is the responsibility of all staff, not just senior leaders and risk specialists. The first and primary risk management responsibility lies with those who trade securities and derivatives, manage assets, issue loans, advise clients, underwrite insurance and provide brokerage services. Their job is to take risk on behalf of their employer, subject to certain constraints or risk policies/limits.

For example, a proprietary trader or loan officer is allocated limits or boundaries constraining the amount and type of trades/loans (s)he can make. Financial advisors may be required to follow procedures designed to reduce the risk of selling products that are not well matched to customer needs, thus reducing the risk of future customer complaints, fines, legal consequences and reputational damage. All staff are expected to comply with policies designed to protect against cyber-attack such as not opening the attachments of suspect emails. While the importance of compliance with risk policy is clear, surprisingly little is known about compliance behaviour, and how this interacts with culture and incentives.

2. THE EXPERIMENT

We designed an experimental study to mimic investment decisions taken by bank executives e.g. buying securities, granting loans, underwriting insurance. The participants had to do some simple analysis (with a calculator) and then decide whether to invest. During the one-hour lab session, they could invest in up to 60 transactions.



The lab used by the participants in the study.

To reflect the industry context, the participants were given a risk policy/limit to follow. In the experiment, the risk policy/limit was set in terms of the maximum allowable loss on the transaction; so very risky investments (as defined by the risk limit) were forbidden, even if highly profitable. Of the 60 transactions, 20 exceeded the risk limit. Participants were able to choose whether to comply or not. However, they knew that they would be penalised if they were caught investing in non-compliant transactions. They were also informed that 20% of transactions would be checked for compliance with policy.

With assistance from FINSIA (a professional membership body), we recruited finance professionals to participate in this study. We provided cash payments to participants immediately following the experiment, depending on their decisions. In the fixed payment groups participants received

\$120, less any penalties for non-compliance. In the incentive payment groups, participants received a 'commission' based on the expected value of all investments made, less any non-compliance penalties. In all cases we guaranteed a minimum payment of \$50 for one hour participation. Overall the maximum payment was \$193 and the average payment was \$115.

Table 1: Experiment groups

	No Framing	Profit Framing	Risk Framing
Fixed Payment (\$120) less any compliance penalties	1	3	Not included
Incentive Payment based on the expected profits from investments, less any compliance penalties	2	4 and 6	5

In recent years there has been a lot of discussion about the culture within financial institutions and how it might affect behaviour. By culture we mean the norms of behaviour — perceptions of what is expected. It is important to distinguish between what actually happens and policy statements; the 'is' versus the 'ought'. When new staff members join an organisation they don't study the procedure manual to learn how to behave; instead they learn from those around them. People look to the words and actions of managers and co-workers, especially when the team is under pressure to perform. Previous research suggests that staff discern the norms based on what gets rewarded, the words and actions of those they respect and admire in the workplace, what kind of behaviour builds status, the extent to which 'bad' behaviour is excused. All of this information creates a perception of the norm (= culture) which then influences behaviour.

To mimic these influences in the laboratory we used two types of framing: profit-focussed or risk-focussed. Participants who were assigned to the framing treatments received a short paragraph of text and a picture at the beginning of the experiment; this was repeated at regular intervals.

Profit Framing

In your workplace compliance with risk policy seems to have a low priority compared with meeting **profit** targets. Non-compliance is common. Your manager rarely mentions the risk policy but talks often about the need to **meet budget**. He is always giving you motivational messages to encourage you to boost **profits**. You notice that colleagues who breach policy are excused if they are top performers.

The risk policies are often criticised by staff because they can interfere with meeting profit targets; risk managers have low status compared with people who have **great profit figures**.



Risk Framing

In your workplace non-compliance with **risk policy is taken very seriously** and is extremely rare. Breaches are not excused or tolerated, even if they produce high profits. Your manager is an excellent role model of risk management behaviour and talks frequently about the **need to comply with risk policy**, even when the team is behind on profit targets. It is clear from what colleagues do and say that compliance with risk policy is regarded as essential for the firm to survive and prosper. **Risk managers are highly respected** because they are seen as adding value to the organisation.



Example:

This example illustrates the treatments with incentive payments. The risk limit (for the Loss Amount) is \$200,000.

Deal: 1 out of 60 Time remaining in seconds: 199

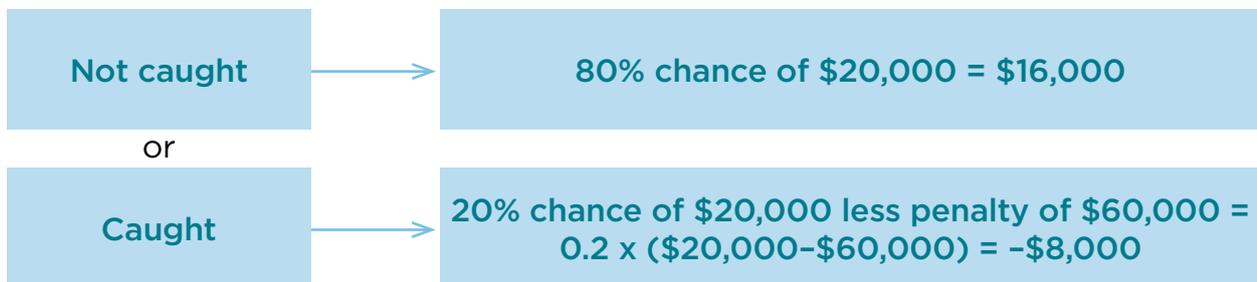
Time remaining in minutes: 19

Deal 1: Analysis
Chance of Profit = 60%
Profit Amount = \$200,000
Chance of Loss = 40%
Loss Amount = \$250,000
Expected Profit is:

The investment has 60% chance to gain \$200,000 and 40% chance to lose \$250,000. So the expected profits can be easily calculated: $60\% \times 200,000 - 40\% \times 250,000 = 20,000$.

This investment violates risk policy (the loss amount of \$250,000 is more than the specified limit of \$200,000). If you invest, then total expected profits will increase by \$20,000. If you are caught (20% chance) then you will be penalised by $3 \times \$20,000$ or \$60,000.

So the overall expected value on the deal: $\$16,000 - \$8,000 = \$8,000$.



At the end of the experiment we asked participants to complete a short survey so we could understand and control for variables such as demographics and attitudes. We also asked them a crucial question about their perceptions:

Perception Question:

In the experiment you just completed, a number of investments were outside of risk policy because the Loss Amount exceeded \$200,000.

In your opinion, what percentage of participants in the experiment would ALWAYS follow risk policy (i.e. not invest if outside the risk policy)? (Enter X%)

The answer to this question is a good measure of workplace culture because it measures perceptions of workplace norms regarding compliance with risk policy. This captures very well what is meant by the term ‘risk culture’¹. We expected that this measure would predict how individuals behaved. In other words, people tend to behave in a way that they believe will be socially acceptable.

1. You could argue that risk culture also captures norms regarding other types of risk behaviour like speaking up, but compliance with risk policy is a crucial aspect of risk management behaviour and arguably the minimum standard for finance professionals.

3. RESULTS

Comparing groups 1 and 2, we expected that group 2 (having profit-based incentives) would complete more transactions but would be less compliant with the risk policy. As shown in Table 2, the proportion of people who always complied with risk policy decreased (from 68.6% to 42.3%) when incentives were introduced. Also fewer 'bad deals' were rejected (78.4% of the bad deals vs 85.9%). The average number of total investments increased from 28.4 to 30.3 but this was not enough to be statistically significant. This is a bit surprising, especially since the whole point of incentives is to encourage staff to work harder and benefit shareholders. But it is consistent with a recent report² which found that reducing profit-based incentives in the UK has not adversely affected business outcomes. It is also consistent with the possibility that finance professionals are intrinsically motivated to work hard so pay-for-performance (outside motivation) is not essential.

In groups 3 to 6 we introduced other elements into the equation i.e. risk and and profit framing. Remember that these are statements provided to participants with information about the behaviour of peers and managers.

We found that the profit framing had a powerful effect when combined with profit-based incentives. You can see this in Table 2 row (d). For Group 2 (incentives but no framing) the compliance rate per deal is 78.4%. When profit framing is combined with the incentives (Group 4) the compliance rate drops significantly to 63.7%. When risk framing is combined with the incentives (Group 5) the shift in the compliance rate to 82.9% is much smaller. The results suggest that the signals from managers/peers are most powerful in influencing behaviour when they are consistent with the incentive program.

Table 2: Group analysis

	Group 1 Fixed Payment, No Framing	Group 2 Incentive Payment, No Framing	Group 3 Fixed Payment, Profit Framing	Group 4 Incentive Payment, Profit Framing	Group 5 Incentive Payment, Risk Framing	Group 6 Incentive Payment, Profit Framing, No Calculations
a. Number of participants	51	52	51	50	65	34
b. Average total investments per participant	28.4	30.3	31.0	32.3	30.5	41.2
c. Compliance rate by person What proportion of people were <i>fully</i> compliant i.e. never invested in any 'bad' deals?	68.6%	42.3%	60.8%	38.0%	55.4%	35.3%
d. Compliance rate by deal Of the 'bad' deals considered, what proportion were rejected?	85.9%	78.4%	85.3%	63.7%	82.9%	72.7%
e. Perceptions of compliance What proportion of people <i>do you think</i> would <i>always</i> comply with risk policy?	81.9%	65.0%	68.2%	57.3%	68.0%	45.4%

2.. Independent Review into Retail Banking Remuneration for the ABA conducted by Mercer. Remuneration Practices in the UK – Detailed Review, April 2017, p. 19. <http://retailbankingremreview.com.au>

The final row of Table 2 (row e) displays *perceptions* of compliance. We treat this as a measure of risk culture because it measures expectations of compliance (with risk policy) by participants – the extent to which people in this group believe that compliance is ‘the norm’. Notice that the highest perceptions of compliance occurred in Group 1 (fixed payment and no framing). The lowest perceptions of compliance related to Groups 4 and 6 (incentive payment and profit framing). All the groups with incentive payments had perceptions of compliance below 70%; we can infer that a culture that values compliance is fundamentally inconsistent with profit-based incentives.

In regression analysis (not reported here) we were able to demonstrate that the effect of incentives was felt through the channel of culture.

Comparing row (e) with row (c), notice that perceptions of compliance were always better than the reality (i.e. actual compliance in the lab!)

Finally, we decided to check whether the task of performing the calculations had any impact on the outcomes. Group 6 is a variation of Group 4 where participants were not required to calculate expected value; instead the expected value was given and participants had only to decide whether to invest. Not surprisingly, people in that group were able to enter into many more investments. What is particularly interesting is that compliance rates in this group were significantly improved. In row (d) we see the compliance rate jump from 63.7% (Group 4) to 72.7% (Group 6). This is consistent with previous research that has shown that people are better able to regulate themselves (resist temptation to cheat or break rules) when they are not tired or depleted. For example, people are much more likely to break a diet when they are tired.

A number of people in groups 1 to 5 told us that they found the experiment quite tiring even though the calculations themselves were simple. This may have made them less able to resist the temptation to earn extra cash by breaching risk policy. Note the similarity with financial services workplaces where people are under time pressure to complete analysis or other tasks while simultaneously making compliance choices.

4. OTHER FINDINGS REGARDING COMPLIANCE BEHAVIOUR

Incentives (through risk culture) seem to influence compliance behaviour, but we also checked to see if other factors might be important. Characteristics of the individual (such as age, personality, attitudes) were considered, along with characteristics of the investment (expected profit, risk) and characteristics of the workplace that each participant is drawn from. For example, if an individual works in an environment where compliance is not taken seriously, then this may have influenced his or her behaviour in the experiment. The table below summarises what we discovered.

Table 3: Other influences on compliance behaviour

Variable	Detail	Impact on compliance based on regression analysis
Individual age	How old are you? Less than 25 yrs, 25–34 yrs, 35–44 yrs, 45–54 yrs, 55 yrs or over.	No impact.
Individual gender	Are you male/female?	No impact.
Time in Australia	How long have you lived in Australia? All my life, 20 yrs or more, 15–19 yrs, 10–14 yrs, 5–9 yrs, less than 5 yrs.	No impact.
Industry tenure	How long have you worked in financial services? 6 mths to just less than 1 yr, 1 yr to just less than 3 yrs, 3 yrs to just less 5 yrs, 5–10 yrs, 10–15 yrs, 15–20 yrs, 20–25 yrs, > 25 yrs.	Longer tenure was associated with more compliance.

Variable	Detail	Impact on compliance based on regression analysis
Seniority	At what level are you currently working? Senior Management; Report to Senior Management; Middle Management; Team Leader; Professional Employee (but not a Manager); Team Member/ Front-Line Employee.	No impact.
Lines of defence	What best describes your role (also known as the Lines Of Defence model)? 1. Business (Line 1), 2. Independent/Specialist Risk Manager, including Compliance (Line 2), 3. Internal Audit/Assurance (Line 3), 4. Don't know.	No impact.
Segment	In what segment of financial services do you work? Banking and Finance, Superannuation, Broking, Financial Planning/Wealth Management, Funds Management, Consulting, Professional Services, Other	Those working in superannuation were significantly less likely to comply.
Gross income	What do you estimate your gross income will be from all sources this year (including the value of expected bonuses, allocations of shares and options, etc)? <\$40,000, \$40,000 to \$80,000, \$80,000 to \$120,000, \$120,000 to \$160,000, \$160,000 to \$200,000, \$200,000 to \$300,000, \$300,000 to \$400,000, >\$400,000; Decline to disclose.	No impact.
Individual risk tolerance (financial)	A set of five items that assess an individual's propensity to take financial risk in their life outside of work. E.g. how likely is it that you would: <ul style="list-style-type: none"> > Invest 5% of your annual income in a very speculative stock, > Bet a day's income on the outcome of a sporting event. 	No impact.
Individual attitude to risk/compliance	A set of three items that assess an individual's personal attitude to risk/compliance in the finance industry. These are answered on a sliding scale, e.g. Risk management is: an unnecessary impediment to doing business versus an enabler for doing business.	Those with favourable attitudes to risk/ compliance were significantly more likely to comply.
Individual personality (conscientiousness)	A set of five items to assess the extent to which an individual has conscientious personality (this is one of the Big 5 personality variables) e.g. Do you agree/disagree with the following? <ul style="list-style-type: none"> > I get chores done right away, > I like order. 	No impact.
Investment expected value	The expected value of the investment (recall that incentive payments in the experiment were based on expected value).	Compliance was reduced for investments with higher expected value.

Variable	Detail	Impact on compliance based on regression analysis
Investment risk	In the experiment the risk policy was defined in terms of Loss Amount for the investment.	Compliance increased in cases where the loss amount was higher.
Workplace culture in the real world (avoidance)	<p>A set of six items assessing the real world workplace of the participant which may potentially affect behaviour in the lab. These are drawn from the Macquarie University Risk Culture Scale;³ high scores are unfavourable, e.g. Do you agree/disagree with the following regarding your usual workplace?</p> <p>> The behaviour of those who breach risk policy is typically excused if they are a top performer.</p>	No impact.

As shown in Table 3, one of the few additional variables that explained risk behaviour was individual attitudes to risk management/compliance. We established that individual attitudes are not significantly linked to other variables such as age, gender, individual risk tolerance or workplace.

The finding relating to workers from the superannuation industry (10% of our sample) is intriguing. The fact that this group is less likely to comply with risk policy may be consistent with concerns expressed by some⁴ that risk culture is less mature (or at least more variable) in the superannuation sector compared with other segments of financial services. We note that this finding should be treated with caution due to the small sample.

3. The Macquarie University Risk Culture Scale is (to our knowledge) the only survey tool of its type with psychometric evidence of reliability and validity. It has gone through the process of peer review and a paper is available presenting this evidence in the *Journal of Business and Psychology*. To download the paper please use this link: <https://link.springer.com/article/10.1007/s10869-015-9424-7>
The Scale has been used to assess risk culture in financial institutions in Australia, Canada, New Zealand and the UK. For further information about the Macquarie University Risk Culture Scale (including potential use of the Scale) please contact Elizabeth Sheedy on esheedy@mafc.mq.edu.au

4. APRA (2016) Risk Culture, p. 22. <http://www.apra.gov.au/CrossIndustry/Documents/161018-Information-Paper-Risk-Culture.pdf>

finsia.com

FINSIA - Financial Services Institute of Australasia
ABN 96 066 027 389 ACN 066 027 389
FINSIA NZ Ltd GST 96 458 150