



*Short research note*

## **Evidence of lower risk tolerance among public sector employees in their personal financial matters**

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Critics claim that excessive risk avoidance is characteristic of public sector workers. To test this contention, the financial risk tolerance scores of public sector and private sector employees who had used financial planning services were compared on a financial risk tolerance scale. Public sector employees scored lower on financial risk tolerance relative to private sector employees. Differences remained even after controlling for other variables linked to risk tolerance.

Critics of the public sector often contend that civil servants are excessively risk averse, which supposedly renders them ineffectual, especially in managerial positions (Bozeman & Kingsley, 1998). This charge – which has been levelled against government workers in the US (Gingrich, 2005), New Zealand (Wright & de Joux, 2003), and Great Britain (Prowle, 2000) – is at the heart of the ongoing debate about the need to ‘reform’ and ‘privatize’ the public sector (e.g. Fitzgerald, 1988; Gingrich, 2005; Gore, 1993). However, as Bozeman and Kingsley (1998, p. 109) aptly observed, the notion of low risk tolerance in the public sector is ‘widely embraced but rarely tested’.

### **Nature of the evidence**

Some of the evidence is very tenuous, based on the conjecture that since risk averse individuals fear unemployment (Feinberg, 1977) and government jobs are more secure than private sector jobs (Utgoff, 1983), then people working in the public sector must be more risk averse. Frequently cited as direct evidence of the risk aversion of public servants is a study by Bellante and Link (1981) in which risk tolerance was measured on the basis of seat belt usage, insurance ownership, smoking, and drinking. Public sector

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employees scored lower on this measure. Fitzgerald (1988) implied that this research offered ample proof of the poor managerial skills of the public sector employee. Starr (1989), however, expressed dismay at this suggestion: 'In other words, we are asked to believe that people who do not smoke but wear seats belts and carry insurance are exhibiting a general aversion to risk that makes them poor managers of organizations' (p. 357).

### **Contexts – specific nature of risk tolerance**

Starr's skepticism about the notion of 'general' risk aversion is supported by research conducted nearly a decade earlier by Jackson, Hourany, and Vidmar (1972), which identified four contexts for risk – physical, monetary (i.e. financial), social, and ethical/legal. For the most part, Bellante and Link (1981) were assessing physical risk taking, which on the face of it, has rather limited relevance to competence in most positions in government. Although there is some debate as to the exact number of contexts, it is well established that consistency of risk taking between contexts is rather low (Blais & Weber, 2006; Jackson *et al.*, 1972) and that it is hard to identify a 'general' risk taking factor (Slovic, 1972). According to Blais and Weber (2006), the within-person variation in risk taking across different domains of risk taking is about seven times larger than the one between-persons.

### **Differences between sectors on 'general' risk taking**

A recent study in Germany (Dohmen *et al.*, 2005) nonetheless asked public and private sector employees for self-ratings on 'general' risk taking. Public sector employees rated themselves lower than private sector employees. The meaning of this difference is ambiguous, however, because it is unclear which type of risk taking was being rated in the abstract. Inadvertently, this study too might have picked up differences in physical risk taking given research showing that when asked for a self-rating on risk taking in the abstract (i.e. without a context), respondents tend to base their assessment mainly on their physical risk taking proclivities (Rohrmann, 2004).

### **Low agreement between different approaches to assessment**

Different means of assessment, even within the same context – such as self-rating versus choice on a lottery – can produce contradictory results. Consider the research conducted by Dohmen *et al.* (2005), which examined differences by sector in self-rated willingness to take risks in driving, financial matters, sports and leisure, career, and health. In addition to the self-ratings, a question involving a hypothetical lottery (a test of financial risk taking) was administered. Public sector workers rated themselves lower than private sector employees on career risk taking, but not on financial risk taking. Surprisingly, in terms of the lottery, public sector employees were actually more risk taking than private sector employees. Yet a similar study conducted in The Netherlands (Hartog, Ferrer-i-Carbonell, & Jonker, 2002), which also measured risk tolerance on the basis of a hypothetical lottery, found greater risk aversion among persons employed in the public sector, but only in two of their three samples.

### **Limitations in studies focusing on financial risk tolerance**

Financial risk tolerance is perhaps the most relevant context to consider when addressing the issue of differences between public and private sector workers because

nearly all key decisions have fiscal implications on an agency's budgets and capital investments (Walls, 2005). The few studies that have considered this aspect of risk between sectors have as their major limitation either a reliance on global self-ratings or the measurement of risk preferences with just a single lottery question. Single items of any type are notoriously unreliable. Furthermore, global self-ratings of risk tolerance are susceptible to self-stereotyping (Roszkowski & Grable, 2007). Risk preferences on lottery questions, in turn, can easily change across pay-off domains and response modes (Schoemaker, 1990). For instance, framing the same alternatives as either losses or gains exerts a marked influence on choice (Highhouse & Yuce, 1996; Roszkowski & Snelbecker, 1990).

Whether a person is classified as a risk avoider or a risk taker on a single question thus may depend on the nature of the question. Assessment of any construct, including risk tolerance, is best accomplished with a multi-item test (Roszkowski, Davey, & Grable, 2005). Moreover, since the overlap between different approaches to measuring financial risk tolerance is low (Yook & Everett, 2003), in the absence of information about which procedure works best with a particular individual, it is prudent to diversify assessment techniques and average the results.

#### **Contribution of the current study**

The aim of our research was to compare the public and private sectors on a multi-item measure of financial risk tolerance that incorporates multiple approaches to measuring this construct. In this analysis, the private sector was split into two parts – employed by another and self-employed – in order to account for the possibility that self-employed persons might be more risk tolerant (Ekelund, Johansson, Jarvelin, & Lichtermann, 2005). The analysis also controlled for variables linked to financial risk tolerance in prior research (see Hallahan, Faff, & McKenzie, 2004) to determine if perhaps the relationship is spurious. Since the questionnaire dealt with matters of financial risk tolerance unrelated to the job, it allows one to see if differences exist outside the workplace.

## **Method**

### **Measures**

Financial risk tolerance was assessed using the survey of financial risk tolerance (SOFRT) published by The American College (Roszkowski, 1992). The scale was created to help financial advisors make investment recommendations that are consistent with a client's risk tolerance. It consists of 51 items that are averaged to produce a total score which can theoretically range from 0 (extreme risk aversion) to 100 (extreme risk loving). The SOFRT employs a comprehensive approach to assessing this construct, including: (1) minimum return required to prefer a risky venture over a sure one; (2) minimal probability of success required to take a risky option instead of a guaranteed one; (3) preferences for different investment vehicles; (4) reactions to sample portfolios; (5) investment objectives; (6) emotional reactions to risky situations; (7) life-style characteristics; and (8) self-classification. Both loss and gain frames are used. Sample items are shown in the Appendix.

The internal consistency reliability (Cronbach's  $\alpha$ ) of the scale was .91 in the developmental sample, with alphas ranging from .81 and .86 in samples of actual users. A 45-day interval test-retest reliability equalled .83 (Roszkowski, Delaney, & Cordell, 2004). Scores on the SOFRT correlate with an adviser's impressions of the risk tolerance

of the client (Roszkowski & Grable, 2005), and they are predictive of actual investing behaviour (Roszkowski, 1992).

The final section of the SOFRT requests basic demographic information. Age is recorded as an exact value (in years). Sex is a two option question, and level of education is assessed with seven options: less than high school; high school; some college; bachelor's degree; master's degree; law degree; and doctorate. Employment sector, has four choices: (1) an employee of a private company or business, or an individual working for wages, salary, or commissions; (2) a government employee (federal, state, county, or local); (3) self-employed in your own business, professional practice, or farm; and (4) retired. Information about personal income, household income, and net wealth are collected in brackets. The brackets for income are: under \$50,000; \$50,000-\$99,000; \$100,000-\$149,000; \$150,000-\$199,000; \$200,000-\$249,000; \$250,000-\$500,000; and over \$500,000. Wealth levels are: under \$250,000; \$250,000-\$499,000; \$500,000-\$999,000; \$1,000,000-\$2,499,000; \$2,500,000-\$5,000,000; and over \$5,000,000. These ranges were coded 1 through 7 for income and 1 through 6 for wealth.

### **Participants**

The sample consisted of clients of financial planners who had used the SOFRT in the process of client advising during years 1992 through 1998. The database contained 946 cases, but clients who were retired were excluded from this analysis. The 745 cases with employment sector information (excluding retired) were distributed as follows across the sectors: 399 private sector; 260 self-employed; and 86 public sector. The average age was 45.39 ( $SD = 10.01$ ). The average personal income, expressed on the seven-point code (brackets), equalled 2.33 ( $SD = 1.57$ ). On this same metric, household income was 2.86 ( $SD = 1.54$ ). Net wealth equalled 2.22 ( $SD = 1.26$ ). The educational level of the sample was distributed as follows: 1.5% less than high school; 6.6% high school graduate; 21.8% some college; 35.3% bachelor's degree; 21.7% masters degree; 2.8% law degree; and 10.4% doctorate. For the purpose of the present analysis, the last two categories were collapsed, and the levels coded 1 through 6.

The mean risk tolerance score for the norm group for the SOFRT is 43 (Roszkowski, 1992). In the current sample ( $N = 745$ ), the mean was 41.43 ( $SD = 11.30$ ; minimum = 6, maximum = 88; kurtosis = .16; skewness = .20). For the 654 cases used in the multiple regression analysis, the mean SOFRT score was 41.54 ( $SD = 41.54$ ; minimum = 6, maximum = 88; kurtosis = .18, skewness = .21).

## **Results**

### **Evidence suggesting the sample is representative**

Since the sample was one of convenience, tests were conducted to determine how closely the sample matched the profile of the public sector employee reported in prior research. Because it can be argued that some of the variables are ordinal rather than interval in nature or that some data fails to meet normal distribution assumptions, both parametric and non-parametric statistical tests were used to judge the representativeness under such circumstances.

Overall, the patterns are generally consistent with what is known about the public sector. Therefore, the results can be generalized to the population of public sector

workers rather than being limited to clients of financial planners. The details are as follows:

- (1) Females were overrepresented in the public sector [ $\chi^2(2) = 7.85, p = .020$ ]. Women constituted 31.08% of the self-employed, 39.84% of the private sector, and 45.35% of the public sector.
- (2) Personal income differences between men and women were smaller in the public sector. The ANOVA sex by sector interaction was significant [ $F(2, 711) = 6.08, p = .002$ ] with a smaller sex difference in income occurring in the public sector (Cohen's  $d$ : self-employed = .83; private = .79; public = .59).<sup>1</sup> Income differences between males and females within each sector were also statistically significant in terms of the non-parametric Mann-Whitney test (self-employed:  $U = 3,347.50, p = .000$ ; private sector:  $U = 8,881.50, p = .000$ ; public sector:  $U = 586.00, p = .002$ ). The average income ranks for males and females, respectively, within each sector were as follows: 143.87 versus 82.63 for the self-employed; 228.88 versus 134.93 in the private sector; and 49.76 versus 35.03 in the public sector. The ratios of the ranks indicate a smaller differential in income in the public sector relative to the other two sectors (74.11% for the self-employed, 69.63% for the private sector, and 42.05% for the public sector).
- (3) The distribution of personal income was tighter in the public sector. The standard deviations on coded income were 1.23 for the private sector and 0.76 for the public sector. Levene's test showed that the variance in income in the public sector was different from the private sector ( $F = 77.73, p = .001$ ). In terms of the Siegel-Tukey test, the probability of the difference being due to chance was also fairly low, but it failed to reach conventional levels of statistical significance ( $Z = -1.54, p = .125$ ).
- (4) Public sector employees were slightly older [ $t(139) = -2.13, p = .035$ ]. The average age of public sector employees was 46.65 ( $SD = 1.24$ ), compared to 44.34 ( $SD = 3.95$ ) for private sector employees.
- (5) On the six-point scale used to represent level of education, the mean for the public sector was 4.55 ( $SD = 1.24$ ), whereas for the private sector it was 3.95 ( $SD = 1.08$ ), a statistically significant difference [ $t(114) = -4.15, p = .001$ ]. The average ranks were 300.91 and 230.52 for the public sector and private sector, respectively, and the difference between private and public sector employees was likewise statistically significant in terms of the Mann-Whitney test ( $U = 12,176.50, p = .000$ ).

#### **Risk tolerance by sector and sex**

Differences in risk tolerance as a function of employment sector are reported in Table 1. Sex is included in the breakdown because there were clear disproportions in the number of males and females employed in each sector, and it is well established that sex is related to risk tolerance (see meta-analysis by Byrnes, Miller, & Schaefer, 1999). Risk tolerance differed significantly by both sector [ $F(2, 737) = 7.59, p = .001$ ] and sex [ $F(1, 737) = 33.69, p = .001$ ], but the interaction was not significant [ $F(2, 737) = 0.03, p = .973$ ]. The lack of an interaction is supported by the values of

<sup>1</sup> Generally, effect sizes can be interpreted as follows: .4 and below as small; .5–.7 as medium; and .8 and above as large.

Cohen's *d* on male-female risk tolerance differences, which are almost identical in the three sectors (range of .51-.53). Public sector employees of both sexes exhibited lower financial risk tolerance relative to their private sector counterparts. The difference was on the order of about one-third of the common standard deviation (Cohen's *d* was .32 for males, .31 for females, and .33 combined).

**Table 1.** Financial risk tolerance as a function of sector and sex

	<i>N</i>	<i>M</i>	<i>SD</i>
<b>Males</b>			
Self-employed	178	45.34	11.01
Private	240	43.18	9.97
Public	47	39.96	10.12
Total	465	43.68	10.50
<b>Females</b>			
Self-employed	80	39.43	11.88
Private	159	37.69	10.92
Public	39	34.31	10.80
Total	278	37.71	11.26
<b>Combined</b>			
Self-employed	258	43.51	11.59
Private	399	40.99	10.69
Public	86	37.40	10.75
Total	743	41.45	11.16

### Controlling for possibly confounding variables

The data were also analysed in terms of several ordinary least squares regression models. The aim was to determine the nature of the relationship between employment sector and risk tolerance on an 'as is' basis and then again when control was introduced for the effects of six variables known to be linked to risk tolerance (i.e. sex, age, education, personal income, household income, and net wealth). The sample was reduced to 654 individuals due to missing values (two for education, 13 for age, 26 for personal income, 28 for net wealth, and 66 for household income). Employment sector and sex were dummy coded, with private sector and male as the respective holdout categories (Table 2).

In the first model, employment sector was the sole predictor. The model was significant [ $F(2, 651) = 11.35, p = .001$ ] and  $R^2$  equalled .034 (.031 adjusted). The standardized Beta ( $\beta$ ) for public sector was  $-0.11$  ( $t = -2.68, p = .008$ ) and  $0.12$  ( $t = 3.09, p = .002$ ) for self-employed, indicating that relative to the holdout category (private sector), public sector employment was characterized by lower risk tolerance whereas self-employment was associated with higher risk tolerance.

In the second model, just the control variables were considered, resulting in a multiple correlation ( $R^2 = .106$  unadjusted/.097 adjusted) that was statistically significant [ $F(6, 647) = 12.73, p = .000$ ]. With the exception of education ( $\beta = -0.01, t = -0.13, p = .895$ ), all other regression weights were statistically significant or nearly so: personal income ( $\beta = 0.25, t = 3.18, p = .002$ ); sex ( $\beta = -0.18, t = -4.41, p = .000$ ); age ( $\beta = -0.17, t = -4.18, p = .000$ ); household income ( $\beta = -0.15, t = -1.92, p = .056$ ); and net wealth ( $\beta = 0.10, t = 1.95, p = .052$ ).

**Table 2.** Summary of hierarchical regression analysis predicting risk tolerance

	Model 1 Only focal variable	Model 2 Only control variables	Model 3 Control and focal variables
<b>Focal variable</b>			
Public sector ( $\beta$ )	-0.11**		-0.08*
Self-employed ( $\beta$ )	0.12**		0.07
<b>Control variables</b>			
Personal income ( $\beta$ )		0.25**	0.21**
Sex (female) ( $\beta$ )		-0.18***	-0.19***
Age ( $\beta$ )		-0.17***	-0.16***
Household income ( $\beta$ )		-0.15	-0.15
Net wealth ( $\beta$ )		0.10	0.08
Education ( $\beta$ )		-0.01	0.01
<b>Multiple correlation</b>			
$R^2$	.034***	.106***	.119***
$R^2$ adjusted	.031	.097	.108
$\Delta R^2$ Model 3 vs. Model 1			.086***
$\Delta R^2$ Models 3 vs. Model 2			.014**

Note. \* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ .

The independent variables in the third model consisted of the six control variables and the focal variable. The model resulted in a statistically significant [ $F(8, 645) = 10.91, p = .000$ ] multiple correlation ( $R^2 = .119$  unadjusted/.108 adjusted). The  $\Delta R^2$  was significant in relation to both the first model [ $F(2, 645) = 10.67, p = .000$ ] and the second model [ $F(2, 645) = 4.98, p = .007$ ]. Of the six control variables, three had significant Betas: personal income ( $\beta = 0.21, t = 2.69, p = .007$ ); female sex ( $\beta = -0.19, t = -4.50, p = .000$ ); and age ( $\beta = -0.16, t = -4.02, p = .000$ ). The standardized regression weights of two control variables, household income ( $\beta = -0.15, t = -1.94, p = .053$ ) and net wealth ( $\beta = 0.08, t = 1.59, p = .113$ ), although not reaching conventional levels of statistical significance, nonetheless had fairly low probabilities of occurring by chance. The probability level of the standardized regression weight for education ( $\beta = 0.01$ ) remained highly insignificant ( $t = 0.36, p = .718$ ). With all the control variables in the equation, the  $\beta$  for public sector dropped to  $-0.08$  ( $t = -2.13, p = .033$ ) and the  $\beta$  for self-employed fell to  $0.07$  ( $t = 1.81, p = .072$ ). Holding the control variables constant, the association between public sector employment and risk tolerance was abated, but not eliminated.

## Discussion

Relative to their private sector counterparts, public sector employees scored lower on a test of financial risk tolerance which was administered as part of a financial planning process. The lower risk tolerance of people employed in the public sector was evident even after controlling for demographic variables related to risk tolerance. Considered along with the other literature reported to date, it is reasonable to conclude that there is some basis in reality to the claim of lower risk tolerance among public servants. It is not merely a stereotype.

It has been argued that public sector employees may be more risk averse than their private sector counterparts in work-related behaviours because the public sector is charged with maintaining public welfare rather than maximizing yield on investments (Bozeman & Kingsley, 1998). The items in the risk tolerance test dealt with personal monetary issues and economic decisions, so this risk aversion extends beyond job-related behaviours. Public sector employees are less risk tolerant financially in their private affairs.

The question that remains is whether there is a self-selection of risk-averse individuals into the public sector or do they become more risk-averse in the process of adapting to the organizational demands and culture. Becker and Connor (2005) concluded that most differences in values between the sectors are due to acculturation and not self-selection, but risk tolerance was not a characteristic they studied. Interpreted according to Schneider's Attraction, Selection, and Attrition (ASA) model (Schneider, Goldstein, & Smith, 1995), the cycle begins with the attraction of inherently less risk tolerant people into government positions due to features such as greater job security and guaranteed benefits. According to the model, persons already employed by public sector agencies are more likely to select applicants who are similar to them in terms of risk tolerance. Even if hired, an individual characterized by high risk tolerance is less likely to fit into the organization's culture and is therefore more likely to terminate. Thus, over time, the organization becomes more homogenous with respect to risk tolerance.

Unfortunately, risk tolerance is value-laden. According to Lying (2005), today there is an '... increased willingness to embrace risk taking in workplace settings where, in earlier times, risk avoidance was the rule' (p. 25). It is questionable whether this is a healthy trend given Reyna and Farley's (2006, p. 1) conclusion that 'greater risk aversion is generally adaptive, and that decision processes that support this aversion are more advanced than those that support risk taking'. Preference for risk seeking over risk avoidance cannot be the norm for all positions. Rather, the risk tolerance requirements of the position need to be matched with the person's inherent willingness to take risks. Contrary to some opinions (e.g. Fitzgerald, 1988; Gingrich, 2005), both high risk tolerance and low risk tolerance can constitute either competence or incompetence in public sector employees, depending on the demands of the position.

### **Study limitations**

One potentially relevant variable that remained uncontrolled in this study is employment level. There was, however, an indirect control for it because personal income and education were included in the regression analysis. Managerial positions generally require higher levels of education and have greater compensation. [Holding other relevant factors constant, Halek and Eisenhauer (2001) could not detect difference in risk tolerance between managers and non-managerial employees.]

### **Suggestion for future research**

Our results suggest that public sector employees, on the average, exhibit lower levels of financial risk tolerance than private sector employees, especially compared to individuals who are self-employed. It remains to be determined under what circumstances risk aversion is a virtue and when it is a drawback. Sorely needed is research assessing the relationship between risk tolerance and work performance on specific jobs. Such information would take the discussion beyond conjecture when value judgments are made about risk tolerance as an indicator of either competence or incompetence.



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## Appendix

### Sample test items by category

#### Guaranteed versus probable outcome

- Assume you're an executive. Your company offers you two ways of collecting your bonus: either cash equivalent to 6 months' salary or a stock option with a 50–50 chance of either doubling in value or becoming worthless in the next year. Which would you take? Possible answers: *definitely the cash*; *probably the cash*; *not sure*; *probably the stock option*; *definitely the stock option*.

#### Minimal probability of success

- Assume you are a contestant on a TV game show. After winning a prize that's equivalent to 1 year's salary, you are offered the option of walking away with this prize money or taking a chance on either doubling it or losing it all. What are the odds of success that you would require before agreeing to accept this gamble. Possible answers: *would not take the bet no matter what the odds*; *9 in 10*; *8 in 10*; *7 in 10*; *6 in 10*; *5 in 10*; *4 in 10*; *3 in 10*; *2 in 10*; *1 in 10*.

#### Minimum return

- You are offered an investment in which you stand an even chance of either losing half your personal net worth or making a certain amount of money. What's the lowest return you would need in order to make such an investment? Possible

answers: *I would not make the investment no matter what the rate of return; quadruple my net worth; triple my net worth; double my net worth; less than double my net worth.*

*Emotional reactions*

- When you think of the word risk in an investment context, which of the following words comes to mind first? Possible answers: *danger; uncertainty; opportunity; thrill.*

*Investment objectives*

- Is it more important to be protected from inflation or to be assured of the safety of your principal? Possible answers: *much more important to be assured of the safety of my principal; somewhat more important to be assured of the safety of my principal; somewhat more important to be protected from inflation; much more important to be protected from inflation.*

*Preferences for investment vehicles*

- Diversification is typically the soundest investment strategy. However, suppose an eccentric uncle left you an inheritance of \$75,000, stipulating in his will that you invest all the money in only one of the following investments. Which one would you select? Possible answers: *savings account; mutual fund (moderate growth); blue-chip common stock; limited partnership; naked option/commodities futures contract.*

*Reaction to sample portfolio*

- Which of the following investment portfolios do you find most appealing? Possible answers: (a) *60% in low-risk, 30% in medium-risk, and 10% in high-risk investments;* (b) *30% in low-risk, 40% in medium risk, and 30% in high risk investments;* and (c) *10% in low-risk, 50% in medium-risk, and 40% in high-risk investments.*

*Life style characteristics*

- Have you ever borrowed money in order to make an investment (other than a home-mortgage loan)? Possible answers: *no, yes*

*Self-classification*

- How would you rate your willingness to take investment risks in comparison to the general population? Possible Answers: *extremely low risk taker; very low risk taker; low risk taker; average risk taker; high risk taker; very high risk taker; extremely high risk taker.*