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Gender, Competition, and Real Life Work Performance of Insurance Agents

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Motivation

1. Competitive preferences play an important role in explaining individuals' job market performance (Buser, Niederle, and Oosterbeek (2014), Flory, Leibbrandt, and List (2015), and Falk and Hermle (2018)).

2. Existing experimental studies find that competitiveness of female is highly context-dependent (Cassar, Wordofa, and Zhang (2016), Flory, Gneezy, et al. (2018), and Cassar and Rigdon (2021)).

   ▶ Females are more competitive than males in matrilineal society (Gneezy, Leonard, and List (2009)).
   ▶ Incentivized to compete for children-related rewards, gender differences in competitiveness disappear (Cassar, Wordofa, and Zhang (2016)).

Research Question

1. Whether gender differences in competitiveness exist among insurance agents?

2. Can lab-in-the-field experiment elicited competitiveness preferences predict real life work performance among insurance agents, including sales revenue, career level, and expected income growth?

Why Insurance Agents?

1. Insurance industry plays a dominate role in attracting workers in the service sector (In 2022, 5.7 million insurance agents in total).

2. The occupation of insurance agents has more unique features that potentially would attract more female workers (67.4% agents are females).

3. The large variation in income among insurance agents may defer females, and this provides a highly competitive work environment.

Our Research

1. We conducted a lab-in-the-field experiment in more than 1000 insurance agents to elicit their competitiveness preferences in May, 2021.

2. We combine the experimental data with the administrative individual characteristics and real life work performance data to answer the research questions.

Preview of Results

1. We find that female insurance agents are more likely to choose the tournament competition game than males.

2. Our results provide some suggestive evidence on the importance of environment in shaping individuals' competitiveness preferences: gender gap in competitiveness follows an inverted U-shape pattern with the years of working in the insurance industry.

3. More competitive individuals are performing better in real life job performance than less competitive individuals: (1) larger sales revenue; (2) higher occupational rank; and (3) higher expected income growth.

Contribution

① Our study extends the studies on gender differences in competitiveness (Gneezy, Niederle, and Rustichini (2003), Niederle and Vesterlund (2007), Niederle and Vesterlund (2011), Cárdenas et al. (2012), Andersen et al. (2013), Lee, Niederle, and Kang (2014), and Cassar, Wordofa, and Zhang (2016)).

② We also contribute to the literature on the validity of the game-elicited competitiveness in explaining real life behavior outcomes (Booth and Nolen (2012), Ertac and Gurdal (2012), Dargnies (2012), Buser, Niederle, and Oosterbeek (2014), Nagahi et al. (2020), and Jørgensen, Piovesan, and Willadsen (2022)).

③ We enrich the study of environment-shaping effect on individual preference, such as competitiveness (Booth and Nolen (2012), Andersen et al. (2013), Almås et al. (2016), Andersen et al. (2018), Lu, Shi, and Zhong (2018), Eber, François, and Weill (2021), Dariel, Nikiforakis, and Stoop (2022), and Palacios-Huerta (2022)).

Experimental Design

1. First step: questionnaire
2. Second step: lab experiment
   - First part: risk aversion
     - Multiple price lists
     - ten choices between two lotteries.
   - Second part: competitive preference
     - designed by Niederle and Vesterlund (2007).
     - performed an adding task under different incentive systems.
     - observe participants' choices for different incentive systems and their cognitive gap in self abilities.
3. Additional data: administrative data from the company

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Experimental Design

▶ Round 1: Piece-rate game (2 points for each correct answer)

▶ Round 2: Compulsory tournament game (8 points for top 1 and other get 0)

▶ Round 3: Choice game (Before the addition task, participants choose piece-rate or tournament as the incentive system.)

▶ Round 4: Guess game (make choice based on their guess of performance in round one.)

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Experiment Photos

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Summary Statistics

Table 1: Summary Statistics of Key Variables I

	Female	Male	Difference	P-value	Obs.
Panel A: Outcome Variables					
Tournament Choice (0/1)	0.48	0.38	0.095	0.003	987
	(0.50)	(0.49)			
Leadership ranking(1-4)	1.90	1.84	0.054	0.404	1012
	(1.02)	(1.01)			
Leadership (0/1)	0.23	0.20	0.025	0.342	1002
	(0.42)	(0.40)			
Number of team members	5.36	7.32	-1.968	0.000	1012
	(6.54)	(9.70)			
Ever promoted (0/1)	0.23	0.32	-0.097	0.001	1012
	(0.42)	(0.47)			
Yearly sales revenue (2020-2021)	110959.21	75406.74	35552.475	0.000	1012
	(119410.47)	(78541.99)			
Log (expected salary increase)	10.15	9.69	0.460	0.000	879
	(1.31)	(1.27)			

Notes: Data comes from authors' collection.

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Summary Statistics (Continuous)

Table 2: Summary Statistics of Key Variables II

	Female	Male	Difference	P-value	Obs.
Panel B: Individual Characteristics					
Age	39.22	41.01	-1.796	0.000	988
	(6.20)	(7.51)			
Number of kids	2.18	2.23	-0.053	0.222	1001
	(0.67)	(0.69)			
Married (0/1)	0.83	0.87	-0.040	0.077	1001
	(0.38)	(0.34)			
Bachelor degree and above (0/1)	0.67	0.51	0.167	0.000	1001
	(0.47)	(0.50)			

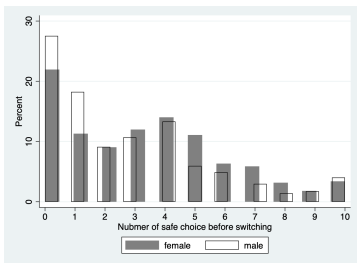Notes: Data comes from authors' collection.

Descriptive Evidence

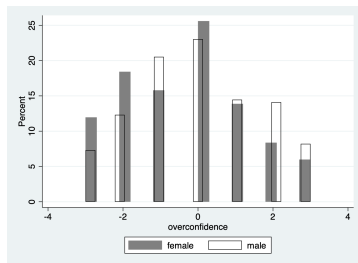Figure 1: Distribution of Lottery Choices, by gender

p=0.0001 (Mann–Whitney test).

Figure 2: Distribution of Overconfidence, by gender

p=0.0004 (Mann–Whitney test).

Empirical Analysis I: Are female insurance agents less competitive than males?

For individual i,

$$y_i = \alpha_0 + \beta_1 female_i + \gamma_1 p_i + \gamma_2 \lambda_i + \gamma_3 \delta_i + \gamma_4 Score_i + X_i' + \varepsilon_i \quad (1)$$

- y_i: 1 if choose tournament, 0 if choose piece-rate.
- $female_i$: 1 if female, 0 if male.
- p_i: the probability of winning the tournament game
- λ_i: the CRRA coefficient
- δ_i: the overconfidence
- X_i': include age, marital status, education attainment, work experience, and the job entry title.

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Empirical Analysis I: Are female insurance agents less competitive than males?

Finding 1: Female insurance agents are more competitive than male insurance agents.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Dep. Var.: Choose Tournament				
Female	0.095***	0.098***	0.093***	0.094***	0.089***	0.089***	0.089***
	(0.025)	(0.025)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Overconfidence	0.202***	0.206***	0.206***	0.205***	0.206***	0.206***	0.206***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Risk aversion	0.005	0.005	0.005	0.005	0.004	0.004	0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Win probability	0.646***	0.459***	0.468***	0.470***	0.468***	0.468***	0.465***
	(0.044)	(0.133)	(0.133)	(0.134)	(0.132)	(0.132)	(0.132)
Score of compulsory tournament game		0.014	0.013	0.013	0.012	0.012	0.012
		(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Age	No	No	Yes	Yes	Yes	Yes	Yes
Marriage	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	Yes	Yes	Yes
Single parent	No	No	No	No	No	Yes	Yes
Work experience	No	No	No	No	No	No	Yes
N	978	972	972	962	962	962	962
adj. R^2	0.398	0.399	0.399	0.397	0.399	0.399	0.398

Notes: The table present coefficients from OLS regression. All regressions clustered at individual level. Choose tournament is the tournament choice of Choice Game (0: piece-rate, 1: tournament). Win probability is the chance of winning the compulsory tournament game. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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Empirical Analysis I: Are female insurance agents less competitive than males?

Fingding 2: Gender gap in competitiveness follows an inverted U-shape pattern with the years of working in the insurance industry.

| | Dep. Var.: Choose Tournament | | | |
| | (1) | (2) | (3) | (4) |
	Less than 1 year	1-3 years	3-10 years	More than 10 years
Female	-0.285	0.172**	0.090***	0.063
	(0.281)	(0.069)	(0.034)	(0.049)
Overconfidence	Yes	Yes	Yes	Yes
Risk aversion	Yes	Yes	Yes	Yes
Win probability	Yes	Yes	Yes	Yes
Score of complusory tournament game	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
N	21	136	541	264
adj. R^2	0.065	0.390	0.418	0.376

Notes: The table present coefficients from OLS regression. All regressions clustered at individual level. Choose tournament is the tournament choice of Choice Game (0: piece-rate, 1: tournament). Win probability is the chance of winning the game 2 tournament. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Empirical Analysis II: Can competititiveness predict real life work performances?

For individual i,

$$y_i = \alpha_0 + \beta_1 tournamentchoice_i + \beta_2 female_i + \gamma_1 \lambda_i + \gamma_2 \delta_i + X_i' + \varepsilon_i \tag{2}$$

- y_i: real life work performance, including yearly sales revenue, supervisor level, and expected income growth.
- All other variables are the same as in Equation(1)

Empirical Analysis II: Can competitiveness predict insurance agents' sales performances?

Finding 3: Competitiveness preference is positively associated with sales revenue.

	Dep. Var.: ln(Yearly Sales Premium)					
	(1)	(2)	(3)	(4)	(5)	(6)
Choose Tournament	0.226***	0.214***	0.205**	0.164**	0.164**	0.161**
	(0.080)	(0.080)	(0.081)	(0.080)	(0.080)	(0.081)
Female	0.351***	0.340***	0.358***	0.329***	0.329***	0.329***
	(0.070)	(0.070)	(0.071)	(0.070)	(0.070)	(0.070)
Overconfidence	Yes	Yes	Yes	Yes	Yes	Yes
Risk aversion	Yes	Yes	Yes	Yes	Yes	Yes
Age	No	Yes	Yes	Yes	Yes	Yes
Marriage	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	Yes	Yes	Yes
Single parent	No	No	No	No	Yes	Yes
Work experience	No	No	No	No	No	Yes
N	761	761	752	752	752	752
adj. R^2	0.053	0.058	0.058	0.075	0.075	0.073

Notes: The table present coefficients from OLS regression. All regressions clustered at individual level. Choose tournament is the tournament choice of Choice Game (0: piece-rate, 1: tournament). Win probability is the chance of winning the compulsory tournament game. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Empirical Analysis II: Can competitiveness predict insurance agents' leadership, by supervisor level?

Finding 4: Competitiveness preference is positively associated with occupational rank.

	Dep. Var.: Supervisor level(0/1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Choose tournament	0.067**	0.070**	0.070**	0.069**	0.069**	0.074**
	(0.032)	(0.032)	(0.033)	(0.033)	(0.033)	(0.032)
Female	0.024	0.025	0.029	0.027	0.027	0.027
	(0.027)	(0.027)	(0.027)	(0.028)	(0.028)	(0.027)
Overconfidence	Yes	Yes	Yes	Yes	Yes	Yes
Risk aversion	Yes	Yes	Yes	Yes	Yes	Yes
Age	No	Yes	Yes	Yes	Yes	Yes
Marriage	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	Yes	Yes	Yes
Single parent	No	No	No	No	Yes	Yes
Work experience	No	No	No	No	No	Yes
N	968	968	958	958	958	958
adj. R^2	0.005	0.006	0.007	0.006	0.006	0.036

Notes: The table present coefficients from OLS regression. All regressions clustered at individual level. Choose tournament is the tournament choice of Choice Game (0: piece-rate, 1: tournament). Win probability is the chance of winning the compulsory tournament game. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Empirical Analysis II: Can competitiveness predict insurance agents' Salary Expectation

Finding 5: Competitiveness preference is positively associated with expected income growth.

	Dep. Var.: ln(Expect wage growth)					
	(1)	(2)	(3)	(4)	(5)	(6)
Choose tournament	0.327***	0.305***	0.304***	0.274***	0.274***	0.272***
	(0.095)	(0.095)	(0.095)	(0.094)	(0.094)	(0.094)
Female	0.285***	0.245***	0.234***	0.217***	0.217***	0.215***
	(0.079)	(0.080)	(0.080)	(0.080)	(0.080)	(0.079)
Overconfidence	Yes	Yes	Yes	Yes	Yes	Yes
Risk aversion	Yes	Yes	Yes	Yes	Yes	Yes
Age	No	Yes	Yes	Yes	Yes	Yes
Marriage	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	Yes	Yes	Yes
Single parent	No	No	No	No	Yes	Yes
Work experience	No	No	No	No	No	Yes
N	800	800	800	800	800	800
adj. R^2	0.035	0.048	0.051	0.065	0.065	0.071

Notes: The table present coefficients from OLS regression. All regressions clustered at individual level. Choose tournament is the tournament choice of Choice Game (0: piece-rate, 1: tournament). Win probability is the chance of winning the compulsory tournament game. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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Conclusion

- We find that gender gap in competitiveness is reversed, which suggests that females are more likely to compete than males, among our subjects.

- We find that gender gap in competitiveness follows an inverted U-shape pattern with the years of working in the insurance industry, suggesting that environment plays an important effect on shaping individuals' competitiveness preferences.

- We find that our game elicited competitiveness preferences can successfully predict individuals' real life work performance.