

BEHAVIORAL ECONOMICS ANALYSIS ON DEVELOPER'S ATTITUDE TO CONSTRUCTION CLAIMS

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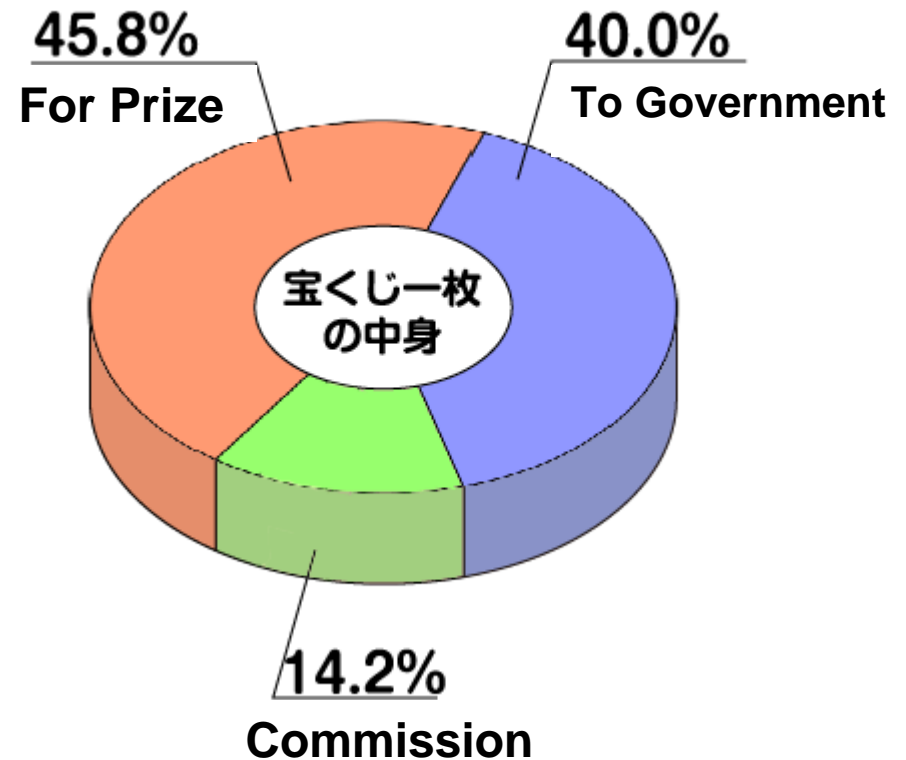
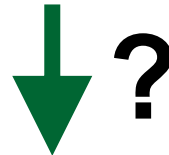
KEYWORD: Behavioral Economics

- Lottery

- ¥300



- ¥300,000,000



People buy a lottery despite of low probability.

KEYWORD : Developer's attitude on construction claims

- Stakeholders do not necessarily have perfect information and make a reasonable judgment.
 - ❑ psychological factors of excessive/undervaluing of construction claims
 - ❑ analysis on the content of psychology to developer's attitude to claims
 - ❑ put more resources to important claim settlement



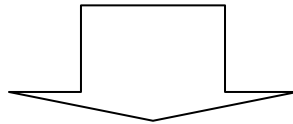
BACKGROUND

- partnership along housing project has collapsed in Japan
 - appropriate correspondence and management of claims increase as one factor of sustainable value in housing projects
- claims by the resident concerning multiple dwelling houses for sale are extremely abundant from the final inspection



PURPOSE

- developer's psychological trend
 - memory as experience of the past projects
 - survey on developer
- actual probability of claims
 - dwelling units with claim / total units (=269)



- developer's psychological trend analyzed by **prospect theory**
- appropriate **prediction** and **correspondence** to the accrual of the claims

CLAIMS IN CONSTRUCTION PROJECT

- Multiple dwelling houses
 - 269 units (1LDK - 4LDK+N)
 - RC structure with 35 stories+PH1F+B1F
 - From November 2003 to January 2006
 - Stakeholders
 - Developer
 - Construction Manager
 - Architect & Engineer
 - General Contractor
 - Survey at
 - final inspection
 - post-occupancy (6 months) inspection





SURVEY

	Check-up	Final inspection	Post-occupancy (6 months) inspection
responsibility	general contractor	general contractor	general contractor
stakeholders	A/E, supervisor, general contractor, sub-contractor	general contractor	- (questionnaire)
reviewer	developer	resident	resident
term	Jul.2005-Oct.2005	Dec.2005-Jan.2006	Jul.2006-Aug.2006
Amount of claims	5,010	2,275	376

CLAIMS IN CONSTRUCTION PROJECT

No.	Description of claim	Units	Probability	$w(p)$	$u(p)$
1	Dirt and damage in cloth (in wall, ceiling, etc.)	131	0.487	0.446	0.799
2	Dirt and damage in shelf and closet	103	0.383	0.381	0.260
3	Dirt and damage in flooring board	85	0.316	0.338	0.372
4	Dirt and damage in wooden frame (of window, door, etc.)	73	0.271	0.308	0.446
5	Dirt and damage in material of door	71	0.264	0.303	0.372
6	Noticeable cloth joint	67	0.249	0.293	0.409
7	Dirt and damage in aluminium sash	56	0.208	0.263	0.316
8	Deflection and float of cloth	47	0.175	0.237	0.410
9	Lack of caulking compound in cloth joint	45	0.167	0.231	0.223
10	Trouble in opening and closing doors of shelf and closet	39	0.145	0.211	0.226
11	Trouble in opening and closing door	35	0.130	0.199	0.167
12	Trouble in opening and closing screen door (niche, etc.)	32	0.119	0.189	0.186
13	Disorder and niche of edge in cloth and other material	28	0.104	0.174	0.483
14	Dirt and damage in baseboard	24	0.089	0.159	0.186
15	Trouble of parts in shelf and closet	24	0.089	0.159	0.149
16	Projection in substrate of cloth	22	0.082	0.151	0.446
17	Dirt and damage in balcony floor and ditch	20	0.074	0.142	0.465
18	Defective finish in substrate of cloth	19	0.071	0.138	0.409
19	Dirt and damage in tile of wall	19	0.071	0.138	0.167
20	Dirt and damage in sink counter board	17	0.063	0.129	0.204
21	Dirt and damage in tile of floor	14	0.052	0.114	0.149
22	Defective connection in electric equipment	14	0.052	0.114	0.074
23	Flaking off in sheet of door	13	0.048	0.109	0.390
24	Dirt and damage in balcony handrail	13	0.048	0.109	0.186
25	Creak in flooring board	12	0.045	0.103	0.130



Units/269





BEHAVIORAL ECONOMICS AND PROSPECT THEORY

- cognitive and emotional biases
 - to better understand economic decisions
- rationality, sense of discipline, self-regard mind are denied
 - though they are assumption of current economics



- Heuristics and bias
- Prospect theory



Prospect theory

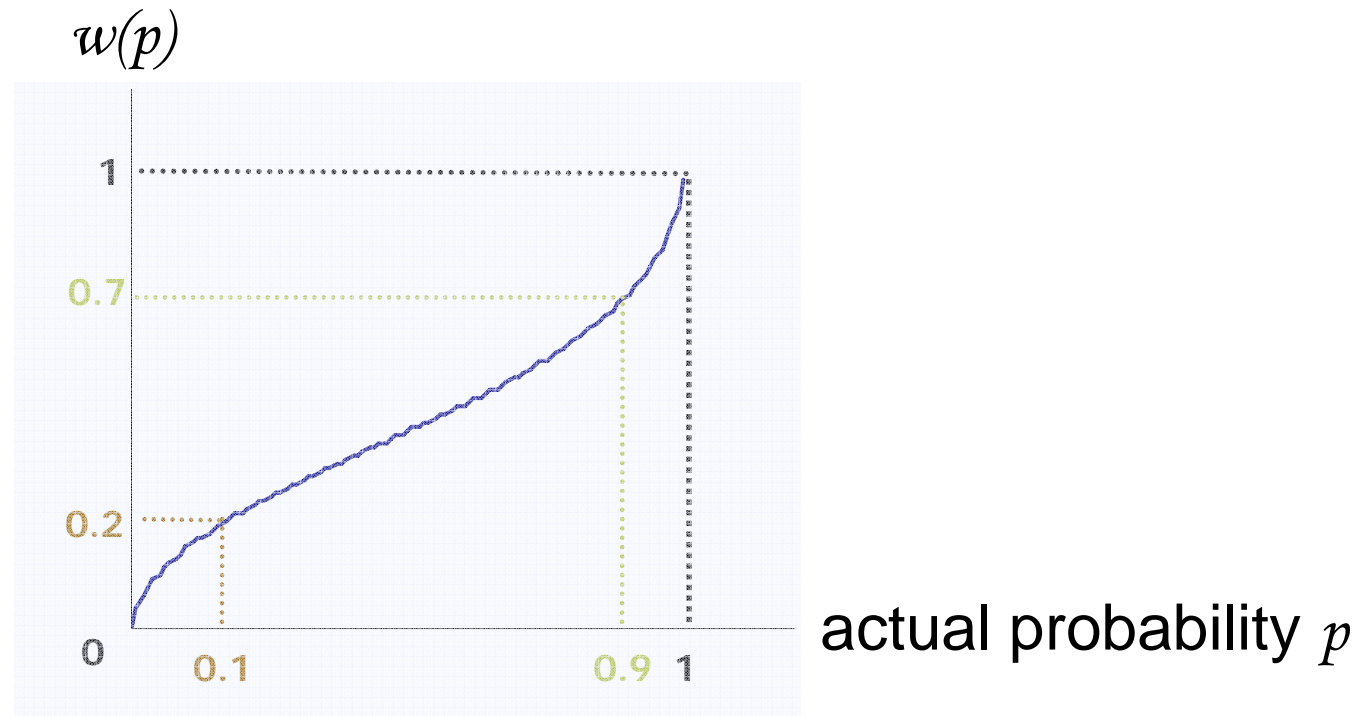
- decision of alternatives that involve risk
- value function
 - a value to an outcome
 - s-shaped; bigger impact of losses than of gains
- probability weighting function

$$w(p) = \frac{p^{0.69}}{\{p^{0.69} + (1-p)^{0.69}\}^{\frac{1}{0.69}}}$$



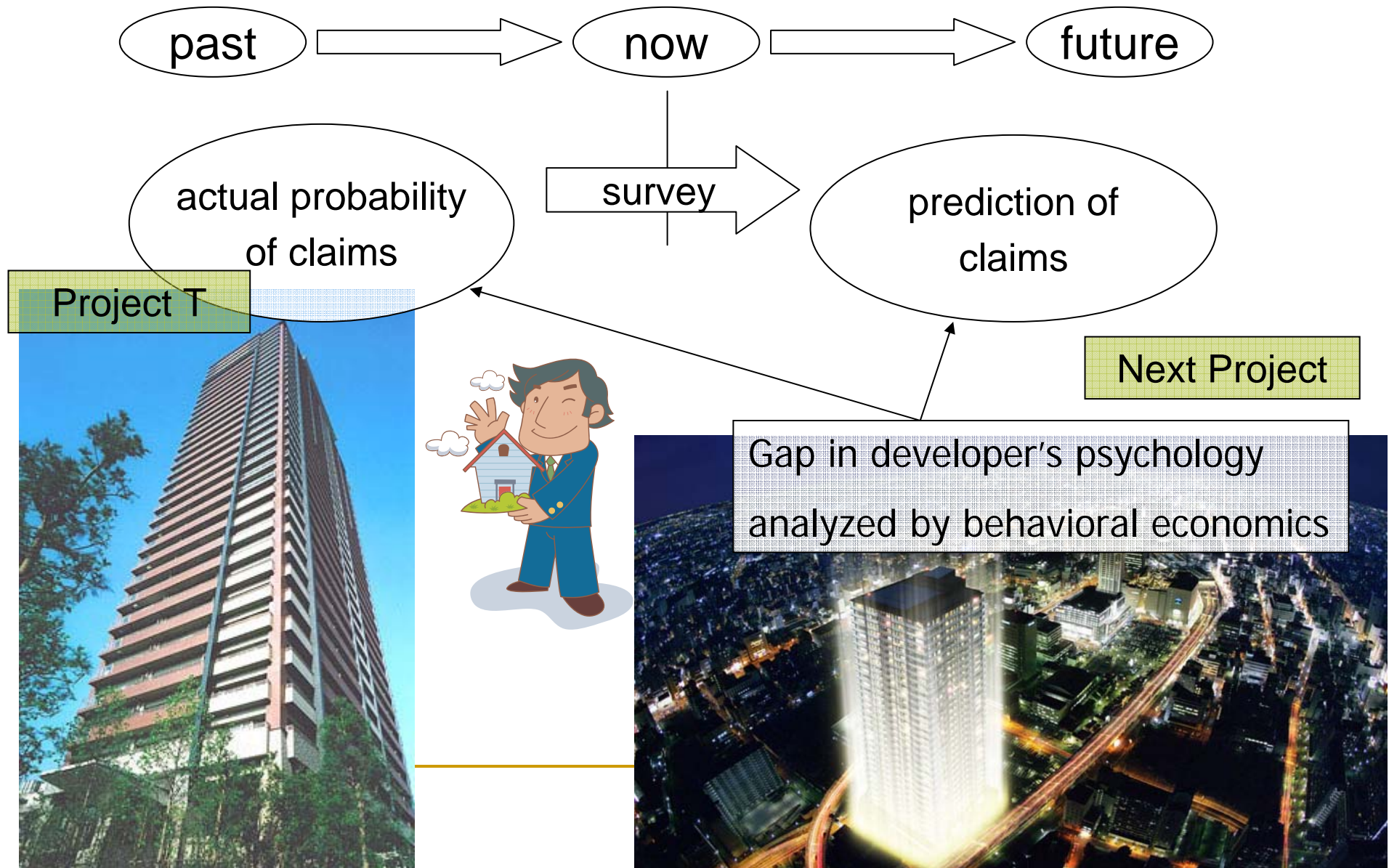
Probability weighting function

- people tend to over react to small probability events, but under react to medium and large probabilities.

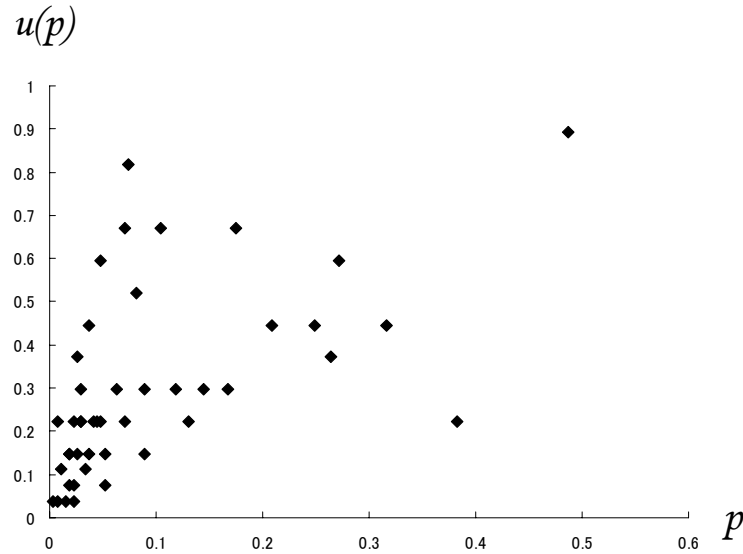




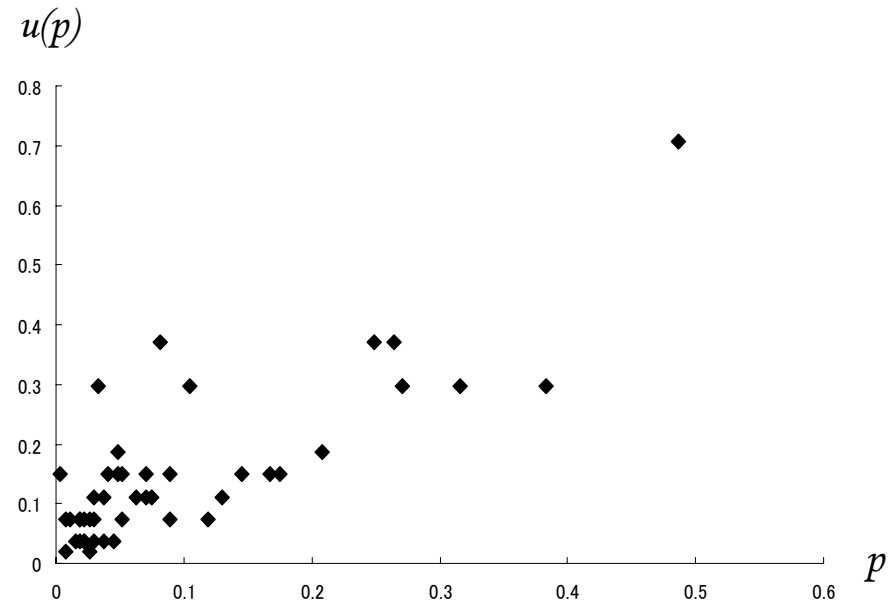
ASSESSMENT OF CLAIM



SURVEY ON DEVELOPER



Mr. K's answer

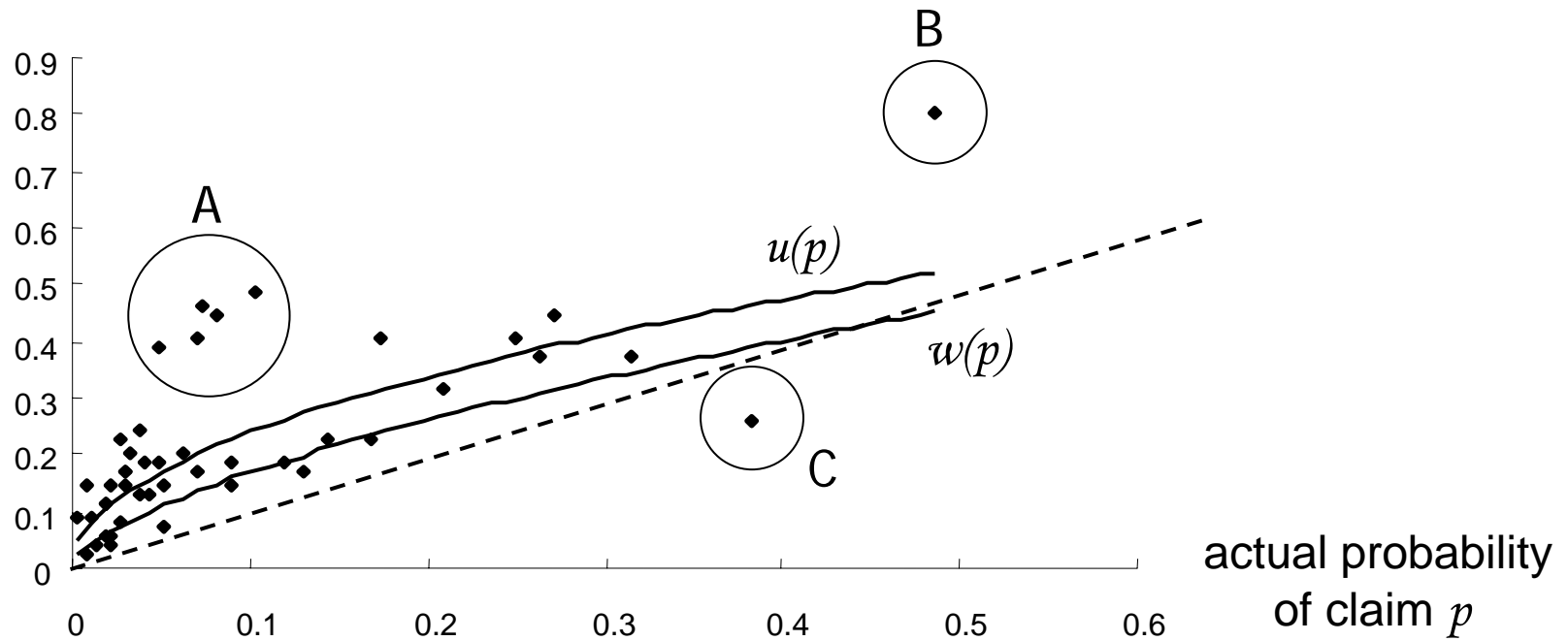


Mr. N's answer



RESULTS

expectation value $u(p), w(p)$



RESULTS

■ Group A

- probability is estimated about 0.4 to 0.5
- actual accrual probability is only about 0 to 0.1
 - Disorder and niche of edge in cloth and other material
 - Projection in substrate of cloth
 - Dirt and damage in balcony floor and ditch
 - Defective finish in substrate of cloth
 - Dirt and damage in balcony handrail
- caused by heuristics “correspondence bias”
 - disregard of the basis rate of claims in balcony



RESULTS

- Group B
 - probability is greatly estimated to be about 0.8
 - actual accrual probability is about 0.5
 - Dirt and damage of the cloth
 - intensively generated in one dwelling unit



RESULTS

■ Group C

- probability is assessed low as about 0.3
- actual accrual probability is about 0.38
 - Dirt and damage in the shelf and closet
- many claims are generated in one dwelling unit
 - take care of these claims, though the cause of the undervaluation of this claim is uncertain



DISCUSSION

- consider an effective risk management
 - from the briefing and schematic design stage
 - find claims earlier, and the better they are treated
- correspond appropriately if the gap between risk treatment and actual claims is recognized
 - remove developer's bias to predict claims correctly

CONCLUSIONS

- Behavioral economics led us to understand how the developer of multiple dwelling housing projects is recognizing the accrual probability of the construction claims
 - The developer assesses the risk probability excessively than the actual value.
 - It is necessary to execute design and construction in the next project considering this property to improve sustainable values of the procurement cycle.
 - It is also important not to fear the claims excessively either in conflict management among stakeholders.

Thank You

