Pareto Damaging Behaviors

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Abstract

This paper reports a rigorous experimental test of Pareto-damaging behaviors. We introduce a new graphical representation of dictator games with step-shaped sets of feasible payoffs to persons self and other on which strongly Pareto efficient allocations involve substantial inequality. The non-convexity and sharp nonlinearity of the Pareto frontier allow us systematically to classify Pareto-damaging allocations: as self-damaging or other-damaging and as inequality-increasing or inequality-decreasing. We find that self and other Pareto-damaging behaviors occur frequently even in circumstances – dictator games – that do not implicate reciprocity or strategic interaction. We also find patterns in this behavior, most notably that behavior that Pareto damages self always reduces inequality whereas behavior that Pareto damages other usually increases inequality. (JEL: C79, C91, D64)

1 Introduction

The Pareto principle pervades economic conceptions of rationality. A large and growing body of laboratory evidence suggests, however, that participants in ex-

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Table 1: The distribution of Pareto efficient decisions aggregated to the subject level

Table 1A: Lexicographic

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
5	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2.0
7	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	6.0
11	4.0	4.0	92.0	0.0	0.0	0.0	0.0	0.0	2.0
12	0.0	2.0	98.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	4.0
18	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2.0
20	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2.0
21	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2.0
28	0.0	2.0	98.0	0.0	0.0	0.0	0.0	0.0	2.0
31	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	8.0
34	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	4.0
39	0.0	8.0	92.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2.0
43	0.0	2.0	98.0	0.0	0.0	0.0	0.0	0.0	0.0
44	6.0	2.0	92.0	0.0	0.0	0.0	0.0	0.0	2.0
46	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	4.0
48	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	4.0
52	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	6.0
54	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
55	2.0	0.0	98.0	0.0	0.0	0.0	0.0	0.0	4.0
Average	0.5	0.8	98.8	0.0	0.0	0.0	0.0	0.0	2.2

Table 1B:Social welfare

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
4	0.0	0.0	90.0	0.0	0.0	0.0	10.0	0.0	2.0
25	0.0	0.0	88.0	0.0	0.0	0.0	12.0	0.0	0.0
29	0.0	0.0	90.0	0.0	0.0	0.0	10.0	0.0	2.0
30	0.0	0.0	96.0	0.0	0.0	0.0	4.0	0.0	8.0
45	0.0	0.0	90.0	0.0	0.0	0.0	10.0	0.0	0.0
56	0.0	0.0	78.0	0.0	0.0	2.0	20.0	0.0	4.0
58	0.0	2.0	92.0	0.0	0.0	0.0	6.0	0.0	4.0
Average	0.0	0.3	89.1	0.0	0.0	0.3	10.3	0.0	2.9

Table 1C: Selfish

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
8	24.0	6.0	60.0	6.0	0.0	4.0	0.0	0.0	8.0
19	62.0	16.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	80.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	10.0	48.0	42.0	0.0	0.0	0.0	0.0	0.0	2.0
37	0.0	87.8	12.2	0.0	0.0	0.0	0.0	0.0	0.0
53	26.5	67.3	6.1	0.0	0.0	0.0	0.0	0.0	2.0
Average	17.5	57.9	23.2	0.9	0.0	0.6	0.0	0.0	1.7

Table 1D: Competitive

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	96.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
50	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average	98.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0

Table 1E: Others

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
9	0.0	2.0	4.0	66.0	4.0	22.0	2.0	0.0	52.0
22	0.0	0.0	16.7	37.5	2.1	31.3	12.5	0.0	37.5
26	0.0	6.8	18.2	27.3	9.1	34.1	4.5	0.0	59.1
33	0.0	0.0	4.0	42.0	22.0	28.0	4.0	0.0	92.0
Average	0.0	2.2	10.7	43.2	9.3	28.8	5.8	0.0	60.1

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
24	0.0	0.0	51.1	23.4	4.3	19.1	2.1	0.0	8.5
27	0.0	2.0	14.3	79.6	4.1	0.0	0.0	0.0	6.1
35	0.0	0.0	44.0	44.0	8.0	4.0	0.0	0.0	4.0
38	0.0	2.0	30.0	66.0	2.0	0.0	0.0	0.0	6.0
57	0.0	4.0	60.0	8.0	18.0	8.0	2.0	0.0	14.0
Average	0.0	1.6	39.9	44.2	7.3	6.2	0.8	0.0	7.7

ID	π^c	Π^1	π^s	Π^2	π^d	Π^3	π^o	Π^4	π^e
51	0.0	0.0	50.0	34.0	0.0	10.0	6.0	0.0	12.0

Table 2: The relative surplus of subjects whose choices correspond to social welfare preferences

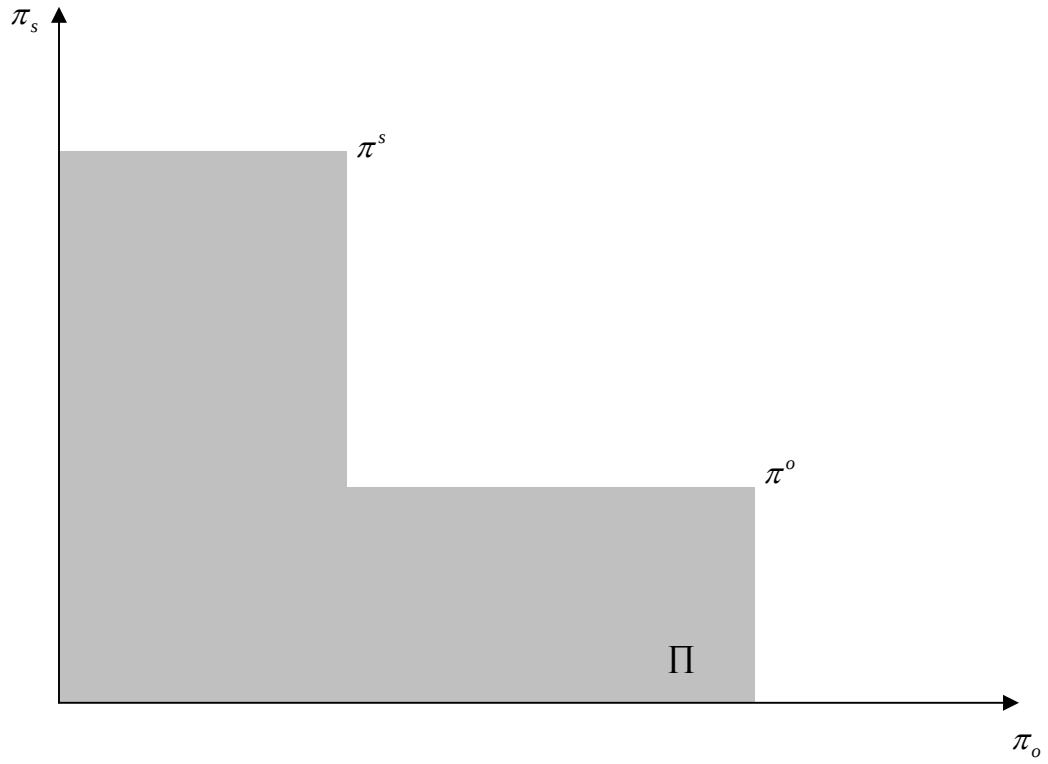
ID	π	#	Mean	SD
4	π^s	45	1.51	1.30
	π^o	5	0.36	0.37
25	π^s	44	1.51	1.04
	π^o	6	0.21	0.09
29	π^s	45	1.27	1.06
	π^o	5	0.26	0.13
30	π^s	48	1.23	0.97
	π^o	2	0.33	0.02
45	π^s	45	1.69	1.61
	π^o	5	0.33	0.24
56	π^s	39	1.84	1.02
	π^o	10	0.85	0.67
58	π^s	46	1.76	1.53
	π^o	3	0.35	0.22

Table 3: Preferences that cannot be cleanly categorized

	(1)	(2)
π^s_s	0.248***	0.481***
	(0.064)	(0.047)
π^s_o	-0.294*	-0.477***
	(0.150)	(0.090)
π^o_o	-0.041	-0.018
	(0.049)	(0.033)
π^o_s	0.099	-0.001
	(0.126)	(0.072)
# of obs.	84	109
R^2	0.48	0.69

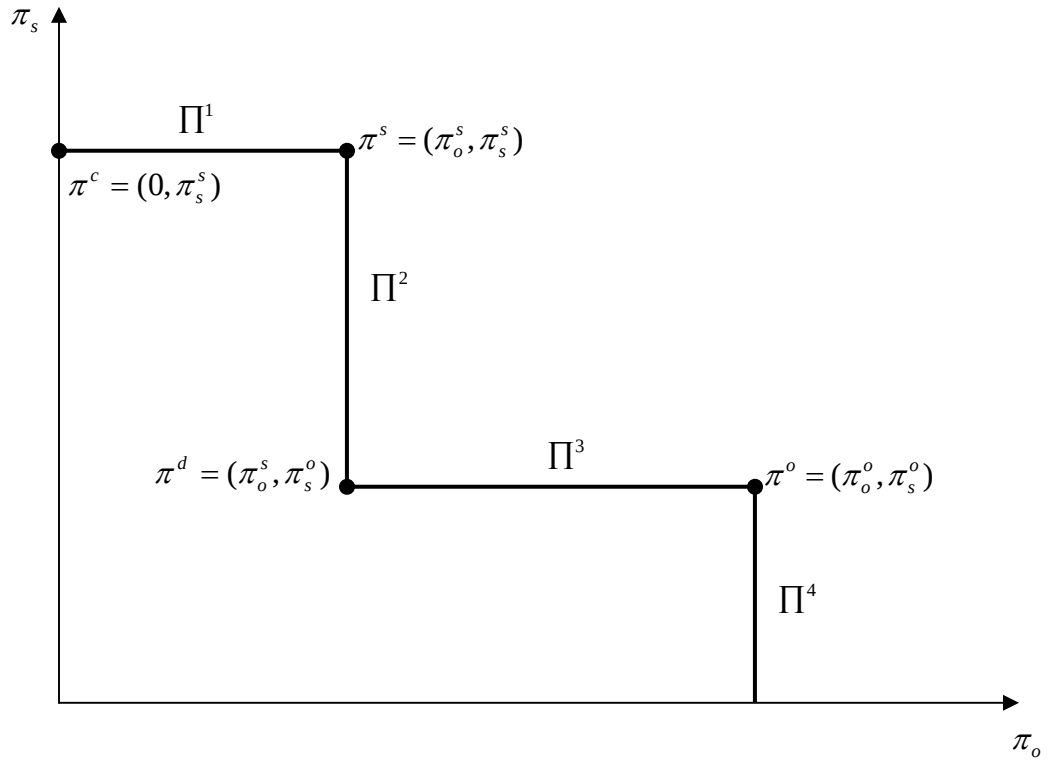
Subjects ID: (1) 9, 22, 26, 33 (2) 24, 27,35, 38, 57.
Standard errors in parentheses.
Significance level: * 10 percent, ** 5 percent, *** 1 percent

Figure 1: A step-shaped dictator set



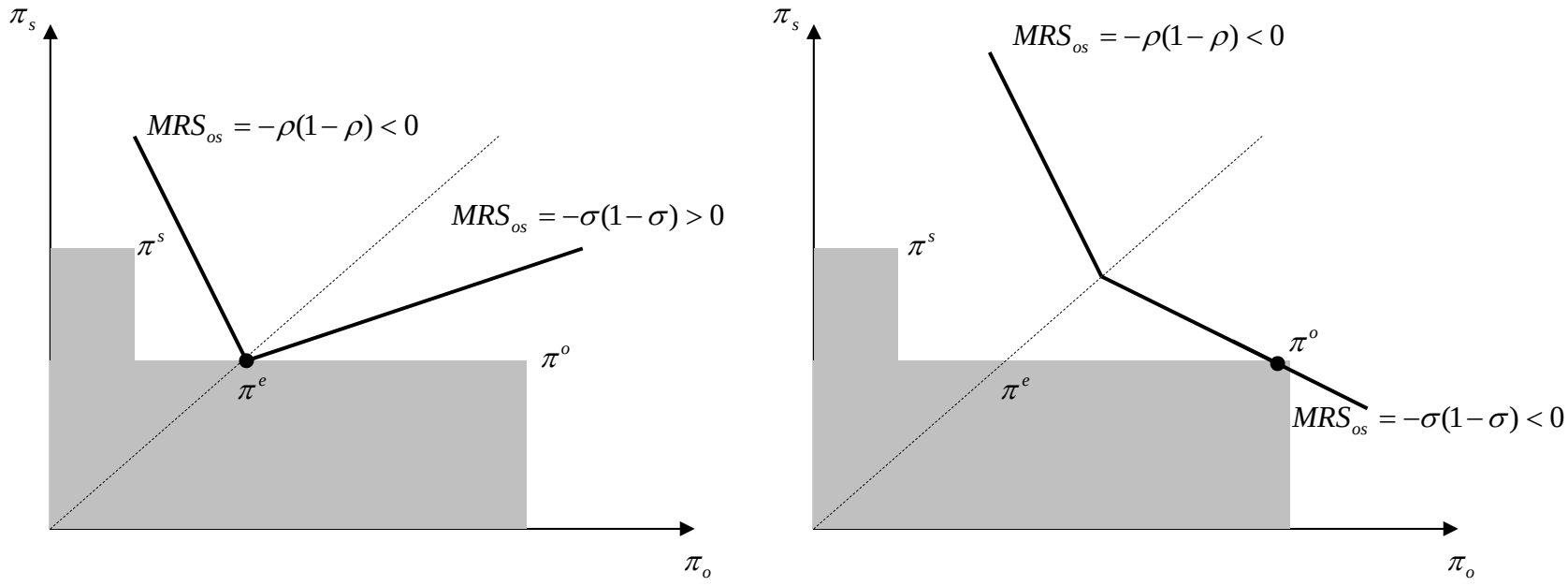
An example step-shaped set dictator set representing the feasible monetary payoff choices of person *self*. Each point $\pi = (\pi_o, \pi_s)$ corresponds to the payoffs to persons *self* and *other*, and $\pi^s = (\pi_o^s, \pi_s^s)$ and $\pi^o = (\pi_o^o, \pi_s^o)$ are the *self* and *other* strictly Pareto efficient allocations, respectively.

Figure 2: The Pareto set



The strictly Pareto efficient allocations, π^s and π^o, and the subsets of the Pareto set associated with Pareto-damaging behaviors. The horizontal subsets, Π^1 and Π^3, involve *other* Pareto-damaging behavior, whereas the vertical subsets, Π^2 and Π^4, involve *self* Pareto-damaging behavior. The allocation π^d involves both *self* and *other* Pareto demanding behaviors.

Figure 3: An example of the preferences of Charness and Rabin (2002)



Instances of social preferences and the range of solutions when $\pi^e \in \prod^3$. A typical indifference curve of a difference aversion function is represented in the left panel and of a social-welfare function in the right panel. The difference aversion optimum is π^e whereas the social-welfare optimum is π^o.

Figure 4: The distribution of log surplus

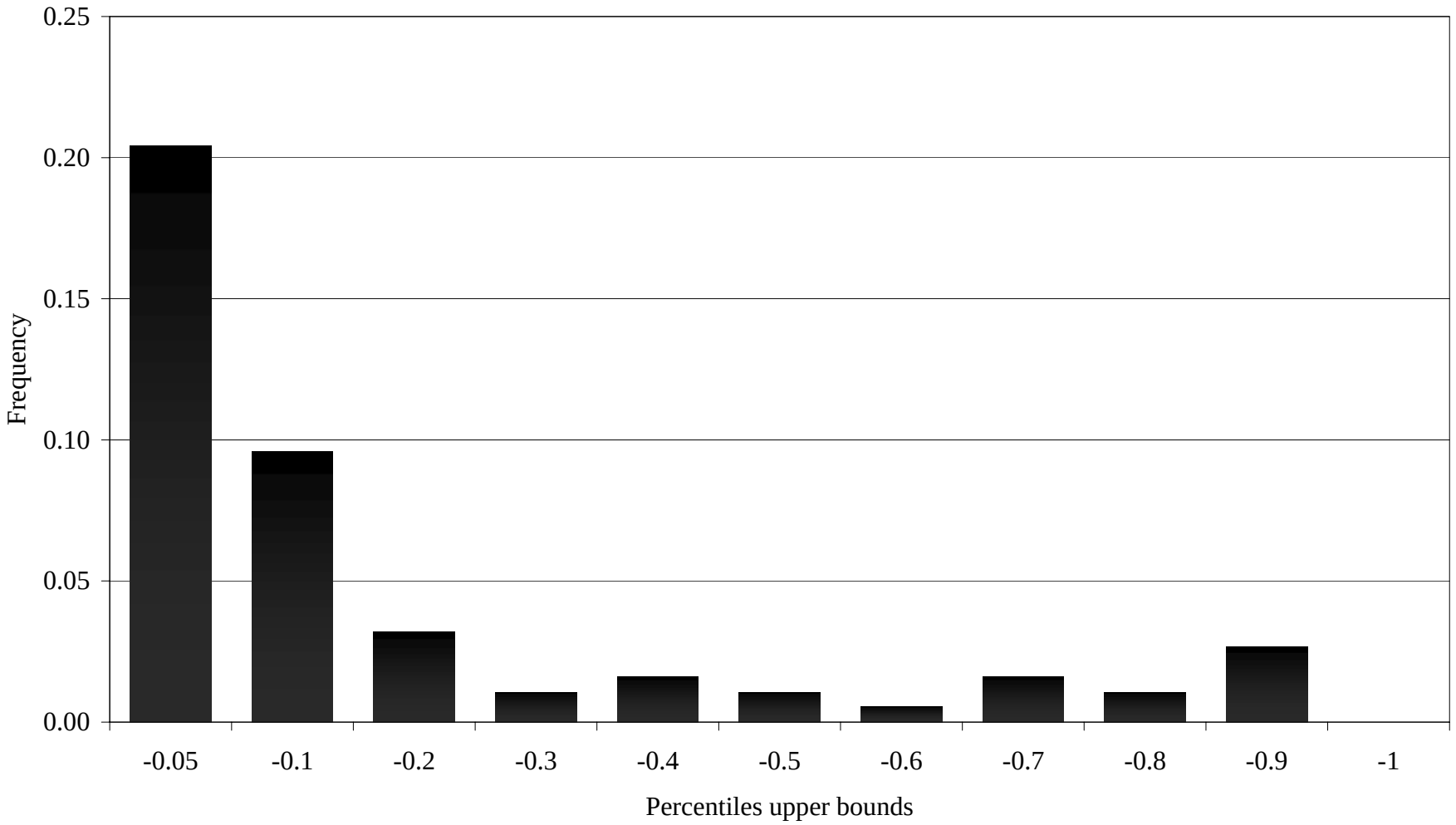
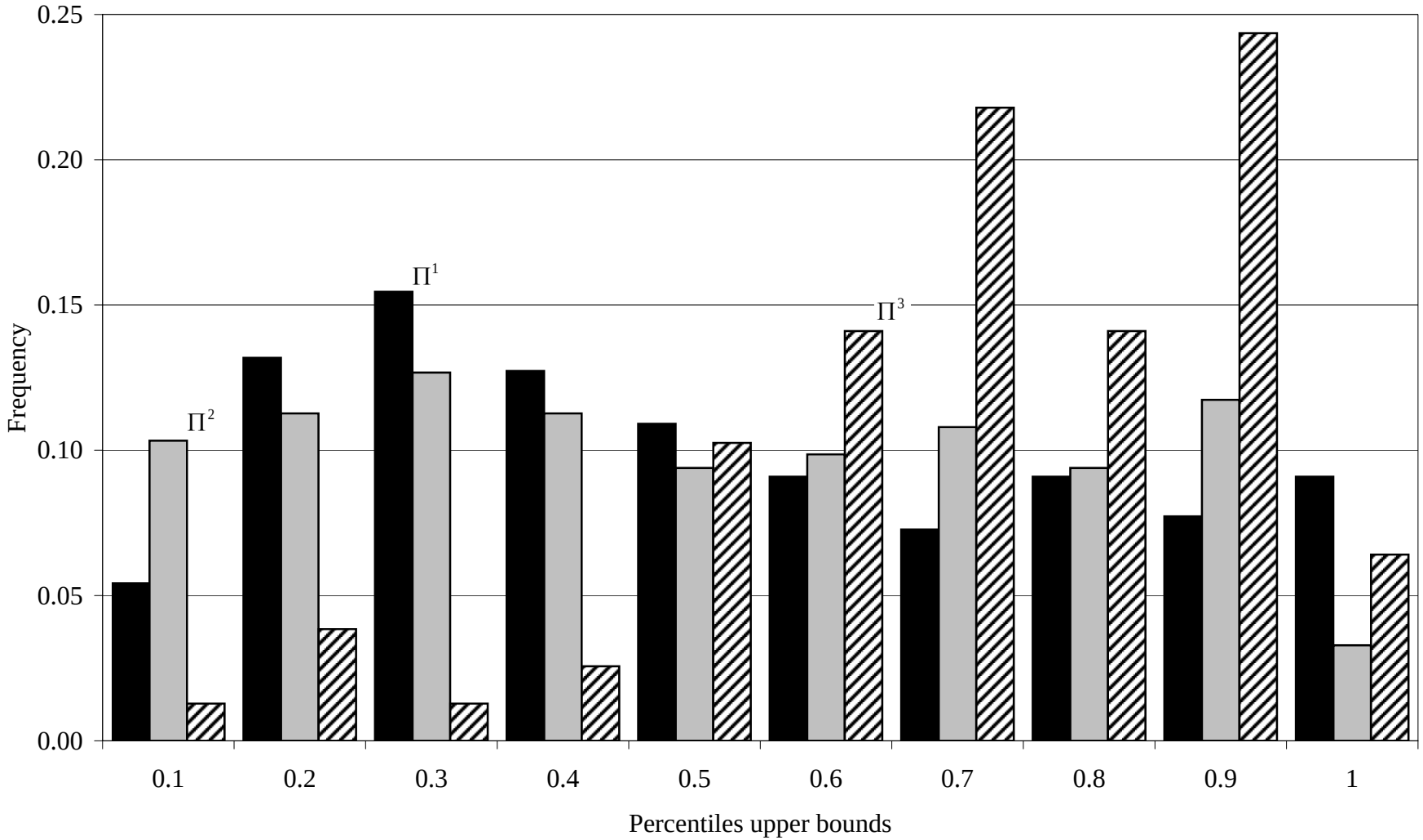
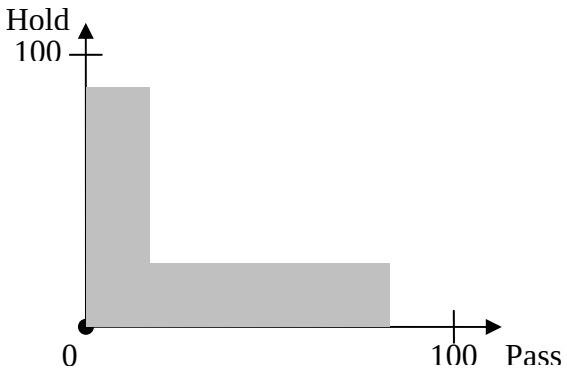


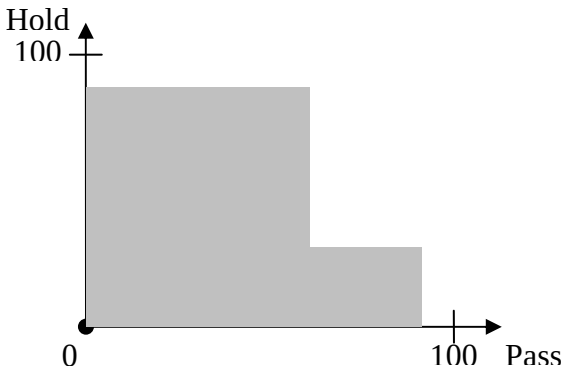
Figure 5: The distribution of weakly Pareto efficient decisions

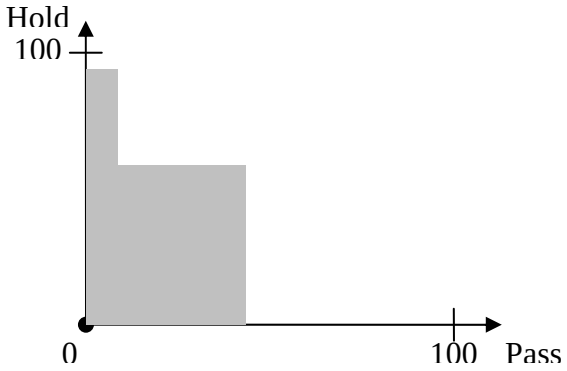
Figure 6: The distributions of the relative loss absorbed from Pareto-damaging allocations



Attachment 1







Attachment 2