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Notes, Comments, and Letters to the Editor

Negotiation and take-it or leave-it in common agency with non-contractible actions

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Abstract

In a recent paper, Peters [Negotiation and take-it or leave-it in common agency, J. Econ. Theory 111 (2003) 189–228] identifies a set of restrictions on players' preferences, called "no-externalities assumption", under which, in common agency games, there is no loss of generality in restricting principals' strategies to be take-it or leave-it offers. The present note provides an example to show that these conditions are not sufficient when the agent takes a non-contractible action.

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In a recent paper, Peters [1] identifies a set of restrictions on players' preferences, called "no-externalities assumption'', guaranteeing that every pure strategy equilibrium allocation of a common agency game with menus can in fact be supported at (a pure strategy) equilibrium in a simpler game where principals' strategies are restricted to be take-it or leave-it offers. Interestingly, these conditions are satisfied in a large class of common agency games. [1]

The present note argues that the no-externalities assumption is, in general, not sufficient when the agent takes some non-contractible actions. We provide an example of a common agency game which satisfies the no-externalities assumption as stated in Peters [1]. In this game, at least one

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[1] Peters [1] provides several examples.

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Table 1
Payoffs associated to the choice of e'

	A	B	C
a	(1, 1, 0)	(1, 2, 0)	(1, 3, 0)
b	(4, 1, 1)	(4, 2, 4)	(4, 3, 4)
c	(3, 1, 4)	(3, 2, 4)	(3, 3, 4)

Table 2
Payoffs associated to the choice of e''

	A	B	C
a	(0, 3, 1)	(0, 1, 1)	(0, 0, 1)
b	(1, 3, 2)	(1, 1, 2)	(1, 0, 4)
c	(2, 3, 4)	(2, 1, 4)	(2, 0, 4)

equilibrium implementable through menus cannot be sustained by take-it or leave-it offers, which contradicts Theorems 3 and 4 in Peters [1].

To develop our counterexample, we refer to a simplified version of the general structure of common agency games as proposed in Peters [1]. First, there is no private information on the part of the agent (i.e., in the notation of Peters, $|\Omega| = 1$). Second, the agent's actions are non-contractible (that is, we study a pure moral hazard environment). Using Peters' terminology, we can say that for every principal j, the equivalence class $\mathscr{E}_j$, in which he is constrained to respond to each effort level chosen by the agent in the same way, corresponds to the whole set of available effort choices E.

In this setting, the no-externalities assumption can be stated as follows: (i) each principal's utility only depends on his own action and on the agent's effort; (ii) the agent has a weak preference ordering over the actions of every single principal that is independent of her effort choice and of the other principal's actions. [2]

Following Peters' framework and examples, we will focus on pure strategy equilibria.

Now, consider the following example, where two principals (denoted P1 and P2) contract with one agent in a pure moral hazard scenario. P1 can take three decisions a, b or c. In the same way, P2 can also choose between the three actions A, B and C. The agent can select her non-contractible level of effort in the set $\{e', e''\}$.

If the agent chooses effort e', the corresponding payoffs are given by the matrix in Table 1, where the first element in each cell refers to the payoff of P1, the second one to the payoff of P2 and the last one to that of the agent. Payoffs associated to the choice of e'' are shown in Table 2.

It is easy to show that this game fulfills Peters' conditions (i) and (ii).

Let us first restrict our attention to take-it or leave-it offers. Allocations are determined in the following way: each principal simultaneously and independently announces a decision. Given the announcements, the agent chooses her effort level and payoffs are implemented.

The outcome (4, 2, 4) cannot be sustained at equilibrium if principals are restricted to the use of take-it or leave-it offer mechanisms. For every possible continuation game, if P1 plays b, then P2 strictly prefers to play A or C rather than B.

However, the outcome (4, 2, 4) can be supported at equilibrium if principals are allowed to offer menus over the relevant alternatives. Consider any continuation game in which the agent chooses

[2] For a formal definition of conditions (i) and (ii) one should refer to Peters' original article.