

ECON915 MICROECONOMIC THEORY

Part A: Introduction to Decision Theory

Problem Set 2

Question 1

Show that the weak axiom of revealed preference is equivalent to the following property: *Let $a, b \in Y$ and $a, b \in Y'$. If $a \in c(Y)$ and $b \in c(Y')$, then $\{a, b\} \subseteq c(Y)$ and $\{a, b\} \subseteq c(Y')$.*

Question 2

Let $X = \{x, y, z\}$ be the set of alternatives, and consider the context $\mathcal{D} = \{\{x, y\}, \{x, y, z\}\}$ with a choice function $c : \mathcal{D} \setminus \emptyset \rightarrow \mathcal{D}$. Show that if $c(\{x, y\}) = \{x\}$ and c satisfies the weak axiom of revealed preference, then $c(\{x, y, z\}) = \{x\}$ or $c(\{x, y, z\}) = \{z\}$ or $c(\{x, y, z\}) = \{x, z\}$.

Question 3

Let $X = \{x, y, z\}$ be the set of alternatives, and consider the context $\mathcal{D} = \{\{x, y\}, \{x, y, z\}\}$. Consider the choice function c_1 such that $c_1(\{x, y\}) = \{x\}$ and $c_1(\{x, y, z\}) = \{x\}$ as well as the choice function c_2 such that $c_2(\{x, y\}) = \{x\}$ and $c_2(\{x, y, z\}) = \{x, y\}$.

- (i) Determine whether c_1 satisfies the weak axiom of revealed preference.
- (ii) Determine whether c_2 satisfies the weak axiom of revealed preference.

Question 4

Let $X = \{x, y, z\}$ be the set of alternatives, and consider the context $\mathcal{D} = \{\{x, y\}, \{y, z\}, \{x, z\}\}$. Consider the choice function c such that $c(\{x, y\}) = \{x\}$, $c(\{y, z\}) = \{y\}$ and $c(\{x, z\}) = \{z\}$. Determine whether c satisfies the weak axiom of revealed preference.

Question 5

Let $X = \{x, y, z\}$ be the set of alternatives, and consider the context $\mathcal{D} = \{\{x, y\}, \{y, z\}, \{x, z\}, \{x, y, z\}\}$. Consider the choice function c such that $c(\{x, y\}) = \{x\}$, $c(\{y, z\}) = \{y\}$, $c(\{x, z\}) = \{z\}$, and $c(\{x, y, z\}) \subseteq \{x, y, z\}$. Show that c must violate the weak axiom of revealed preference.