MSQE 2019. Microeconomic Theory I

Problem Set 1

1. Prove that contraction consistency is a weaker condition than the Weak Axiom of Stochastic Revealed Preference.
2. Prove that, under complete domain and a deterministic choice correspondence, Sen’s and conditions are together equivalent to the Weak Axiom of Revealed Preference.
3. Suppose the universal set of alternatives is . Consider a deterministic choice function F defined over which satisfies contraction consistency. Would this deterministic choice function necessarily satisfy the Weak Axiom of Revealed Preference as well? What if F is a stochastic choice function?
4. Suppose the universal set of alternatives is . Construct a deterministic choice correspondence F defined over which satisfies Sen’s and conditions but violates the Weak Axiom of Revealed Preference. How would you redefine Z so as to make the two conditions equivalent?
5. Prove that, for a tight deterministic demand function, the Weak Axiom of Revealed Preference is equivalent to Samuelson’s Inequality. State and establish the corresponding demand theorem from this result.
6. Construct an SDF which satisfies non-positivity of the own-price substitution effect but violates stochastic substitutability.
7. Construct an SDF which satisfies stochastic substitutability but violates WASRP.
8. Prove, for a deterministic supply function, that the Consistent Firm Choice and Non-reversibility conditions are, together, equivalent to the Weak Axiom of Profit Maximization. Prove also that Consistent Firm Choice and Non-reversibility are independent conditions.
9. Construct a deterministic supply function that satisfies both cost minimization and the law of supply, but violates profit-maximization, for the general case of *n* commodities, *n ≥ 2*.
10. Consider two competitive firms facing identical price vectors. Construct a supply function for each firm such that each firm individually violates the law of supply, but the aggregate stochastic representation satisfies the law of supply in its stochastic version.