1057-91-195     **Adib Bagh** and **Francesco Ruscitti\*** (`ruscitti@yu.edu`), Yeshiva University, Wilf Campus, 2495 Amsterdam Avenue, BH suite 501, New York, NY 10033, and **Galeazzo Impicciatore**. *An Open Graph Theorem for Correspondences with Applications.* Preliminary report.

We prove an open graph theorem for correspondences mapping an arbitrary metric space into an euclidean space. That is, let S be a set-valued map from an arbitrary metric space into $\mathbb{R}^n$. Assume that S has convex and open upper sections. Then S is lower hemicontinuous if and only if the graph of S is open. We construct a counterexample that shows that our theorem does not hold when the range space is a separable Hilbert space equipped with the weak topology. We work out a few applications of our open graph theorem in order to illustrate its usefulness. The main example deals with Economics: we prove the existence of a continuous uitlity-like function for non-transitive preferences. It is a generalization of a theorem due to Shafer (1974). The second and third examples concern lower hemicontinuous set-valued maps. In the second example we show the existence of fixed points assuming neither compactness nor convexity of the domain. The third one shows that continuity of a set-valued map with open and convex upper sections is very restrictive. (Received January 22, 2010)