sets are norm compact. Once this result is available we proceed to complete the proof of the Main Theorem as follows. We construct a suitable family of truncated subeconomies each of which satisfies the assumptions of the Auxiliary Theorem. By appealing to the Auxiliary Theorem we can conclude that a competitive equilibrium exists in each subeconomy. Therefore, we obtain a net of equilibrium consumption-price pairs for the truncated subeconomies. The proof then is completed by extracting converging subnets whose limit is a competitive equilibrium for the original economy.

Below we state our Auxiliary Theorem which may be seen as the infinite dimensional extension of Aumann's (1966) Auxiliary Theorem.

Auxiliary Theorem. *Let $\mathcal{E}$ be an economy satisfying (3.1), (3.2′)–(3.4). Then a competitive equilibrium exists in $\mathcal{E}$.*

5. Proof of the Auxiliary Theorem

We begin by stating the following generalization of the Gale-Nikaido-Debreu Lemma proved in Yannelis (1985).

Main Lemma. *Let Y be a Hausdorff locally convex linear topological space whose positive cone Y_+ has an interior point u. Let $\Delta = \{p \in Y_+^* : p \cdot u = 1\}$. Suppose that the correspondence $\zeta : \Delta \to 2^Y$ satisfies the following conditions:*

(i) For all $p \in \Delta$ there exists $z \in \zeta(p)$ such that $p \cdot z \leq 0$,
(ii) $\zeta : \Delta \to 2^Y$ is weak u.s.c., (i.e., $\zeta : (\Delta, w^*) \to 2^Y$ is u.s.c.),*
(iii) for all $p \in \Delta$, $\zeta(p)$ is nonempty, convex and compact.

Then there exists $\bar{p} \in \Delta$, such that $\zeta(\bar{p}) \cap (-Y_+) \neq \phi$.

The Theorem below will be of fundamental importance for the proof of our equilibrium existence theorem. It should also be noted that results of the same nature with the Theorem below have found applications to equilibrium points of non-cooperative models of competition [see for instance Schmeidler (1973), Khan (1986), Khan-Papageorgiou (1987), and Yannelis (1987, 1990a)].