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Approximation of excess demand on the boundary and equilibrium price set

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Abstract. When preferences may not be homothetic but satisfy other regularity conditions such as monotonicity, the market excess demand function is characterized by continuity and Walras' law on almost entire region of the price simplex. In particular, Mas-Colell (1977) shows that for a continuous function f defined on the interior of the price simplex satisfying Walras' law and the boundary condition, there exists an exchange economy E whose excess demand function is approximately equal to f and the equilibrium price set of E is exactly equal to the one of f. This paper shows that if f may be finite on the boundary of the price simplex, E can be chosen so that the equilibrium price set of E is approximately equal to the one of f. Theorem 3 in Wong (1997), showing the equivalence between Brouwer's fixed-point theorem and Arrow-Debreu's equilibrium existence theorem, follows from this result.

Key words: excess demand, decomposition theorem, fixed-point theorem