

# Abstract

*This paper studies the possibilities of different types of cross-holding in a market with three firms competing in quantities, producing vertically and horizontally differentiated products, wherein two firms are high-quality producers while the third is a low-quality producer. The possibility of unilateral cross-holding between two high-quality firms is independent of the level of vertical differentiation, however, requires a sufficiently high level of horizontal differentiation between them. Unilateral cross-holding by a high-quality firm in a low-quality firm requires a sufficiently high level of horizontal differentiation along with a sufficiently low level of vertical differentiation. And, unilateral cross-holding by a low-quality firm in a high-quality firm necessitates that both horizontal and vertical differentiation should not be extremely low. Moreover, bilateral cross-holding between a high-quality firm and a low-quality firm requires an even higher level of horizontal differentiation, however, similar to unilateral cross-holding, this is independent of the level of vertical differentiation. Although, bilateral cross-holding between a high-quality firm and a low-quality firm also requires a high level of horizontal differentiation, however, the requirement of vertical differentiation differs at different levels of horizontal differentiation.*

JEL classification: L 13, D 43, D25

Keywords: Cross-holding; Oligopoly; Product Differentiation; Quality, Cournot