

Exact Relationships between Fisher Indexes and Theoretical Indexes

E. Grifell-Tatjé, Universitat Autònoma de Barcelona

C. A. K. Lovell, University of Queensland

Abstract

In this paper we develop exact relationships between empirical Fisher indexes and implicit versions of their theoretical Malmquist and Konüs counterparts. We begin by using implicit Malmquist price and price recovery indexes to establish exact relationships between implicit Malmquist quantity and productivity indexes and Fisher quantity and productivity indexes. We then show that Malmquist quantity and productivity indexes and Fisher price and price recovery indexes “almost” satisfy the product test with the relevant value change, and we derive an economically appealing closed form expression for the relationship. We next use implicit Konüs quantity and productivity indexes to establish exact relationships between Konüs price and price recovery indexes and Fisher price and price recovery indexes. We then show that Konüs price and price recovery indexes and Fisher quantity and productivity indexes “almost” satisfy the product test with the relevant value change, we derive an economically appealing closed form expression for the relationship, and we show that this expression differs from the expression relating Malmquist and Fisher indexes.

Keywords: implicit Malmquist and Konüs indexes, Fisher indexes

JEL Classification codes: C43, D24, D61