HETEROGENEOUS RELATIONSHIPS BETWEEN DIGITAL TRANSFORMATION, INNOVATION, AND INSURANCE MARKET DEVELOPMENT IN THE EU: EVIDENCE FROM QUANTILE REGRESSION AND STRUCTURAL EQUATION MODELING

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Abstract

The research objective is to assess the associations of digitalization and innovation with the development of the European Union (EU) insurance market, using a differentiated approach that captures heterogeneity across the conditional distribution of insurance market size, as well as the overall structural relationships. The panel dataset for the EU-27 Member States (MS) includes variables capturing the size of the insurance market, the level of digitalization and innovation, as well as control variables serving as proxies of socio-economic development. Therefore, to examine heterogeneity in the estimated relationships, the methodology employs pooled quantile regression models (QREG) using robust standard errors, at the lower (0.25), median (0.50), and upper (0.75) quantiles of the conditional distribution of insurance market size. In addition, structural relationships across the EU are examined using Structural Equations Modeling (SEM) with the Maximum Likelihood method and bootstrap standard errors. The results reveal the heterogeneity of the EU MS, showing that the level of development of the insurance market is associated with the degree of digitalization and innovation, in the sense that the estimated associations tend to be stronger at the higher quantiles. At a global level, innovation has positive associations with the development of the insurance market. However, digitalization shows mixed associations: internet access is positively associated with insurance penetration, while the share of the ICT sector in GDP is negatively associated with both insurance penetration and density. These findings highlight the need for strategies that consider differences in insurance market development across EU MS. Such strategies could help countries make better use of digitalization and innovation while supporting financial inclusion and socioeconomic resilience.

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