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ASSESSING INFLATION RISK IN NON-LIFE INSURANCE

Alexander Bohnert, Nadine Gatzert, Andreas Kolb*

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ABSTRACT

Inflation risk is of high relevance in non-life insurers' long-tail business and can have a major impact on claims reserving. In this paper, we empirically study claims inflation with focus on automobile liability insurance based on a data set provided by a large German non-life insurance company. The aim is to obtain empirical insight regarding the drivers of claims inflation risk and its impact on reserving. Toward this end, we use stepwise multiple regression analysis to identify relevant drivers based on economic indices related to health costs and consumer prices, amongst others. We further study the impact of (implicitly and explicitly) predicting calendar year inflation effects on claims reserves using stochastic inflation models. Our results show that drivers for claims inflation can considerably vary for different lines of business and emphasize the importance of explicitly dealing with (stochastic) claims inflation when calculating reserves.

Keywords: Separation method, claims inflation, regression analysis, simulation, Vasicek

JEL Classification: C53; E31; G22; G32

1. INTRODUCTION

For non-life insurers, inflation associated with long-term liabilities represents one major risk source and can considerably impact the adequate estimation of technical provisions, thus directly influencing future earnings (see, e.g., Wüthrich, 2010, Ahlgrim and D'Arcy, 2012a, and D'Arcy, Au, and Zhang, 2009). Furthermore, in the context of new risk-based capital requirements for insurers as imposed by Solvency II, all material risks have to be considered in the calculation of solvency capital requirements and the Own Risk and Solvency Assessment (ORSA), implying that inflation risk should at least be taken into consideration within an internal model of an insurance company. The aim of this paper is to empirically study claims inflation in non-life insurance based on automobile liability insurance, fully comprehensive car insurance, and third party liability insurance data provided by a large non-life insurance company in Germany. Toward this end, we first focus on claims inflation by determining the main driving factors for inflation risk based on economic indices for different

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