

# **ACTUARIAL ANALYSIS OF THE MULTIPLE LIFE ENDOWMENT INSURANCE CONTRACT**

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## **Abstract**

We extend the classical analysis of the endowment contract on a single life to multiples lives. The two lives case covering the joint-life and the last-survivorship status is discussed thoroughly. In practice actuarial values of the tariff book are calculated under the simplifying assumption of independent future lifetimes. It is therefore important to measure the impact of this assumption under the observation that independence is not fulfilled in real life. In the two lives case the maximal impact can be measured using the well-known Höfdding-Fréchet lower and upper bounds. The independence assumption overestimates the joint-life net single and level premiums and underestimates the last-survivor net single and level premiums. The maximal deviations are obtained by perfect positive dependence. Some formulas illustrate the application to multiple life insurance contracts for more than two lives, which point out to further possible developments.

## **Key words**

endowment life insurance, multiple lives, joint-life, last-survivorship, lifetime dependence