

气候变化风险对养老金和 退休投资的影响



摘要

本项目研究了气候变化风险对退休投资的财务影响，重点探讨了养老基金（Pension Funds）应如何管理此类风险。研究涉及的气候变化风险主要包括两大类别：

- 物理风险（Physical risk）：指由极端气候事件和全球变暖对资产及养老金负债的直接影响。
- 转型风险（Transition risk）：指在向低碳经济转型过程中产生的财务风险，包括因遵守新规定而带来的诉讼风险。

本研究详细阐述了上述风险对养老基金资产负债表中资产端和负债端的影响，核心观点总结如下：

1. 现有文献及本研究均指出，气候变化对长期资产回报和养老金领取者死亡率均存在影响，因此，养老基金将气候变化风险纳入投资决策过程是有意义的（第一章）。
2. 通过对一组代表性股票的研究发现，欧洲和北美的金融市场均未充分认识到气候变化风险，也未在价格中完全反映。这种情况提高了未来价格修正的可能性，并为那些在碳密集型资产上具有高敞口的养老基金带来了不确定性（第二章）。
3. 本研究在提出了量化方法，用以评估气候变化风险对资产负债表资产端的影响，包括固定收益资产、权益类资产和搁浅资产。相关的数值分析结果表明：
 - a) 长期来看，转型风险对于碳强度水平较高、债务价值比较高（即杠杆水平较高）的发行人所发行债券的负面影响更为显著。

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b) 在权益类资产方面，来自碳密集型行业（能源、公用事业和原材料）及房地产行业的股票预计将受到来自气候变化的负面影响。相比之下，医疗保健和信息技术等行业预计将保持韧性，甚至可能从中受益（第三章）。

4. 在养老金负债端，气候变化风险可能对死亡率产生重大影响。因此，本研究第四章通过回归分析来量化温度变化与死亡率之间的关系。基于美国人口死亡率数据的实证结果得出以下结论：

- a) 40 至 80 岁人群的死亡率随温度升高而降低。
- b) 80 岁以上人群的死亡率随温度升高而增加。

5. 除上述定量分析外，第五章进一步探讨了气候变化风险对养老基金的影响还需考虑其他实际因素：

- a) 绿色债券虽适合作为养老金投资标的，但基金经理应警惕潜在的漂绿（greenwashing）问题。
- b) 气候变化通过多种渠道对房地产价值产生直接和间接影响，需要进行深度分析以评估其净影响。
- c) 气候变化风险可能会为许多现有的确定缴费（DC）计划的默认选项（如平衡基金和目标日期基金）的适用性带来新视角。

6. 基于上述见解和现有的“负债驱动型”投资组合构建框架，本文针对确定给付（DB）养老基金，提出了一个反映气候变化影响的投资组合优化框架，以在资金充足状况方面实现理想的风险回报目标。本研究通过一个数值算例来说明该方法在实践中如何应用，并讨论了该框架在 DC 计划基金和个人退休投资中的扩展应用（第六章）。

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