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## Actuarial social insurance and pension funds

PROF. GIAN PAOLO CLEMENTE

### Course aims and intended learning outcomes

Aim of the course is to provide a knowledge about actuarial techniques for the evaluation of public pension-schemes and pension funds.

The following topics will be tackled: the structure of the Italian public and complementary pension systems, the development of regulations and main reforms of the public pension-scheme, the financial systems for managing the public pensions, the determination of premiums and actuarial reserves within the framework of an IVS system (disability, retirement and survivor), the methods for computing contributions and benefits for a defined benefit pension fund.

The course contemplates lectures as well as seminars involving experts so as to illustrate some of the issues linked to the management of the public pension and pension funds.

By the end of the course, students should be able to compute pension benefits and contribution levels for an IVS system and a defined benefit pension plan.

### Course content

- General information about pensions*
  - understand and know the concept of pensions;
  - know which risks are covered by public pensions schemes and which kind of benefits are provided;
  - understand Italy's three-pillar pension system.
- The Italian pension system*
  - understand the Italian pension system;
  - know the main reforms made to the Italian pension system in recent years;
  - be able to compare different financial management systems;
  - understand the impact of the different reforms and any individual initiative on the balance of a financial system.
- Basic public pensions (disability, retirement and survivor)*
  - choose appropriate technical bases for the determination of the premium in an IVS system;
  - calculate the estimated present value of the benefits and wages related to a group pension plan with specific characteristics;
  - understand and calculate capitalisation coefficients;
  - determine the contributions for a hypothetical IVS system for different financial management systems;
  - determine the actuarial reserves of an IVS system for different financial management systems;
  - evaluate the equilibrium of a financial system for a specific accounting year;
  - evaluate the relationships between the capitalisation coefficients and the transformation coefficients introduced by the Dini reform.
- Complementary pension system*
  - understand current legislation about pension funds;
  - compare Italian complementary pension system to European framework;
  - understand the financial management methods for pension funds;
  - compare defined-contribution and defined-benefit plans.
- Actuarial models for defined-benefit pension plans with individual capitalisation*
  - understand a defined-benefit plan;



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- evaluate benefits and contributions;
- use different actuarial funding methods for computing contributions;
- evaluate the level of equilibrium of a pension fund in static and dynamic conditions.

## Reading list

Given the particular structure of the course and the analysis of certain topics over a long term horizon, it is not possible to identify specific textbooks that cover all course topics.

Instructional material will be made available on the Blackboard platform throughout the course.

Reading materials for further study (optional)

A. TOMASETTI ET ALII, *Tecnica attuariale per collettività*, Kappa, Rome, 1995, vol. I.

N. SAVELLI, *Modelli attuariali per schemi pensionistici a prestazioni definite con capitalizzazione individuale*, Kappa, Rome, 1984.

## Teaching method

Lectures, supplemented by presentations by experts in the pension business.

## Assessment method and criteria

The assessment method is carried out exclusively through a written examination on the whole course program. The written examination includes four/five questions lasting 2 hours and an half. The written examination is based on both open-ended questions and exercises. Calculator is allowed during the written examination.

The exam intended to evaluate the reasoning skills and the analytical rigor on the topics treated in class as well as the correct use of language and the communication skills.

## Notes and prerequisites

### *Prerequisites*

Before entering the course, the student should have a basic knowledge of demographics and financial concepts, be able to evaluate premium and technical provisions for life insurance policies, have a knowledge of actuarial methods for annuity contracts.

### *Other information*

Further information can be found on the lecturer's webpage at <http://docenti.unicatt.it/web/searchByName.do?language=ENG>, or on the Faculty notice board.