GLOBAL PENSION TRENDS – AN ACTUARIAL PERSPECTIVE

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Chris Daykin
UK Government Actuary

chris.daykin@gad.gov.uk
CHALLENGES FACING PENSION AND SOCIAL SECURITY SYSTEMS

• demographic ageing
• maturing of pay-as-you-go schemes
• life expectancy at retirement rising
• economic conditions
• changing political fashion
• perceived lack of sufficient pre-funding
• security issues in private pensions
TOTAL PERIOD FERTILITY RATES, 总生育率, 1960-2010

Eastern Asia
South-central Asia
South-eastern Asia
Western Asia
Expectation of Life for Males, 男性预期寿命，1950-2010

UK
USA
Germany
France
Italy
Spain
Japan
Russia
China
Expectation of Life for Females, 女性预期寿命，1950-2010

- UK
- USA
- Germany
- France
- Italy
- Spain
- Japan
- Russia
- China
Expectation of life at 65 according to the mortality rates experienced or projected for cohorts, England & Wales

根据各人群既往或预测死亡率，65岁人口的预期余命

(Females 女, Males 男)

Expectation of life at 65 (years)

Year reaches age of 65

1850 1900 1950 2000 2050
DEPENDENCY RATIOS, 1970-2030
(nos. 65 & over per 1000 aged 15-64)
赡养率，1970-2030（65岁以上人口/15-64岁人口千人）
Population pyramid for 2000

2000年人口金字塔
Population pyramid for 2050

2050年的人口金字塔

男，女
PENSION REFORM IMPERATIVES

- recognise impact of longevity
- make structure and financing sustainable
- reduce intergenerational dependency
- reduce perverse incentives in labour market
- improve retirement incentive structures
- increase coverage
- preempt large increases in public expenditure
- increase level of saving
PENSION REFORM TYPOLOGY

- contribution adjustment and reform
- benefit adjustment and reform
- structural reform
- reform of retirement age and structures
- new approaches to financing old schemes
- development of funded pensions
STRUCTURAL REFORM

- move to notional defined contributions
- introduce or increase flat-rate element
- make greater use of means-testing
- introduce element of pre-funding
- increase role of private pensions
NOTIONAL DEFINED CONTRIBUTION

- clear link between contributions and benefits
- still on a PAYG basis rather than funded
- different revaluation approaches
- possible demographic adjustment factor
- annuity conversion at pension age
- permits flexibility of retirement age
- passes on part of longevity risk
EXAMPLES OF NDC

• Sweden
• Italy
• Latvia
• Brazil
• PRChina (2\textsuperscript{nd} pillar)
• France (régimes complémentaires)
WHY IS WORLD BANK SO KEEN ON NDC?

• DB is “flawed” – heterogeneous characteristics
• NDC creates better incentive structure
  - benefits linked directly to contributions
  - penalty for retiring early
  - good trade-off between work and leisure
• internalises adjustment to life expectancy
• can be made self-adjusting in other ways
• radical change easier to effect
• much harder to “game” than DB
SWEDEN

- notional defined contribution approach
- revalorisation of accounts by average wage
- automatic economic regulator
- annuity responds to improving mortality
- annual balance mechanism
- funded mini-pillar for 2½% of earnings (PPM)
- complementary industry-wide schemes
- fairly fast transition
NEW APPROACHES TO FINANCING

• shift some of the cost to general revenue
• introduce additional ear-marked taxes
• pre-fund part of the future liability
• make investment process independent
• introduce funded component
DEVELOPMENT OF FUNDED SCHEMES

• increased level of investment
• possible economic benefits
• introduces market disciplines…..
• …..and in some cases competition
• may improve efficiency
• makes pensions less political
• greater need for actuarial involvement
CHILE

• compulsory contributions to AFPs
• choice of private pension fund (AFP)
• minimum pension guaranteed by state
• underpin on annual return
• recognition bonds for previous rights
• old scheme closed to new entrants
• high levels of transaction costs
SINGAPORE

- Central Provident Fund (from 1953)
- defined contribution
- deposit account style
- high contributions (varying from time to time)
- medical expenses, education, investment
- lump sum benefit
HONG KONG

- Mandatory Provident Fund from 2000
- contributions of 10% of salary plus allowances
- earnings floor and ceiling
- private schemes and master trust schemes
- alternative of occupational retirement schemes
- 63% of employed population in MPF(31.3.02)
CHINA

- flat-rate basic pension (20% of average wage)
- NDC second pillar (11% contribution)
- pension is 1/120 of accumulated amount
- partially funded (at least in some provinces)
- fully funded voluntary third pillar
- Liaoning experiment
  * basic pension at 30% of average wage
  * fully funded DC from employee contns.
- further experiment in Helongjiang
US DEBATE

• OASDI out of actuarial balance over 75 years
• currently income exceeds expenditure
• substantial fund building up (in Treasuries)
• fund projected to run out in 2015
• President’s proposal to allow contracting out
• …with diversion into individual accounts
• huge potential transition cost
• doesn’t address problem of inbalance…
• …unless benefits are reduced in long term
ARGUMENTS IN FAVOUR OF FUNDING

• increases level of saving
• helps to develop capital markets
• provides needed investment capital
• helps to address ageing problems
• may reduce long-term cost
COUNTER-ARGUMENTS

- may substitute for other saving
- markets may not be able to cope
- may push up prices with excess demand
- ageing will still have an impact
- cost is only reduced in certain circumstances
CONCLUSIONS

• advantages of mix of systems
• private funds are not a panacea
• problems of coverage, risk and misselling
• good regulation is essential
• need to keep transaction costs down
• need for functioning capital markets
• ... and annuity markets
• …and new retirement products
Actuarial Roles in Social Security Schemes

社会保障计划中精算的作用

- demographic projections 人口预测
- estimates of future benefit outgo 未来福利支出预测
- estimates of future contribution income 未来缴费收入预测
- long-term projections of financial balance 长期财务收支预测
- short/medium-term estimates of cash-flow 中短期现金流预测
- development of funding strategies 规划基金收支战略
- asset/liability management 资产/负债管理
- actuarial control cycle 精算控制程序环
Report on Long-term Financial Condition
长期财务状况报告

- estimates of future outgo on different benefits
  未来各类福利计划的预测支出
- yield of contributions or hypothecated taxes
  缴费或税收收入
- adequacy of contribution rates set in law, or….
  法定缴费率是否适当，或…
- contribution rates necessary to achieve balance
  收支平衡的缴费率
- costs relative to GDP or to total earnings
  与GDP或总收入相关的成本
- impact of investment earnings on cash-flow
  现金流投资收益影响
- projected size of funds
  预计的基金规模
Status of actuarial work
精算工作

- information to support operations
  提供支持系统运作需要的信息
- information to support policy-making
  提供决策支持需要的信息
- independent financial audit and review
  独立的财务审计和评估
- component of comprehensive internal reporting
  综合全面的内部报告
- part of general government reporting system
  是政府报告体系的一个部分
- public assurance of sustainability
  保证可持续性
International Guidelines
国际指导方针

• International Social Security Association 国际社会保障协会
  - governance and investment guidelines
    管理和投资原则方针
  “An actuary should be appointed… to carry out periodic
  actuarial reviews of the scheme. The actuary should be
  free from political interference.”
  “应指定精算师……定期对计划进行精算评估。精算师应不受
  政治因素干扰。”

• International Actuarial Association 国际精算协会
  - guidelines for social security actuaries
    社会保障精算师指导方针
Why Actuaries?
为何需要精算师?

- actuaries “make financial sense of the future”
- mathematical modelling of future scenarios
- experts in demography…
- …and in projecting financial consequences
- understanding of uncertainty and risk
- professional framework for reporting
- actuaries provide professional independence

- 精算师让“未来的发展在财务上具有可靠性”
- 对各种未来发展方案的数学建模
- 是人口学的专家……
- 并是预测未来财务情况的专家
- 了解不确定性性和风险
- 专业的报告体系
- 精算师提供中立没有其他因素干扰的专业意见
Role of Actuaries in Social Security Reform

社会保障改革中精算师的作用

- analysis of costs of existing arrangements
- advice on design of alternative structures
- modelling the transition
- regulation of complementary schemes
- modelling impact on individuals
- impact on public expenditure/borrowing
- modelling impact on investment markets

- 分析当前计划的成本
- 对其他的体系结构的设计提出意见
- 转型建模
- 补充计划的法规
- 建模模拟个人效应
- 对公共支出/债务的影响
- 建模模拟对投资市场的影响
Professional Independence
中立的专业意见

- pressures from government
- pressures from operational units
- frequently a desire to suppress information
- disparate interests of different players
- potential conflicts with other forecasts
- actuary’s right to determine scope of report
- …and to insist on content and assumptions

- 来自政府的压力
- 来自业务部门的压力
- 经常会控制信息
- 不同利益方的不同利益
- 有可能与其他预测发生冲突
- 精算师有权决定报告的范围
- 还可以决定内容和假设条件
Reporting Mechanism

actuary should take personal professional responsibility for the report…
…including responsibility for assumptions
should be clear to whom report is addressed
signed report should be in public domain
discuss recommendations and agree action
Possible Structures

• regular independent external actuarial review
• 定期进行独立的外部精算评估
• Government Actuary
• 政府精算师
• actuaries inside social security department
• 社会保障部门内部的精算师
• ad hoc external studies or reviews
• 类似的外部研究或评估
Role of Government Actuary in the United Kingdom

英国政府精算师的职责

- five-yearly reviews of National Insurance Fund
- 对国家保险基金每5年进行一次评估
- …with 60 year projections
- 做60年的预测
- reports on annual uprating of benefits
- 每年报告福利待遇水平的更新情况
- financial consequences of new legislation
- 新立法带来的财务后果
- costings and estimates on ongoing basis
- 成本核算并按照即往情况预测
Role of Chief Actuary of OSFI in Canada

加拿大OSFI总精算师的职责

• situated within the Office of the Superintendent of Financial Institutions (equivalent of CIRC)
  合署金融机构监管办公室（相当于保监会）
• statutory role for Canada Pension Plan (CPP)
  负责加拿大养老金计划的法规制定（CPP）
• triennial published valuation of CPP
  每三年公布CPP评估结果
• effective professional independence
  完全独立的专业性服务
Role of Chief Actuary of SSA in United States of America
美国SSA总精算师的职责

- Office of Chief Actuary is within Social Security Administration
  总精算师办公室设在社会保障管理部内
- actuary's report is published as part of the report of the Trustees of the social security program
  精算报告作为社会保障计划参保人报告的组成部分一起对外公布
- includes a signed actuarial opinion
  出具签名负责的精算意见
- effective independence of actuarial opinion…
  完全独立的精算意见
- …but Advisory Committee determines assumptions
  咨询委员会决定假设条件
- dedicated actuarial resource for SSA
  指定SSA的精算资源
Social Security Actuary
社会保障精算师

- demographic understanding
- 了解人口情况
- ability to project income and expenditure
- 可以预测收支
- economic and public policy impact
- 对经济和公共政策的影响
- investment policy and ALM
- 投资政策和ALM
- design of pension and social security structures
- 设计养老金和社会保障体系
- understanding of private insurance and pensions
- 了解个人保险和个人养老金