



HM TREASURY

Long-term Public Finance Projections

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Overview (I)

- Background
 - Fiscal Framework
 - Long-term demographic challenges
 - Monitoring public finances in long term
- Long-term budgetary projections
 - Population and employment
 - GDP projections
 - Projecting public spending and revenues



Overview (II)

- Results
 - Spending and Revenue Projections
 - Assessing fiscal sustainability
- Challenges
 - Defining current policy
 - Modelling uncertainty
 - Coverage of long-term challenges
- Conclusion



Background

- Fiscal framework
- Long-term demographic challenges
- Understanding future fiscal pressures



Fiscal Framework

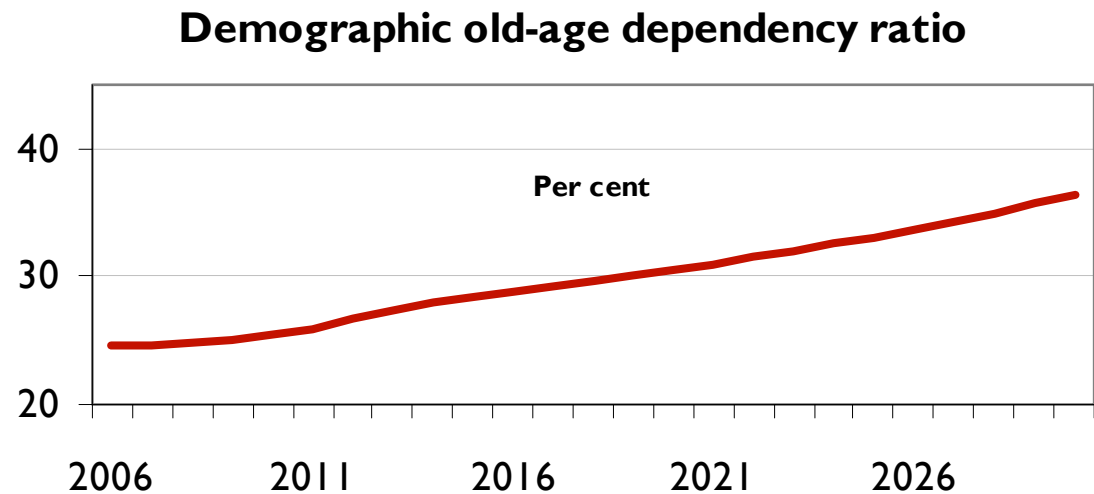
- Code for Fiscal Stability: Objectives for Fiscal Policy include “ensure sound public finances and that spending and taxation impact fairly both within and between generations”
- Public finances over long term
 - Inter-generational fairness
 - Long-term sustainability
- Inter-temporal budget constraint

$$D_{t_0} + \sum_{t=t_0+1}^{\infty} \frac{S_t}{(1+r)^{t-t_0}} = \sum_{t=t_0+1}^{\infty} \frac{R_t}{(1+r)^{t-t_0}}$$



Long-term Demographic Challenges

- Ageing population (increasing longevity, low fertility and ageing of 'baby boomer' cohorts)
 - **Economy:** shrinking workforce supporting growing number of retirees
 - **Public finances:** pressures from lower revenues and higher public spending from older people



Monitoring Long-term Public Finances

- Understanding implications of current policy on current and future generations – in light of demographic change
- *Code for Fiscal Stability*: Illustrative Long-term Fiscal Projections covering at least 10 years
 - Top-down (overview of fiscal aggregates – constraint development)
 - Bottom up projections (detailed analysis of spending and revenue pressures – unconstraint development)



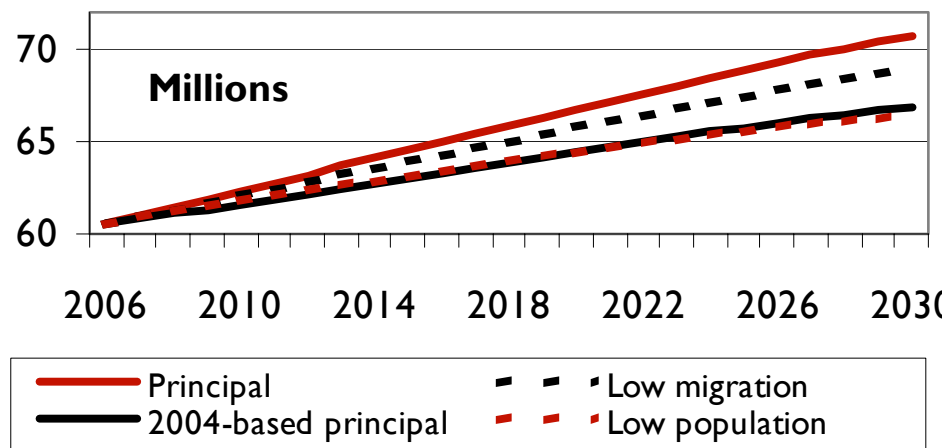
Long-term Budgetary Projections

- Population and employment
- GDP projections
- Projecting public spending and revenues



Population

- ONS population projections
- Uncertainty – population variants



| | Assumptions | | | | |
|--|-------------|----------------|---------------------|---------|---------------|
| | Principal | Low population | Low life expectancy | Old | Low migration |
| Fertility rate ¹ | 1.84 | 1.64 | 1.84 | 1.64 | 1.84 |
| Life expectancy at birth | | | | | |
| Males | 82.7 | 80.7 | 80.7 | 84.7 | 82.7 |
| Females | 86.2 | 84.9 | 84.9 | 87.5 | 86.2 |
| Long-term average annual net migration | 190,000 | 130,000 | 190,000 | 130,000 | 130,000 |

¹ Long-term average number of children per woman.

Source: Office for National Statistics, 2006-based national population projections.



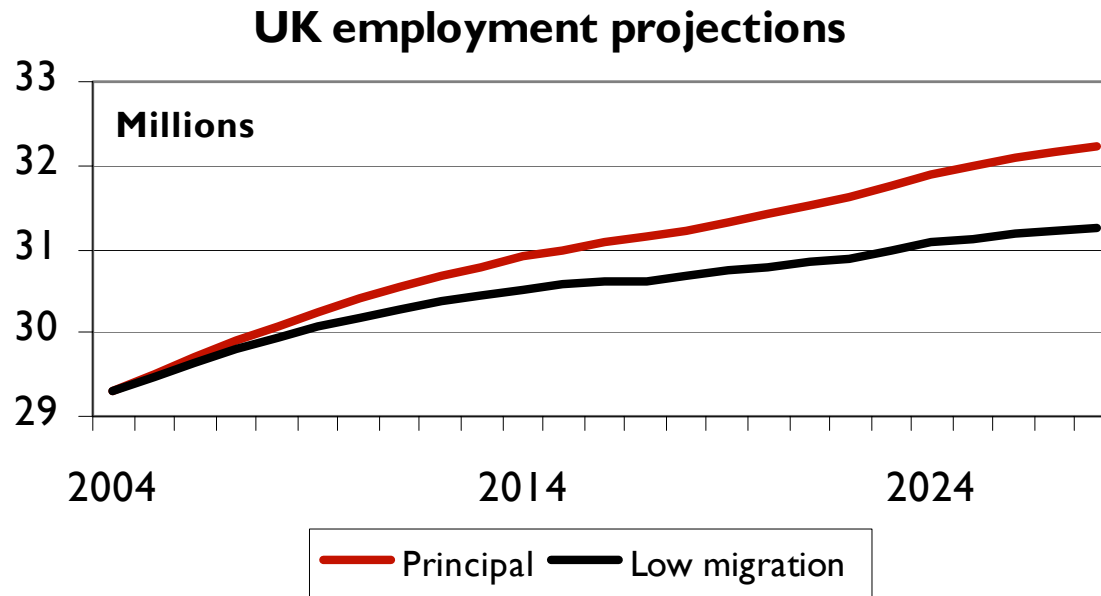
Employment (I)

- “Cohort method”: Latulippe (1996); Scherer (2002)
- Used by OECD and European Commission
- Projections of participation rates by single year of age/gender
- Captures:
 - Negative impact of an ageing population on overall participation rates
 - Cohort/intergenerational effect



Employment (II): Methodology

1. Entry and exit rates
2. Apply to current participation rates
 - Generates projection: $PR_{30}^{2008} = f(PR_{29}^{2007}, ent_{30}, ex_{30})$
3. Repeat for all ages, by gender



Employment (III): Issues

- Entry and exit rates
 - Cyclical effects
 - Recent trends
- Planned increases in the State Pension age
 - Adjust labour market behaviour at later ages
- Behavioural changes (full-time/part-time)
- Future cohorts



GDP Projections

- Labour market projections: employment growth of around $\frac{1}{4}$ – $\frac{1}{2}$ per cent
- Assume 2 per cent productivity growth
- Results for baseline real GDP growth:

| Year | 2017-18 to 2026-27 | 2027-28 to 2036-37 | 2037-38 to 2046-47 | 2047-48 to 2056-57 |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Productivity | 2 | 2 | 2 | 2 |
| Employment | 0.25 | 0.25 | 0.5 | 0.25 |
| Real GDP | 2.25 | 2.25 | 2.5 | 2.25 |



Projecting Spending and Revenues (I): Methodology

- UK Generational Accounts: Kotlikoff, Sefton and Cardelli (1998), NIESR (2002)
- Long-term projection of spending and revenues, taking into account overlapping generations
- Captures changes in:
 - Population size
 - Demographic structure of the population (age, gender)
- Exceptions: pensions and social security benefits (DWP)

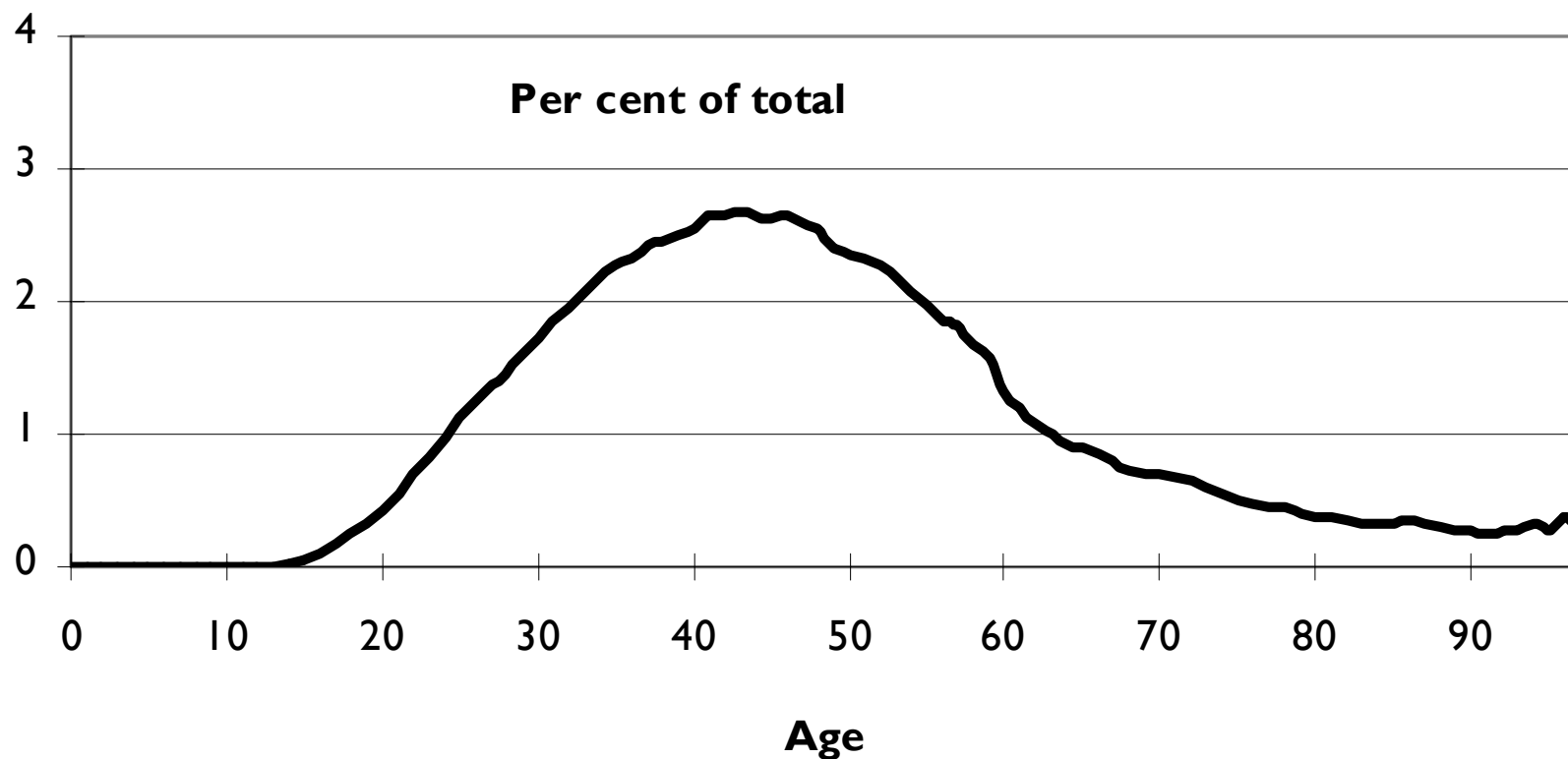


Generational Accounting Method:

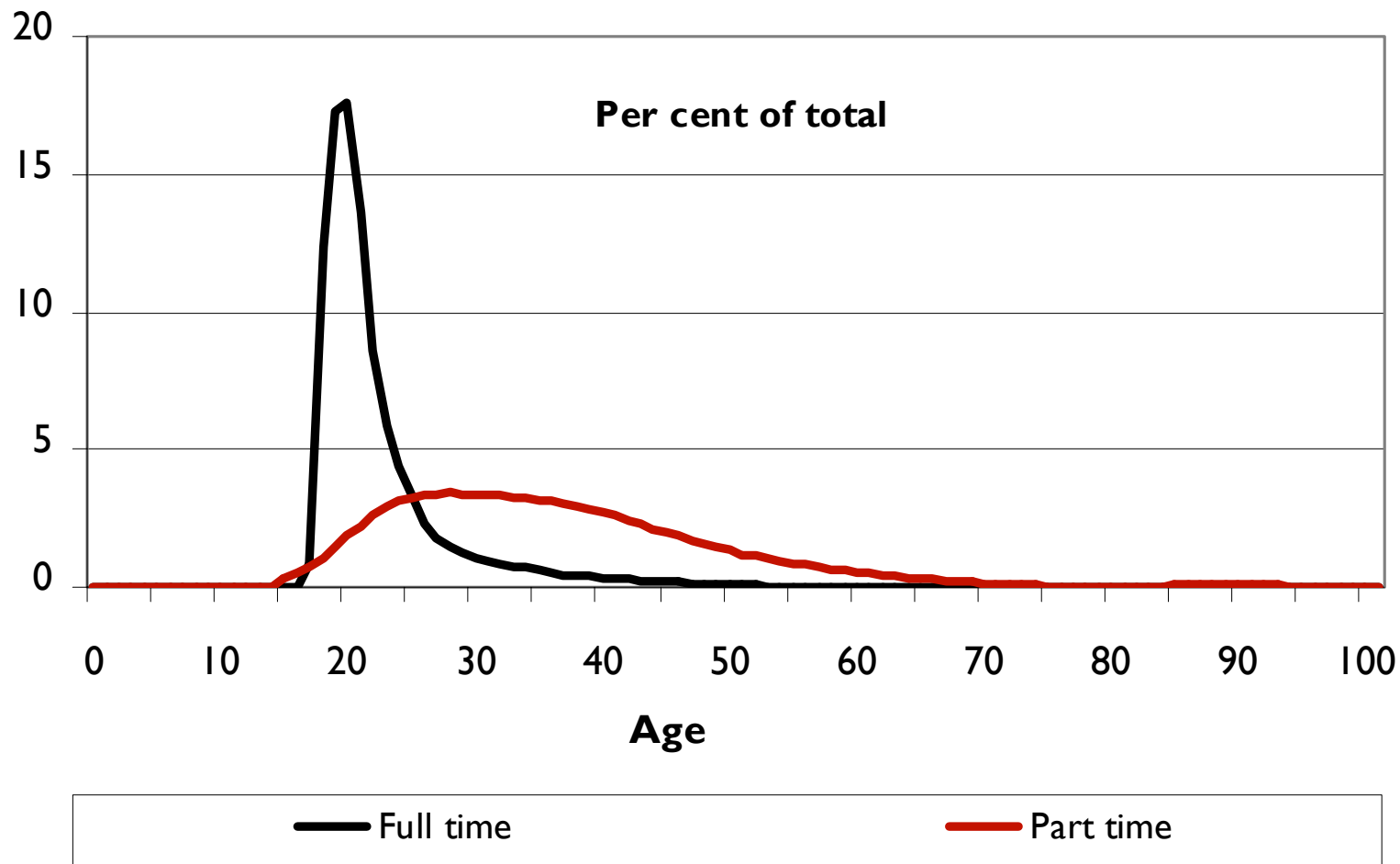
- Separately project each spending and revenue item:
 1. Proportion of per capita lifetime spending at each age (Age-profiles)
 2. Combined with projected demographic structure and size of population
 3. Repeat for all spending and revenue items



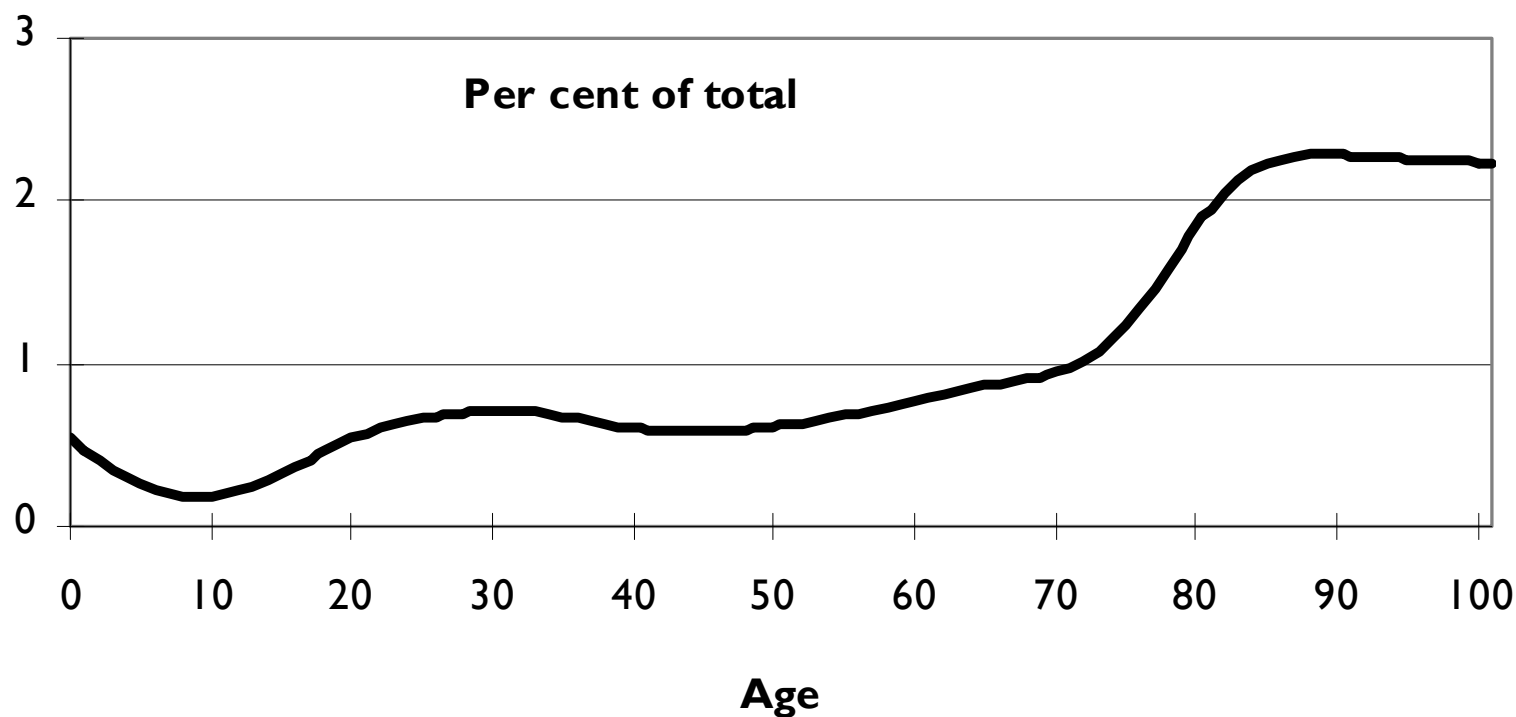
Age-profile: Income tax (males)



Age-profile: Education

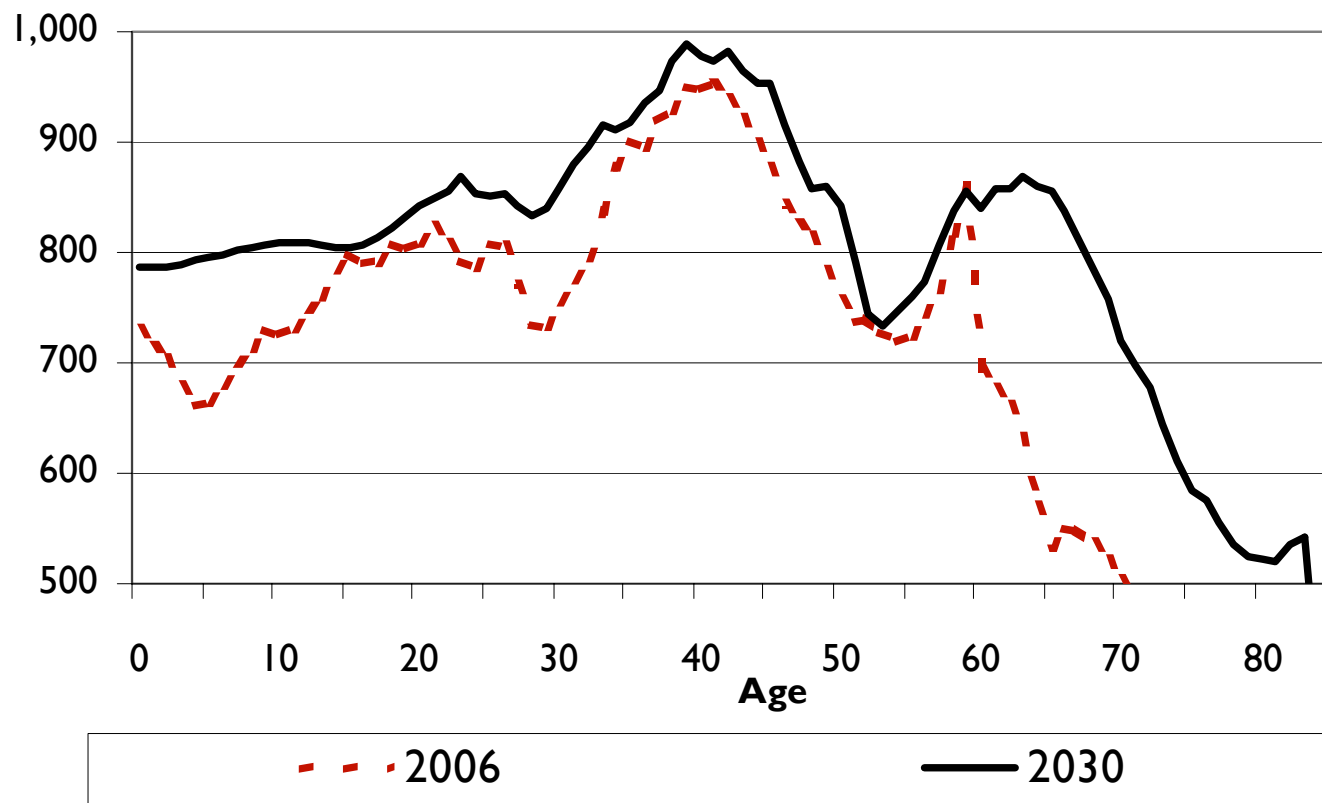


Age-profile: Health (females)



Population projection 2030

Population age-structure ('000)



Source: Office for National Statistics



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Projecting Spending and Revenues (II): Assumptions

- Current policy and behaviours
- Constant per capita revenue and spending (e.g. technology)
- No cohort effects
- Demand side only



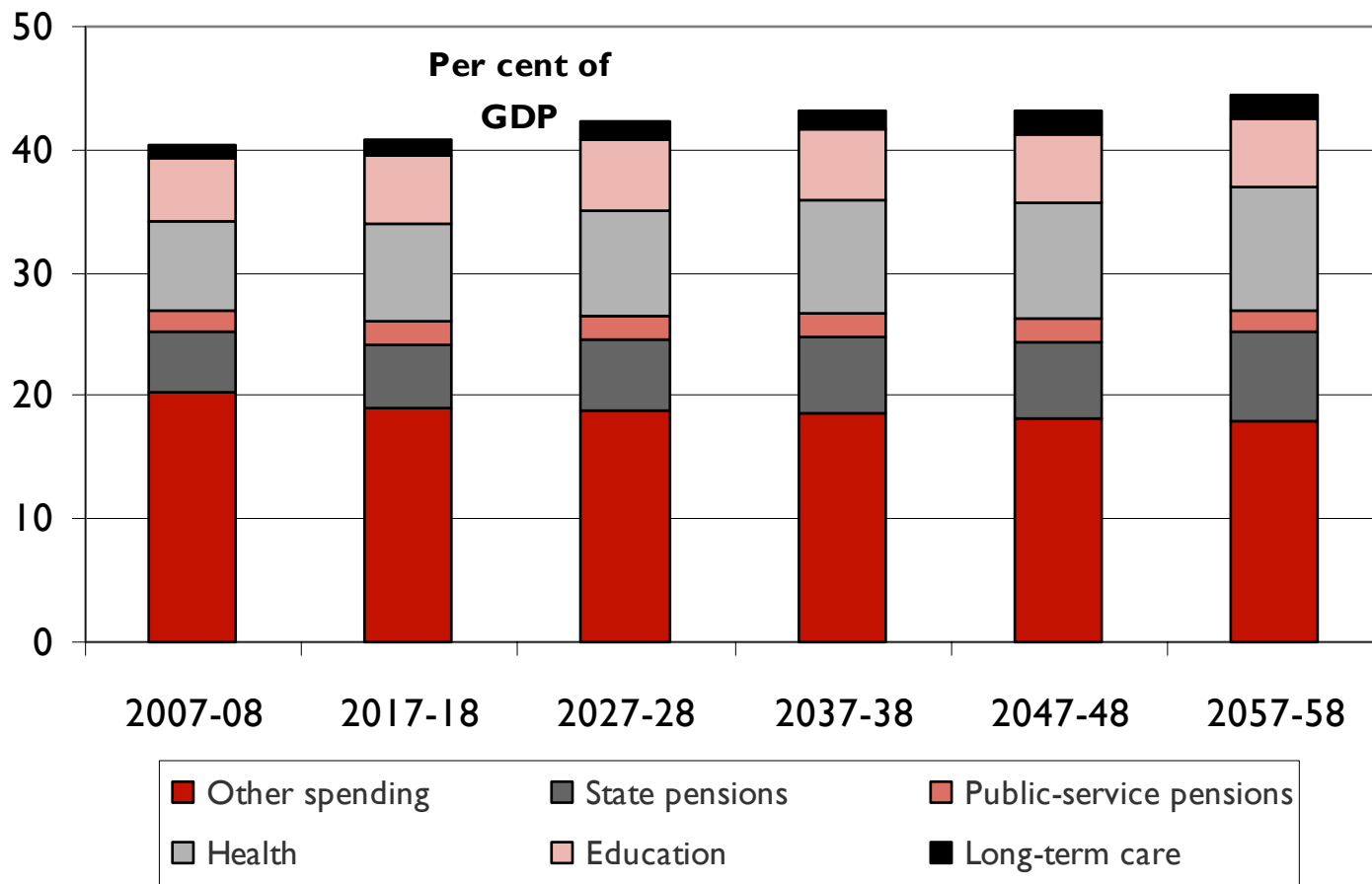
Results

- Spending and revenue projections
- Assessing fiscal sustainability



Spending Projections

Baseline spending projections

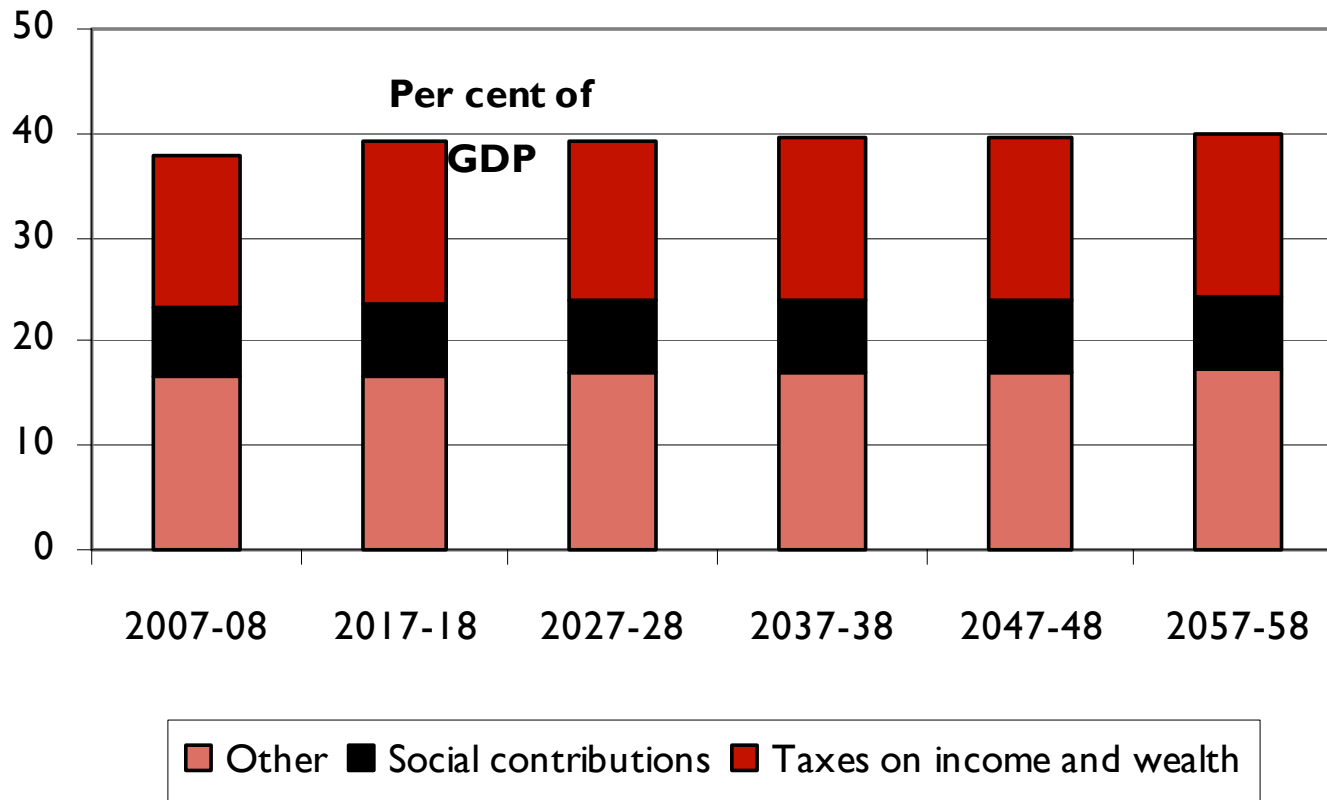


Total spending includes gross investment but excludes interest and dividends paid.



Revenue Projections

Baseline revenue projections

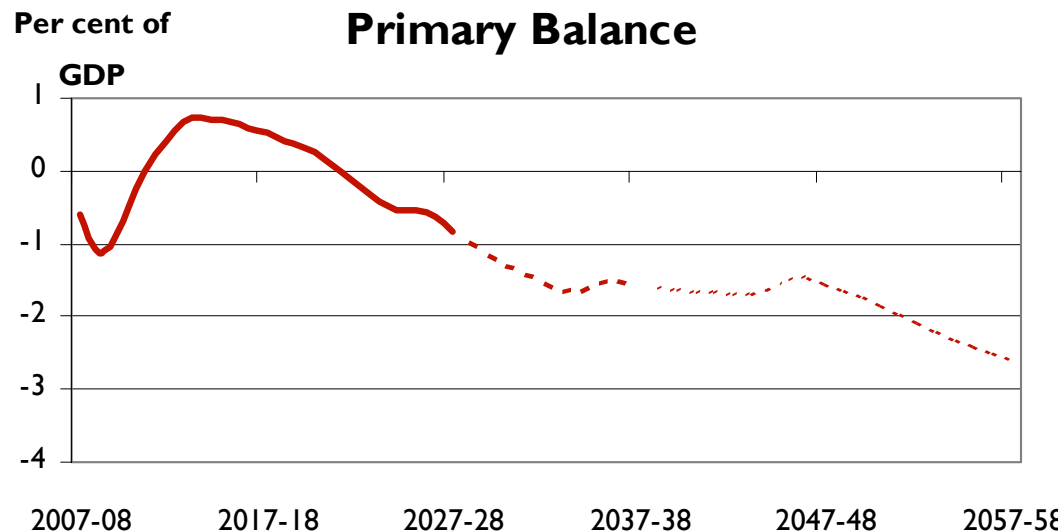


Total receipts, excluding interest and dividends received.



Assessing Fiscal Sustainability

- Primary balance
- Forward looking indicators:
 - Intertemporal budget gap
 - Fiscal gap



Source: HM Treasury

Fiscal gaps (per cent of GDP)

| Interest rate (per cent) | 2½ | 3 | 3½ |
|--------------------------|------|------|------|
| Target year | | | |
| 2027-28 | 0.25 | 0.50 | 0.75 |
| 2037-38 | 0.75 | 1.00 | 1.25 |
| 2047-48 | 1.00 | 1.25 | 1.50 |
| 2057-58 | 1.50 | 1.50 | 1.75 |



Challenges

- Defining current policy
- Modelling uncertainty
- Coverage of long-term challenges



Defining current policy

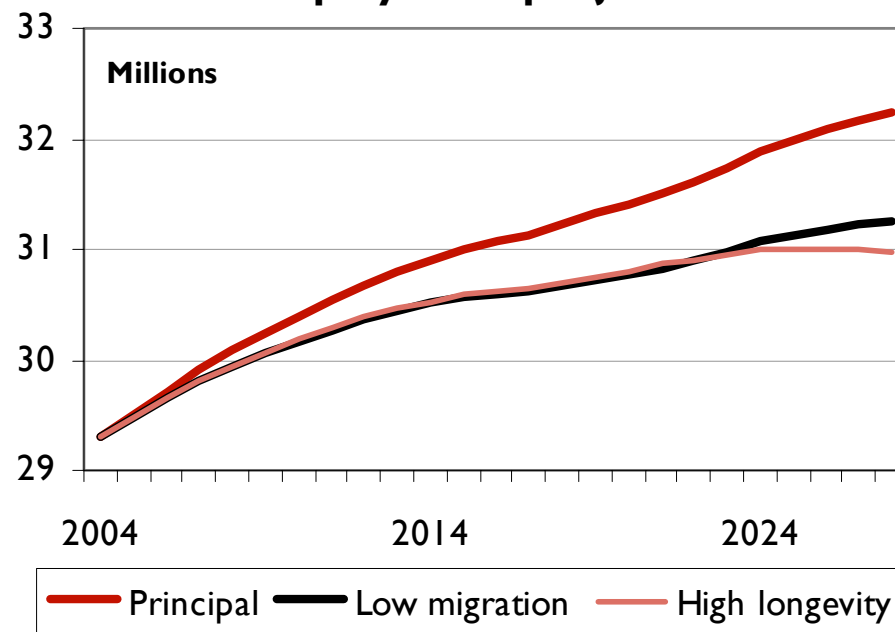
- Indexation
 - Taxation (Fiscal drag, proportion of GDP)
 - Benefits (e.g. pension/ unemployment versus disability)
- Government targets and aspirations
- Per capita spending
 - Technological change (health)
 - Supply side effects



Modelling uncertainty

- Sensitivity analysis
 - Population variants
 - Productivity
 - Interest/Discount rate

UK employment projections



Spending projections (per cent of GDP) under variant population projections

| | 2007-08 | 2017-18 | 2027-28 | 2037-38 | 2047-48 | 2057-58 |
|----------------|---------|---------|---------|---------|---------|---------|
| Baseline | 40.5 | 40.7 | 42.1 | 42.8 | 42.3 | 43.3 |
| Low migration | 40.5 | 40.8 | 42.5 | 43.7 | 43.7 | 45.1 |
| High longevity | 40.5 | 40.5 | 41.9 | 44.0 | 44.8 | 47.7 |



Coverage of long-term challenges

- 2007 Comprehensive Spending Review – main long-term challenges for UK:
 - Demographic and socio-economic change;
 - Increasing pressures on natural resources and the global climate;
 - Intensification of cross-border economic competition; and
 - Continued global uncertainty from global market instability and ongoing threats from terrorism and conflict
- Current assessment of long-term public finances only accounts for demographic change



Conclusion

- Projections show implications of current policy
 - Pressures on public finances in long-term
 - Distribution of spending and revenue between generations
- Current fiscal position: UK well placed to deal with fiscal challenges arising from demographic change over the coming decades and therefore in good position to deal with potential fiscal impacts arising from other long-term trends.
- BUT given likely changes in behaviours, uncertainty and other long-term trends => **only an illustration**



Who knows...

