POLICY COUNCIL
THE STATES OF GUERNSEY

Potential long term implications of demographic and population change on the demand for and costs of public services

Policy and Research Unit, Policy Council

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Contents

1. Executive Summary

The potential costs of changing demographics are generally acknowledged but often little understood in detail. Rising numbers of pensioners and fewer workers, together with increasing life expectancy is likely to increase the cost, in relative and absolute terms, of public services, in particular of pension and healthcare provision. Increased demand and a worsening dependency ratio are the key drivers of this trend.

Whilst the potential problem in Guernsey, and indeed across the Channel Islands, is much less significant than elsewhere in the western world (where already current levels of Social Security spending are not matched by current revenues) the problem is real. In addition, Guernsey (again like Jersey) is fortunate that significant Social Security reserves have been accumulated which can be used to help lessen the impact. Similarly on the revenue front, current temporary budget deficit issues aside, Guernsey's overall fiscal position is strong; it has no external debts and has a low tax base.

These projections are not intended as a definitive guide to the future, but serve to illustrate the scale of the factors and pressures that will need to be managed and mitigated to ensure that the States is able to continue to provide a sustainable level of public services to meet the needs of the population. Despite the substantial uncertainties surrounding projections over such long a time period, particularly in relation to the growth of healthcare costs, such a horizon is useful for illustrating the long-term fiscal challenges that Guernsey faces. As the US Congressional Budget Office stated in its introduction to its projections for long term health care projections, *"The goal of the projections in this study is to examine the implications of a continuation of current federal law, rather than to make a prediction of the future. Under that assumption, however, federal spending on health care would eventually reach unsustainable levels. In reality, federal law will change in the future, ensuring that the basis for the projections will not turn out to be correct, but the projections nevertheless provide a useful measure of the scope of the problem facing the nation."*

As this report illustrates, between the end of the States Strategic Plan planning horizon (2016) and 2040, using the assumptions contained in this report and importantly assuming no change in current service provisions or funding models and assuming positive net migration of 200 people per annum:

- Total public sector expenditure could increase by 4.0% of GDP, rising to more than 30% of GDP in 2040.
- Expenditure on pensions is likely to increase by 1% of GDP (a total rise of 1.6% of GDP between 2010 and 2040).
- Healthcare costs could increase by 2.4% of GDP, increasing the proportion of public expenditure spent on healthcare from 28% in 2016 to 32% in 2040.
- The costs of public services could require a combined increase in tax and Social Security contribution rates in the region of nine percentage points to break even on a year on year basis in 2040.

There are three key factors that will have a key impact on future costs:

1. Population growth
2. Earnings growth
3. Healthcare inflation and rates of benefit increases.

To illustrate:

- Under a constant population model, GDP will be 17% lower in 2040 than with an assumed inward migration rate of 200 people per annum; correspondingly public expenditure will be 3.2% of GDP higher.
- If earnings growth slows to half its average rate of the last 20 years, total public sector costs could be 8.2% of GDP higher by 2040.
- If healthcare inflation remains at its current real terms rate of 3% per capita, per annum, health expenditure could grow by 3.3 percentage points of GDP more than if the rate were kept to 2% per capita (the assumed increase in average earnings).

The scale of the problem for Guernsey and Jersey is remarkably similar as illustrated by recent actuarial reviews of Social Security funding completed by the UK Government Actuary's Department. As Figures 1.1.1 and 1.1.2 illustrate both islands' Social Security reserves are projected to be exhausted in around 30 to 40 years if expenditure continues at its current rate. If nothing else, this illustrates the scale of issue is common to both islands and resolving it is unlikely in itself to create further sources of fiscal competition between the two islands.

Figure 1.1.1. Progression of Guernsey Insurance Fund based on principle assumptions as at 31st December 2009

Government Actuary's Dept., Report on the operation of the Social Insurance (Guernsey) Law in the period 1 January 2004 to 31 December 2009, June 2011

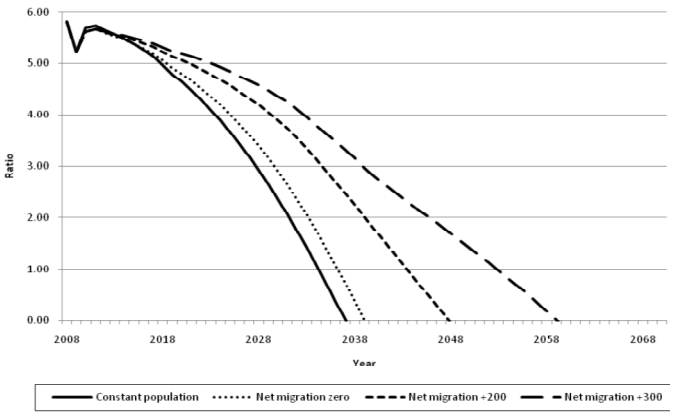
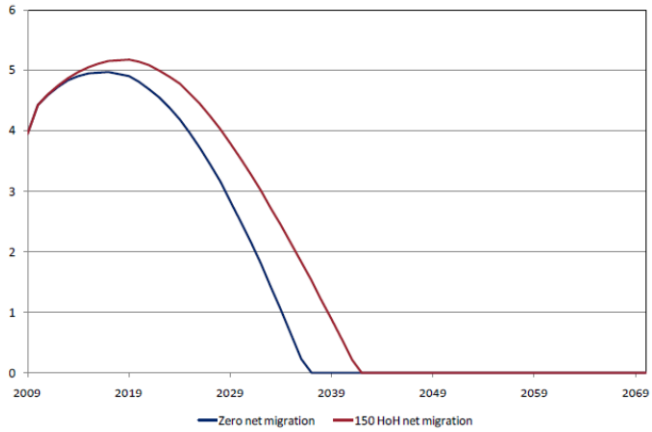


Figure 1.1.2. Progression of Jersey Social Security Fund based on principle assumptions as at 31st December 2009

Government Actuary's Dept., Report by the Government Actuary on the financial condition of the Social Security Fund as at 31 December 2009, Nov. 2011.



These projections should not be seen as alarmist, indeed as stated above, the scale of the issues that Guernsey faces relative to many jurisdictions throughout Europe is much smaller, particularly given the prudence previously displayed in building up reserves. Neither should these potential costs be seen as insurmountable or as evidence of deliberate prolificacy on the part of the public sector.

However, they do clearly highlight the need for sustained long run economic growth to fund services: a point that is fully recognised by Fiscal and Economic Plan. However, what is clear is that the costs of current levels of service with current funding models will rise as a result of demographics.

The objective, in publishing these projections, is to inform policy debate and ensure that the context and costs of the welfare system, in its present form, is fully understood and choices rationally made. This policy

debate includes initiatives such as the Health and Social Services Department's work on its 20/20 Vision and the results and work of this study will assist such initiatives.

The purpose of this report is to put forward potential future scenarios in order to help policymakers in Guernsey plan for these scenarios. It does not attempt to prescribe policy solutions. These projections do not imply that the correct policy response is to ensure revenues rise to meet the projected demands, nor do they suggest that expenditure must be contained to current shares of GDP and services reduced accordingly. What is apparent from the projections is that either revenue must rise as a share of GDP, or projected spending must fall—or some combination of the two outcomes must be achieved to ensure the States remains in balance in the projected period.

The principle purpose of the report is to provide as definitively as is possible, given the uncertainties involved in projecting expenditures over such a long time horizon, an indication of the likely future pressures on public sector expenditures driven by unavoidable demographic changes.

2. Introduction

The potential costs of changing demographics are generally acknowledged but often little understood in detail. This report provides an analysis of the potential impact of demographic issues on public expenditure for Guernsey, setting out a series of projections of the path of future costs of public services in Guernsey to 2040. These projections are based on what are essentially simple extrapolations of historic trends based on the key assumption of a continuance of current services provision and funding models.

These projections are intended to provide an objective illustration of the scale of the potential future needs. The purpose of the projections is to make clear the consequences of unavoidable long term changes: namely demographics.

The potential demographic change varies according to the assumed future path of the population and levels of net migration. In this respect, the Channel Islands' experience of continued population control and net inward migration over recent decades means that the effects of this 'variable' on the relative cost of public services is itself something that needs to be properly appreciated and thus is a consistent theme of the projections contained in this report.

Projections have been created using historic statistics held by the Policy and Research Unit ('PRU'), States revenue and expenditure figures and the population projections produced by the UK Government Actuary's for the Social Security Department ('SSD'). For the purpose of creating a single model incorporating all public expenditure in Guernsey, the projections made by the UK Government Actuary's Department for the Guernsey Insurance Fund and the Long Term Care Fund have been reproduced (albeit using slightly boarder assumptions).

Population growth and, by implication, migration will be itself a significant determinant of the size of future working population and the demand for services: thus throughout this report two separate population models, using key variants of net migration are illustrated for comparison. The first of these assumes net immigration of 200 people per annum; the second assumes a constant population at the level reported in March 2007.

The report focuses on two key areas of expenditure: health and social security expenditure. These are by far the two largest components of public sector expenditure and the areas of most sensitive to demographic change. The report builds a set of projections in stages. Section 3, illustrates as a first stage, the projected demographic based on two population models outlined above and provides a detailed breakdown of the implications for the working age workforce under each. Section 4 then illustrates the variance of levels of future GDP using each population model. Immediately following this, Section 5 summarises of the projected levels of aggregate (or total) public sector expenditure relative to GDP which is then broken down into component spending areas in Section 6 and by the funding source in Section 7. Projections are produced for expenditure to 2040, using series of assumptions set out in each section.

The States Strategic Plan has already firm targets for expenditure to 2016. These are incorporated into the projections; it is only after this period that the assumptions of demand led growth in costs are produced.

Sections 8 and 9 then conclude by illustrating the required break even rates of taxation and Social Security contribution rates that are consistent with the implied projections of the report. These sections also present

alternative scenarios illustrating the effect of a reduction in long term growth rates, represented by assumed average earnings growth falling from 2% per annum to 1% per annum, and variation of the rate of rate health service inflation (i.e. the increase in the real terms (above or below retail price inflation) costs of healthcare per capita) by plus or minus one percentage point.

Each of these three variables, (details of which are presented in Appendix 2 and 4) have a significant influence on long term projections contained in this paper. For example, reducing the assumed long run average real wage growth to 1% reduces GDP by 26% percent in level by 2040; assuming net migration of 200 per annum against a static population level reduces the proportion of GDP spent on pension provision by 1 percentage points of GDP by 2040; varying real terms growth in the per capita costs of healthcare services from 2% (the central assumption used in the model) to 3%, increases projected healthcare expenditures by 34% in 2040.

As is common in economics, costs are presented as a percentage of (projected) GDP to ease comparisons across time. The effects of inflation and real economic growth, particularly compounded across significant time periods make attempts to analysis future costs in monetary terms quite a difficult exercise (Guernsey's Fiscal Framework sets all its parameters as shares of GDP): except where otherwise, stated monetary values are presented 2010 values.

The relationships between the population size and composition, the local economy and States finances are complex, particularly as both the economy and States' finances are subject to a wide range of internal and external factors which it is not feasible to incorporate into the methodology. As such the data presented in this report should be viewed as an indication of the likely trends rather than an accurate estimation of actual levels.

This report has been independently produced by the Policy & Research Unit. Liz Laine, Research Officer, is the author of the report, working under the supervision and direction of the States Economist, Dr Andy Sloan. Any errors are his responsibility; any opinion provided unintentional.

3. Population Projections and Demographic Change

This section describes the core projections for population which form the basis of the calculations of the projections of future demands for and costs of key public services. Two variants are included and, similar to those used in the Policy & Research Unit's Annual Population Bulletin, they have been chosen to illustrate the likely path of population levels based and recent actual historic experience of net migration (the +200 net migration model) and the demographics associated with the implications of the 2007 population policy resolution of the States.

3.1. Population projection models

Models are based on two population projections compiled by The UK Government Actuary's for SSD together with a 'status quo' scenario to illustrate the relative effects of demographic change:

- **The +200 net migration model**[1]
  - Assumes a net immigration of 200 people per year together with the natural change in the population due to fertility and mortality rates.
- **The constant population model**[2]
  - Assumes the total population remains at 61,175 with migration rates varying throughout the projected period in order to maintain this level. Fertility and mortality rates are the same as those used in the +200 net migration model.
  - It should be noted that the total population in March 2010 was 62,431, more than 1,200 higher than the population level used in the constant population model.

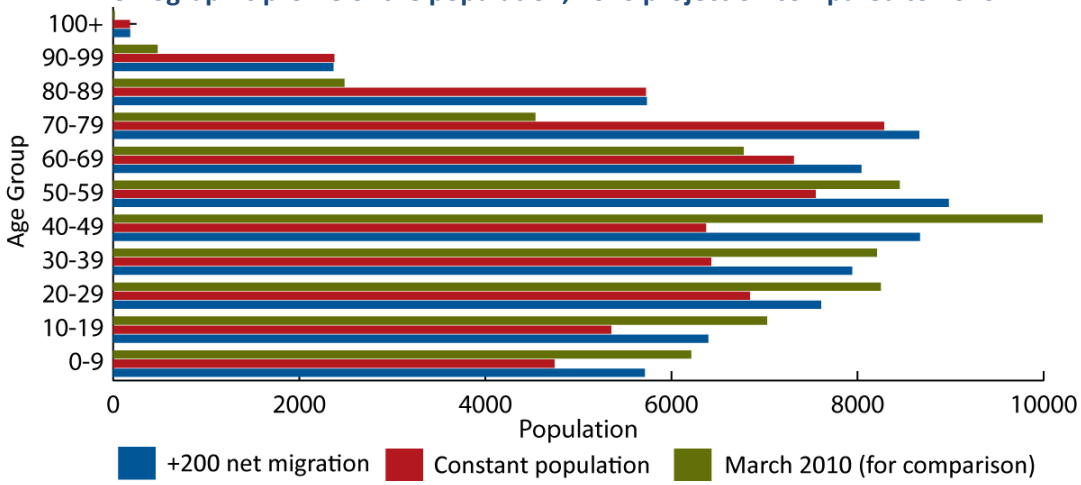
3.2. The demographic profile

Figure 3.2.1 shows the demographic profile of the population projections in 2040. It can be seen that under both models there is a significant shift in the age distribution of the population from its current status by 2040. Most notably the population in the 'baby boom' age groups (born between the end of World War II in 1946 and the mid 1960's and currently aged between 45 and 65) will have passed into older age groups resulting in an upward shift of the age profile in both projected models.

[1] These projections were produced using the population as at June 2008. For the purpose of this report the projections have been adjusted to project from the March 2010 population (which is the most recent headline measure). Due to seasonal variations (the population typically being higher in June than in March) and a lower than typical net migration in the twelve months proceeding March 2010, this represents a decrease in the population level of approximately 300 persons.

[2] This model was produced in response to a States resolution passed in 2007 to maintain the Islands population at or around the 2007 level (Billet D'etat IV 2007, 28th February 2007). However, the +200 net migration model was selected as the official population projections at the time of publication as being more consistent with the current migration trends.

Figure 3.2.1. Demographic profile of the population, 2040 projection compared to 2010



The models assume that migration (including the emigration required to maintain the level of the population against natural growth in the constant population model) is concentrated among adults of working age. The immigration or emigration of adults of child bearing age is also reflected in the number of children born in the Island. As a result the +200 net migration models show a significantly larger population than the constant population in all age groups below the age of 60.

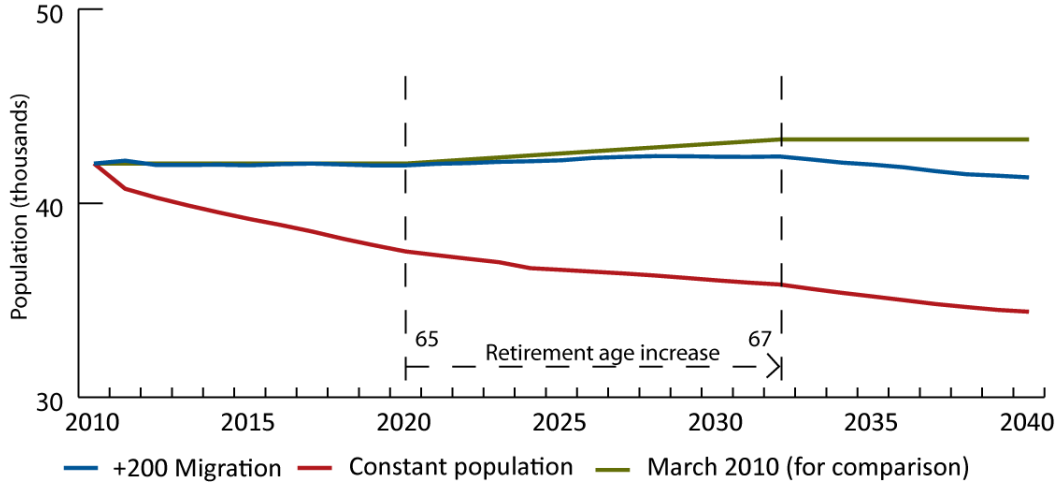
Figure 3.2.2. Demographic profile of the population, 2040 projection compared to 2010

	Total population	Population <16	Population 16-64 (working age up to 2020)	Population 16-66 (working age after to 2032)	Population >65 (retirement age up to 2020)	Population >67 (retirement age after to 2032)
+200 net migration in 2040	70,301	9,382	---	41,331	---	19,558
Constant population in 2040	61,175	7,755	---	34,406	---	19,014
March 2010 (for comparison)	62,431	10,161	42,044	---	10,266	---

3.3. The working age population

Both economic output and income tax revenue are generated primarily by those who are of working age. The critical effect of the changing demographics and aging population is to reduce the size of the working age population. The increase in the retirement age from 65 to 67 between 2020 and 2032 (see Appendix 1) goes some way to mitigate this effect. Under the most recent projections of the +200 net migration model, the working age population at the point at which the transition is due to be completed (and therefore including those aged 65 and 66) is similar to the working age population (up to the age of 65) in March 2010 (See Figure 3.3.1). However after this point the working age population is projected to fall.

Figure 3.3.1. The working age population

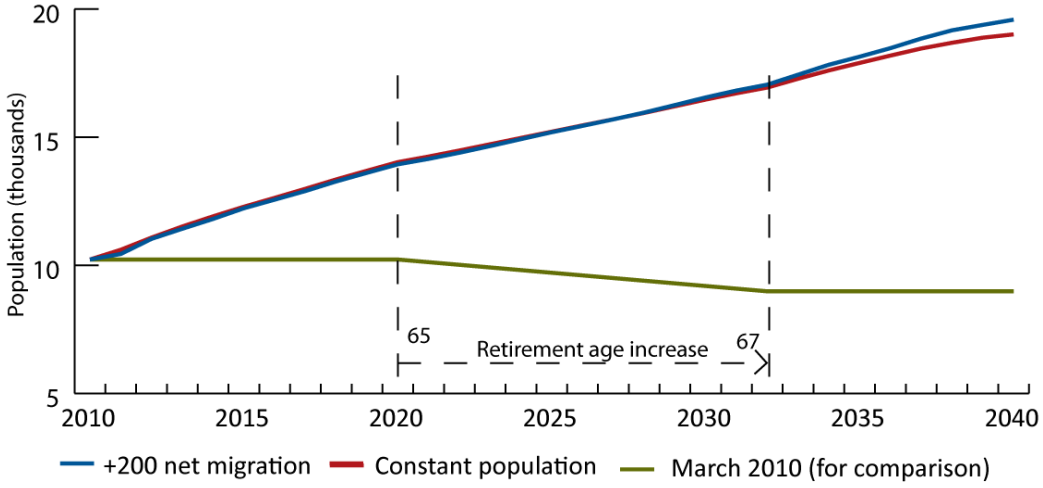


The constant population model shows a much more pronounced fall in the working age population across the period shown. This is because, in order to maintain the total population at the prescribed level (that of March 2007) it is necessary to assume negative net migration to balance the natural growth in the population due to the higher number of projected births than deaths during the period shown[3].

3.4. The retired population

The aging population is a major cause for concern in many developed countries. The aging of the 'baby boom' generation born between 1946 and the mid 1960's combined with falling fertility rates and increased life expectancy means that an increasing proportion of the population are above retirement age and dependent on a smaller working age population. It can be seen in Figure 3.2.1 that using both the +200 net migration and constant population models the population in all age groups over 60 is projected to increase significantly.

Figure 3.4.1. The retired population



The increasing number of people above retirement age is projected to be one of the principal sources of increasing government expenditure, a burden principally carried by the Guernsey Insurance (which funds

[3] In the latter stages of the population projections (which run to 2070) the death rate increases above the birth rate as the baby boom population reach the end of their projected average life span. At this point the constant population model assumes net immigration to maintain the constant population.

public pensions) and Long Term Care funds. Increasing numbers of retirees is also a driver behind increased costs of healthcare. Figure 3.4.1 shows the projected size of the retired population in the next 30 years. The population projection models assume that the majority of migration occurs within the working age population and as such there is little difference between the projected retired population for the +200 net migration and the constant population models.

3.5. Dependency ratios

The dependency ratio is the ratio of the non-working age population, who are either below the minimum school leaving age or above the age of retirement, to the working age population. The aim of the ratio is to give a crude measure of the relative numbers of people who are likely to be making an overall positive contribution to public revenues (i.e. by paying taxes) and those who are likely to represent an overall cost to the public purse (i.e. by receiving pensions or education).

The projected decrease in the working age population and the increase in the retired population means that the dependency ratio will increase significantly from its current level of 0.48 (or 48 dependent people for every 100 working age people) over the next 30 years. Although the number of retired people is similar in both the +200 net migration and constant population models, the smaller working age population in the latter results in a higher dependency ratio. By 2040 the dependency ratios under the +200 net migration and constant population models are projected to have increased to 0.70 and 0.78 respectively (see Figure 3.5.1)

Figure 3.5.1. Dependency ratios

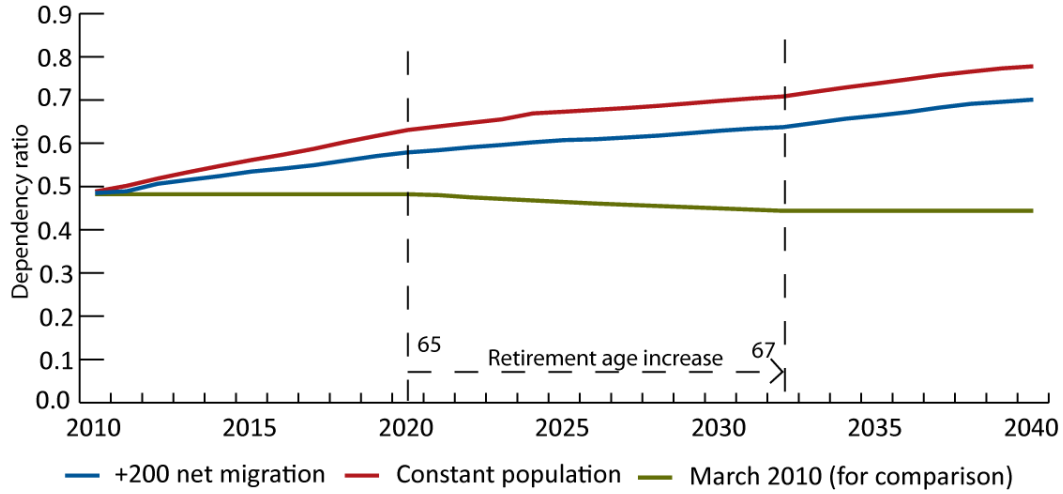


Table 3.5.1. Dependency ratios

	2020	2030	2040
+200 net migration	0.58	0.63	0.70
Constant population	0.63	0.70	0.78
March 2010 (for comparison)[4]	0.48	0.45	0.44

[4] Figures represent the dependency ratio based on the current population but incorporating the relative retirement age in 2030 and 2040.

It should be noted that dependency ratios take no account of the relative distribution of ages within the broad dependent and independent categories and the effect this may have on the supply and demand of resources. For example, participation rates (the percentage of the population who are economically active) are highest between the ages of 25 and 54 and decline rapidly from 55 to the current official retirement age implying a reduced average contribution as people approach retirement. Conversely, the cost of supporting those in their early retirement years, when they are likely to still be comparatively healthy, is on average much less than supporting those in their late 80s who generally require more care.

As well as the financial implications of having to support a larger dependent population with a smaller workforce, increased numbers of older people requiring care is also likely to have a significant impact on the distribution of labour in the workforce. Health and residential care are both labour intensive and an increased demand for nurses and carers is likely to result in a shift of labour into health and social care to the possible detriment of other areas of the labour market.

4. Economic output

This section describes the core GDP projections that have been used as the denominator in calculating the relative costs of public services where such costs have been illustrated as shares of GDP. To illustrate the impact of population policy and net immigration, future GDP has been projected for both population models outlined in the previous section. GDP is some 17% lower in the static population model. Projections are also provided on an alternative assumption of a lower average earnings growth rate (1% as opposed to the historic 2% figure). These projections also illustrate the economic costs of any potential slow down in the long term growth rate of Guernsey. A halving of the assumed earnings growth rate leads to a level of GDP some 26% lower in either population scenario. The impact on the relative costs of public services of this factor is included in Appendix 2.

4.1. Economic growth

Approximately 50-55% of Guernsey's GDP is comprised of remunerations (wages), and as such the size of the working age population has a significant impact on Guernsey's economic output. As the ratio of GDP comprised of remunerations has, historically, remained relatively stable, projected changes in remunerations based on the size of the working age population and thus the projected workforce can be used to estimate projected GDP output.

The following assumptions are made in the calculation of these figures:

- Mean average remunerations per worker increase at an annual rate of 2.0% per annum.
- The participation rate (the percentage of the working age population who are economically active) is calculated by age group and the participation rate within each age band remains constant at the average rate calculated from the available data[5].
- At the commencement of the increase in retirement age participation rates for the additional working age population is assumed to be the same as that for those between the ages of 60 and 64.
- The relative proportion of total GDP output comprised by remunerations, profits and other income remains constant.
- Economic growth is assumed to be steady and no allowance is made for the movement of the business cycle.
- All figures are presented at 2010 value unless otherwise stated.

Table 4.1.1. GDP in 2040

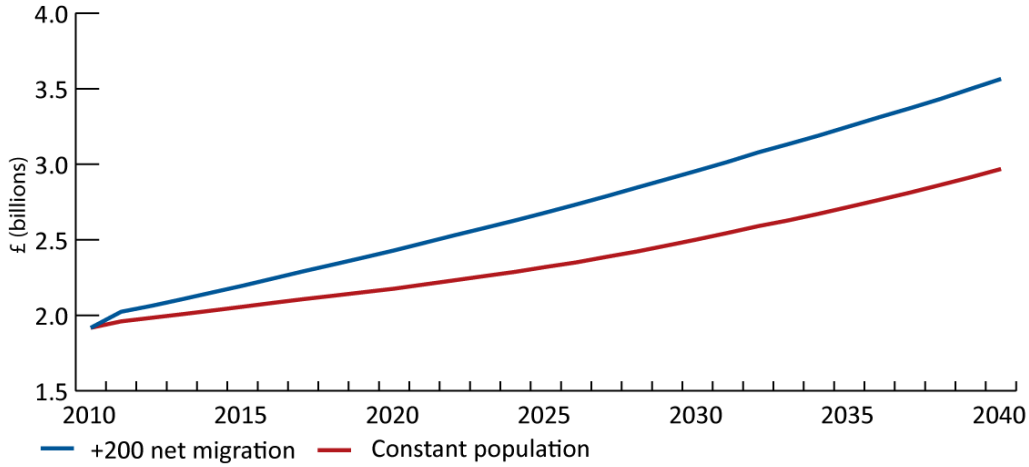
2% real earnings growth

	GDP in 2040 (£ millions)	Average annual change 2010-2040 (%)
+200 net migration	3,565	2.0
Constant population	2,969	1.4

[5]The available data (2007-2009), provided by SSD, shows that participation rates differ significantly between age groups with participation rate highest between the ages of 25 (at which point the vast majority of people have left full time education) and 55. Between 55 and 59 and 60 and 64 participation rates decline significantly.

Figure 4.1.1. Projected GDP

2% real earnings growth



Under the assumptions used in these models the +200 net migration model shows annual average growth of 2.0%, the same rate of increase as the assumed increase in mean average earnings. By contrast the constant population model shows annual average increase at 1.4% as a result of the more rapid decline in the size of the working age population. In consequence by 2040 the constant population model results in a projected GDP 17% lower than the +200 net migration model.

Figure 4.1.2. The effect on GDP of varying earnings growth, +200 net migration model

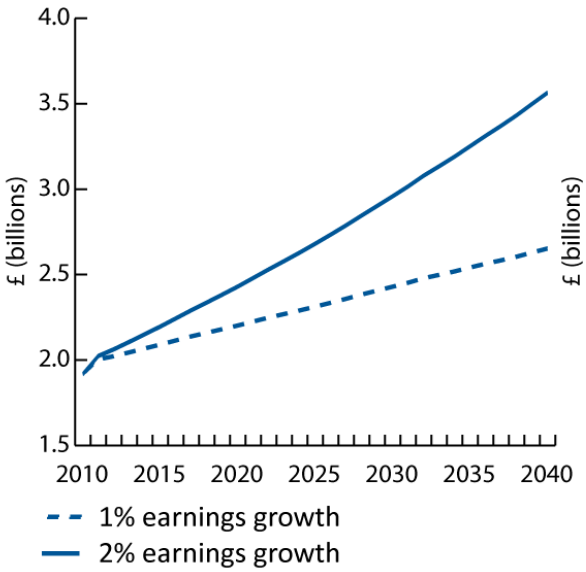
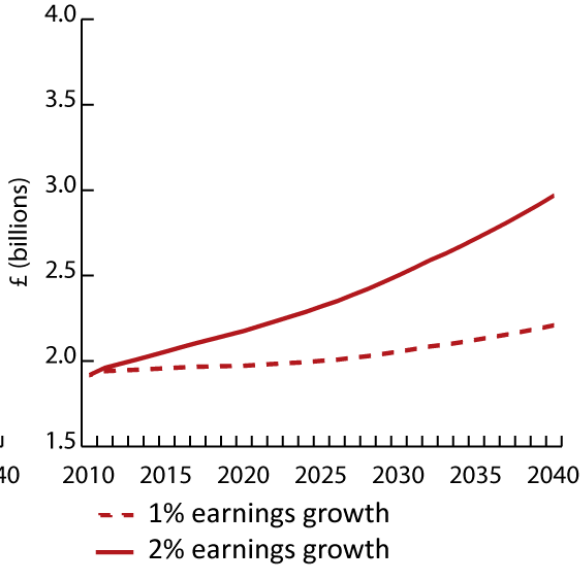


Figure 4.1.3. The effect on GDP of varying earnings growth, constant population model



The main body of this report assumes a 2% per annum real growth in average earnings. However, although this assumption is consistent with Guernsey historic mean average earnings growth, following the recent economic stress, speculation has arisen among economists regarding the possibility of a long term reduction in the average growth rate of developed economies. In order to consider the potential impact this would have on Guernsey's economic growth Figures 4.1.2 and 4.1.3 show the effect on GDP in both models of reducing the long term growth in earnings to 1%.

The effect of this reduction on both models is, over the period shown, more significant than effect of varying the population migration assumptions. The degree of impact on the two population models is similar, each being reduced by 26% by 2040.

5. Aggregate expenditure

This section provides the central projections for total public sector expenditure to 2040. As is common in economics, costs are presented as a percentage of (projected) GDP to ease comparisons across time. The effects of inflation and real economic growth, particularly compounded across significant time periods make attempts to analysis future costs in monetary terms quite a difficult exercise (Guernsey's Fiscal Framework sets all its parameters as shares of GDP).

As explained in the introduction, SSP forecasts to 2016 are incorporated into the projections. Post 2016 (to 2040) assumptions are as set out below.

Using the central assumptions for healthcare inflation of 2% per annum, total public expenditure is projected to rise by between four and six percentage points of GDP between 2016 and 2040, depending on the population projection. Of this increase approximately 45% is accounted for by increased in HSSD expenditure, 15% by the Guernsey Health Service Fund (administered by Social Security) and 40% by other benefits and expenditure (including pensions) administered by SSD.

As explained in Appendix 4 the increase in total healthcare costs is greater (by 3.3% of GDP) if the historic 3% above inflation rise in healthcare costs is assumed and less (by 2.5% of GDP) if it is assumed healthcare inflation is restricted to just 1% above general inflation.

The assumptions for non-health and Social Security expenditure are contained in an appendix but the general rule of thumb used is that such expenditure remains broadly constant following the current SSP 2016 planning horizon. Clearly, total expenditures can be reduced if this assumption is relaxed and real reductions in expenditure (either in absolute or relative terms (as is the case in the SSP)) are achieved in these areas. However, this is clearly a policy matter and is not presumed for the purposes of this report.

5.1. Aggregate public sector expenditure

Figure 5.1.1 and Table 5.1.1 shows projections of aggregate public expenditure using both population models assuming a 2% per annum real increase in average earnings and a 2% per annum real increase in the cost of healthcare per capita. The model also incorporates the savings outlined in the SSP up to the end of the planning horizon in 2016. The assumptions used in modelling the underlying expenditure are explained in more detail in the Section 6 where expenditure is broken down by area[6].

Figure 5.1.1. Aggregate public expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

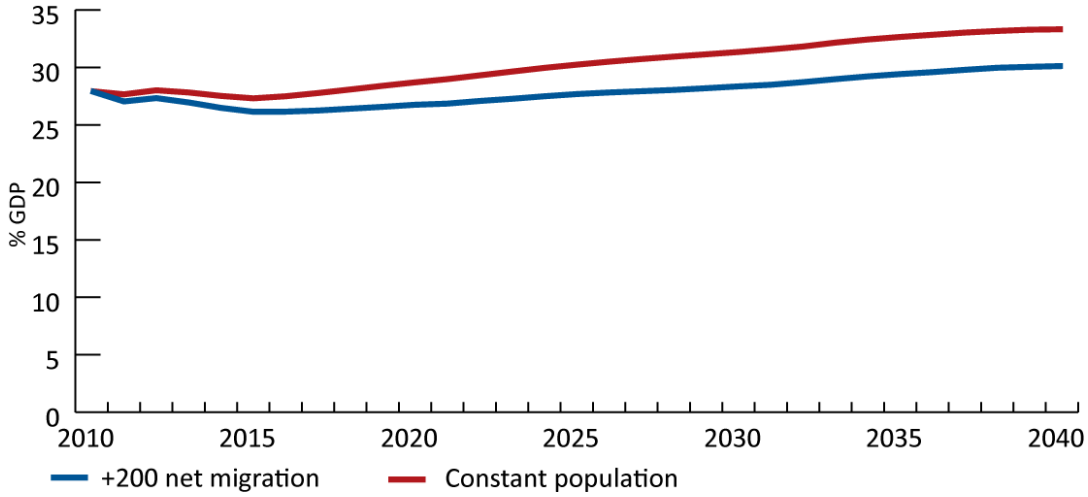


Table 5.1.1. Aggregate public expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

	Aggregate expenditure 2010 (for comparison)		Aggregate expenditure in 2016		Aggregate expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	535	27.9	587	26.2	1,074	30.1
Constant population	535	27.9	572	27.4	989	33.2

The model shows that, using the +200 net migration assumption, aggregate public expenditure is projected to generally decrease relative to the size of the economy until the end of the current SSP planning horizon. After this point expenditure is projected to increase steadily to 30.1% in 2040, 4.0 percentage points above expenditure in 2016.

Although the actual monetary value of expenditure projected using the constant population assumption is lower than that of the +200 net migration model (by 8%), because of the lower levels of economic growth outlined in Section 4 the cost relative to GDP is 3.1 percentage points higher.

[6] The following assumptions are made in addition to those outlined in Section 6:

- Expenditure funded by DOI increases in line with GDP
- No adjustment is made for the double counting of funds paid from SSD funds to States departments (which is incorporated in DOI)

5.2. Composition of public expenditure

Table 5.2.1 and Figures 5.2.2 and 5.2.1 show the composition of aggregate expenditure by expenditure area. It can be seen that, under the assumptions used in these models, expenditure by those areas most susceptible to changes in demographic and medical inflation, namely expenditure by the Health and Social Services Department ('HSSD') and by the SSD administered funds, which fund pensions and supplement medical care.

Table 5.2.1. Composition of public expenditure in 2010 and in 2040

Expenditure area	2010	2040	
		+200 net migration	Constant population
	Percentage of total expenditure	Percentage of total expenditure	Percentage of total expenditure
Health and Social Services Department	20	24	24
Education	14	10	10
Social Security Department (revenue only)	9	8	7
Other general revenue	19	13	13
Expenditure funded by operating income	6	5	5
Social Security fund expenditure	26	34	36
Capital expenditure	7	6	5

Figure 5.2.2. Composition of aggregate public expenditure, +200 net migration model

2% real earnings growth and 2% increase in healthcare costs per capita

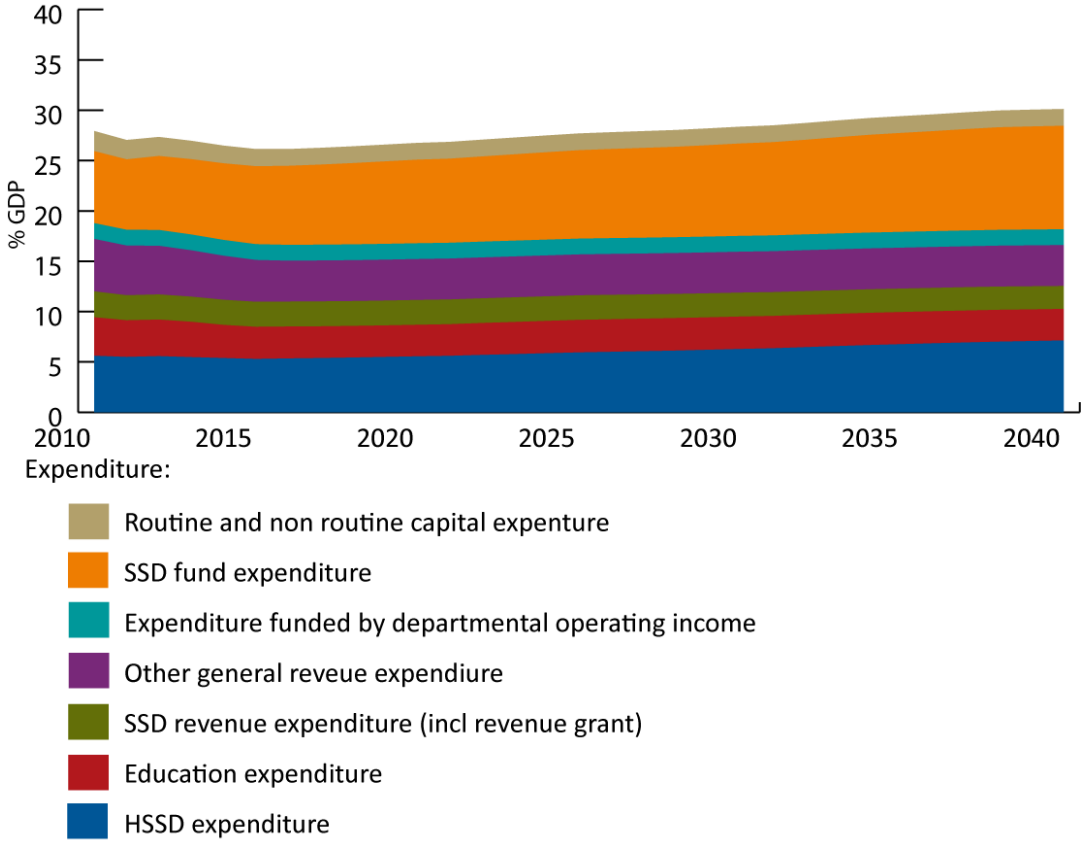
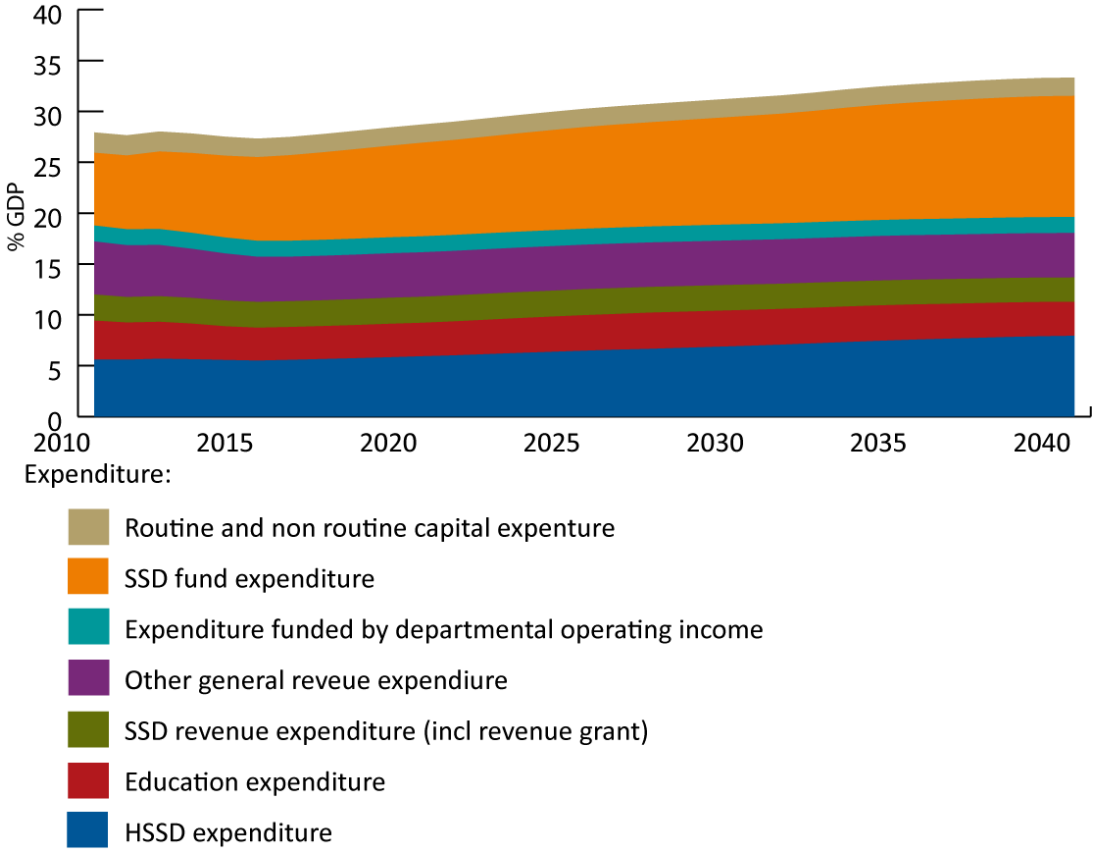


Figure 5.2.3. Composition of aggregate public expenditure, constant population model

2% real earnings growth and 2% increase in healthcare costs per capita



6. Breakdown of projections by type of expenditure

This section provides a detailed exposition of the projection for healthcare costs to 2040 and a complete and detailed explanation of the methodology used. It also provides a detailed illustration of the projections of the other key elements of welfare expenditure including pensions and long term care. Whilst historic rates of healthcare inflation per capita have run at 3% more than general inflation, the central assumption used is that healthcare inflation is restricted to 2% per annum. Assuming historic rates of healthcare inflation illustrates that healthcare expenditure projections can soon reach unsustainable levels.

Public spending on healthcare is not restricted to HSSD expenditure but includes spending from the Guernsey Health Service Fund (GHSF) administered by SSD. Total expenditure on healthcare if projected to rises by 2.4% of GDP in the +200 net migration model and 3.2% of GDP in the constant population model between 2016 and 2040. Using both models approximately 75% of the increase is due to additional expenditure by HSSD and 25% due to additional expenditure by the GHSF.

Social Security spending on other contributory benefits, including pensions and long term care (assuming current service provisions and funding models) increases by 1.8% of GDP using the +200 net migration model and 2.7% of GDP using the constant population model.

As explained in Section 5, an assumption of a constant level of expenditure (relative to GDP) has been made for other main components of expenditure (excluding education and non contributory Social Security expenditure). For completeness each has been summarised in Appendix 5.

6.1. Healthcare

Healthcare in Guernsey is the single most significant area of expenditure in the General Revenue Budget and one of the most challenging to control. In 2010, the Heath and Social Services Department expenditure totalled £108 million[7] comprising more than 30% of net revenue expenditure. In addition, the Social Security Department Guernsey Health Service Fund spent a further £35 million funding additional healthcare costs such as the Consultation Grant, Specialist Health Insurance and Prescription Subsidies.

Spending on healthcare is typically one of the most difficult areas to control and to predict. Combined, the average public expenditure on health and social services (by HSSD and the GHSF) increased in real terms by an average of 3% per capita per annum between 2006[8] and 2010 which forms the basis for the inflationary element of the healthcare modelling presented in Appendix 3. However, as the growth in healthcare cost above the rate of increase in earnings (taxes on which are the principle source of income in Guernsey) is an unsustainable position in the long run, a 2% per capita, per annum increase in healthcare has been selected as the central assumption for this report. Further background to the method and assumptions used in the modelling of healthcare expenditure is provided in Appendix 3.

[7] Net of the expenditure of departmental operating income.
[8] Population statistics are not available on an annual basis prior to 2006

This section shows the projected healthcare costs in the Island using the following assumptions:

- Healthcare costs by age:
  - Data on the distribution of heath care costs by age group in the UK[9] has been utilized in order to create a projected model of health and social care costs in Guernsey by age group.
  - Healthcare per capita within each age group is assumed to increase at 2% per annum in real terms.
- Healthcare costs by proximity to death:
  - Mortality rates have been used to provide an estimate of the number of people in each age group in their last year of life.
  - Data on the distribution of heath care costs by proximity to death in the UK has been utilized in order to create an estimate of the relative cost of healthcare of those in their last year of life relative to the average cost per capital for each age group. This ratio is assumed to be constant.
  - The model assumes an annual improvement in mortality rates in line with the principle rate outlined by the UK Government Actuary's Department[10] as far as is feasible. This assumes the improvements in mortality rates (which currently vary significantly between age groups) will converge to an annual 1% improvement in 2031 and continue at this level in all subsequent years.
- Healthcare costs and expenditure restraint:
  - The projected savings resulting from the FTP have been apportioned by department in the same proportions as the overall expenditure in 2010. The savings within HSSD have been apportioned to the per capita expenditure levels.
  - Although under the current fiscal policy of expenditure restraint HSSD are subject to a requirement (along with all other departments) to maintain a real term restraint on revenue expenditure until 2016 (in addition to the savings of the FTP), in light of an annual average increase in expenditure well above inflation over the past five years this has not been incorporated into the model.

6.1.1. Health and Social Services Department

As can be seen from Figures 6.1.1 to 6.1.3 and Table 6.1.1, under both models there is a significant increase in HSSD expenditure from 5.6% of GDP in 2010 to 7.1% and 7.9% of GDP using the +200 net migration and constant population models respectively.

Due to the ageing population, the older age groups (those over 65), exert a considerable upward movement in the cost of healthcare during the period shown. In particular projected expenditure on those over the age of 85 in 2040 is more than two and a half times its current level relative to GDP under the +200 net migration model and more than three times its current level under the constant population assumption.

As a result of the decrease in the size of the population in the age groups up to 65, the total cost of expenditure in these groups relative to GDP decreases between 2016 (the end of the SPP planning horizon) and 2040 in both the +200 net migration model and (to a greater extent) in the constant population model.

[9] Seshamani, M. and A. Gray (2002), "Ageing and Health-care Expenditure: The Red Herring Argument Revisited", Health Economics 13,303–314.
[10] http://www.gad.gov.uk/Demography%20Data/Life%20Tables/Varmortass.html

Figure 6.1.1. Projected net HSSD expenditure by age group, +200 net migration

2% real earnings growth and 2% increase in healthcare costs per capita

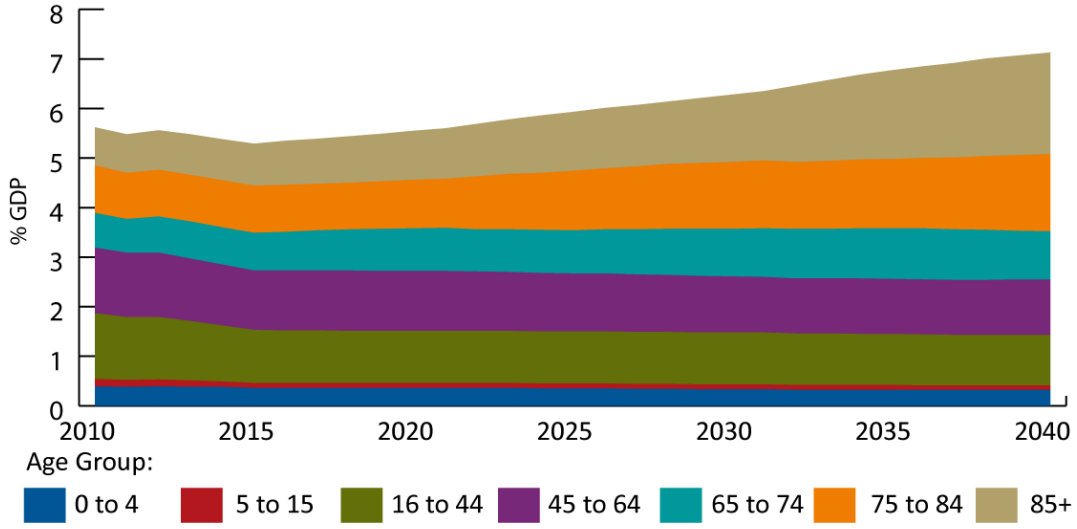


Figure 6.1.2. Projected net HSSD expenditure by age group, constant population

2% real earnings growth and 2% increase in healthcare costs per capita

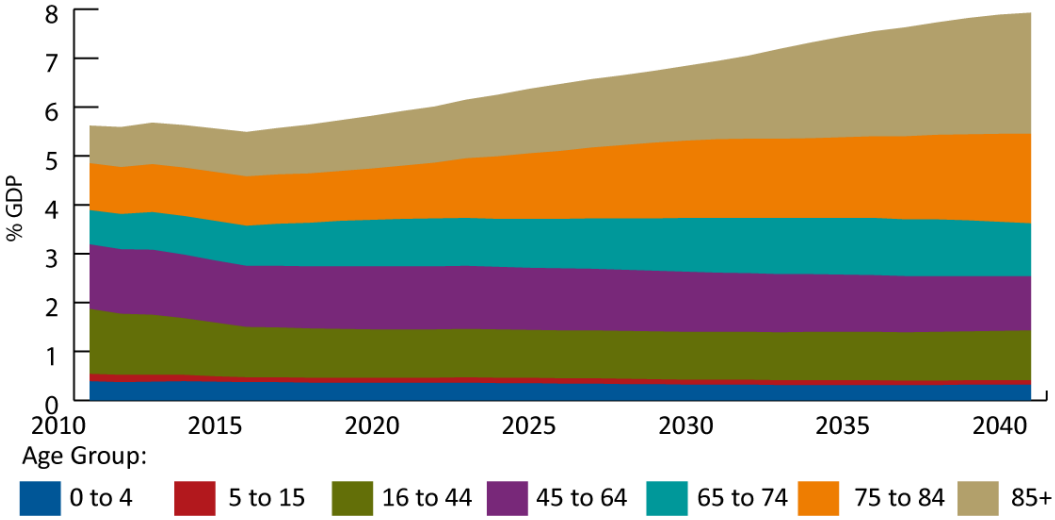


Figure 6.1.3. Projected net HSSD expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

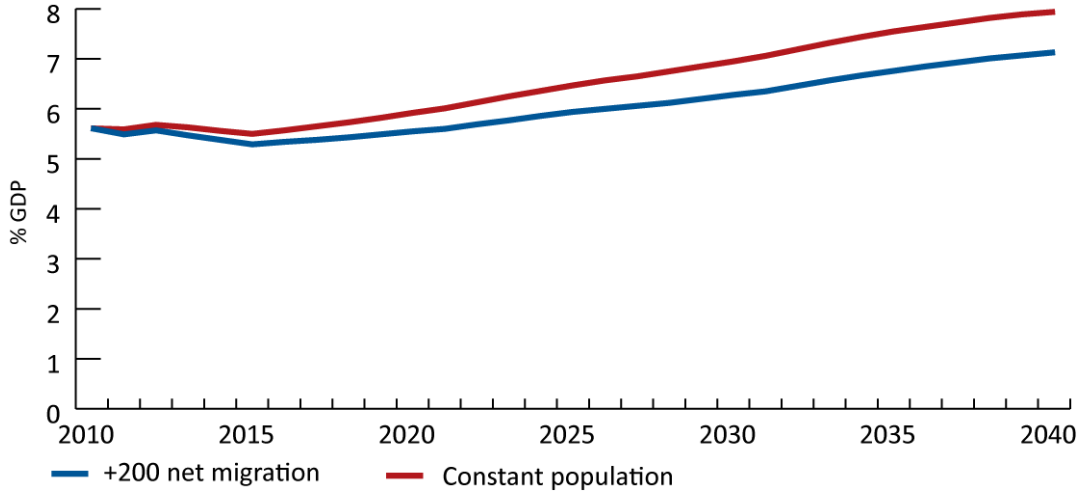


Table 6.1.1. HSSD expenditure

	HSSD Expenditure in 2010 (%GDP)		HSSD expenditure in 2016		HSSD expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	108	5.6	120	5.3	254	7.1
Constant population	108	5.6	116	5.6	236	7.9

6.1.2. Guernsey Health Service Fund

To gain a complete overview of the total public cost of healthcare in Guernsey it is important to consider the expenditure of the Guernsey Health Service Fund (GHSF)[11]. Administered by SSD, the fund covers a range of health expenditure including the specialist health insurance scheme; the provision of drugs, medicines and specialist medical equipment and subsidising GP and nursing consultations.

Some of the expenditure of this fund is paid directly to the Health and Social Services Department[12] and is incorporated in Departmental Operating Income in the General revenue accounts. Because the expenditure in this section is presented net of the expenditure of Departmental operating income there is no double counting of this expenditure at this stage.

For the purpose of this report, the expenditure from the GHSF has been modelled under the same assumptions as those used to model HSSD expenditure[13]. Although there is some degree of overlap, it should be noted that the areas of expenditure covered by the fund are, for the most part, distinct from those covered by HSSD. As a result it may be that the future events may result in different patterns of expenditure growth in the GHSF and HSSD.

[11] It should be noted that in some instances, benefit claimants receive additional support in paying for medical expenses funded from other areas of the Social Benefits system, most notably the medical expenses assistance scheme funded by SSD's non contributory services. This has not been incorporated in these figures.

[12] £161,161 in 2010.

[13] Between 2006 and 2010 there is a clear correlation between increases in per capita expenditure by HSSD and GHSF although the time series available is limited.

Figure 6.1.4. Total GHSF expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

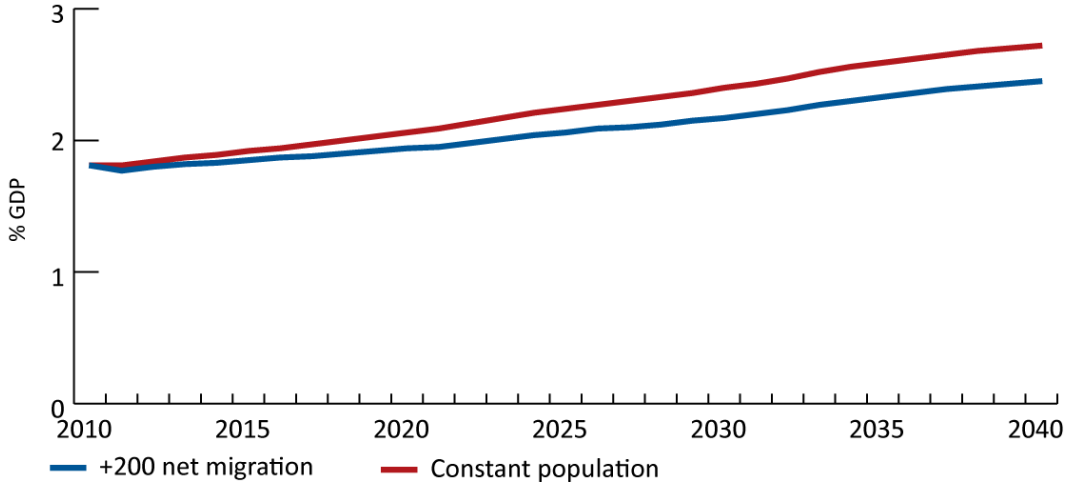


Table 6.1.2. Total GHSF expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

	GHSF expenditure in 2010		GHSF expenditure in 2016		GHSF expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	35	1.8	42	1.9	87	2.5
Constant population	35	1.8	40	1.9	81	2.7

6.1.3. Total public sector expenditure on health

The expenditure of HSSD and the GHSF combined give an indication of the total level of public expenditure on health. Figure 6.1.5 shows total healthcare cost, under the central assumptions, escalating from 7.4% of GDP in 2010 to 9.6% and 10.7% under the +200 net migration and constant population models respectively.

Figure 6.1.5. Total HSSD and GHSF expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

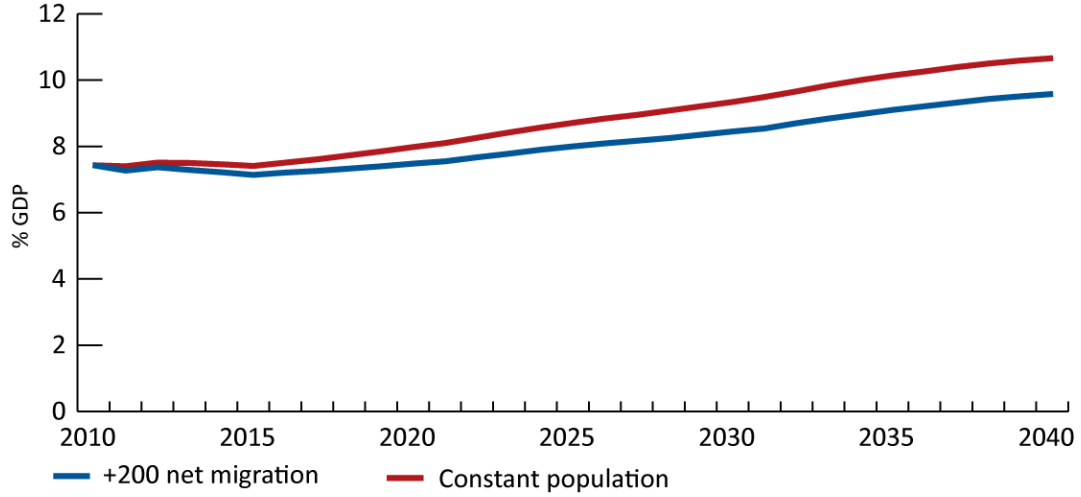


Table 6.1.3. Total HSSD and GHSF expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

	Total health expenditure in 2010		Total health expenditure in 2016		Total health expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	142	7.4	162	7.2	341	9.6
Constant population	142	7.4	156	7.5	316	10.7

6.2. Social Security Spending: Guernsey Insurance and Long Term Care Funds

Long term expenditure projections for both the Guernsey Insurance Fund (GIF) and the Long-term Care Fund (LTC) were modelled in detail by the UK Government Actuary's as part of the review of the sustainability of the funds commissioned by SSD. It is not the intention of this report to reproduce in detail the work already undertaken. However, in the interest of providing a complete picture of public expenditure the, projected expenditure of these funds has been replicated, albeit under broader assumptions than those utilised in the Actuarial reports[14].

6.2.1. Guernsey Insurance Fund

The GIF is the largest of the three funds administered by Social Security. At present more than 80% of the fund's total annual expenditure (£100 million in 2010) is spent on funding the States' pension scheme. The remaining expenditure covers a variety of smaller (predominantly employment related) schemes including unemployment, sickness and invalidity benefit.

GIF expenditure is modelled using the assumptions outlined above and in addition:

- Expenditure is modelled on the most representative age group for each area of expenditure (i.e. pensions are modelled on the number of people over retirement age, employment benefits are modelled on the size of the working age population).
- The rate at which benefit payments are made is assumed to increase at 1% per annum in real terms[15].
- The number of claimants for each benefit is assumed to remain at a constant proportion of the population against which they are modelled[16].

Figure 6.2.1. shows the increase in GIF expenditure relative to GDP under the assumption of 2% earnings growth. Using both population models the level of expenditure relative to GDP reaches a peak towards the end of the period shown (at 7% and 8% of GDP for the +200 net migration and constant population models respectively).

[14] The resulting expenditure patterns produced by the modelling used in this report are similar to those published in the actuarial reports, showing peaks in expenditure of a comparable time and magnitude. The slight differences in the models are a result of both the broader assumptions used in this report, the "update" of the 200+ net migration model to incorporate population data from March 2010 and the use of 2010 expenditure data which was not available to the Actuary's at the time the review was commissioned.

[15] This represents the "halfway between prices and earnings" assumption used as the primary benefit rate increased used by the UK Government Actuary's.

[16] It is acknowledged that this assumption as regards to unemployment claimants may be flawed, as the number can vary considerably dependent on the economic conditions. In particular it is likely that, should long-term economic growth reduce it is likely that the Island will experience higher average unemployment levels (and therefore higher cost).

Because pension costs represent such a significant portion of expenditure of the reserve the increase in the pension age between 2020 and 2032 has a significant impact on expenditure, reducing the rate of increase in expenditure across that period.

Figure 6.2.1. Total expenditure from the Guernsey Insurance Fund

2% real earnings growth

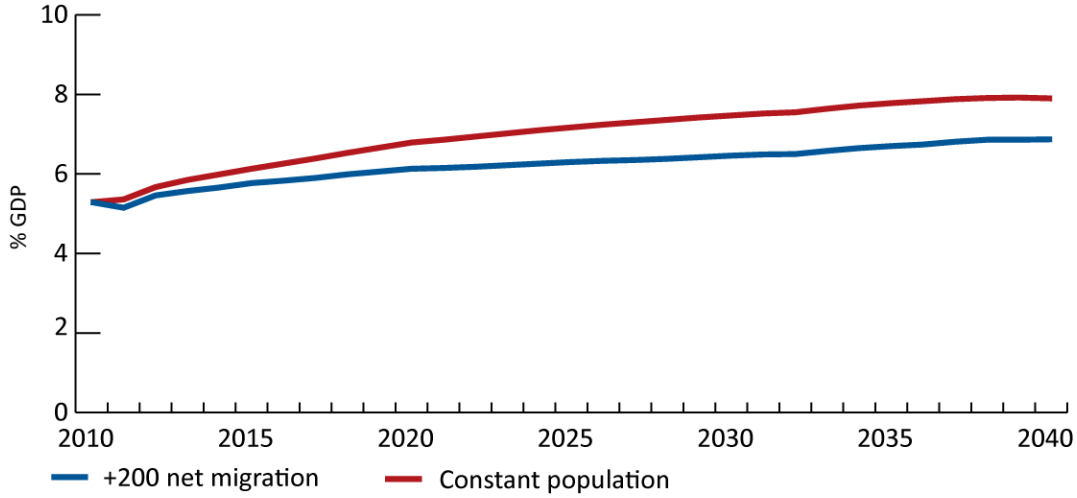


Table 6.2.2. Total expenditure from the Guernsey Insurance Fund

2% real earnings growth

	GIF expenditure in 2010		GIF expenditure in 2016		GIF expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	104	5.4	134	6.0	250	7.0
Constant population	104	5.4	133	6.4	239	8.1

6.2.2. Long Term Care Fund

The LTCF is the newest and smallest of the funds administered by SSD. Established to fund residential and nursing care for older people, expenditure of the fund is very sensitive to the effects of the ageing population.

For the purpose of this report expenditure is modelled using the following assumptions:

- Residential care expenditure is proportional to the size of the population aged over 75
- Nursing care is proportional to the size of the population aged over 85
- The cost of care per capita increases at 1% per annum

Figure 6.2.1 shows the progression of expenditure from the LTCF relative to GDP. It should be noted that, under the assumptions used in this model the progression of the "baby boom" population results in a marked increase in the rate of expenditure growth in 2032 when the first of the "baby boomers" (those born in 1946-47) move into the over 85 categories used for modelling nursing care.

Figure 6.2.1. Total expenditure from the Long Term Care Fund

2% real earnings growth

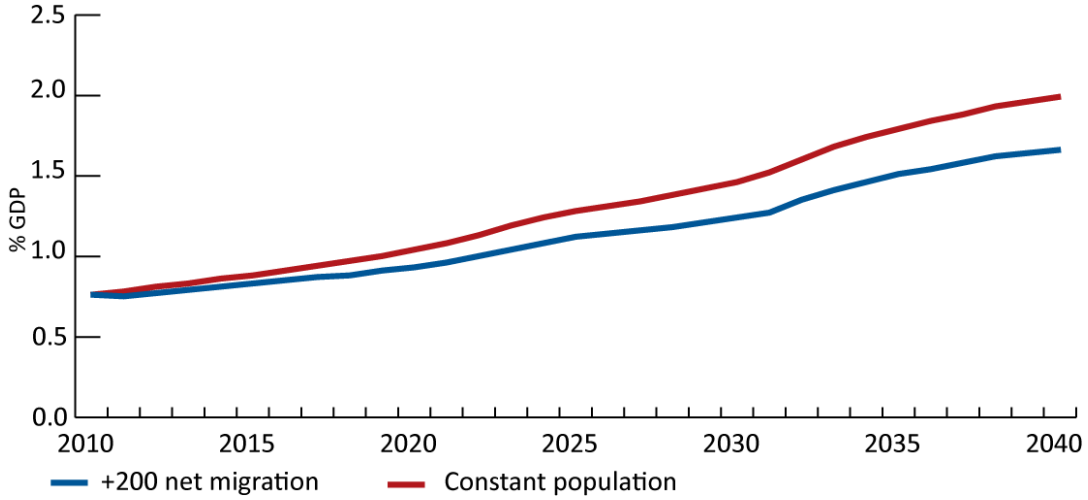


Table 6.2.1. Total expenditure from the Long Term Care Fund in 2040

2% real earnings growth

	LTCF expenditure in 2010		LTCF expenditure in 2016		LTCF expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	15	0.8	20	0.9	61	1.7
Constant population	15	0.8	20	1.0	60	2.0

7. Breakdown of projections by funding source

7.1. Aggregate public sector expenditure

As is commonly known but possibly little understood, Guernsey's funding of public sector expenditure is quite unique. Its complexity was commented upon in both the 2010 and 2011 independent fiscal reviews. This section provides projections of expenditure by funding source, so that the impact of the 2040 projections can be analysed assuming current funding models in the next section. The source of funding for public expenditure (Figure 7.1.1. and 7.1.2.) can be broken down into three broad categories:

- General Revenue
    - Expenditure funded by General Revenue income sourced predominantly from income tax, corporation tax and indirect taxes which are allocated to States' departments in the General Revenue Budget. This expenditure covers the majority of expenditure by States' departments and includes the revenue grant to the Social Security funds and non-contributory benefits paid by the Social Security Department.
- Social Security Contributions
    - Expenditure funded by Social Security contributions to the three funds (GIF, GHSF and LTCF) administered by SSD. This expenditure covers the total expenditure of the SSD funds net of the revenue grant paid from General revenue.
- Departmental Operating Income
    - Expenditure funded by fees, charges and other income paid directly to States Departments and not incorporated in general revenue. Income from these sources is netted of the expenditure of the department by which it was generated and is not available for allocation in the General Revenue budget. The level of gross departmental expenditure funded this way varies considerably from Department to Department with some Departments (such as Housing) funding more than 50% of their expenditure in this manner.

Figure 7.1.1. Aggregate public expenditure by source of funds, +200 met migration model

2% real earnings growth and 2% increase in healthcare costs per capita

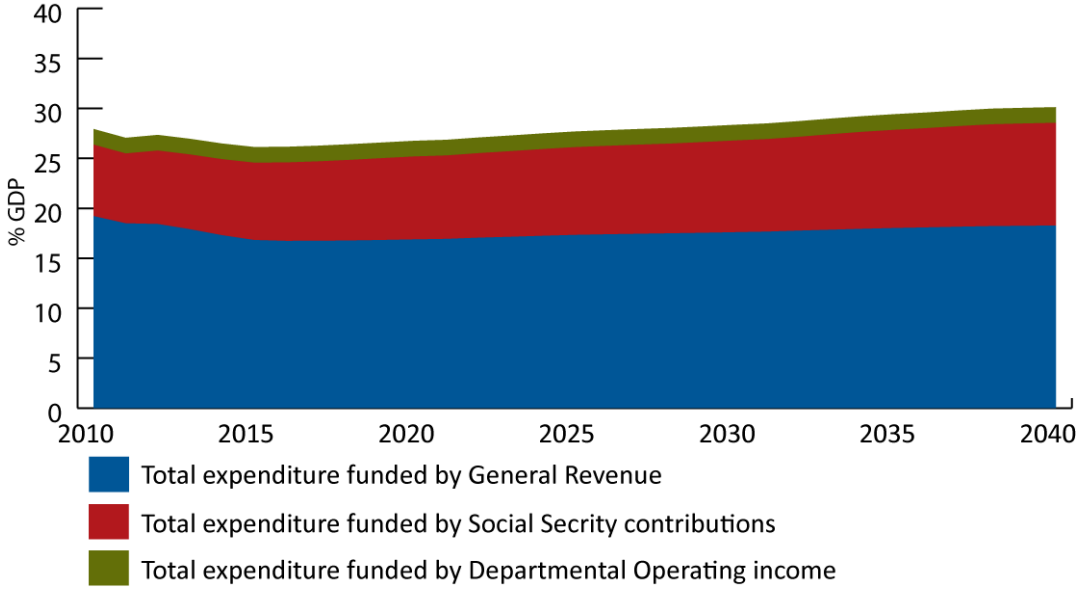
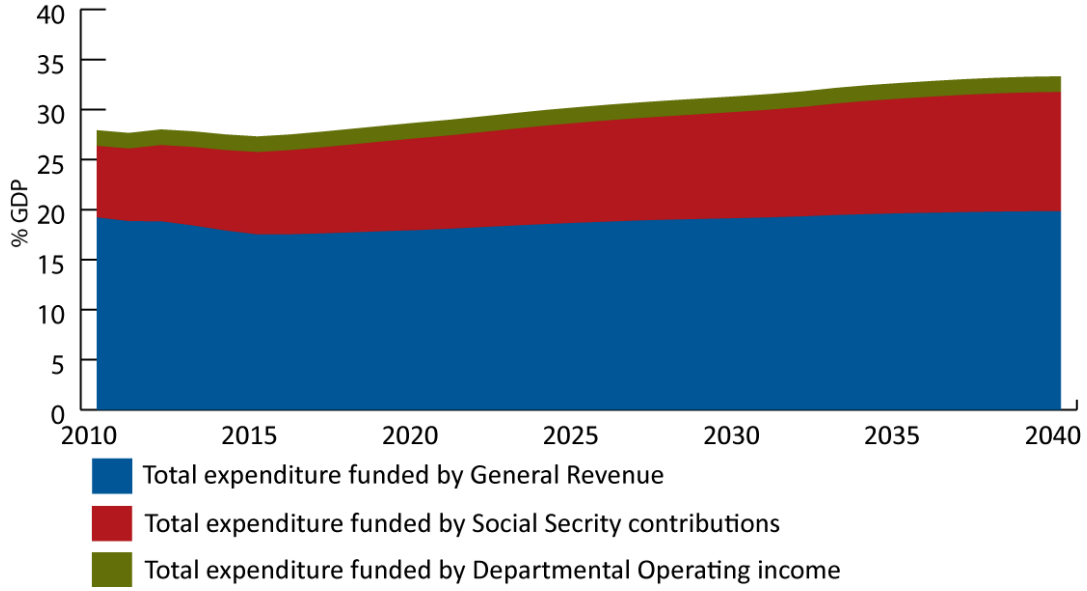


Figure 7.1.2. Aggregate public expenditure by source of funds, constant population model

2% real earnings growth and 2% increase in healthcare costs per capita



7.2. General revenue expenditure

Figure 7.2.1. shows that, after the horizon of the current SSP and the expenditure restraint imposed by it, aggregate public expenditure relative to the size of the economy is likely to increase regardless of the population model used. However, the rate of growth relative to the size of the economy is lower using the +200 net migration model, which increases to 18.3% of GDP in 2040, than using the constant population model, which increases to 19.8% of GDP by 2040.

Figure 7.2.1. Total general revenue funded expenditure (including capital expenditure, non-contributory benefits administered by SSD and the revenue grant)

2% real earnings growth and 2% increase in healthcare costs per capita

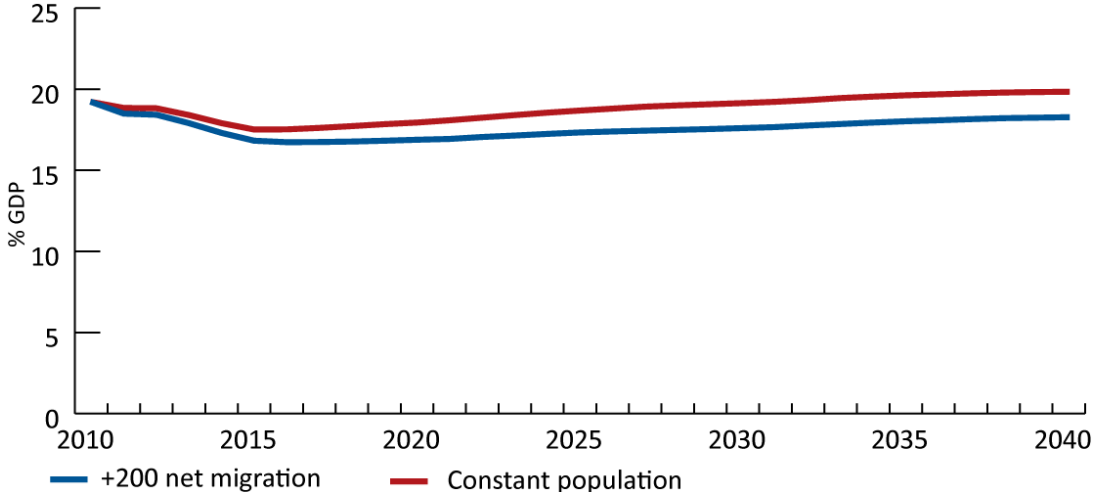


Table 7.2.1. General revenue expenditure

2% real earnings growth and 2% increase in healthcare costs per capita

	Total revenue expenditure in 2010		Total revenue expenditure in 2016		Total revenue expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	368	19.2	375	16.7	677	18.3
Constant population	368	19.2	365	17.5	615	19.8

7.3. Expenditure funded by Social Security Contributions

Figure 7.3.1. shows the increase in expenditure funded by Social Security contributions. Both population models show a steady increase in expenditure over the period shown. However the rate of increase using the constant population model is higher than that shown by the +200 net migration model. As a result, by 2040 the level of expenditure shown in the constant population model is 1.6 percentage points of GDP higher than that shown in the +200 net migration model.

Figure 7.3.1. Total SSD expenditure funded by contributions income (i.e. net of the revenue grant and excluding non-contributory expenditure)

2% real earnings growth and 2% increase in healthcare costs per capita

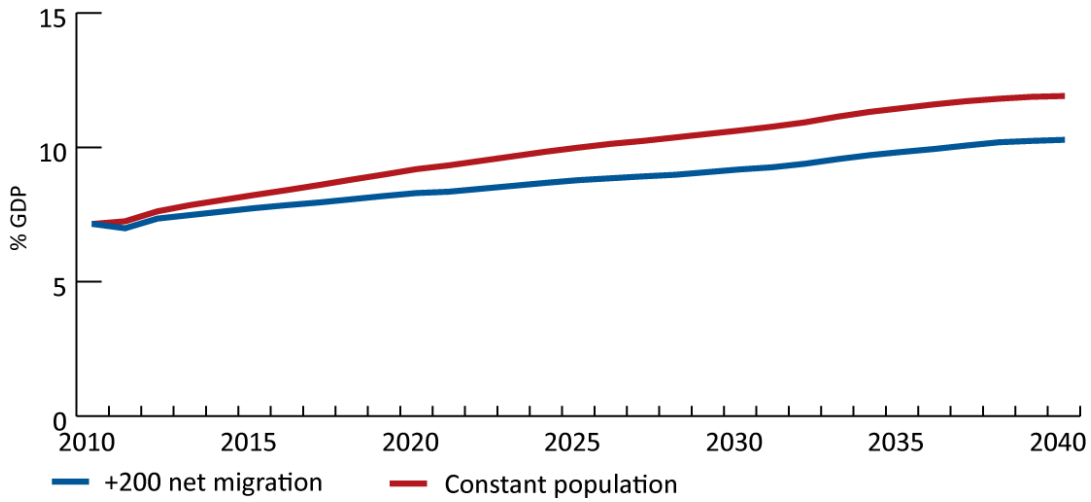


Table 7.3.2. Total SSD expenditure funded by contributions income (i.e. net of the revenue grant and excluding non-contributory expenditure)

2% real earnings growth and 2% increase in healthcare costs per capita

	Total SSD expenditure funded by contributions in 2010		Total SSD expenditure funded by contributions in 2016		Total SSD expenditure funded by contributions in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	137	7.2	176	7.9	367	10.3
Constant population	137	7.2	175	8.4	353	11.9

8. Implied break even tax rates – General revenue

This section provides simple estimates of the implications of the projections contained in this report for revenue funded expenditure on the break even rate of tax. This is not to imply this is a default policy response but it has been calculated to provide some comparison of the scale of the increased revenue funding that would be required if the central projections of the models were to occur. Clearly an alternate policy response could be to restrict expenditure growth to current shares of GDP and limit or reduce services accordingly.

What the modelling exercise illustrates is that, given the assumptions of current service levels and current methods of funding, increases in revenues are required. The size of the required increase equates to rises in personal tax of between four and seven percentage points above the current rate depending on the assumed population model. The impact of a lower average growth rate in earnings is also provided. The impact of a halving of the long term growth rate is quite significant. In both population scenarios, break even tax rates in 2040 are some 9 or 10 percentage points higher with lower assumed economic growth.

As was stated in the introduction to this report, the projections in the SSP to 2016 have been incorporated into the report, it is only from 2016 to 2040 that demand led increases based on demographic change, etc are modelled. Therefore to that date, as the current fiscal deficit is removed, the 'break even' tax rate reduces.

8.1. General revenue

The break even tax rate is the estimated personal tax rate which would need to be charged for a balanced budget year on year assuming any deficit was funded solely from increases in personal taxes. In order to calculate the break even tax rate the total general revenue income has been modelled by utilising the population projections to model Employee Tax Instalment (ETI) receipts. This model in turn has been used to infer a level of total general revenue income against which the expenditure projections can be prepared.

The projections presented below utilise the following assumptions:

- **The base model of income**
  - ETI receipts
    - Tax allowances increase in real terms at 1% per annum.
    - Taxable earnings increase in real terms at 2% per annum.
    - The participation rate (the percentage of the working age population who are economically active) is calculated by age group and the participation rate within each age band remains constant at the average rate calculated from the available data.
    - At the commencement of the increase in retirement age, participation rates for the additional working age population is assumed to be the same as that for those between the ages of 60 and 64.
    - Economic growth is assumed to be steady and no allowance is made for the movement of the business cycle.

- Other personal income taxes
    - The total value of other taxable personal income is assumed to be equal to 35% of the total income taxable under the ETI scheme [17].
- Corporate, indirect taxes and other income.
    - Continue at a constant ratio to ETI receipts (at the assumed personal tax rate of 20%)
    - No allowance is made for any changes in the corporate tax system which may result from the corporate tax review.
    - No allowance has been made for capital income.

- **Break even tax rate**
    - **Any deficit is to be funded entirely by increases in the personal tax rate** (no variation in tax allowances, corporate or indirect taxes has been included).
    - No allowance is made for the use of reserves to fund the deficit or the accumulation of interest on the general and contingency reserves.

Figure 8.1.1. Break even tax rate, general revenue

2% real earnings growth and 2% increase in healthcare costs per capita

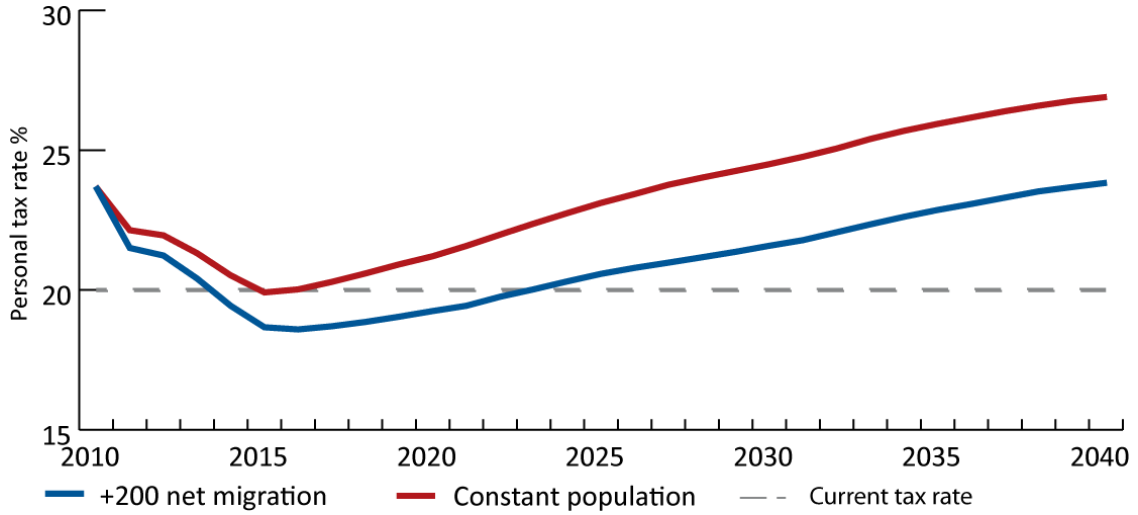


Table 8.1.1. Total SSD expenditure funded by contributions income (i.e. net of the revenue grant and excluding non-contributory expenditure)

2% real earnings growth and 2% increase in healthcare costs per capita

	Break even tax rate in 2010 (%)	Break even tax rate in 2016 (%)	Break even tax rate in 2040 (%)
+200 net migration	23.6	18.6	23.8
Constant population	23.6	20.0	26.9

As the general revenue budget in 2010 was in deficit the current break even tax rate is 23.6%, 3.6 percentage points above the current level of personal taxes. These projections indicate that, using the +200 net migration model that the budget will return to balance in 2015 in line with the projection published in the SSP. The budget projected remains in surplus until 2023. However, after this point the budget is projected to once again fall into deficit. By 2040, if the deficit were to be funded solely by increases in direct personal taxes, the tax rate would need to be increased to 23.8% to balance the budget.

[17] The time series available for the formation of this assumption is limited and the ratio between ETI and other personal income can vary considerably as it is largely dependent on external factors such as interest rates and stock market performance.

Using the same assumptions applied to the constant population model, indicates that the budget will be brought in to balance for just a single year (2015) before falling returning to a deficit position. This model indicates that by 2040 the personal tax rate would need to be increased to 26.9% to balance the budget.

Figure 8.1.2 to 8.1.3 show that by decreasing the assumption of long term annual growth in earnings from 2% to 1% per annum (implying a lower rate of economic growth and tax revenue) the fiscal position is adversely affected. Using the +200 net migration assumption the 1 percentage point decrease in earnings increases the tax rate required to break even in 2040 by more than 9 percentage points. The effect on the constant population model is more pronounced, resulting in an increase of 10 percentage points.

Figure 8.1.2. Break even tax rate: The effect of varying real annual earnings growth, +200 net migration model

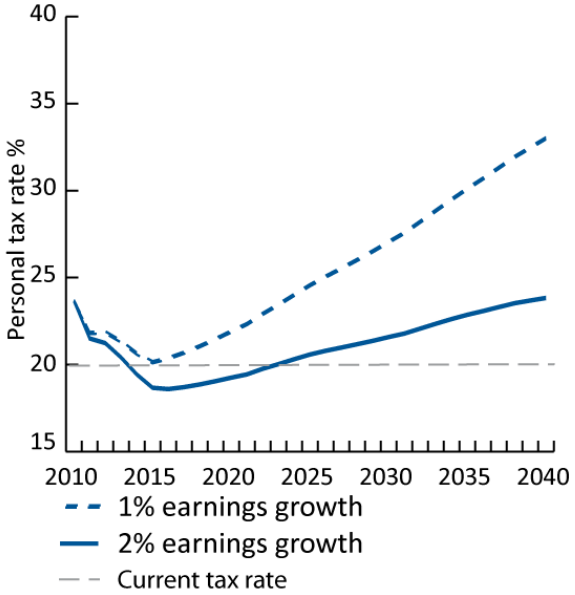
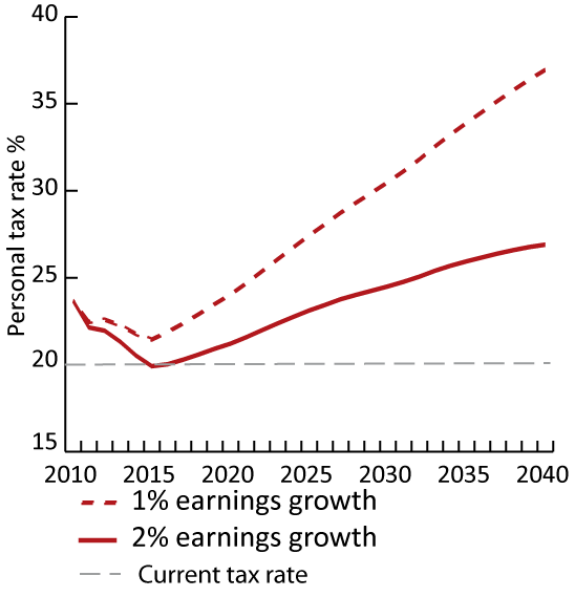


Figure 8.1.3. Break even tax rate: The effect of varying real annual earnings growth, constant population model



Figures 8.1.4. and 8.1.5. show the effect on the implied break even tax rate of altering the assumed level of heath care inflation. Between 2006 and 2010 the average cost of healthcare per capita increased by 2.9%[18]. A long term increase at this level (1 percentage point above the assumed average growth in earning) would be unsustainable. If this were to continue, theses models suggest that by 2040, the break even tax rate could increase to 28.6% using the +200 population model and 32.2% using the constant population model.

[18] Largely due to an HSSD overspend in 2008, resulting in a 10% increases in costs per capita in real terms and a lesser increase (of 6%) in 2007.

Figure 8.1.4. **Break even tax rate: The effect of varying real annual growth in healthcare expenditure per capita, +200 net migration**

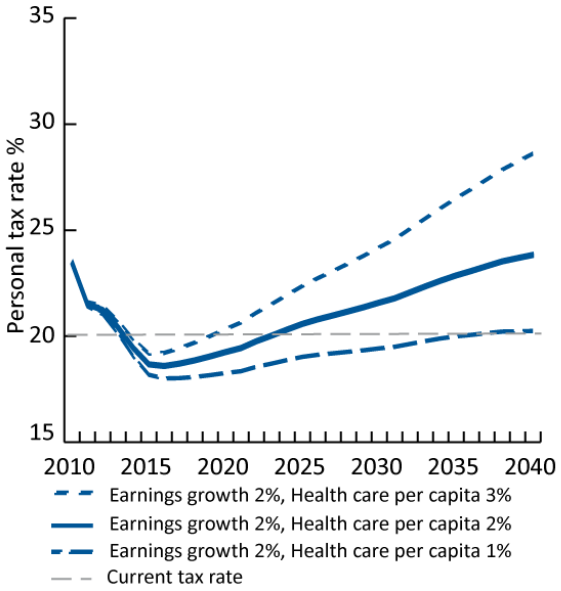
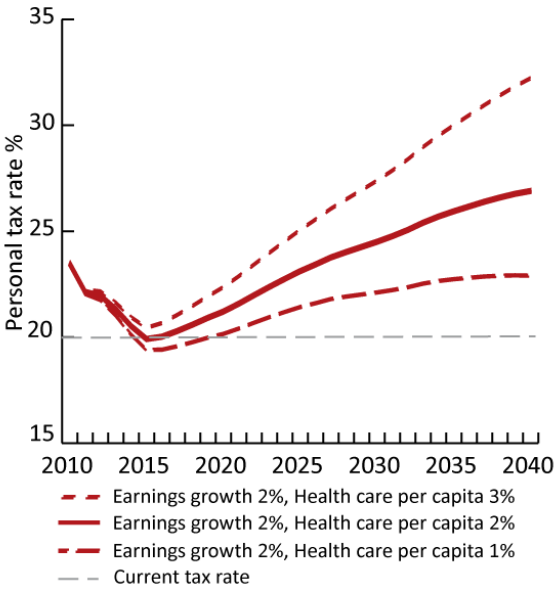


Figure 8.1.5. **Break even tax rate: The effect of varying real annual growth in healthcare expenditure per capita, constant population**



Reducing the growth in healthcare costs per capita to 1 percentage point below the growth in earnings extends the period of fiscal surplus in the +200 net migration model to 2035 and reduces the implied break even tax rate in 2040 to just 0.4 percentage points above the current tax rate. Reducing the growth in healthcare costs per capita to 1% in the constant population model results in a 5 year period of fiscal surplus between 2015 and 2019 and reduces the break even tax rate in 2040 to 22.9%.

9. Implied break even contribution rates - SSD funds

This section provides break even contribution rates to Social Security funds. The total break even contribution rate (represented by the total rate paid by employees and employers) rise to 17.4% in the +200 net migration model and to 19.9% in the constant population model. The greatest increase is a result of increased contributions to the Guernsey Insurance Fund in both models requiring an increase in contribution rate to the fund from its current rate (8.3%) to between 11.4% and 13.0% to break even (in terms of contributions income) in 2040. The Guernsey Health Service and Long Term Care Funds require increased contributions of between 1.0% and 1.4% and 1.2% and 1.7% respectively to break even in 2040.

The effects of varying the earnings growth and healthcare inflation rates are also illustrated. The impact of earnings growth is significant, increasing the break even contribution rate by around 34% in each case. However, the effects of slower earnings growth can be readily mitigated by reducing the assumed annual benefit increases in the modelling.

However, SSD hold significant reserves particularly in the GIF. **These can be drawn down to lessen the impact on the current break even rates.** This is illustrated in Appendix 6. Through combining the use of the reserves and rate increases the level of contributions can be optimised through dynamic modelling (not attempted in this report). To provide illustration, section 9.4 shows the progression of the GIF reserves assuming an increase in the rate of contributions to the fund in 2013 sufficient to ensure reserves do not drop below the equivalent of two years of annual expenditure (to provide a buffer) between now and 2070[19]. This would require an increase in the contribution rate to the GIF of 0.88% using the +200 net migration model and 1.82% using the constant population model. This compares to increases in the breakeven contribution rate of 3.1% or 4.7% by 2040 referred to above: vividly illustrating the mitigating effects of using the reserves and early action.

Social Security contributions can also be modelled as a function of the population. As SSD hold a significant value of reserves for these funds, Appendix 6 projects the value of these reserves relative to the expenditure of the fund. The section also includes additional projections showing the impact of relaxing the central growth and expenditure assumptions and progression of the fund reserves at a selection of higher contribution rates.

Where possible the models presented use the same assumptions as those used in modelling of ETI receipts in the previous section and draw on the assumptions made by the UK government Actuary's Department.

The following additional assumptions are made:

- The limit of earnings against which contributions are chargeable increases in line with inflation.
- The revenue grant for each fund remains at its current percentage of contributions (i.e. 15% of GIF and 12% of GHSF).
- The ratio of contributions on behalf of employed people (from both the employer and employee) to that paid by self-employed and non-employed people remains constant at the level reported in 2010.
- Break even rates are reported in terms of the headline employee/employer rates. Self-employed and non-employed rates are assumed to change in proportion to the changes to the headline rate.

[19] Covering the full extent of the population projections produced by the UK Government Actuary's department

- Break even rates represent the operating surplus deficit of the fund (i.e. in year expenditure vs. income from contributions and revenue grants) and do not incorporate the use of reserves.
- The progression of the fund reserves across the period is modelled on an iterative basis based on the operating surplus/deficit and investment income. Given the known weakness of financial markets in 2011, particularly in the later half, the fund reserves are assumed to have made no real gain on investment in 2011. After 2011, reserves are assumed to receive 3.5% annual return on investment regardless of the size of the remaining capital[20].

9.1. Guernsey Insurance Fund

The GIF is already running an operational deficit (£3.6m in 2010) and this is projected to increase over the period shown. In particular there is a marked increase projected between 2011 and 2012 as the current population statistics show the first (and one of the largest[21]) "baby boom" year capturing those born between March 1946 and March 1947 will be registered as having moved into the retirement age in 2012.

From 2012 onward the break even contribution rate for the GIF is projected to continue to increase reaching a peak of 11.4% in 2040 using the +200 net migration model and of 13.0% in 2039 using the constant population model (see Figure 9.1.1. and Table 9.1.1.)

Figure 9.1.1. GIF break even contribution rate

2% real earnings growth

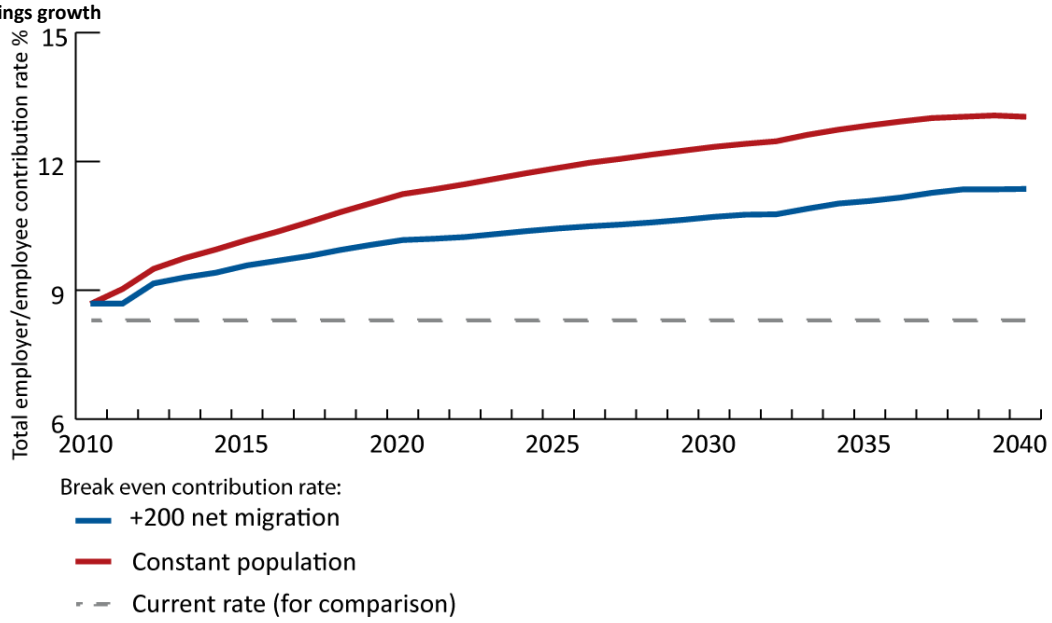


Table 9.1.1. GIF break even employers/employee contribution rate

2% real earnings growth

	GIF break even contribution rate in 2040 (%)
+200 net migration	11.4
Constant population	13.0
In 2010 (for comparison)	8.7

[20] This is the same assumption of investment return as used by the UK government Actuary's in the actuarial review.

[21] March 2010 population statistics show 997 people in this year of age compared to 613 people who were one year older and 808 people who were one year younger.

Figures 9.1.2 and 9.1.3 show the effect decreased earnings growth could have on the break even contribution rate for this fund.

Figure 9.1.2. GIF break even contribution rate: The effect of varying real annual earnings growth, +200 net migration model

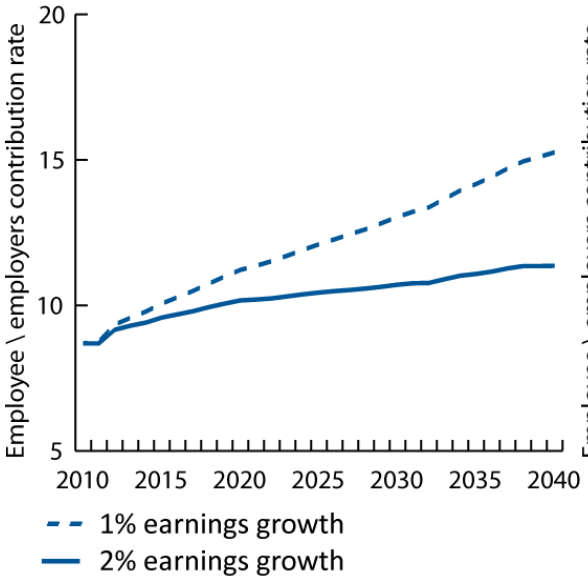
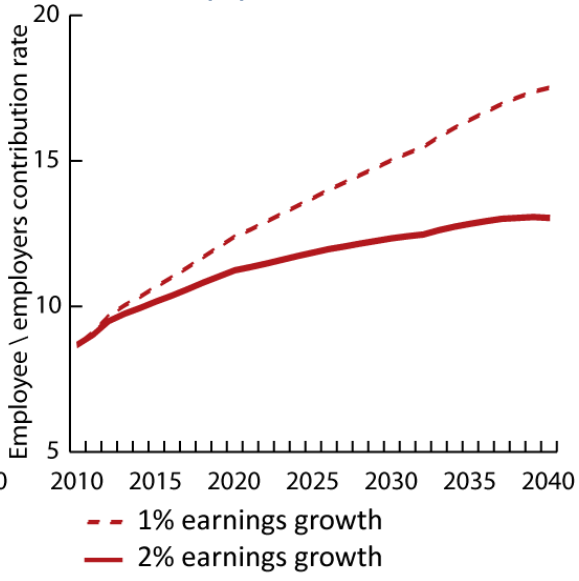


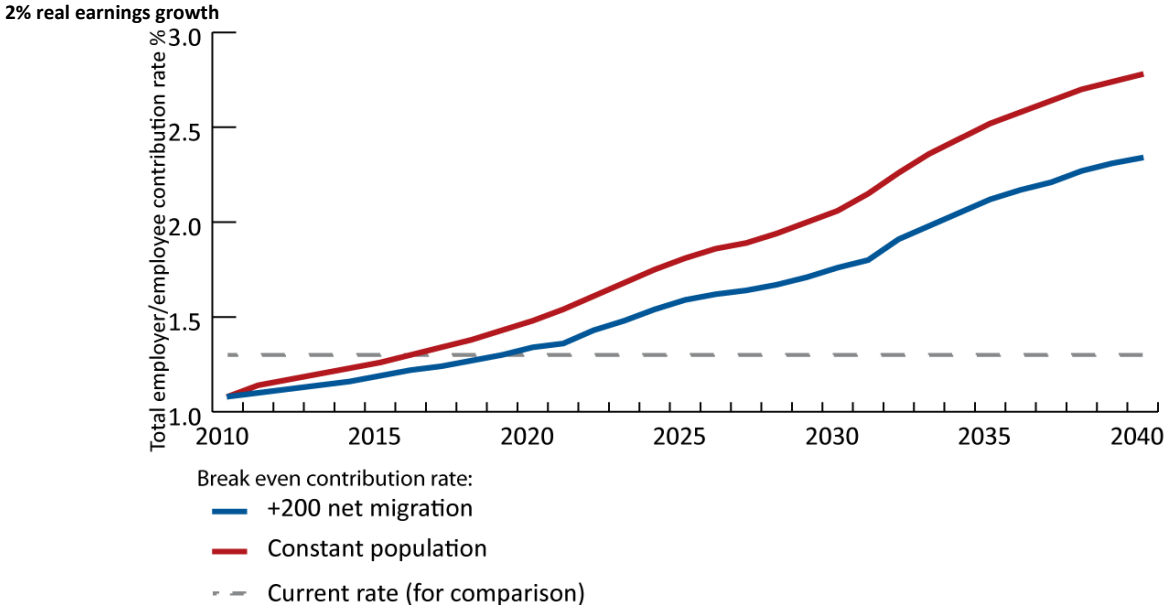
Figure 9.1.3. GIF break even contribution rate: The effect of varying real annual earnings growth, Constant population model



9.2. The Guernsey Long Term Care Fund

Although running a surplus in 2010, the expenditure of the long term care has increased in nominal terms by more than 50% in the last five years. The projections presented in Figure 9.2.1. indicate that the fund will begin running a deficit between 2015 and 2020. By 2040, the break even contribution rate for this fund is projected to increase from its current level of 1.1%[22] to 2.3% using the +200 net migration model and 2.8% using the constant population model.

Figure 9.2.1. LTCF break even contribution rate



[22] Actual contribution rate in 2010 was 1.3%

Table 9.2.2. LTCF break even employers/employee contribution rate

2% real earnings growth and 3% increase in healthcare costs per capita

	LTC break even contribution rate in 2040 (%)
+200 net migration	2.3
Constant population	2.8
In 2010 (for comparison)	1.1

Figures 9.2.2 and 9.2.3 show the effect decreased earnings growth could have on the break even contribution rate for this fund.

Figure 9.2.2. LTCF break even contribution rate: The effect of varying real annual earnings growth, +200 net migration model

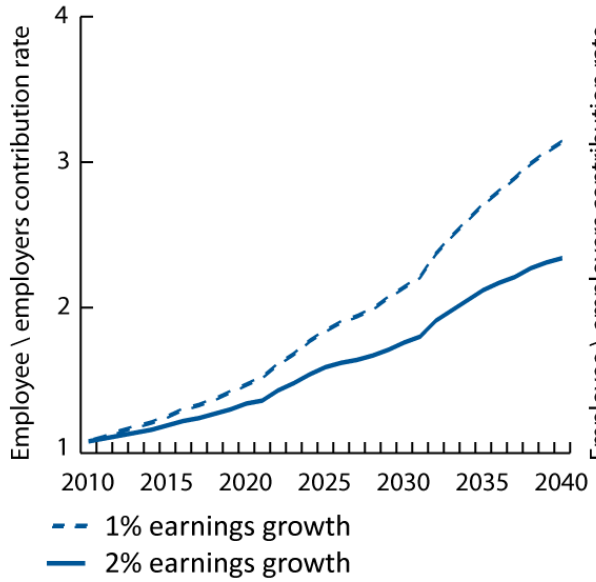
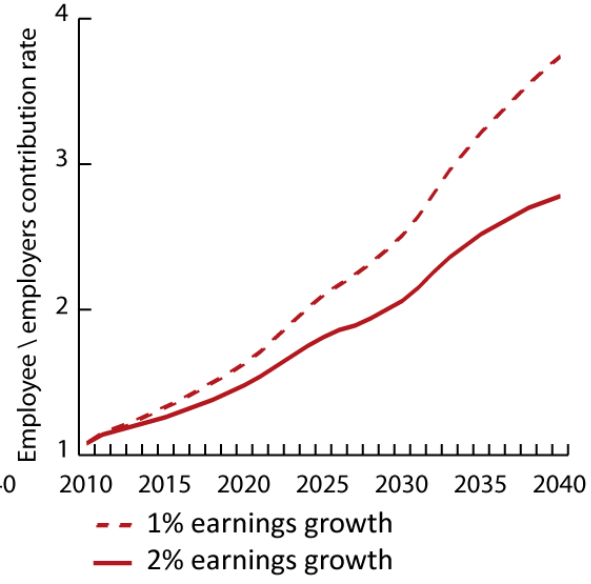


Figure 9.2.3. LTCF break even contribution rate: The effect of varying real annual earnings growth, Constant population model



9.3. Guernsey Health Service Fund

As stated earlier the position of the GHSF was not projected by the Government Actuary's Department in the same manner as the GIF and LTCF, the projections spanning only five years. The projections presented below show that, assuming increases in the GHSF fund expenditure progresses in the same manner as central healthcare by HSSD the fund may be running a deficit by 2020.

According to these projections by 2040 the break even contribution rate will have increased from 2.7%[23] in 2010 to 3.7% using the +200 net migration model or 4.1% using the constant population models.

Figure 9.3.1. GHSF break even contribution rate

2% real earnings growth and 2% increase in healthcare costs per capita

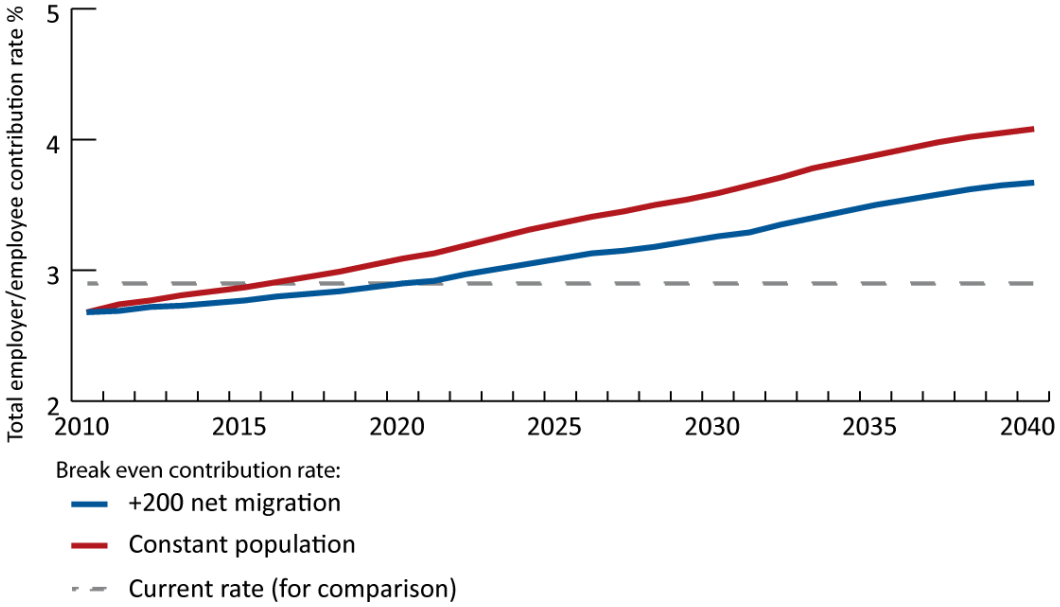


Table 9.3.3. GHSF break even employers/employee contribution rate

2% real earnings growth and 2% increase in healthcare costs per capita

	GHSF break even contribution rate in 2040 (%)
+200 net migration	3.7
Constant population	4.1
In 2010 (for comparison)	2.7

Figure 9.3.2. to 9.3.5. show the impact of varying earnings growth and healthcare expenditure growth on the break even contribution rate.

[23] The current employer/employee contribution rate to this fund is 2.9%.

Figure 9.3.2. GHSF break even contribution rate: The effect of varying real annual earnings growth, +200 net migration model

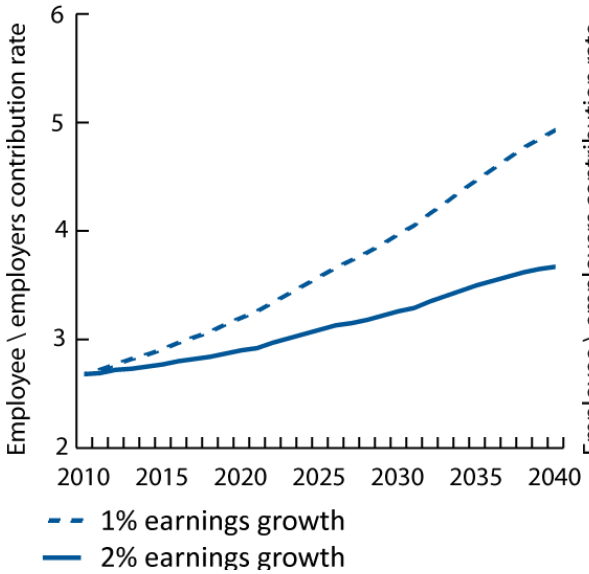


Figure 9.3.3. GHSF break even contribution rate: The effect of varying real annual earnings growth, constant population model

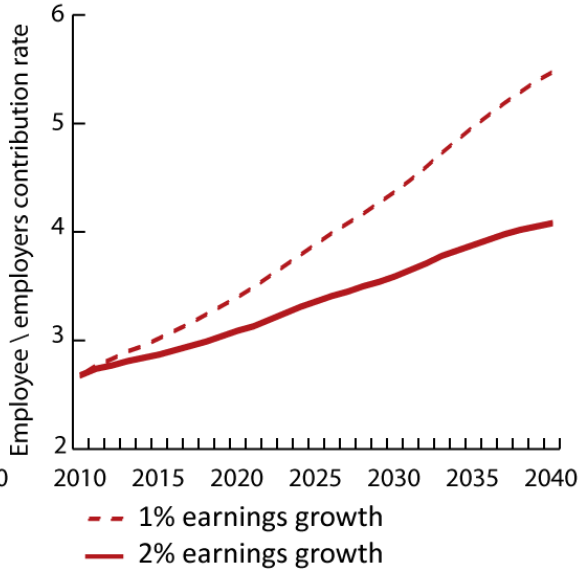


Figure 9.3.4. GHSF break even contribution rate: The effect of varying real annual growth in healthcare expenditure, +200 net migration model

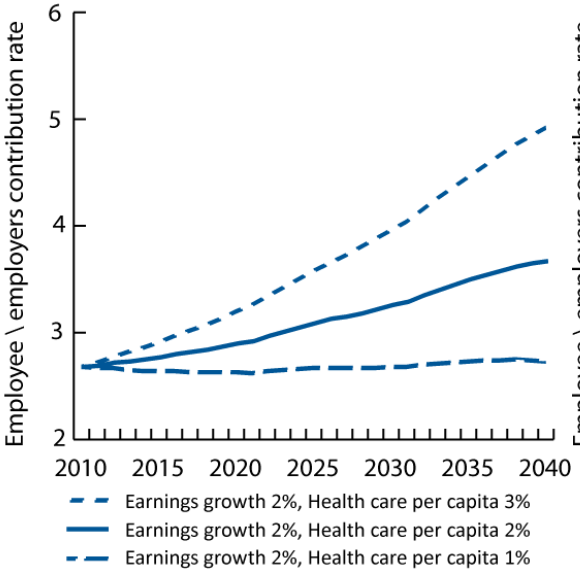
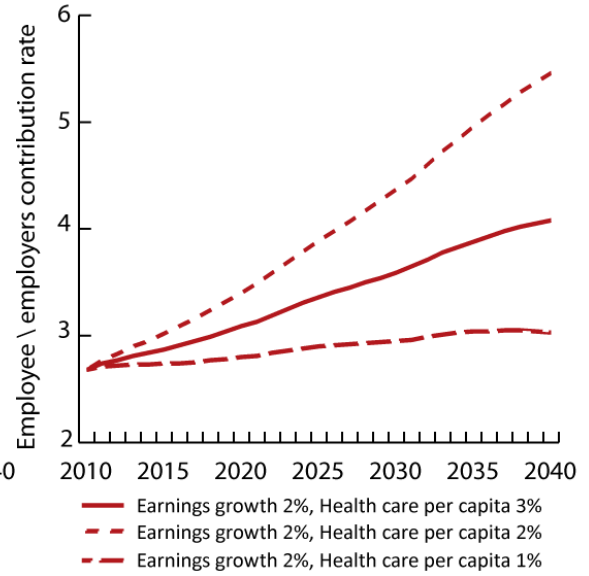


Figure 9.3.5. GHSF break even contribution rate: The effect of varying real annual growth in healthcare expenditure, constant population model



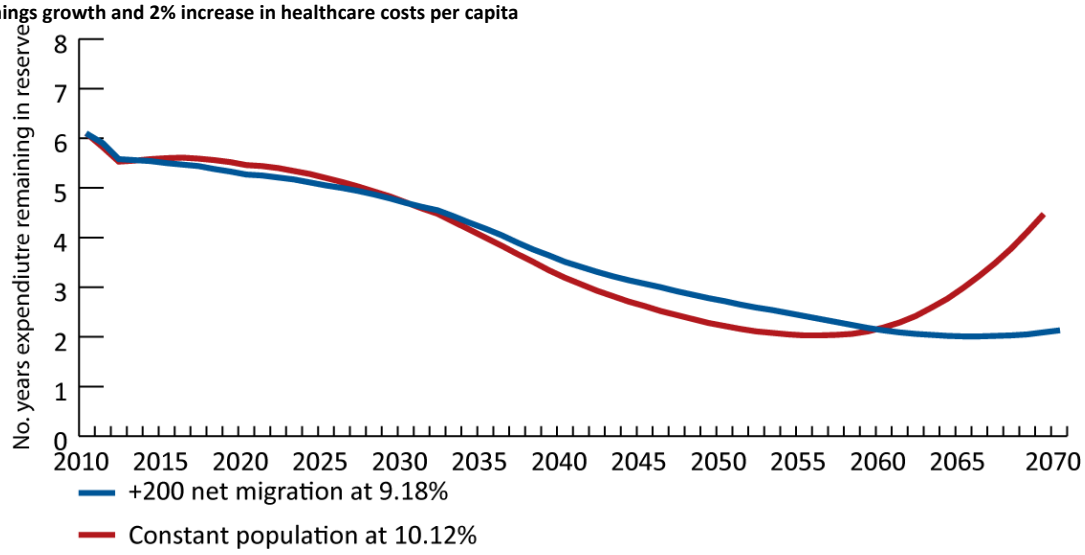
9.4. Use of reserves

As previously mentioned, the reserves currently held in the Social Security Funds could be utilised to mitigate the effects of increased demand. To illustrate this Figure 9.4.1 shows the progression of the GIF reserves assuming an increase in the rate of contributions to the fund from 2013[24] onwards sufficient to ensure reserves do not drop below the equivalent of two years of annual expenditure between now and 2070.

An immediate increase (in 2013) of 0.9% in the +200 net migration model and 1.8% assuming a static population to 2070 could maintain the level of reserves in the GIF above two years of expenditure beyond of the period covered by the population projections. This compares to increases in the breakeven contribution rate for the GIF of 3.1% or 4.7% by 2040 referred to above: vividly illustrating the mitigating effects of using the reserves and early action.

Figure 9.4.1. Guernsey Insurance Fund: projections of reserves with assumed immediate increases

2% real earnings growth and 2% increase in healthcare costs per capita



[24] This is the earliest point at which an increase could reasonably be made.

10. Conclusion

With the first of the "baby boom" generation progressing into retirement in 2012 the States of Guernsey face a prolonged period during which a high proportion of the population will be largely dependent on the government for pensions, long-term residential, nursing, health and social care.

The impact of demographic change and the issues surrounding the aging population on public expenditure are considerable and wide reaching affecting both Revenue and Social Security expenditure and economic growth prospects. What is clear is that the costs of current levels of service with current funding models will rise as a result of demographics. Positive net migration alleviates the problem but it does not fully resolve it.

The purpose of this report is to put forward potential future scenarios in order to help policymakers in Guernsey plan for these scenarios. It does not attempt to prescribe policy solutions. These projections do not imply that the correct policy response is to ensure revenues rise to meet the projected demands, nor do they suggest that expenditure must be contained to current shares of GDP and services reduced accordingly. However, policy changes will be required if public expenditure is to be sustainable in the medium and long term.

The objective, in publishing these projections, is to inform policy debate and ensure that the context and potential future costs of the welfare system, in its present form, is fully understood and choices rationally made.

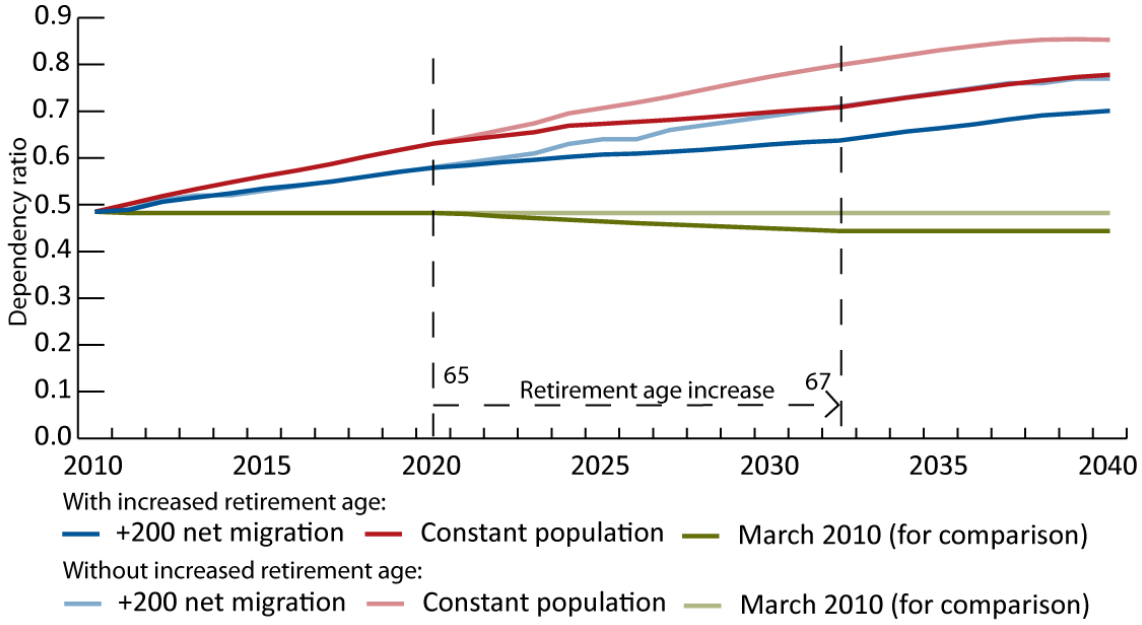
Appendix 1. The effect of the retirement age increase

The projected decrease in the working age population and the increase in the retired population means that the dependency ratio (the ratio of the non-working age (dependent) population, who are either below the minimum school leaving age and above the age of retirement, to the working age population) will increase significantly from its current level of 0.48 (or 48 dependent people for every 100 working age people) over the next 30 years.

In light of this, in December 2008 the States passed legislation increasing the age at which a States pension can be claimed by 2 months a year between 2020 and 2032, increasing it from 65 to 67 across this period. These changes have been included in the projected size of the working age and retired population presented above and the estimated workforce utilised in the estimation of revenue and economic output.

Figure 1 shows the impact of the increase in retirement age on the dependency ratio. Using the +200 net migration model the increase of the retirement age reduces the dependency ratio in 2040 for 0.76 (76 dependents for every 100 people of working age) to 0.70 (70 dependents for every 100 people of working age).

Figure 1. Dependency ratios



Appendix 2. The effect of varying the average rate of earnings growth

The main body of this report assumes a 2% per annum real growth in average earnings. However, although this assumption is consistent with Guernsey historic mean average earnings growth, following the recent economic stress speculation has arisen among economists regarding the possibility of a long term reduction in the average growth rate of developed economies. In order to consider the potential impact this would have on Guernsey's economic growth Figures 1 and 2 show the effect on GDP in both models of reducing the long term growth in earnings to 1%.

The effect of this reduction on both models is, over the period shown, more significant than effect of varying the population growth assumption. The degree of impact on GDP using the two population models is similar, each being reduced by 26% by 2040.

Figure 1. **GDP: the effect of varying earnings growth, +200 net migration model**

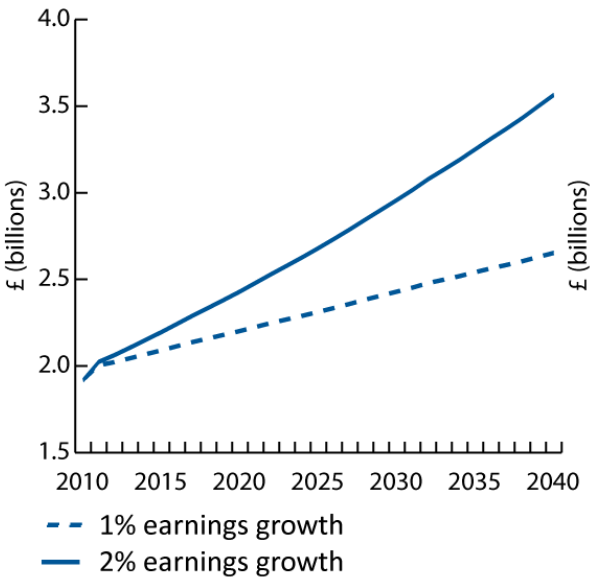
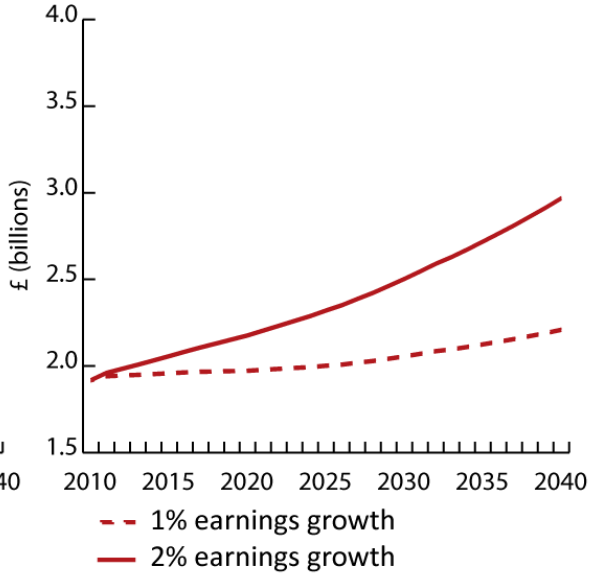


Figure 2. **GDP: the effect of varying earnings growth, constant population model**



Aggregate Expenditure

Figure 3 and 4 illustrate the potential impact of decreased economic growth (using the assumption of an assumed decrease in earnings growth) would have on the cost of aggregate public expenditure relative to the size of the economy.

Again the effect on the two models is similar (although slightly more pronounced in the constant population model) increasing aggregate expenditure by approximately 27% relative to GDP.

Figure 3. **Aggregate expenditure: the effect of varying real annual earnings growth, +200 net migration model**

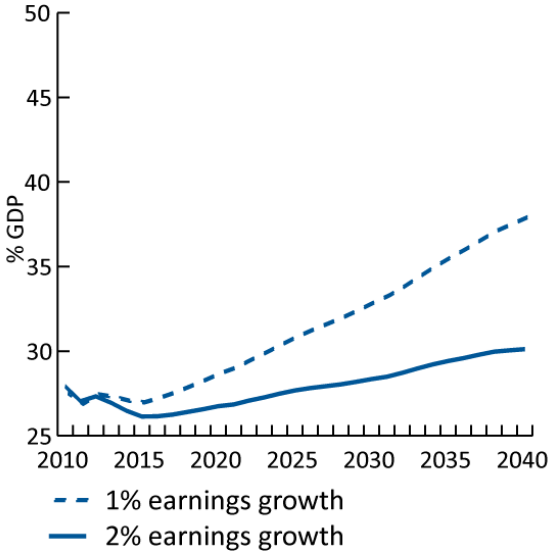
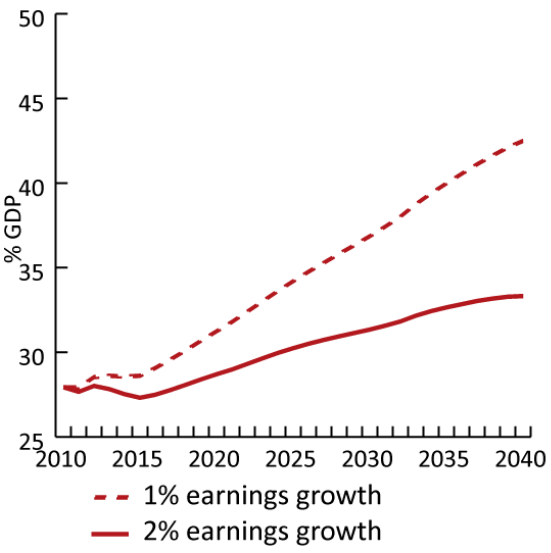


Figure 4. **Aggregate expenditure: the effect of varying real annual earnings growth, constant population model**



Expenditure by area

Figures 5 to 16 show the assumed impact of the long term decrease in earnings and economic growth on the various expenditure areas. The impact is more pronounced in those areas where expenditure is considered to be a function of the population size: health; education and the Social Security Funds, than in other general revenue expenditure where the expenditure is assumed to be moderated in line with the available income after the SSP horizon.

Figure 5. **Total public expenditure on healthcare: the effect of varying real annual earnings growth on the +200 net migration model**

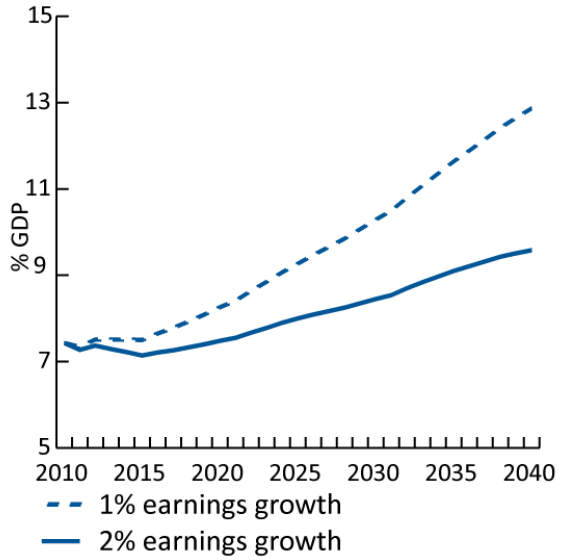


Figure 6. **Total public expenditure on healthcare: the effect of varying real annual earnings growth on the constant population model**

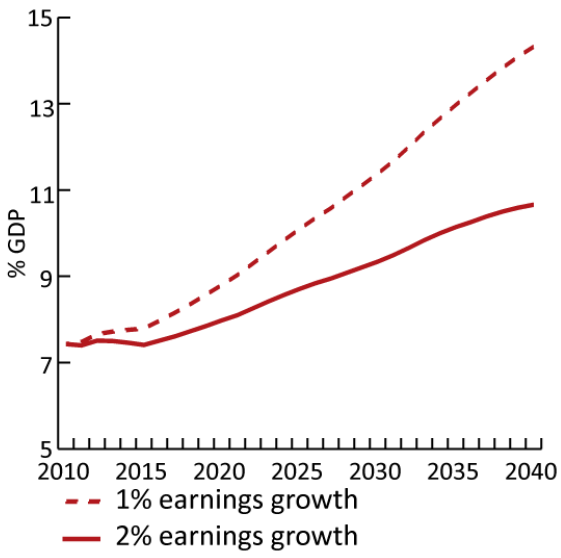


Figure 7. Guernsey Insurance Fund: the effect of varying earnings growth, +200 net migration model

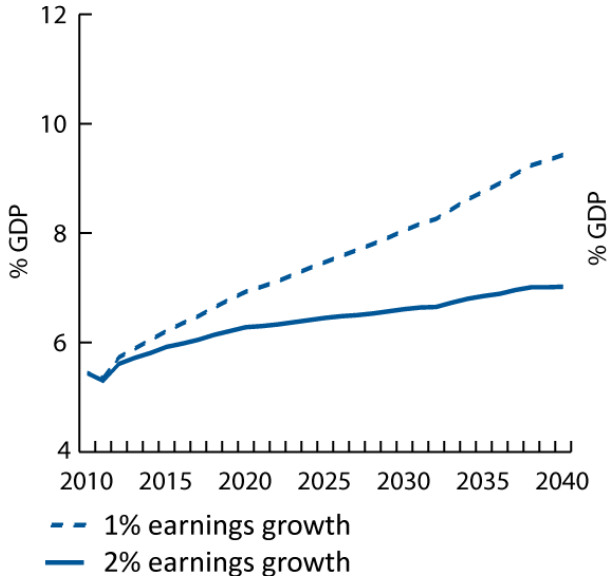


Figure 8. Guernsey Insurance Fund: the effect of varying earnings growth, constant population model

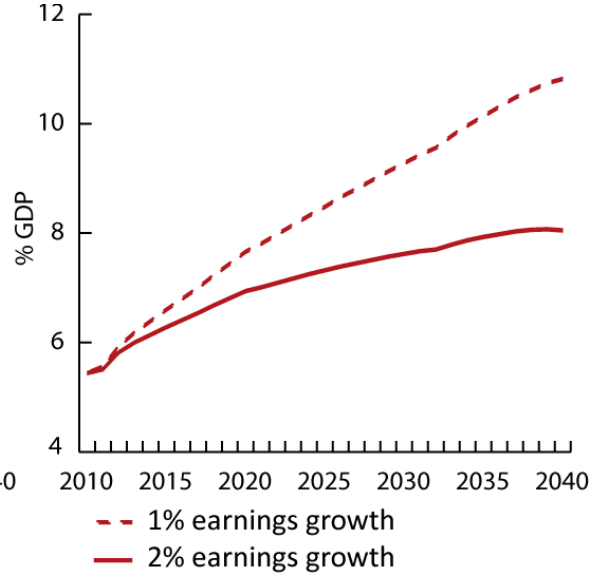


Figure 9. Long Term Care Fund: the effect of varying earnings growth, +200 net migration model

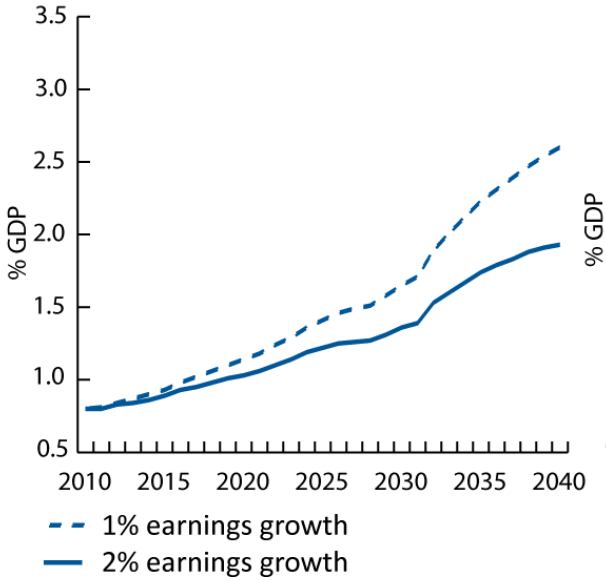


Figure 10. Long Term Care Fund: the effect of varying earnings growth, constant population model

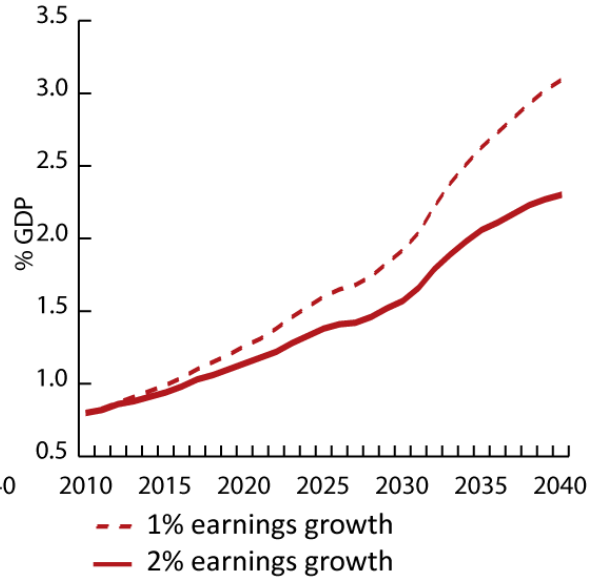


Figure 11. **Education expenditure: the effect of varying real annual earnings growth on the +200 net migration model**

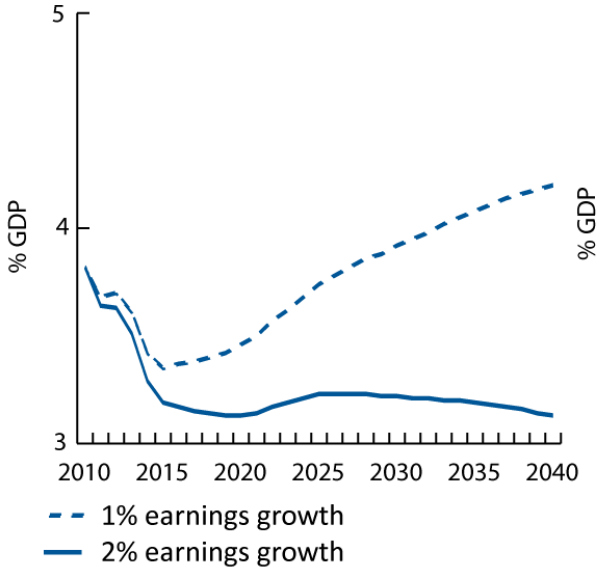


Figure 12. **Education expenditure: the effect of varying real annual earnings growth on the constant population model**

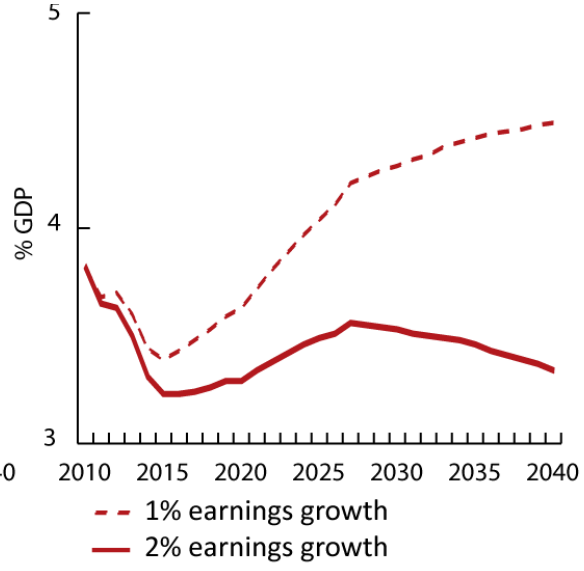


Figure 13. **Revenue expenditure on SSD: the effect of varying real annual earnings growth on the +200 net migration model**

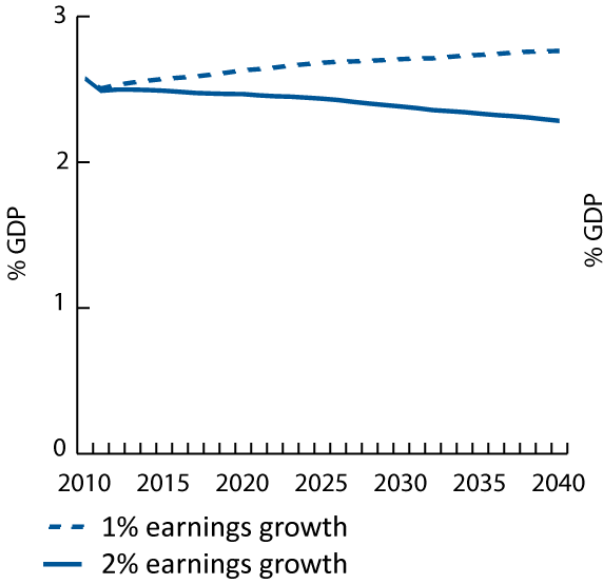


Figure 14. **Revenue expenditure on SSD: the effect of varying real annual earnings growth on the constant population model**

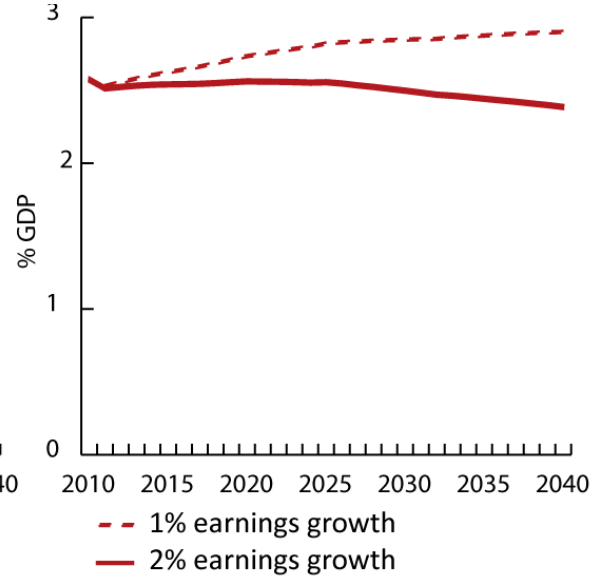


Figure 15. Other general revenue and capital expenditure : the effect of varying earnings growth on the +200 net migration model

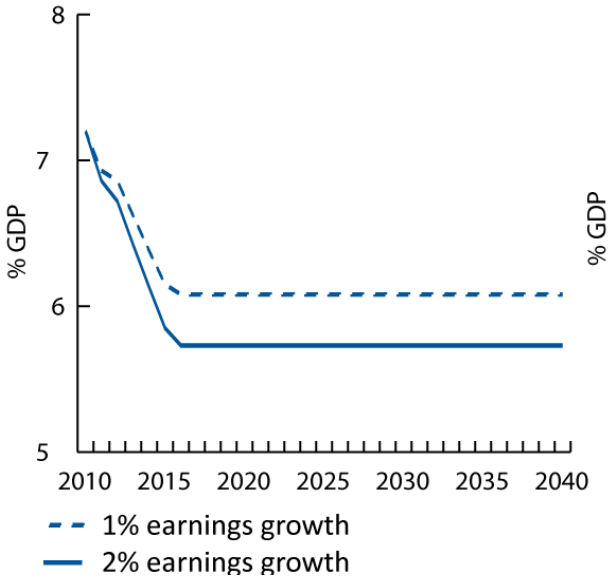
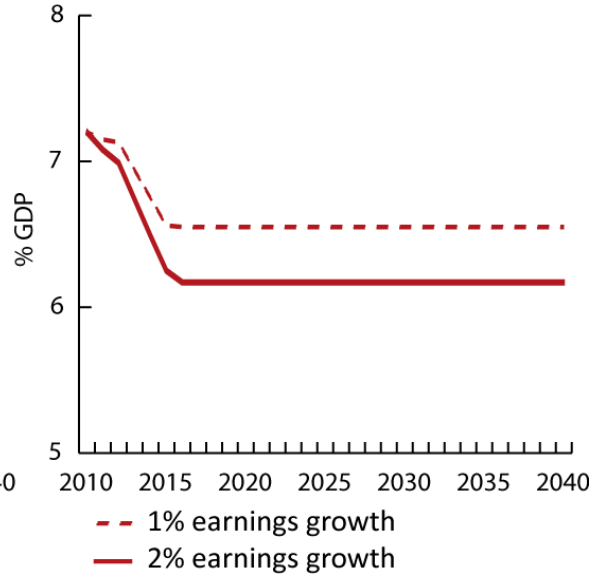


Figure 16. Other general revenue and capital expenditure : the effect of varying earnings growth on the constant population model



Expenditure by funding source

Figures 17 to 20 show the effect of reduced earnings growth on expenditure by the area of funding relative to GDP (i.e. by general revenue funds or by Social Security contributions.).

The impact on general revenue is to increase the level of expenditure relative to the economy in 2040 by 24% in both models (although again the impact is slightly higher in the constant population model). The impact of on expenditure funded by SSD is more pronounced, increasing relative to GDP by 37% to a total of 15% of GDP.

Figure 17. General revenue expenditure: the effect of varying real annual earnings growth, +200 net migration model

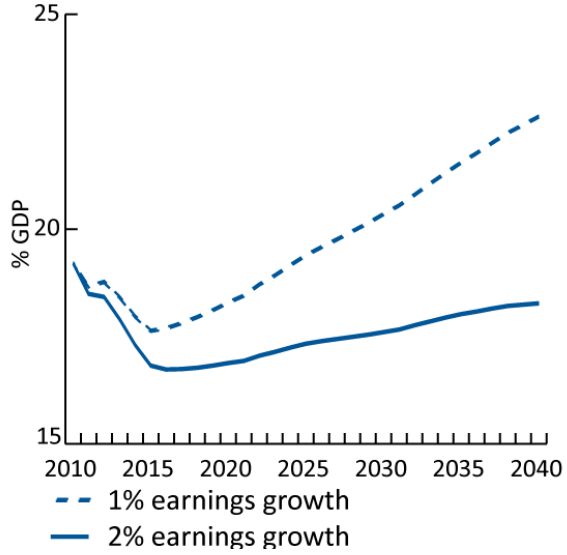


Figure 18. General revenue expenditure: the effect of varying real annual earnings growth, constant population model

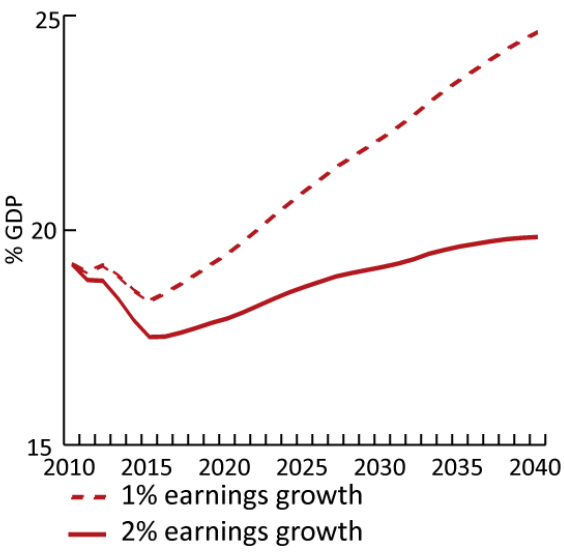


Figure 19. **SSD expenditure funded by contributions income: The effect of varying real annual earnings growth, +200 net migration model**

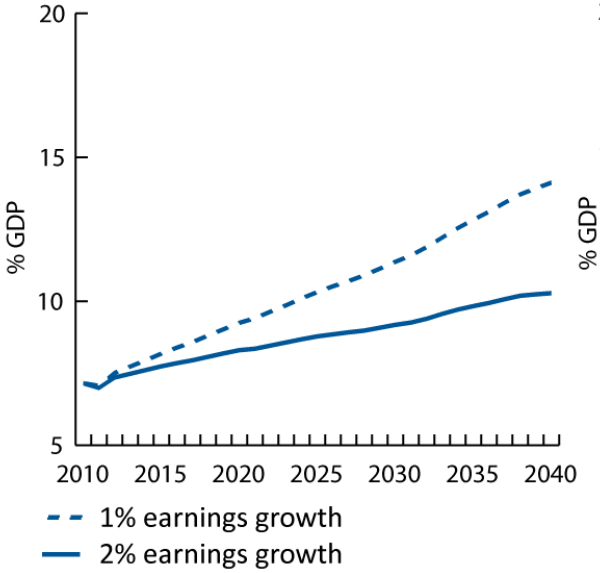
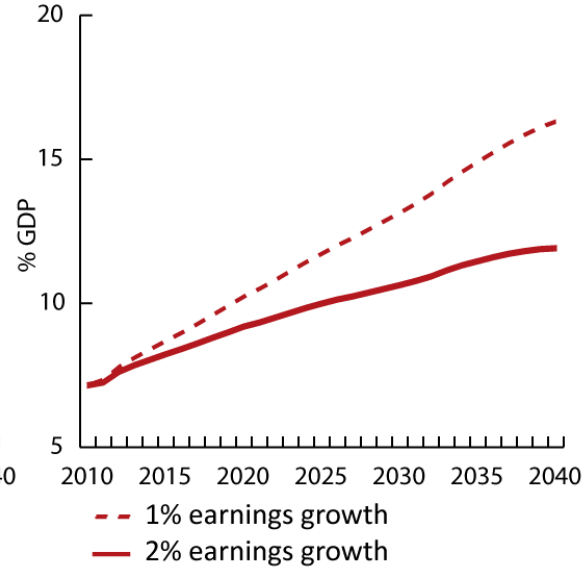


Figure 20. **SSD expenditure funded by contributions income: The effect of varying real annual earnings growth, constant population model**



Appendix 3. Methodological Background for Healthcare Modelling

Modelling of healthcare expenditure is particularly challenging and fraught with unknowns. Future medical and technological breakthroughs could have a major impact on health expenditure on both the positive and negative sides. The progression of social issues which impact health (such as drugs, alcohol, smoking and obesity) may also have a significant impact on the average cost of healthcare and average life expectancy. The success of policies designed to tackle such issues could result in savings both in terms of lives and public expenditure. However failure to tackle significant issues could result in an additional burden on the public purse.

Figure 1. Relative distribution of healthcare costs by age and by proximity to death in England.

Table 2

Share of population and hospital expenditures by age group, 2002 and 2026, England

	0–4	5–15	16–44	45–64	65–74	75–84	85+
% of population							
2002	5.8	14.0	40.9	23.8	8.1	5.5	2.0
2026	5.4	11.9	36.0	26.2	10.4	7.3	2.7
%-point change	−0.4	−2.1	−4.9	+2.4	+2.3	+1.8	+0.7
% of decedents							
2002	0.2	0.2	3.5	13.1	18.7	33.7	30.7
2026	0.1	0.1	2.5	12.0	17.1	32.9	35.2
%-point change	−0.1	−0.1	−1.0	−1.1	−1.8	−0.8	+4.5
% of expenditures							
2002	7.9	3.4	24.9	20.1	13.1	18.4	12.5
2026	7.3	2.8	21.3	21.9	13.7	19.0	14.0
%-point change	−0.6	−0.6	−3.6	+1.8	+0.6	+0.6	+1.5

Source: Seshamani and Gray (2002).

Table 3

Share of population and hospital expenditures attributable to people in their last year of life, 2002 and 2026, England

Age group	2002		2026	
	Share of age group in last year of life (%)	Share of expenditures (%)	Share of age group in last year of life (%)	Share of expenditures (%)
0–4	0.03	1.54	0.02	1.02
5–15	0.01	0.65	0.01	0.44
16–44	0.09	3.83	0.07	3.10
45–64	0.56	18.97	0.47	16.48
65–74	2.35	43.06	1.68	36.81
75–84	6.24	55.94	4.63	51.44
85+	15.90	64.63	13.47	63.04
All ages	1.02	28.98	1.02	27.98

Source: Seshamani and Gray (2002).

The average cost of healthcare per capita increases significantly with age (see Figure 5.3.1) and also with proximity to death. This has a potentially significant impact on healthcare expenditure in Guernsey with an increasing percentage of the population in the older age groups likely to result in an increase in overall healthcare costs per capita beyond that caused by price inflation alone[25,26,27].

Price inflation in medical costs also tends to be significantly higher than that exhibited by the economy as a whole. Between 2001 and 2009 the OECD reported a real average increase in UK general government expenditure on public health per capita of 5%, with an overall average annual increase of 4% in all reported countries over the same period[28]. This level of inflation is due partly to increased cost of existing medical service and partly due to the continuing development of new and more sophisticated medical treatments. This also has significant implications for the cost of health services in the Island, implying a likely real increase in medical care costs independent of changes in the population.

[25] Seshamani, M. and A. Gray (2002), "Ageing and Health-care Expenditure: The Red Herring Argument Revisited", Health Economics 13,303–314.
[26] Alastair Gray, "Population Ageing and Healthcare Expenditure", University of Oxford, Aging horizons Issue no. 2
[27] Constantina Safiliou-Rothschild, "Are Older People Responsible For High Healthcare Costs? "*,CESifo Forum 1/2009*
[28] http://stats.oecd.org

Appendix 4. The effect of varying healthcare expenditure

The central projection of healthcare expenditure growth used in the primary modelling is that the cost of healthcare per capita will increase by 2% each year - the same rate assumed rate as the growth in average earnings. However, between 2006 and 2010 the total cost of healthcare per capita (including HSSD and GHSF) increased by an average 2.9%, 0.9 percentage points higher than the mean average increase in earnings over the same period. As, in these models, earnings are the primary driver of revenue for the States of Guernsey this position is fundamentally unsustainable in the long term as it will inevitably lead to a faster rate of growth in expenditure than income.

This appendix examines the impact of varying the assumption of per capita growth in healthcare expenditure on public spending.

Aggregate Expenditure

Figures 1 and 2 show the impact of both reducing and increasing the level of healthcare expenditure growth by 1 percentage point on aggregate public expenditure. This results in a range of possible expenditure outcome ranging from 27.6% to 33.4% of GDP in 2040 using the +200 net migration model and 30.6% and 37.0% of GDP using the constant population model.

Figure 1. **Aggregate Expenditure: The effect of varying real annual growth in healthcare expenditure per capita, +200 net migration**

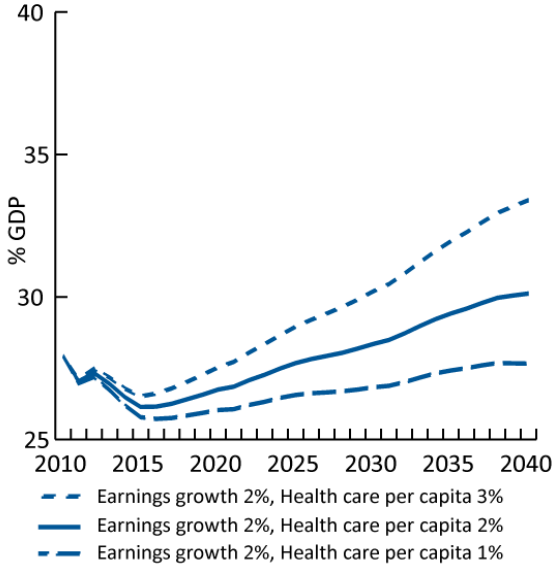
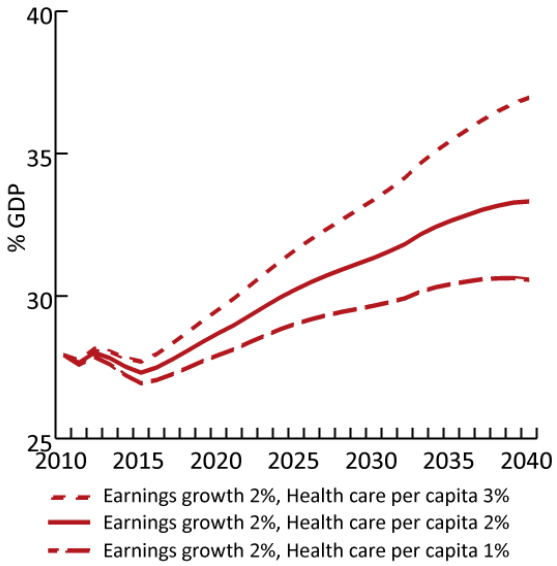


Figure 2. **Aggregate Expenditure: The effect of varying real annual growth in healthcare expenditure per capita, constant population**



The projections show that, in order to maintain expenditure at its current level relative to the size of the economy using the +200 net migration model, the increase in healthcare expenditure per capita would need to be restrained to approximately 1 percentage point less than the increase in average earnings. However, using the constant population model the aggregate expenditure relative to GDP may increase to more than its current level (27.9%) even if per capita growth in healthcare expenditure is restrained to this level.

Healthcare expenditure

The total public expenditure on healthcare (including the expenditure of both HSSD and the GHSF) could increase by an additional 3.3 percentage points of GDP by 2040 if healthcare expenditure per capita were allowed to increase by one percentage point more than average earnings (using the +200 net migration model). This would increase total public expenditure on health from 7.4% of GDP in 2010 to 12.9% in 2040.

Should healthcare costs per capita consistently grow at a faster rate than earnings, the principle driver of public sector income, expenditure growth will outstrip income growth in the long term. This position is fundamentally unsustainable even without the added pressure of an increased level of demand as a result of the aging population.

In order to maintain public expenditure on health to it current level relative to GDP health inflation per capita would need to be restrained to at least 1 percentage point below the growth in average earnings.

Figure 3. **Total public expenditure on healthcare: The effect of varying real annual growth in healthcare expenditure per capita, +200 net migration**

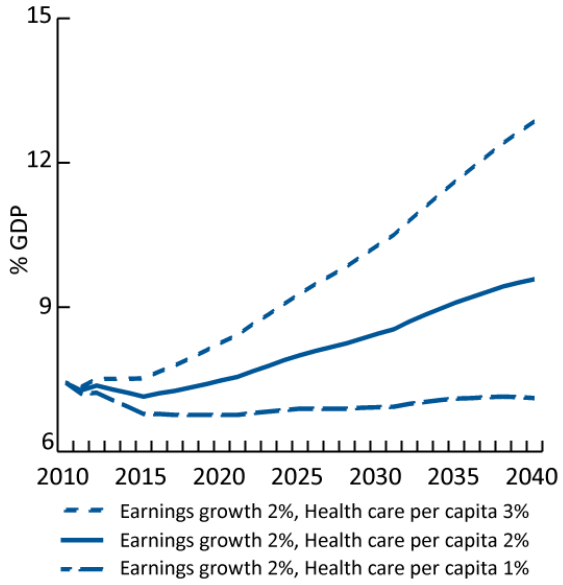
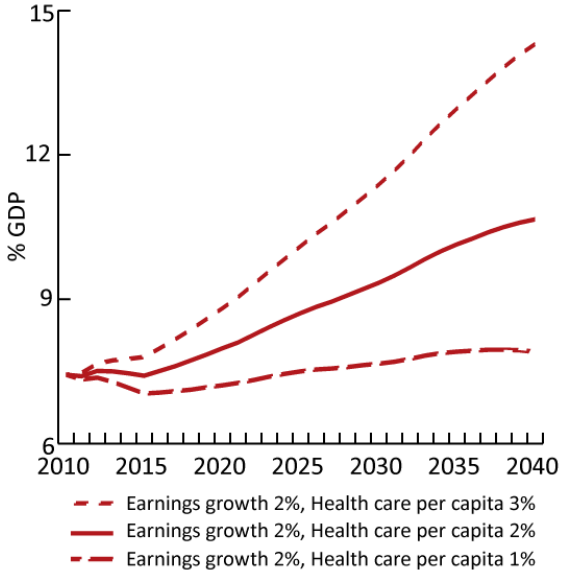


Figure 4. **Total public expenditure on healthcare: The effect of varying real annual growth in healthcare expenditure per capita, constant population**



10.2. Expenditure by funding source

Figures 5 to 8 show the relative impact of varying the healthcare expenditure assumptions on both general revenue expenditure and expenditure funded by Social Security contributions. It can be seen that, because of the larger burden of healthcare carried by HSSD (and therefore general revenue) than the GHSF (funded by SSD contributions) the impact on general revenue is much larger than in the SSD funded expenditure.

Varying the healthcare expenditure assumptions between 1% and 3% per capita per annum produces a range of projective general revenue expenditure between 16.4 and 20.7% of GDP (using the +200 net migration model) and SSD contributions funded expenditure of between 9.7 and 11.1% of GDP.

Figure 1. **General revenue expenditure: The effect of varying real annual growth in healthcare expenditure per capita on the +200 net migration**

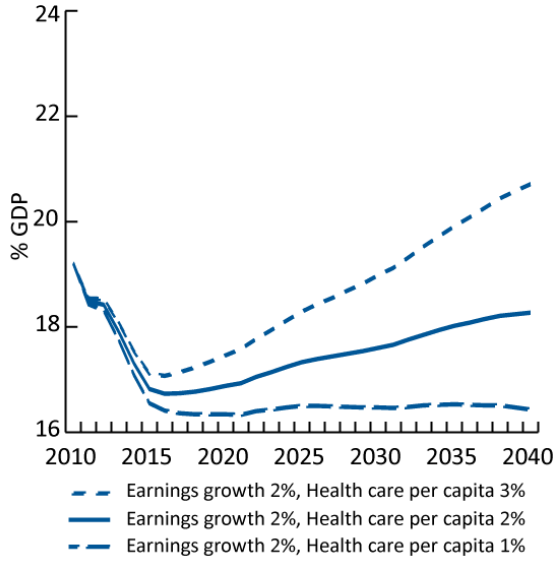


Figure 2. **General revenue expenditure: The effect of varying real annual growth in healthcare expenditure per capita on the constant population**

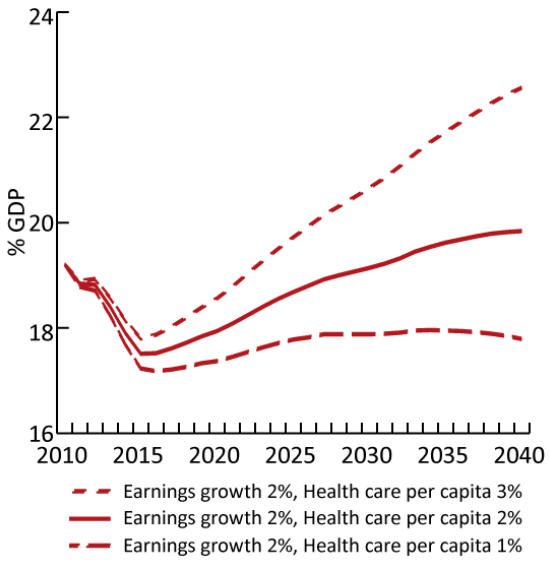


Figure 3. **SSD expenditure funded by contributions income: The effect of varying real annual growth in healthcare expenditure per capita, +200 net migration**

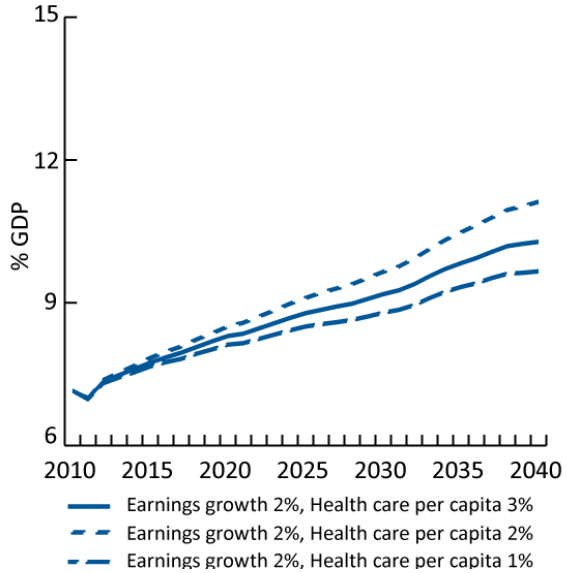
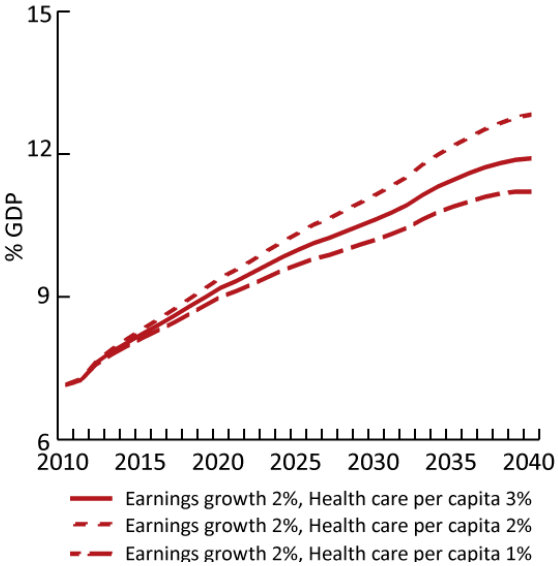


Figure 4. **SSD expenditure funded by contributions income: The effect of varying real annual growth in healthcare expenditure per capita, constant population**



Appendix 5. Other areas of revenue expenditure

Social Security Revenue Expenditure

As has been the methodology throughout this report, the projections are based on current service levels and current funding models. No account has been attempted to account for potential changes that have not yet been agreed by the States. The projections for Social Security expenditure funded from general revenue exhibits little growth over the forecast horizon. This is due, in the main to the assumption of continued recent practice of an increase in benefit levels lower than the historic average annual earnings increase. Similarly, no account is attempted of potential changes in structural levels of claimants through either changed economic circumstance, or changed eligibility criteria.

Although the expenditure of the SSD administered funds is not incorporated in the general revenue budget, non-contributory benefits (those to which you are eligible regardless of your contributions record) such as supplementary benefit, are funded directly from general revenue.

In addition, a grant (known as the revenue grant) is paid from general revenue to the Guernsey Insurance Fund (GIF) and the GHSF. The revenue grant is a formula led expenditure, equal to 15% of Social Security Contributions to the GIF and 12% of contributions to the GHSF[29]. Combined the revenue grant represents 12.5% of the total amount of income received by SSD from contributions.

Modelling in this section is based on the method and assumptions mentioned in previous sectors plus:

- SSD non-contributory benefits
    - The benefits incorporated by the revenue portion of SSD expenditure have been broken down and modelled as proportional to the age group deemed most applicable (e.g. Family allowance is modelled against the population 0-16, Incapacity benefit against the working age population).
    - The rate at which benefit payments are made is assumed to increase at 1% per annum in real terms.
    - The number of claimants for each benefit is assumed to remain at a constant proportion of the population against which they are modelled[30].

- Revenue grant to SSD funds
    - The revenue grant is modelled at a constant rate of 15% of contributions to the Guernsey Insurance Fund (GIF) and 12% of contributions to the (GHSF).
    - Contributions are calculated based on the current rates applied to aggregate income figures extracted from the models used to calculate GDP projections.

[29] No grant is paid to the Long Term Care Fund

[30] It is acknowledged that this assumption regards to supplementary benefit claimants may be flawed, as the number of which can vary considerably dependent on the economic conditions. In particular it is likely that, should long-term economic growth reduce it is likely that the number of household requiring additional financial support will increase.

Figure 1. Total expenditure from General Revenue on Social Security

2% real earnings growth

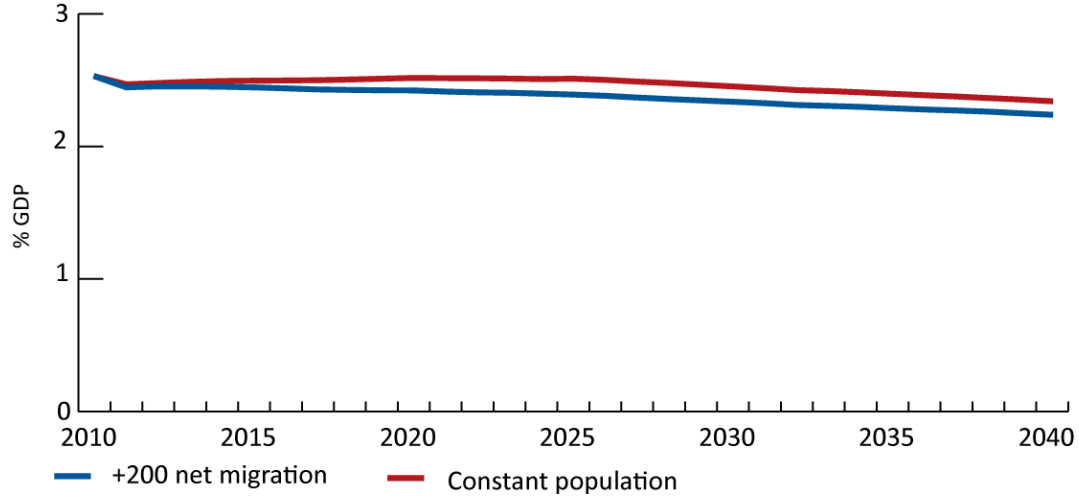


Table 1 Total expenditure by General Revenue on Social Security

2% real earnings growth

	Revenue expenditure on SSD in 2010		Revenue expenditure on SSD in 2016		Revenue expenditure on SSD in 2040	
	£ million	**% GDP**	**£ million**	**% GDP**	**£ million**	**% GDP**
+200 net migration	49	2.6	56	2.5	81	2.3
Constant population	49	2.6	53	2.5	71	2.4

Education

Education is also, by nature, intrinsically linked to the demographic profile. However, unlike healthcare costs, it is the younger age groups that have the largest impact on expenditure. As fertility rates have fallen in the last 40 years and the youngest of the 'baby boom' generation are now moving beyond their child bearing age the number of children being born in the Island is projected to fall over the next thirty years resulting in a smaller number of children than in the current demographic profile.

Education costs have been modelled using the following assumptions:

- Education expenditure is assumed to be proportional to the population in the applicable age groups for the level of education (primary, secondary, tertiary etc).
- The cost of education per capita in each age group is assumed to increase in real terms at 2% per annum.
- The projected savings resulting from the FTP have been apportioned by department in the same proportions as the overall expenditure in 2010. The savings within education have been apportioned to the per capita expenditure levels.
- Administrative costs are assumed to increase in real terms at 2% per annum independent of the population.

Figure 2. Total education expenditure

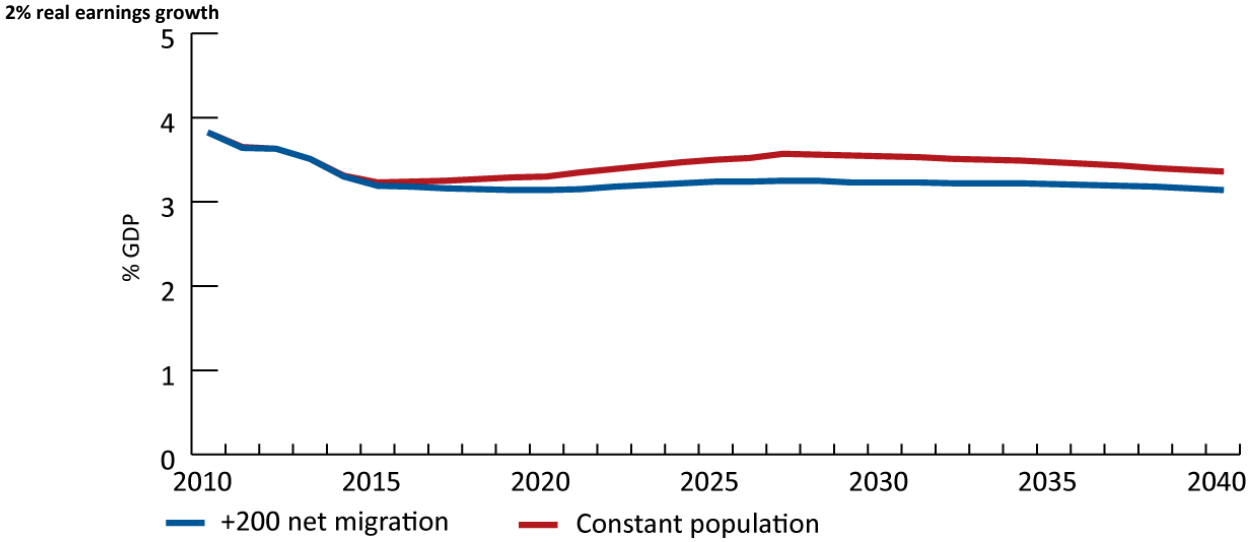


Table 2 Education expenditure

	Education expenditure in 2010		Education expenditure in 2016		Education expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	73	3.8	71	3.2	111	3.1
Constant population	73	3.8	67	3.2	99	3.8

Other general revenue and capital expenditure (excluding Health, Education and Social Security)

The expenditure areas included in this section are those less directly linked to the population. This includes expenditure by the majority of States Departments. As such these have been modelled using the following assumptions:

- In line with the expenditure profile outlined in the SSP expenditure in these areas shows not real increase between 2010 and 2016
- After 2016 expenditure increases at the same rate as GDP
- The projected savings resulting from the FTP have been apportioned by department in the same proportions as the overall expenditure in 2010.
- Capital expenditure is projected to follow the path outlined in the SSP until 2016 and remain at a constant proportion of GDP thereafter (See Box 4).

Figure 3. Other general revenue and capital expenditure, +200 net migration

2% real earnings growth

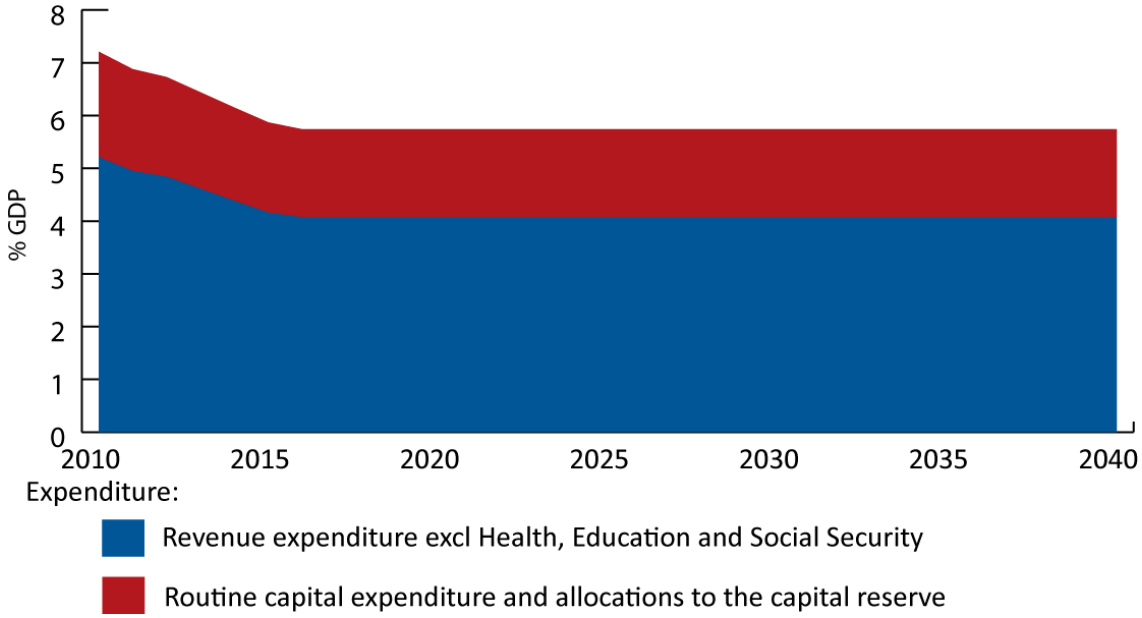


Figure 4. Other general revenue and capital expenditure, constant population

2% real earnings growth

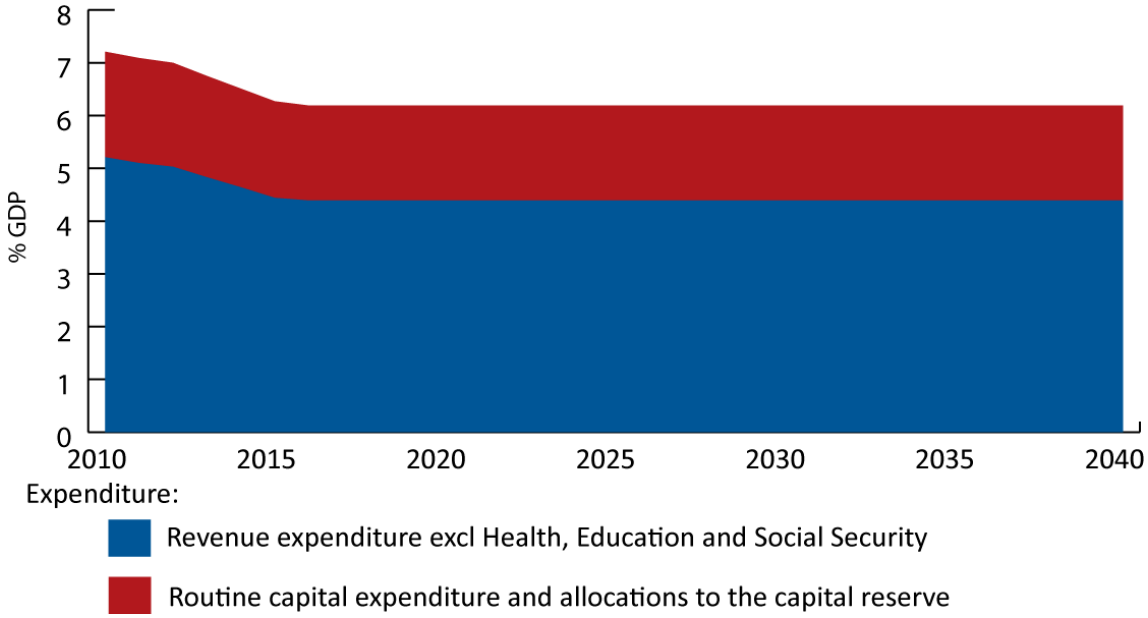


Figure 5. Other general revenue and capital expenditure

2% real earnings growth

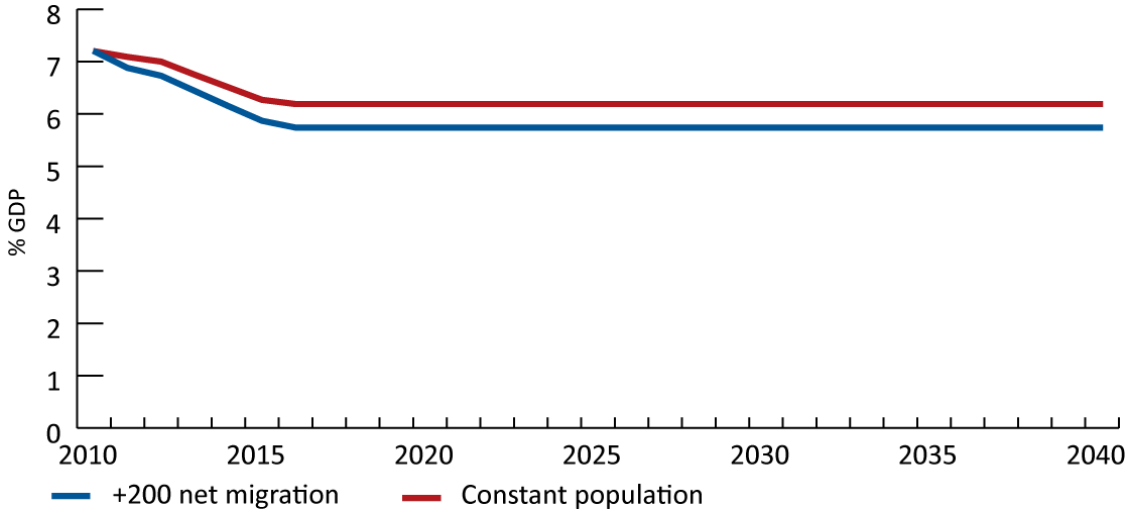


Table 3 Other general revenue and capital expenditure

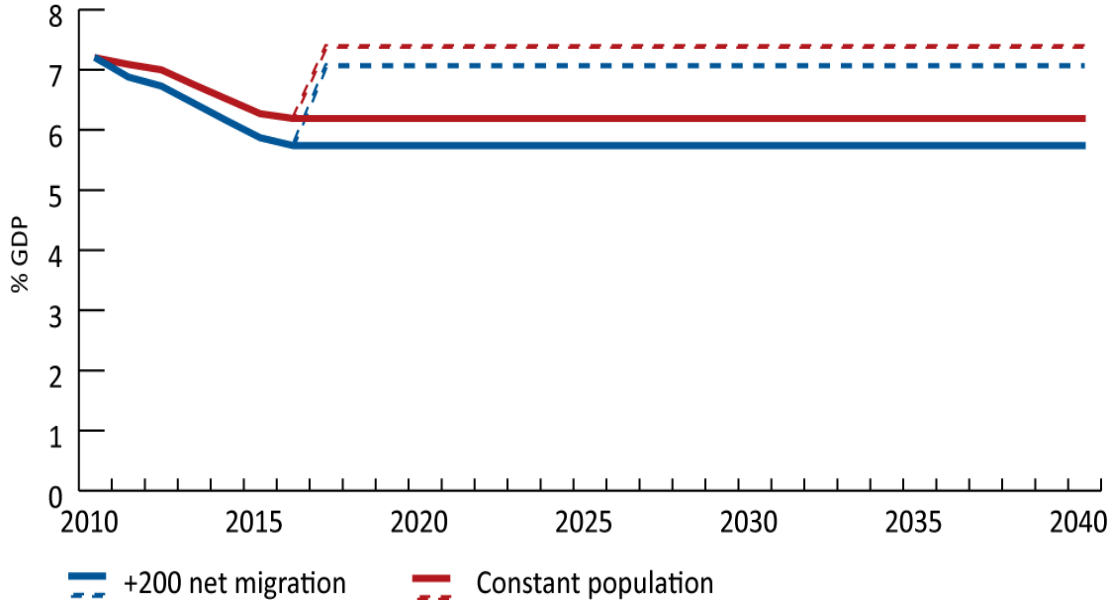
2% real earnings growth

	Other general revenue expenditure in 2010		Other general revenue expenditure in 2016		Other general revenue expenditure in 2040	
	£ million	% GDP	£ million	% GDP	£ million	% GDP
+200 net migration	138	7.2	129	5.7	204	5.7
Constant population	138	7.2	129	6.2	183	6.2

Box 1. Capital expenditure and the Fiscal Framework

The assumptions made in this section maintain capital expenditure at the level of GDP projected in 2016. However it should be noted that under the guidelines of the Fiscal Framework, The States are required to allocate 3% of GDP to capital expenditure per annum. The effect this has on the expenditure is illustrated in the Figure 1. All totals in the report to the 2040 horizon assume the lower level of capital expenditure. If the States were to meet its policy commitment around an additional 1% of GDP of revenues is required, or cuts in other expenditure, or alternative funding of capital expenditure considered. This is not a policy issue for this report.

Figure 1. **Total revenue and capital expenditure excl. Health, Education and Social Security with capital expenditure increasing to 3% of GDP after 2016.**

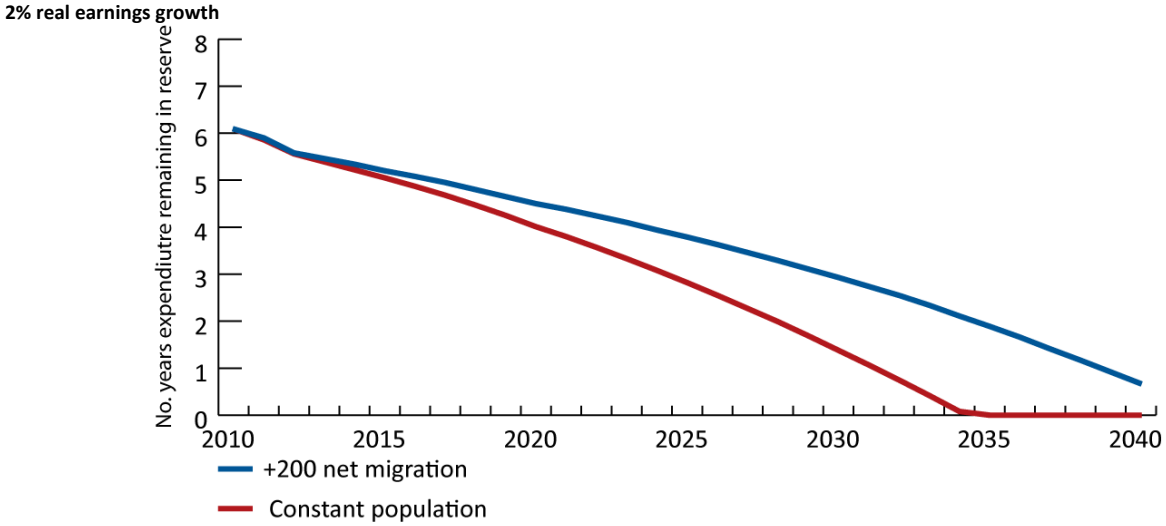


Appendix 6. Progression of reserves held by SSD funds

Guernsey Insurance Fund

Figure 1 below shows the progression of the GIF fund reserve based on the central assumption of 2% earnings growth. At the end of 2010 there were approximately six years of expenditure in the reserve. The effect of both the deficit and the increase in the level of expenditure is to erode the value of the reserve relative to expenditure over time. Although this is partially offset by the return on investment, particularly in the early stages when there is still a significant volume of funds in the reserve, this results in a depletion of the fund reserves to less than 1 year of expenditure in 2040 using the +200 net migration model and complete exhaustion of the fund in the mid 2030s using the constant population model.

Figure 1. GIF- progression of the reserve at current rate



Figures 2 and 3 show the potential impact that reduced earnings growth could have on the progress of the reserve. It can be seen that, should the island experience an extended period of lower earnings growth this could significantly reduce the level of reserves and hasten the exhaustion of the fund.

Figure 2. GIF- progression of the reserve at current rate: The effect of varying real annual earnings growth, +200 net migration model

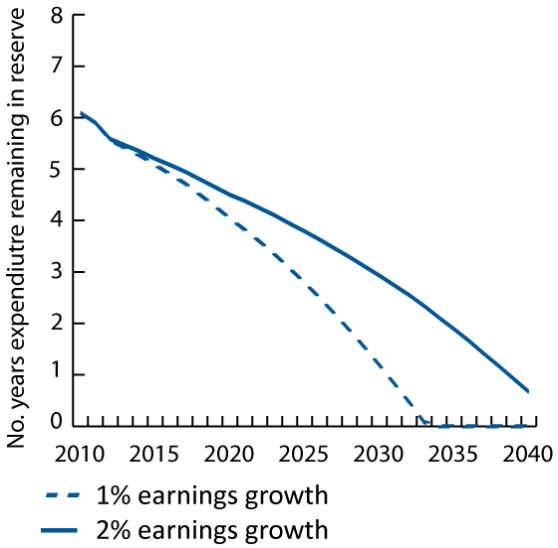


Figure 3. GIF progression of the reserve at current rate: The effect of varying real annual earnings growth, constant population model

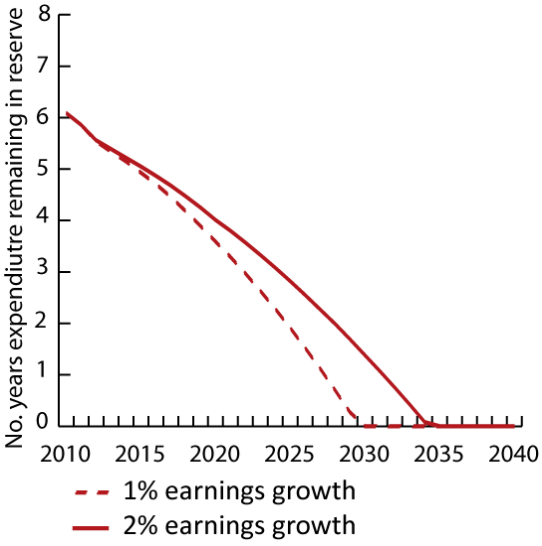


Figure 4 and 5 show the effect of increasing the assumed contributions rates from 2013 onwards. An increase in the contribution rate, even if by less than 1 percentage point has a significant impact on the projected value of the fund. However, because of the larger workforce (and therefore greater contributions income) in the +200 net migration model, the effect of raising contributions rates is more pronounced in this model than in the constant population model.

Raising the contribution rate from its current rate (8.3%) to 8.8% results in more than three times the available funds in 2040 using the +200 net migration model, and a three year delay in the exhaustion of the fund using the constant population model.

It should be noted that although the pensions cost bulge due to the baby boom population is projected to reach its peak towards the end of the 30 year period covered in this report, the operating break even contribution rate is likely to remain in excess of 10% until at least 2060. As a result the fund reserves are likely to continue to fall beyond the 2040 horizon.

Figure 4. **GIF- progression of the reserve: The effect of varying the contribution rate from 2013, +200 net migration model**

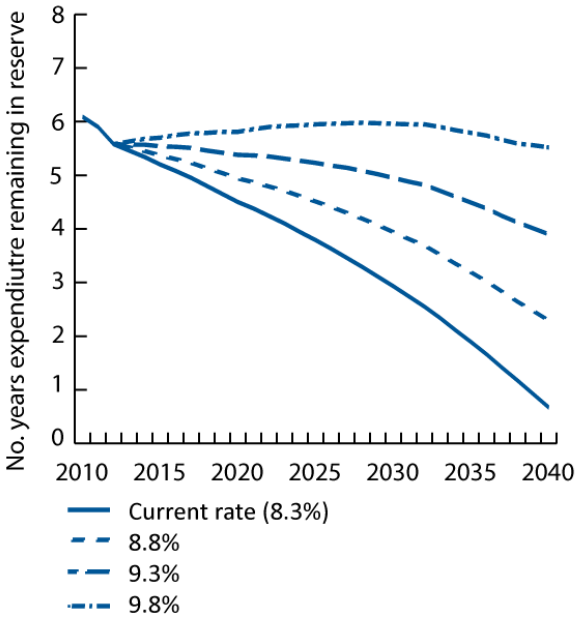
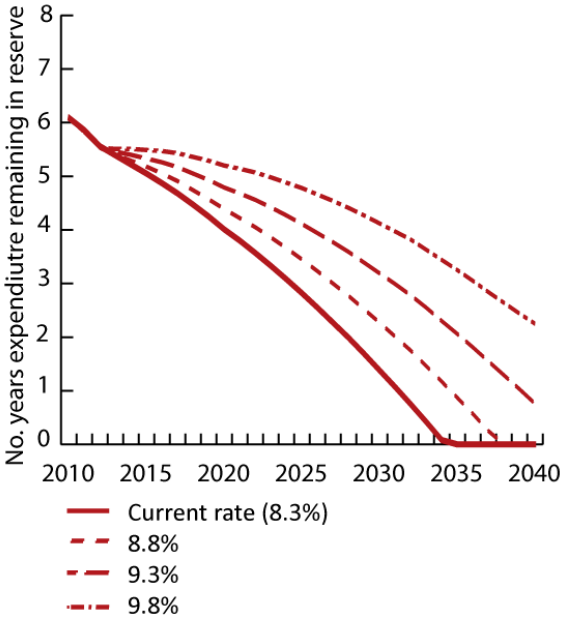


Figure 5. **GIF- progression of the reserve at current rate: The effect of varying the contribution rate from 2013, constant population model**



Long Term Care Fund

As the youngest and smallest of the three funds the reserves held by the LTCF are significantly smaller relative to its expenditure than the reserves of the GIF shown in the section above. Using the central assumption of 2% annual growth in earnings, these projections indicate that the LTCF will be exhausted by 2028 using the +200 net migration model and by 2025 using the constant population model.

Figures 7 and 8 show the effect of reduced earnings growth on the reserves held by this fund.

Figure 6. LTCF- progression of the reserve at current rate

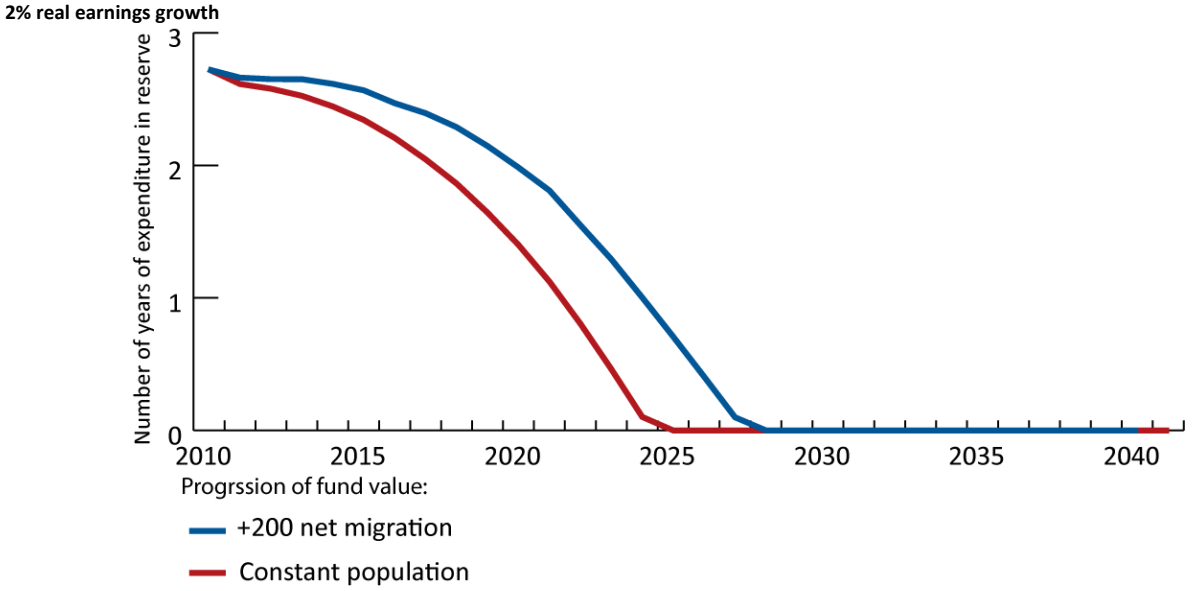


Figure 7. LTCF- progression of the reserve at current rate: The effect of varying real annual earnings growth, +200 net migration model

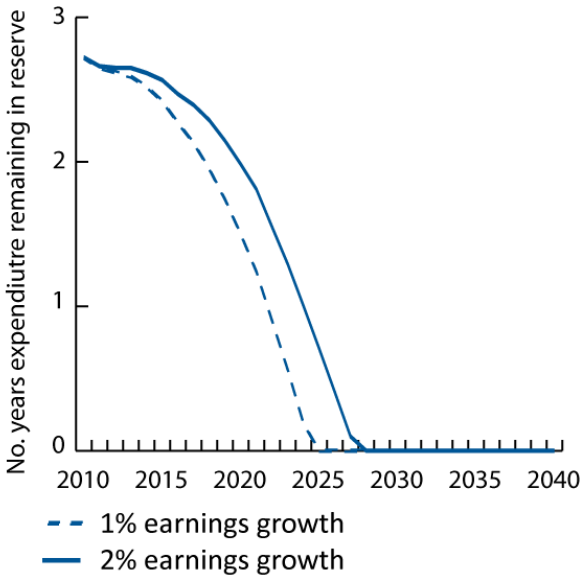
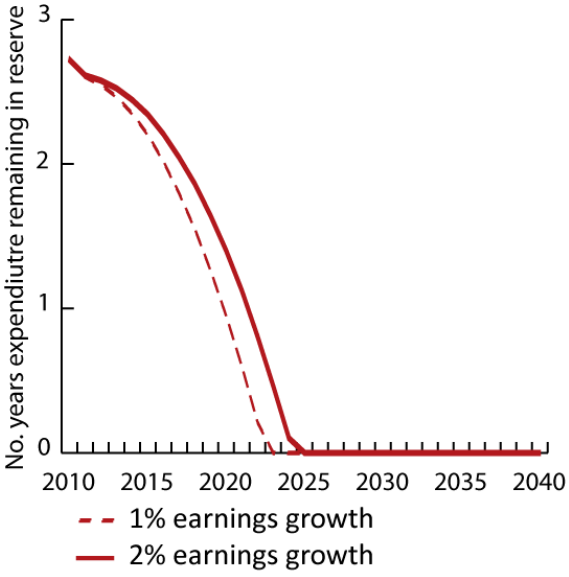


Figure 8. LTCF progression of the reserve at current rate: The effect of varying real annual earnings growth, constant population model



Figures 9 and 10 show the impact of increasing the contributions rate for the LTC fund on the progression of the fund reserves relative to expenditure. As seen in the GIF the impact of this in the +200 net migration model is larger than in the constant population model.

Of the contribution rates shown 1.9% is the lowest at which the fund remains in credit until 2040 using the +200 model. However, at this level using the constant population model the fund will be exhausted before the end of the period shown.

Figure 9. **LTCF- progression of the reserve: The effect of varying the contribution rate from 2013, +200 net migration model**

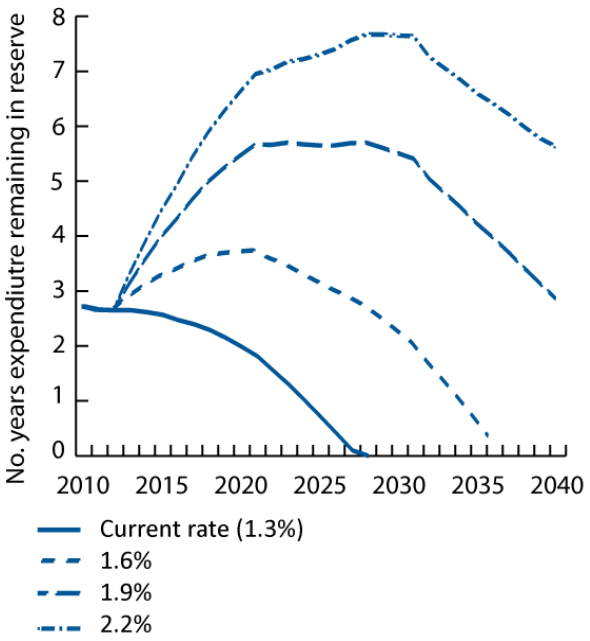
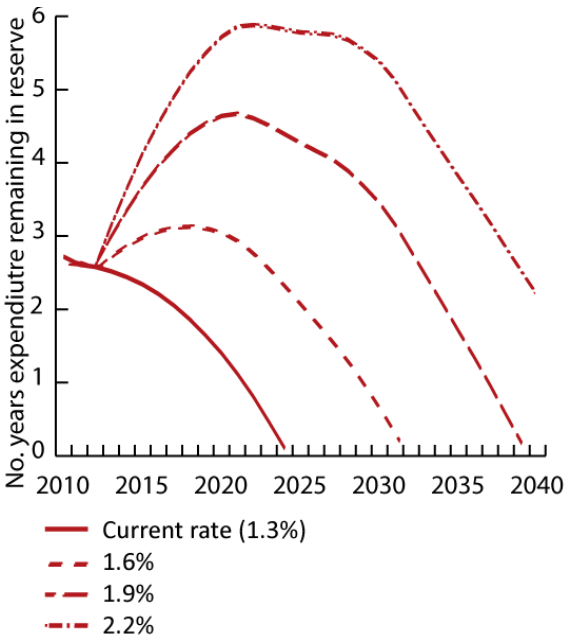


Figure 10. **LTCF- progression of the reserve at current rate: The effect of varying the contribution rate from 2013, constant population model**

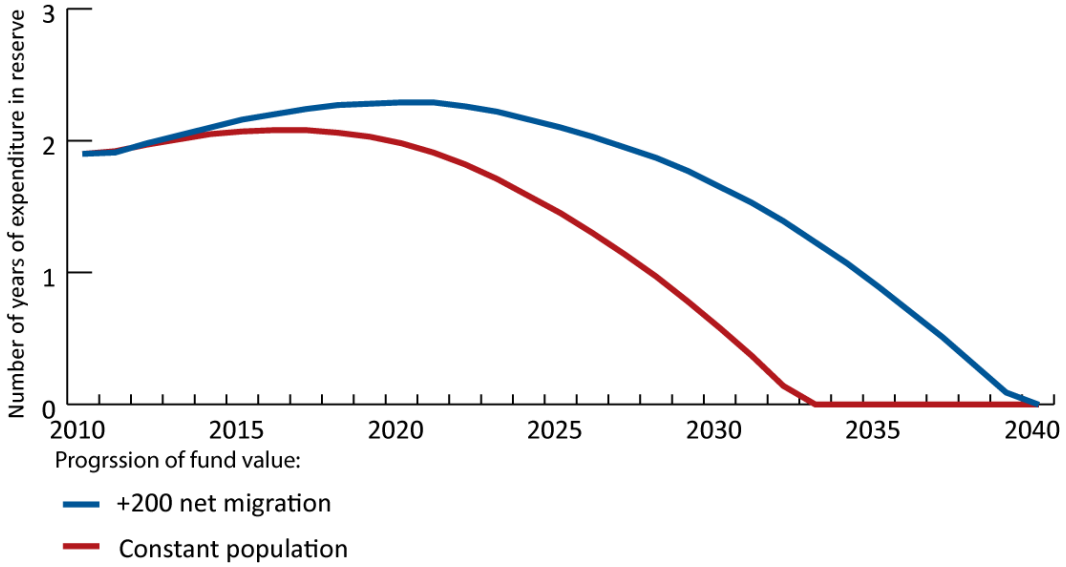


Guernsey Health Service Fund

Figure 11 shows the progression of the GHSF reserve at the current contribution rate. The GHSF currently has the lowest level of reserves relative to its expenditure of the three funds administered by SSD and these projections indicate that, under the central assumptions of 2%per annum earnings growth and 2% per capita per annum growth in healthcare costs, the reserves will become exhausted between 2026 and 2028.

Figure 11. **GHSF- progression of the reserve at current rate**

2% real earnings growth and 2% increase in healthcare costs per capita



Figures 12 to 15 show the effect on the fund reserve progression of varying the assumptions of average earnings and healthcare expenditure growth. In this instance the effect of varying the healthcare expenditure assumptions is more significant than the variation in earnings.

Under the +200 net migration model by restraining the annual increase in expenditure per capita to 1 percentage point less than earnings growth at the current level of contributions the fund value is projected to increase and remain above its current level relative to expenditure. However, growth in healthcare expenditure per capita 1 percentage point above the annual growth in earnings could shorten the lifespan of this fund by more than 10 years.

Figure 12. **GHSF- progression of the reserve: The effect of varying real annual earnings growth, +200 net migration model**

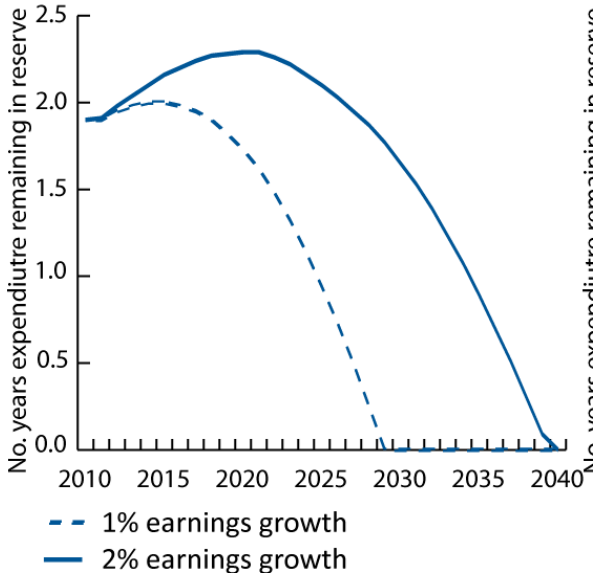


Figure 13. **GHSF- progression of the reserve: The effect of varying real annual earnings growth, Constant population model**

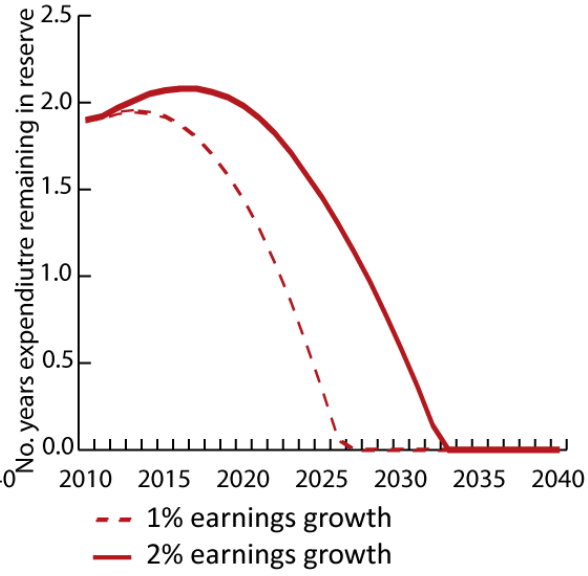


Figure 14. **GHSF- progression of the reserve: The effect of varying real annual growth in healthcare expenditure, +200 net migration model**

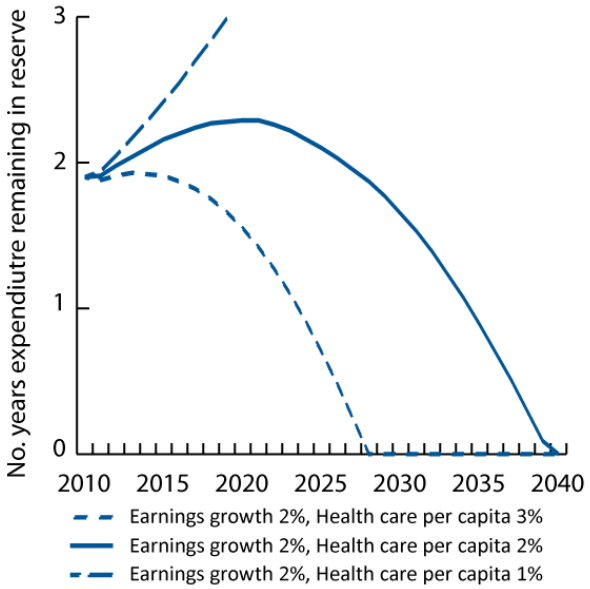
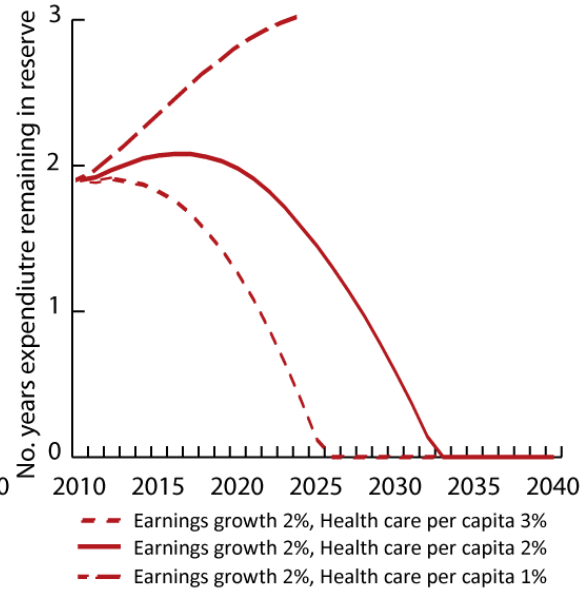


Figure 15. **GHSF- progression of the reserve: The effect of varying real annual growth in healthcare expenditure, Constant population model**



Figures 16 to 17 show the impact on the progression of the GHSF of varying the contribution rate to the reserve. Using the assumption of 2% earnings growth and 2% growth in healthcare costs, the GHSF would require a contribution rate of 3.1% in order to have funds left in reserve in 2040.

Figure 16. **GHSF- progression of the reserve: The effect of varying the contribution rate from 2013, +200 net migration model**

2% real earnings growth and 2% increase in healthcare costs per capita

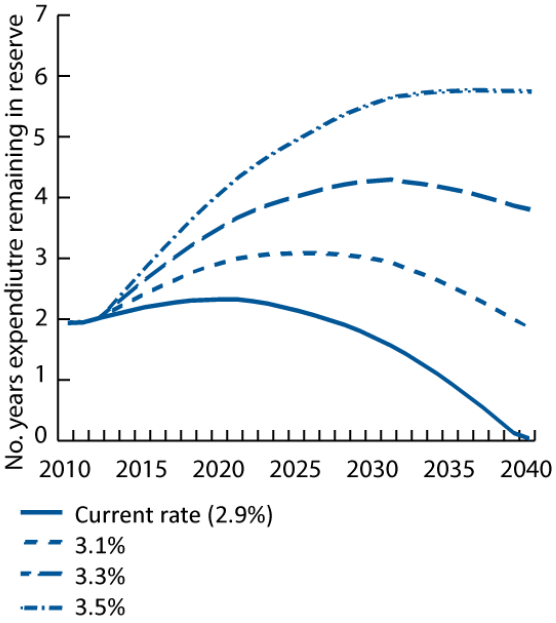
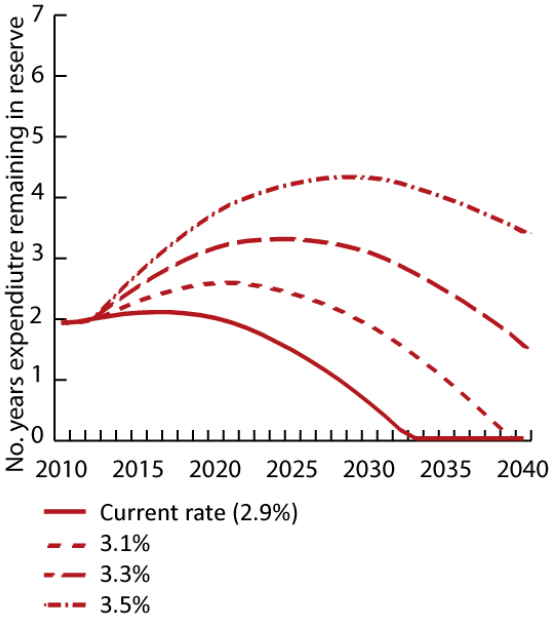


Figure 17. **GHSF- progression of the reserve at current rate: The effect of varying the contribution rate from 2013, constant population model**

2% real earnings growth and 2% increase in healthcare costs per capita



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