



**Report on potential economic
impacts of changes to the
insurance regulatory
framework in response to HM
Treasury's review of Solvency II
and PRA Solvency II Reform
Consultation Papers**

Association of British Insurers

21 November 2023



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In preparing this Report we have considered the requirements of the Technical Actuarial Standards (TAS) issued by the Financial Reporting Council. The TAS which apply to the work performed in preparing this report are 'TAS 100: General Actuarial Standards' and 'TAS 200: Insurance'. We have taken account of the requirements in Practice Standard 'APS X2: Review of Actuarial Work' introduced by the Institute and Faculty of Actuaries on 1 July 2015 and the work has been peer reviewed.





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1 Introduction and purpose

On 23 June 2020, the Government announced that it would review certain features of the prudential regulatory regime for insurance firms, known as Solvency II¹. As set out in that announcement, the financial services sector plays a crucial role in supporting the wider economy, creating jobs across the UK, supporting SMEs, contributing taxes, driving regional growth and investment, tackling climate change, and embracing technology and innovation.

The stated purpose of the review is to ensure that Solvency II properly reflects the unique structural features of the UK insurance sector. By design, the current regime is tailored to the needs of the whole EU insurance market, but in several important ways the UK insurance sector is different. This review initiated by HM Treasury (HMT) was intended to emphasise areas for reform of Solvency II, known as Solvency UK, that could improve the effectiveness of the application of the UK prudential regulatory regime, but also allow it to better recognise the unique features of the UK insurance sector.

HMT launched Review of Solvency II: Call for Evidence² in October 2020 as the first stage of the review and subsequently published its Solvency II consultation on 28 April 2022³ to seek stakeholder views on the following proposals:

- Releasing capital by changing the calculation of the risk margin and cutting the risk margin substantially, including by 60-70% for long-term life insurers in recent economic conditions;
- Reforming the fundamental spread to derive the matching adjustment;
- Unblocking long-term productive investment by making it easier to include a wider range of assets in matching adjustments portfolios; and
- Reforming reporting and administrative requirements to reduce EU derived burdens.

Following the conclusion of the consultation, HMT published its consultation response on Review of Solvency II⁴ in November 2022, and the Prudential Regulatory Authority (PRA) issued two consultation papers; CP12/23 in June⁵ and CP19/23 in September 2023⁶, providing a complete set of proposed updates to the regulatory regime for insurers for the implementation of Solvency UK. The PRA has also clarified the expected implementation timelines.

The Association of British Insurers (ABI), as the trade body for the UK insurance and long term savings industry, intends to co-ordinate an evaluation of the review's benefits in line with the proposals set out in the PRA's consultation papers. The ABI commissioned this report to gain an updated understanding of the wider economic benefits of the Solvency II reforms. This Report does not comment on the appropriateness of Solvency II reform or recommend specific changes to the regulatory framework. The purpose of this Report is to analyse the potential impact on pricing, investment strategy and capital requirements of the proposed regulatory changes on typical UK insurance product groups. The analysis will then

¹ HMT, 2020, [Statement made by the Chancellor of the Exchequer](#)

² HMT, 2020, [Review of Solvency II: Call for Evidence](#)

³ HMT, 2022, [20220328_Review_of_Solvency_II_Consultation.pdf \(publishing.service.gov.uk\)](#)

⁴ HMT, 2022, [Consultation Response - Review of Solvency II .pdf \(publishing.service.gov.uk\)](#)

⁵ PRA, 2023, [CP12/23 - Review of Solvency II: Adapting to the UK insurance market | Bank of England](#)

⁶ PRA, 2023, [CP19/23 – Review of Solvency II: Reform of the Matching Adjustment | Bank of England](#)



be used to forecast the marginal macro-economic benefit of productivity gains in the insurance sector to the wider UK economy.

The report's findings have been compiled by using KPMG's Spatial Computable General Equilibrium ('SCGE') model. This is the same model and methodology as used in an earlier report by KPMG for the ABI in February 2021⁷. The purpose of the 2021 report was to model the potential economic benefits if all of the insurance industry's proposals for reform were adopted in the economic environment of the time. The purpose of the 2023 report is to examine the specific proposals as set out in HMT's consultation response, CP 12/23, CP 19/23 and the current economic environment. As such, direct comparisons between the two reports should be made with caution and in some cases are not appropriate. This is explained in further detail in Section 3.

⁷ ABI, 2021, [KPMG - Report on the macro-economic impacts of potential regulatory changes from Solvency II - February 2021 - Final \(abi.org.uk\)](#)



2 Executive summary

The UK insurance sector currently has c.£2.0 trillion⁸ of assets under management as at YE 2022 and is a significant contributor to the total GDP of the UK. The total output from the insurance sector stands at £65.8bn based on Office for National Statistics (ONS) statistics⁹. Our analysis shows that through the proposed updates to the existing Solvency II regulatory framework, the insurance sector can deliver additional benefits to the UK economy.

Calculation of Economic Gains

Economic gains are achieved through:

- **Enhanced insurance sector productivity.** Initially, this impacts within the sector, via increased profitability, higher returns on investment, lower premiums, and more attractive products. This in turn incentivises the insurance sector to grow and invest. In a competitive market, these ‘within sector’ effects then result in gains in other sectors (upstream and downstream) and across the rest of the economy, resulting in additional investment and output. Lower premiums lead to greater household expenditure and lower input costs for buyers of insurance, and increased output leads to increased demand for labour and inputs in other sectors of the economy. Overall, this results in higher UK capital stock, increased economic output, increased real wages, and improved tax receipts for the Exchequer; and
- **Redeploying invested capital to reduce financing costs and increase access to capital in other sectors.** This means other parts of the economy benefit from both lower insurance costs (via the ‘within sector’ gains above) and through lower costs of capital as the capital redeployment makes UK capital markets more efficient.

Scenarios Used

The economic benefits are illustrated by developing a central scenario based on the proposed regulatory changes from the HMT and PRA consultation papers. The key regulatory changes that are considered most impactful are reforms to the risk margin (RM) and matching adjustment (MA) requirements. The other proposed regulatory changes are assessed but considered not to have a material impact on the productivity of the insurance sector and therefore have not been explicitly modelled. This assessment is described in more detail in Section 4.2.3. We formed the assumptions for our central scenario based on KPMG's internal assessment of the impacts, consideration of industry consultation

⁸ YE 2022 QRTs S.02.01.02 (Balance Sheet)

⁹ ONS, 2023, 2020 Supply and Use tables, inflated to 2023 prices by KPMG. This is the amount consumed by other sectors, households or exported overseas, and is further discussed in Section 5.2.1. Note that this output value (made up of intermediate inputs and sector GVA) has changed significantly in 2020 compared to more historic estimates in the 2016 and 2018 Supply and Use tables. There are possibly two reasons for this. First, COVID may have affected insurance returns and this may have had a material impact on the way ONS estimates output. Second, the ONS has adjusted the classification of the insurance and finance sectors in recent years (see House of Commons Library 2022, [Financial services: contribution to the UK economy](#), p8), such that certain insurance and financial auxiliary services have been moved from insurance, and are instead reclassified in other sectors. We have reported the latest available data to provide a snapshot of what the insurance sector looks like, but for the purposes of the SCGE modelling it is based on the 2016 database, recalibrated to OBR and ONS latest forecasts. This should not materially impact reliability of results in the modelling, given that the productivity improvement is estimated in £s, and then converted into a % for the modelling to derive the supply side multiplier to be applied to the original estimate in £s.

responses, and discussion and validation with the ABI. The scenarios we tested were:

- **‘Central UK market scenario’** – A scenario which materially replicates the key elements of the proposed Solvency II regulatory changes as set out in the PRA’s consultation papers and the parameters described by HMT and the consultation papers. Subjective assumptions were made on areas where high levels of uncertainty are involved, which are documented below. The ‘Key Findings’ set out further below are based on this scenario input.
- **‘High / Low sensitivity’** – Scenarios which also replicate the key elements of the proposed regulatory changes, but consider a range of assumptions around those in the central scenario, and their potential impact on the insurance industry. The scenarios are based on a realistic range of key assumptions, where the ‘High’ scenario is produced by taking upper bound of all of the sensitivity assumptions and the ‘Low’ scenario is produced by taking lower bound of all of the sensitivity assumptions.

For the central scenario, we have considered the potential direct first year benefit of the reforms and modelled the broader economic impact over the period of the next 30 years. For the ‘High/Low Sensitivity’ analysis, we have only estimated the direct first year benefits to illustrate a range of potential outcomes.

The table below is a summary of the modelled reform areas and the assumptions used to derive impacts on insurance metrics and the associated indicative economic impacts. These modelled reform areas, in our view, will have material implications to the UK economy.

Figure 2.1 Summary of modelled reform areas and key assumptions

Potential regulatory changes	Central UK market scenario		Additional sensitivity
<u>Reform Areas</u>	<u>Modelled elements</u>	<u>Economic implication</u>	<u>Key assumption modelled</u>
Reform on risk margin (RM)	<ul style="list-style-type: none"> - 65% reduction in RM under net of Transitional Measure on Technical Provisions (TMTP) basis (assuming same RM/TMTP offset as of YE22) for life companies in existing business - 30% reduction in RM for non-life with £120bn New Business (NB) Gross Written Premiums (GWP) p.a. and 65% reduction in RM for Bulk Purchase Annuities (BPA) in NB pricing with £40bn NB GWP p.a. - Assume no change in reinsurance usage 	<ul style="list-style-type: none"> - Cost of RM capital released - Reduced NB strain increases market capacity - Small BPA pricing reduction increases BPA market efficiency 	<ul style="list-style-type: none"> - Consider an alternative level (£30bn as ‘low’ and £60bn as ‘high’) of BPA NB GWP p.a. - No change to reduction % in RM

Potential regulatory changes	Central UK market scenario		Additional sensitivity
Reform on matching adjustment (MA) - Highly predictable (HP) asset eligibility	<ul style="list-style-type: none"> - Allocation of 10% of MA benefit to HP assets - 17.5bps higher net of Cost of capital (CoC) yield earned over the lifetime of the investment period - Recognise premium reduction for BPA NB pricing from higher investment return - Assume no net MA uplift, i.e. MA increase is offset by FS increase 	<ul style="list-style-type: none"> - Increased investment income earned by insurers over time - Small BPA pricing reduction increases BPA market efficiency 	<ul style="list-style-type: none"> - Consider lower allocation (5%) to HP assets - Consider alternative level (0bps as 'low' and 35bps as 'high') of net of CoC yield earned by HP assets - Taking a proportion (50%) of net spread increase into net MA in BPA NB pricing
Reform on MA - Removal of Sub-Investment grade (IG) restrictions	<ul style="list-style-type: none"> - Life insurers with MA makes 5% higher allocation in BBB IG holdings 	<ul style="list-style-type: none"> - Increased investment income - Slight increase in investment in productive assets 	<ul style="list-style-type: none"> - Consider higher allocation (10%) to BBB IG asset.

Source: KPMG 2023

Key Findings

Our key findings of the economic benefits of Solvency UK are:

- A first-year immediate economic benefit of **£0.8bn**;
- An addition to real GDP of **£1.4bn** per year by 2028. On a discounted real terms basis, additional GDP will have been worth **£31.7bn** by 2053 or **£2.5bn per year**;
- This includes **£0.3bn** per year in additional business investment in the wider economy by 2028, worth roughly **£3bn** over the next 10 years (2024-2033) and **£10bn** by 2053 and;
- The reforms could result in additional tax revenue for HMT, worth **£0.9bn** per year by 2053 as a result of this impact on GDP.¹⁰

First-year economic productivity gain

Based on our analysis, focusing on the central scenario, we expect the largest contribution to the first-year productivity gain of £0.8bn will come from the reform of risk margin (£0.6bn),

¹⁰ Consistent with the usual convention in CGE modelling, the analysis reported here holds public expenditure constant between scenarios. This means that the long term balanced budget "fiscal rule" the modelling operates with translates additional GDP into lower tax rates rather than additional Exchequer revenues. At an illustrative long term tax to GDP ratio of some 37.7%, the long term GDP changes being projected by the modelling suggests some £0.9bn annually of potential Exchequer revenue being fed back into lower tax rates in the longer term (2053). The 37% is an illustrative assumption, the OBR notes that the OECD estimates the UK tax burden will rise to 37.7% by 2028, and that it might grow even further with fiscal pressures, but this has to be balanced with the possibility of returning to a longer term historic tax/GDP ratio which is lower, OBR 2023, [The UK's tax burden in historical and international context](#).

followed by the removal of sub-investment grade restrictions and allowance for investment in highly predictable ('HP') asset classes (£0.2bn).

The potential range of the estimated first year economic impact is £0.6-£1.1 billion from the 'High/Low sensitivity' scenarios based on the above model settings. The indicative economic impacts have been derived by representing the impact of the changes in premiums, investment income and capital costs in one year, aligned to the definition used by ONS. A more detailed explanation is provided in Section 5.2.1.

Figure 2.2 Summary of key benefits from proposed Solvency II regulatory changes

Areas	No reform – 'Status Quo'	Proposed Reform – 'Central UK Market Scenario'	Linkage to '1-year' economic impact
Total risk margin (net of TMTP ¹)	£16.6bn	£8.5bn , driven by reduction of 65% reduction in RM from Life back book and 30% reduction in RM from Non-Life assumed in RM reform	£0.3bn impact represents 1-yr cost of capital saving from RM reform.
Indicative investment return (and MA) uplift ² and MA assets redeployed to long-term productive assets over 3-5 years	N/A – impact shown as marginal benefit	5bps uplift in total return (with 3bps net MA uplift with the remaining offset by FS) £25bn shift in allocation to HP assets <i>Driven by 5% of BBB IG allocation, 10% of HP allocation with 17.5bps net of CoC yield assumed in MA reform</i>	£0.2bn impact represents increase in investment income from MA reform. The split of the benefit between HP assets and removal of SIG restrictions is shown in Figure 2.3.
Pricing benefit to policyholders ³		Annuity: Up to 0.6% reduction on Annuity NB premiums, driven by all the above assumptions for RM and MA reform Non-Life: Up to 0.1% reduction on Non-Life products premiums, based on 30% reduction in Non-Life RM assumed in RM reform	£0.3bn impact represents reduction in annuity and non-life premiums achieved by reduced in capital cost by RM reform and increase in return by MA reform.

Source: KPMG 2023

- Note
- 1: Transitional measures on Technical Provisions
 - 2: Yield uplift is presented net of cost of capital and additional expected defaults
 - 3: An industry-wide aggregated impact on annuity premiums has been estimated for modelling purposes. In practice, the actual impacts will vary significantly between insurer and new business liabilities. In addition, the benefits of the impacts could be realised either as premium reductions to policyholders, profitability increase to insurers or as a cost of capital benefit to borrowers in other sectors. The latter impact is illustrated through Tests B and C presented in the Computable General Equilibrium (CGE) analysis in section 5.

Figure 2.3 Summary of estimated 1-year economic impact from proposed Solvency II regulatory changes

Estimated 1-year economic impact from proposed Solvency II regulatory changes (£bn)	Central UK market scenario	High/low sensitivity range
(a) Reform on RM – Impact from existing business	0.3	0.3 ¹
(b) Reform on RM – Impact from new business (Annuity and Non-Life)	0.3	0.3 - 0.4
(c) Reform on MA – Highly predictable asset eligibility	0.1	0.0 - 0.3
(d) Reform on MA – Removal of sub-investment grade restrictions	0.1	0.0 - 0.2
Total	0.8	0.6 - 1.1

Source: KPMG 2023

- Note
- 1: Same reduction % in RM assumed in sensitivity analysis

Use of SCGE model to quantify GDP impact

The wider supply-side impacts are addressed by using the first year economic impact estimates from insurance sector as inputs (“shocks”) into our Spatial Computable General Equilibrium (SCGE) model.¹¹ Computable General Equilibrium (CGE) models are a sophisticated form of economic modelling which capture the complex interactions between different economic agents – including households, businesses, government and the rest of the world – operating in competitive markets with explicit resource constraints and budget constraints. The robust nature of CGE models mean they are widely used by governments and international organisations to understand the economy wide impacts of regulatory and policy changes and investments. In the UK, this includes HM Revenue and Customs (HMRC), HMT and the Department for Business and Trade (formerly DfIT), which use CGE models to assess the impact of tax and trade policies on the UK economy.¹²

Based on the result from KPMG’s SCGE model, the £0.8 billion initial impact in the insurance sector could result in an additional £2.5 billion in annual Gross Domestic Product (GDP) in real terms in the UK by 2053, or 0.05% higher GDP per annum relative to a baseline scenario. This amounts to a supply-side multiplier of 3.1 between the initial impact in 2024 and the expected Gross Domestic Product (GDP) gain in 2053. It is also equivalent to a present value economic benefit of £32 billion in additional GDP aggregated over the 30-year appraised period, applying a 3.5% real discount rate in line with HMT Green Book guidance.

To put this in perspective, this impact is of similar magnitude to the UK-Australia Free Trade Agreement, which DfIT estimated would increase GDP by roughly 0.08%¹³ above the baseline by the end of the modelled period.¹⁴ There are parallels in how trade agreements generate their effects by lowering barriers to resources shifting to more productive uses and in increasing returns to investment and thus capital stock accumulation. Albeit trade agreements work via changing costs in nearly all traded products and services to a specific country, whereas our Central Scenario improves productivity in UK Insurance.

The net impact of the scenario on UK capital stock is the principal mechanism through which these wider, long-term gains in GDP occur – i.e. our ‘3.1 supply side multiplier’. This is consistent with empirical studies that have shown that 50-60% of the GDP impact of a cost change can be missed if effects in capital markets are not modelled.¹⁵

¹¹ KPMG’s SCGE model uses GEMPACK software; Horridge, Jerie, Mustakinov & Schiffmann 2018, GEMPACK manual, GEMPACK Software, ISBN 978-1-921654-34-3

¹² HMRC, 2013, [Analysis of the dynamic effects of Corporation Tax reductions](#), [Analysis of the dynamic effects of fuel duty reductions](#) and; HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#), DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#)¹² HMRC, 2013, [Analysis of the dynamic effects of Corporation Tax reductions](#), [Analysis of the dynamic effects of fuel duty reductions](#) and; HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#), DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#)

¹³ DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#), p 5

¹⁴ While it is challenging to compare results from different CGE models with different structures, baseline assumptions, and different policy interventions, the 0.08% change in GDP reflects the final year of modelling where deviations to the baseline should have broadly stabilised. Hence it can be compared with the 0.0521% estimate in this report where the same has largely occurred. However, the DfIT modelling was only undertaken for 20 years instead of 30 years, so there is an argument that the 0.08% might be better compared to the 20 year deviation in this report, which is 0.0473%. Both our 20 and 30 year deviations round to 0.05%.

¹⁵ HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#), p32

Figure 2.4 Summary of CGE on UK economic impact results of ‘Central UK market scenario’

Results	2028	2053
Baseline values		
GDP in the baseline (£ billions, 2023 prices) ¹⁶	3,277	4,703
Incremental GDP values		
Additional real GDP (£ billions, 2023 prices)	1.4	2.5
Difference on the baseline (%)	0.0417%	0.0521%
Shock 2024 to real GDP output year multiplier (Ratio)	1.7	3.1
Additional real GDP Undiscounted (appraisal from 2023, £ billions, 2023 prices)	6.3	55.0
Additional real GDP Present Value (appraisal from 2023, HMT 3.5% discount rate, £ billions, 2023 prices)	5.7	31.7
Incremental tax receipts		
Illustrative additional tax receipts based on long term tax to GDP ratio of 37.7% (£ billions, 2023 prices) ¹⁷	0.5	0.9
Incremental business investment		
Additional real business investment (£ billions, 2023 prices)	0.3	0.4

Source: KPMG 2023

Note: Values are rounded to closest £hundred million at constant prices

Wider economic benefits beyond UK GDP

By 2053 the UK real capital stock is projected by the SCGE modelling to be £4.7bn larger than what it would be in a baseline scenario. This is driven by additional business investment of roughly £3bn over the first ten years, and £10bn by 2053.¹⁸

¹⁶ SCGE estimates were adjusted to reflect the latest historical and OBR forecast baseline GDP estimates, and further adjusted to today's (2023) prices using the GDP deflator. These were sourced from the [DfT TAG databook](#),

¹⁷ Consistent with the usual convention in CGE modelling, the analysis reported here holds public expenditure constant between scenarios. This means that the long term balanced budget “fiscal rule” the modelling operates with translates additional GDP into lower tax rates rather than additional Exchequer revenues. At an illustrative long term tax to GDP ratio of some 37%, the long term GDP changes being projected by the modelling suggests some £0.9bn annually of potential Exchequer revenue being fed back into lower tax rates in the longer term (2053). The 37% is an illustrative assumption, the OBR notes that the OECD estimates the UK tax burden will rise to 37.7% by 2028, and that it might grow even further with fiscal pressures, but this has to be balanced with the possibility of returning to a longer term historic tax/GDP ratio which is lower, OBR 2023, [The UK's tax burden in historical and international context](#)

¹⁸ The incremental accumulation in real capital stock is not as large as the summation of incremental business investment over the same period, simply because all capital depreciates and must be replaced.

This results in a capital stock multiplier of 5.9 times the size of the initial productivity impact. This kind of growth in capital will help plug the potential ‘capital gap’ identified in the Patient Capital Review 2017¹⁹. Further, with the need for new forms of capital across sectors to achieve HMG’s Net Zero carbon targets, this also demonstrates how productivity improvements in the insurance industry will help enable sectors across the economy to better contribute towards these goals.

These capital stock effects relate to the economic definition of capital as a factor of production - i.e. business investment in buildings, plant, machinery, hardware, software, R&D. Changes in this kind of capital are enabled through the changes in financial capital holdings in the industry unlocked by the regulatory changes because of what those changes do to the industry’s cost base. It is this change in the cost base and how this translates into higher returns to investment in economic capital in other parts of the economy that generate the changes in economic capital that are so important to the eventual change in GDP.

These GDP impacts also mean higher household incomes. In our Central UK market scenario,²⁰ we find that by 2053, household consumption is expected to increase by £2.0bn relative to a baseline, driven by higher wages and higher labour market participation. Firms spend an additional £1.2bn on labour by 2053 and importantly, almost 85% of that expenditure is experienced outside the insurance sector, reflecting its linkages with the rest of the economy. This means productivity gains in the sector translate into higher returns and thus investment elsewhere. At a UK level there is also expected to be slightly higher employment with an additional 2,500 Full Time Equivalence (FTE)²¹ of labour inputs by 2053. UK GVA per person is expected to be £35 higher, with growth across all NUTS 1²² regions in the UK and above average per capita gains in Scotland and Wales.

Alongside the contribution of the insurance industry to the UK economy, it also pays roughly £17bn in taxes to the government and supports communities across the UK by enabling trade, risk-taking, investment and innovation²³. The analysis set out in this report suggests an increase to this wider contribution. However, consistent with the usual convention in CGE modelling, the analysis reported here holds public expenditure constant between scenarios. This means that the long term balanced budget “fiscal rule” the modelling operates with translates additional GDP into lower tax rates rather than additional Exchequer revenues.²⁴ At an illustrative long term tax to GDP ratio of 37.7%²⁵, the long term GDP changes being projected by the modelling suggests some £0.9bn annually of potential Exchequer revenue being fed back into lower tax rates in the longer term.

¹⁹ HMT 2017, [Patent Capital Review](#)

²⁰ Test A in the SCGE analysis, referred to in Section 5.5

²¹ FTE is the hours worked by one employee on a full-time basis. The concept is used to convert the hours worked by several part-time employees into the hours worked by full-time employees. Additional Labour FTE employment could reflect more workers in employment, or workers in employment working more hours, or a mix. See Footnote 63 for more information on treatment of additional employment in the modelling.

²² NUTS is the geocode standard by Eurostat for referencing the subdivisions of the United Kingdom of Great Britain and Northern Ireland for statistical purposes

²³ [ABI](#), 2021

²⁴ This is a standard fiscal rule in CGE modelling which aids transparency; if Government expenditure were allowed to change in response to changes in GDP it would be necessary to make assumptions about the impact of the additional government spending – or savings if GDP fell – on productivity. The assumption that expenditure is constant when combined with the long-term balanced budget assumptions (the stabilisation of long-term government debt) results in modest reductions in assumed income tax rates as GDP increases in response to a productivity impact in Insurance. HMG apply comparable adjustments in their own CGE modelling, see HMG 2014, [Analysis of the dynamic effects of fuel duty](#), p. 25.

²⁵ The 37.7% is an illustrative assumption, the OBR notes that the OECD estimates the UK tax burden will rise to 37.7% by 2028, and that it might grow even further with fiscal pressures, but this has to be balanced with the possibility of returning to a longer term historic tax/GDP ratio which is lower, OBR 2023, [The UK’s tax burden in historical and international context](#)

3 Methodology and approach

Our aim has been to develop a central scenario to represent the impacts on insurance balance sheets and underwriting capacity based on the proposed regulatory changes described by the HMT²⁶ and PRA consultation papers^{27,28}. We sought to model these forthcoming regulatory changes and estimate representative balance sheet impacts, pricing impacts, and capital redeployment. From a macro-economic perspective, these beneficial impacts on insurers will in turn deliver long-term wider economic gains through the supply side of the economy.

To quantify the potential economic impact, we started out by gathering industry data across various sources. Through research and validation with market participants and industry experts, we were able to establish industry trends and identify product groups that are most likely to deliver material impacts to the economy as a result of the proposed regulatory changes.

The initial analysis divides the insurance market into several product groups. We consider the current state of the market and the proposed regulatory changes relevant to each product class. The impact of these changes is considered in respect of each product class separately. We have provided additional qualitative commentary, where appropriate on the broader implications that are not directly modelled.

We considered which regulatory changes are expected to have a material beneficial impact on the economy, either through productivity gains or capital redeployment. Productivity gains are measured as the marginal cost savings to manufacture an insurance product, either through lower cost of capital or improved investment returns. We assume that these savings are passed back to both corporates and individuals which will in turn benefit the wider economy. Capital deployment represents the segment of assets currently under management to be reinvested in long-term growth sectors, thereby improving accessibility of capital to those sectors.

We have worked with the ABI to establish the assumptions and methodology choices used to model the central scenario. The key regulatory changes that are considered most impactful on the economy are amendments to the risk margin and the matching adjustment rules changes on sub-investment grade (SIG) assets and highly predictable (HP) asset eligibility. Additional sensitivities around the central scenario have been included to provide a spectrum of potential impacts based on applying a 'high/low' range of certain judgement-based assumptions, where applicable.

Section 4 captures a snapshot of industry data and current industry trends, before moving on to discuss the proposed regulatory changes and potential impacts for each individual product group. The assumptions and methodology choices required to obtain these economic impacts and how market conditions may evolve in terms of new business volumes and asset availability are further discussed in Section 4.3.

²⁶ HMT, 2022, [Consultation Response - Review of Solvency II .pdf \(publishing.service.gov.uk\)](#)

²⁷ PRA, 2023, [CP12/23 - Review of Solvency II: Adapting to the UK insurance market | Bank of England](#)

²⁸ PRA, 2023, [CP19/23 – Review of Solvency II: Reform of the Matching Adjustment | Bank of England](#)

Section 5 outlines the approach used to convert the regulatory impacts into initial economic impacts or ‘shocks’ in the economy, the approach to Computable General Equilibrium (CGE) modelling undertaken to estimate the wider impacts to other sectors and agents within the economy in the future, and results of this analysis. CGE models are a sophisticated form of economic modelling which capture the complex interactions between different economic agents – including households, businesses, government and the rest of the world – operating in competitive markets with explicit resource constraints and budget constraints. The robust nature of CGE models mean they are widely used by Governments and international organisations. In the UK, this includes HMRC and HMT, which use SCGE models to assess the impact of tax and trade policies on the UK economy.²⁹

Finally, this section illustrates how the economic outcomes achieved as a result of the regulatory changes align with HMG policy objectives. Specifically, we discuss how improved productivity in the insurance industry and beyond supports the wider economy and helps to enable the tackling of climate change.

Comparability with previous KPMG economic modelling for the ABI

As noted in the Introduction to the Report, a previous set of economic benefit modelling was commissioned by the ABI from KPMG much earlier in the reform process, before HMT set out their outline proposals in April 2022. The earlier KPMG report was published in February 2021. While the KPMG S-CGE model, approach and methodology used are the same, the scenario inputs into the model were very different and this means direct comparisons should be made with caution, if at all. The key changes are:

- **Reforms:** The 2021 exercise explicitly sought to model the potential benefits if all the insurance industry’s reform proposals were adopted. Because it was so early in the process, no assumptions were made about potential PRA attitudes to issues such as capping use of the matching adjustment for certain assets and the calibration of the fundamental spread. By contrast, the 2023 exercise is modelled based on the proposed rules to be adopted in 2024 given the conclusion of the consultation process and does not include changes to reduce the calibration of FS, changes to the supervisory approach to capital or a wider expansion of potential MA eligible assets.
- **Economic environment:** The 2021 exercise was conducted on the basis of the continuation of relatively low interest rates, in line with the mainstream forecast projections at the time. The significant change in interest rates since then results in a material impact on the potential benefit of the risk margin reduction contained within the proposed reforms.

²⁹ HMRC, 2013, [HMRC’s CGE model documentation](#) and; HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#), DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#)²⁹ HMRC, 2013, [HMRC’s CGE model documentation](#) and; HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#), DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#)

4 UK Insurance industry overview

4.1 Aggregate statistics for UK Insurance industry

As referenced in the HM Treasury's Call for Evidence³⁰ in 2020, UK insurers held around £1.9 trillion in invested assets as at Q1 2020. We had broadly validated the quoted invested assets from UK Insurer's YE 2019 Solvency II balance sheets QRTs, acknowledging that the difference could be partly driven by the timing difference and potentially a slightly different definition of invested assets. For this report, we have collated YE 2022 Solvency II QRT data:

Figure 4.1.1 Assets held by UK insurers

£bn	YE 2019 QRT	YE 2022 QRT
Invested assets ¹	2,071	2,018
Total assets	2,550	2,519

Source: QRT – YE 2019 and 2022 QRT S.02.01.02 (Balance Sheet)

Note 1: Invested assets is calculated as the sum of "Assets held for index-linked and unit-linked contracts" and "Investments (other than assets held for index-linked and unit-linked contracts)".

Based on QRT data, we expect UK Insurers held around £2.0 trillion as at YE2022. The Solvency II QRT data enables us to obtain more granular Solvency II data for UK Insurers which forms the basis for some of our impact assessments. The analysis in the rest of this report is based on aggregated UK insurer Solvency II QRT data and the total assets figure from the same source.

4.1.1 Technical Provisions split by product group

The Technical Provisions for UK insurers can be split into broad product groups to understand their relative size. We can estimate the total amount of assets backing each product group by considering the liabilities by group.

Figure 4.1.2 Technical Provisions split by product group

YE 2022 (£bn)	Annuities, Protection and Other life insurance	With-profits funds	Unit-linked funds	Non-life	Other	Total
Technical Provisions (net of TMTP)	300.8	210.9	1157.7	144.0	215.5	2028.8

Sources: YE 2022 QRT S.12.01.02 (Life & Health SLT Technical Provisions), QRT S.17.01.02 (Non-Life Technical Provisions)

We have also used the Technical Provisions split above to estimate the amount of assets backing each product group. The Technical Provisions figures used are net of Transitional measures on Technical Provisions (TMTP).

³⁰ HMT, 2020, [Review of Solvency II: Call for Evidence](#)

For various product classes we can determine the total amount of risk margin relating to each class and the total risk margin held by all UK insurers on a pre and post TMTP basis.

Figure 1.1.3 Risk margin pre and post TMTP split by product group

YE 2022 (£bn)	Annuities, Protection and Other life insurance	With-profits funds	Unit-linked funds	Non-life annuities	Accepted reinsurance	Health	Non-life	Total
Risk margin	9.2	1.7	5.8	0.2	1.2	0.4	7.8	26.4
TMTP on RM	5.5	1.2	2.0	0.0	0.9	0.1	0.0	9.8
RM net of TMTP	3.7	0.5	3.8	0.2	0.3	0.3	7.8	16.6

Source: YE 2022 QRT S.12.01.02 (Life and Health SLT Technical Provisions), QRT S.17.01.02 (Non-Life Technical Provisions)

The £16.6bn total in Figure 4.1.3 forms the basis of our economic impact estimates further discussed in Sections 4.3.2 and 4.3.6, as any relief of the risk margin on a pre-TMTP basis relating to business sold prior to 2016 will be materially met by a corresponding release in TMTP. Note that the ‘risk margin net of TMTP’ refers to the proportion of TMTP attached to the risk margin, whilst the remainder of the total TMTP stems from other differences between the legacy Solvency I / Individual Capital A regime and Solvency II regime.

4.1.2 Insurer asset allocation and MA portfolio size for annuities

Given the proposed regulatory changes are expected to give material economic impacts for annuity business, we need further information on asset allocation of annuity business to support our analysis. The sections below provide an overview on how the information is gathered.

4.1.2.1 Asset allocation for annuities and other life business

Firstly, we identify the UK insurers with large annuity books which we use as a representative sample of the UK annuity market. Next, we take the total of ‘Technical Provisions: Other Life’ for these insurers from YE22 QRTs and make the simplifying assumption that this is entirely annuity business, to determine each company’s market share. We then use the asset class information in the YE22 QRTs and verify this against the information disclosed on company websites of their most recent asset allocation split for their annuity business, if available.

Figure 4.1.4 Asset allocation split for annuities and other life business

Entity	% of assets invested in each asset class					
	TP: Other life insurance (£bn)	Market share	Equity and property	Fixed interest	Loans and mortgages	Other
L&G	61	20%	3%	82%	2%	13%
Aviva Life & Pensions UK	53	18%	5%	63%	24%	8%
Prudential Assurance	19	6%	6%	85%	6%	2%
Pensions Insurance Corporation	33	11%	0%	74%	14%	12%
Rothsay Life	35	12%	0%	66%	21%	13%
Scottish Widows	14	5%	0%	32%	23%	45%
Canada Life	16	5%	8%	69%	18%	5%
Phoenix Life	18	6%	2%	75%	16%	8%
Just Retirement	15	5%	0%	51%	33%	15%
Standard Life Assurance	8	3%	3%	77%	5%	15%
Sample Total	272	90%	3%	70%	15%	12%

Source: QRT YE22 and Information disclosed in YE22 results reports on the websites of the insurance companies listed if breakdown of annuity block is available

The 'Sample Total' row gives the weighted average of asset allocation %, weighted by market share. This weighted average is applied to the UK total 'Technical Provisions: Other Life' value of £301bn.

Figure 4.1.5 Asset allocation totals for annuities and other life business

YE 2022 (£bn)	Amount invested in each asset class (£bn)					
	TP: Other life insurance	Market share	Equity and property	Fixed interest	Loans and mortgages	Other
All UK Total	301	100%	8	210	46	37

Source: QRT YE22 combined with Figure 4.1.2

4.1.2.2 Matching adjustment portfolio size for annuity

To isolate the Technical Provisions associated with matching adjustment portfolios, we have taken the assumption that they consist only of fixed interest and loans and mortgages assets, which make up £256bn (£210bn + £46bn)³¹ of the £301bn of assets backing 'Annuity and other life insurance'. As such we are assuming c.£250bn assets are currently held within annuity matching adjustment portfolios.

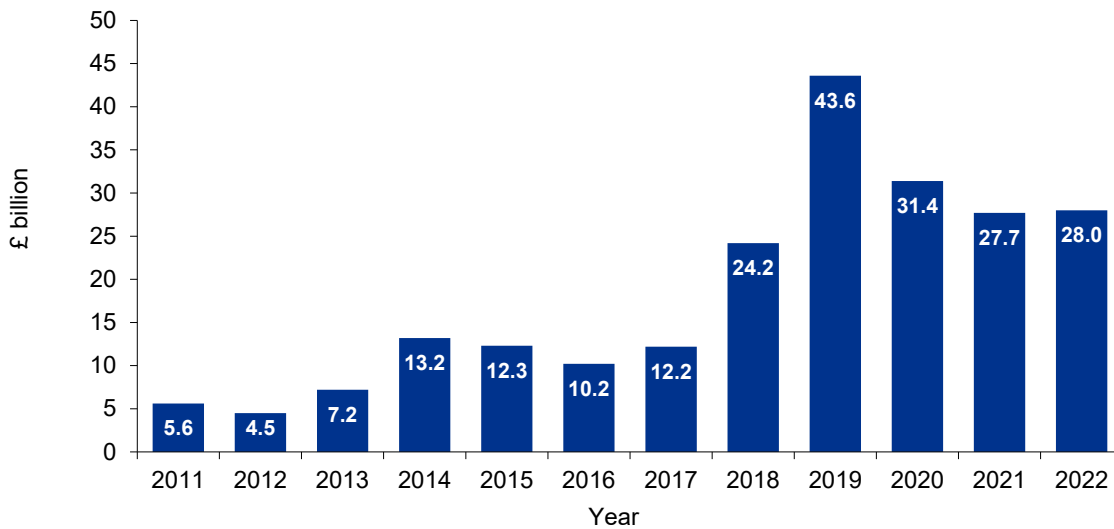
³¹ Figure 4.1.5

4.1.3 Industry market trends

4.1.3.1 Annuity market

Following the pension reforms in 2014, the individual annuity market has experienced gradual recovery after the initial fall in demand. However, it is the bulk annuity market where there is expected to be potential further growth in the medium-term horizon. The graph below illustrates the growth of the bulk annuities market over the last decade, illustrating that the demands for bulk purchase annuity (BPA) business remains strong.

Figure 4.1.6 Volumes of bulk annuities by year



Source: Hymans Robertson Risk Transfer Report 2023³²

Recent increases in interest rates have led to improved funding positions and there is also improvement driven by improved longevity reinsurance pricing. Market survey focusing on the BPA market has indicated market participants are expecting c.£50bn³²⁹ or more a year over a medium-term horizon. The H1 2023 volume-to-date of £20.2bn³³ put 2023 on track to end with higher annual volumes than we observed in 2020 to 2022. We have adopted a slightly modest view relative to market forecasts from the surveys reviewed that the bulk annuity market is likely to be around £40bn a year, which had considered both the actual trend observed and the market participants' expectations.

4.1.3.2 Capital redeployment and related challenges

Given increasing interest rates since 2022, the risk-adjusted return on traditional fixed income assets has improved compared to the past decade where interest rates have been persistently low. While the period of high interest rate environment remains uncertain, any new investments made in this period have to give compelling returns to meet the insurers' risk-adjusted return requirements. For this reason, we expect any shift in asset classes due to regulatory change to take place gradually.

Insurers will likely remain relatively low cost providers of long-term capital, where limited servicing is required beyond origination. In the higher-yield markets, however, insurers may

³² Hymans Robertson, 2023, [Risk Transfer Report 2023 | Hymans Robertson](#)

³³ LCP, 2023, [LCP's analysis of buy-ins/outs for H1 2023 | Lane Clark & Peacock LLP](#)

not necessarily have the expertise to select stocks with the right risk profile. These markets are typically shorter-term and may not be a good match to insurance liabilities.

There are nonetheless pockets of the market that present more optimistic returns, where participants are possibly open to accepting higher risk investments. The introduction of 'highly predictable' assets as eligible assets in matching adjustment portfolios (MAP) will likely drive insurers to seek extra returns in this space and diversify their portfolios. We see a number of areas where insurers could look to deploy the allocation, e.g., infrastructure assets with a glide path to fixed cashflows or investment grade ratings, callable bonds or corporate bonds with other optionality, lower rated tranches of equity release mortgages (ERM) securitisations or even Asset-backed securities (ABSs) such as Collateralized Loan Obligations (CLOs) and Residential Mortgage-Backed Securities (RMBS).

Due to the above operating environment, we have focussed on insurers providing more long-term capital via existing routes, by moving into adjacent ratings and sectors, and adjusting to the implications of the modifications to the asset eligibility requirements for matching adjustment portfolios.

4.1.3.3 Non-life

Based on the data provided by ABI, the UK non-life market has showed an increasing trend on new business premium written throughout the years³⁴. With a clear reduction target set on non-life risk margin in the proposed regulatory change, we expect the cost reduction on risk margin can enhance the non-life market productivity through more competitive premiums, which in turn increases household spending in other sectors.

4.1.3.4 Granularity of analysis by product group

On the basis of the above, we have chosen to capture the impacts of the proposed regulatory changes at a more granular level. We have broken down the insurance industry into five broad product groups that are most representative of the insurance sector as a whole:

- Individual annuities and BPA;
- Protection and other life insurance;
- With-profits funds;
- Unit-linked funds;
- Non-life

The majority of the impact is from individual and bulk annuities, as expected by the focus of review. To aggregate impacts at a product level back up to a total UK insurance industry level for some product groups, we need to know the proportion of the market made up by each product group. We use the proportion of gross written premiums (GWP) from new business sourced from the latest ABI income and outgo data. At the time this report is being written, the 2022 GWP data is not yet available, so we have made references to the 2019 to 2021 data.

³⁴ Figure 4.1.6

Figure 4.1.7 Proportion of new business premiums split by product group

Product group	Annuities	Protection and other life insurance	With-profits and unit-linked funds	Non-Life	Total
2019 GWP (£bn)	39.2	6.9	74.6	97.8	218.5
2020 GWP (£bn)	29.0	6.9	66.3	101.2	203.3
2021 GWP (£bn)	26.6	7.0	73.4	116.3	223.3
Proportion of total (%) – 2021 GWP	12%	3%	33%	52%	100%

Source: ABI Income Outgo tables³⁵

4.2 Reform areas and scenario definition

4.2.1 Reform areas of Solvency II for UK insurance

As noted in the introduction to this report, HMT published their consultation response on review of Solvency II in November 2022 and PRA issued two consultation papers in June and September 2023, providing a complete set of proposed updates to the regulatory regime for insurers for the implementation of Solvency UK. The key reform areas covered by HMT and the PRA are summarised below:

- Reduction of the absolute magnitude of the risk margin;
- Changes to the composition of the matching adjustment portfolio, including a higher proportion of HP assets and the removal of restrictions for sub-investment grade holdings;
- The widening of the liabilities which would be eligible for the matching adjustment to include income protection and the guaranteed part of with-profit business;
- The use of credit rating notches, as opposed to letters, to determine the fundamental spread;
- Simplification and streamlining of approvals for the internal model, matching adjustment and volatility adjustment applications; and
- Simplifications to current reporting, including branch reporting.

4.2.2 Scenarios considered

We have considered the five broad product groups, mentioned in Section 4.1.3.4, that are most representative of the insurance sector, and assessed the likely impact from regulatory outcomes on each of these groups. However, as mentioned in Section 4.1.3.4, the majority of the impact is from individual and bulk annuities, as expected by the focus of review.

The economic benefits are illustrated by developing a central scenario based on the proposed regulatory changes from the HMT and PRA consultation papers. The key regulatory changes that are considered most impactful are reforms to the risk margin (RM) and matching adjustment (MA) requirements. The other proposed regulatory changes are assessed but considered not to have a material impact on the productivity of the insurance sector and therefore have not been explicitly modelled. This assessment is described in more detail in Section 4.2.3. We formed the assumptions for our central scenario based on

³⁵ ABI, 2021, [Industry data and subscriptions](#), general-insurance---total-market-statistics---2021.xlsx; long-term-income--outgo---2021.xlsx

KPMG's internal assessment of the impacts, consideration of industry response, and discussion and validation with the ABI. The scenarios we tested were:

- **'Central UK market scenario'** – A scenario which materially replicates the key elements of the proposed Solvency II regulatory changes as set out in the PRA's consultation papers and the parameters described by HMT and the consultation papers. Subjective assumptions were made on areas where high levels of uncertainty are involved, which are documented below. The 'Key Findings' set out in Section 2 are based on this scenario input.
- **'High / Low sensitivity'** – Scenarios which also replicate the key elements of the proposed regulatory changes, but consider a range of assumptions around those in the central scenario, and their potential impact on the insurance industry. The scenarios are based on a realistic range of key assumptions, where the 'High' scenario is produced by taking upper bound of all of the sensitivity assumptions and the 'Low' scenario is produced by taking lower bound of all of the sensitivity assumptions.

The table below is a summary of the considered reform areas and the assumptions used to derive impacts on insurance metrics and the associated indicative economic impacts. We have considered the full set of proposals from the HMT and PRA papers and modelled the reform areas that have material implications to the UK economy. Modelled reform areas are in bold for easy reference.

Figure 4.2.1 Summary of considered reform areas and key assumptions

Potential regulatory changes	Central UK market scenario		Additional sensitivity
<u>Reform Areas</u>	<u>Modelled elements</u>	<u>Economic implication</u>	<u>Key assumption modelled</u>
Reform on risk margin (RM)	<ul style="list-style-type: none"> - 65% reduction in RM under net of Transitional Measure on Technical Provisions (TMTP) basis (assuming same RM/TMTP offset as of YE22) for life companies in existing business - 30% reduction in RM for non-life with £120bn New Business (NB) Gross Written Premiums (GWP) p.a. and 65% reduction in RM for Bulk Purchase Annuities (BPA) in NB pricing with £40bn NB GWP p.a. - Assume no change in reinsurance usage 	<ul style="list-style-type: none"> - Cost of RM capital released - Reduced NB strain increases market capacity - Small BPA pricing reduction increases BPA market efficiency 	<ul style="list-style-type: none"> - Consider an alternative level (£30bn as 'low' and £60bn as 'high') of BPA NB GWP p.a. - No change to reduction % in RM
Reform on matching adjustment (MA) - Highly predictable (HP) asset eligibility	<ul style="list-style-type: none"> - Allocation of 10% of MA benefit to HP assets - 17.5bps higher net of Cost of capital (CoC) yield earned over the lifetime of the investment period - Recognise premium reduction for BPA NB pricing from higher investment return - Assume no net MA uplift, i.e. MA increase is offset by FS increase 	<ul style="list-style-type: none"> - Increased investment income earned by insurers over time - Small BPA pricing reduction increases BPA market efficiency 	<ul style="list-style-type: none"> - Consider lower allocation (5%) to HP assets - Consider alternative level (0bps as 'low' and 35bps as 'high') of net of CoC yield earned by HP assets - Taking a proportion (50%) of net spread increase into net MA in BPA NB pricing
Reform on MA - Removal of Sub-Investment grade (IG) restrictions	<ul style="list-style-type: none"> - Life insurers with MA makes 5% higher allocation in BBB IG holdings 	<ul style="list-style-type: none"> - Increased investment income - Slight increase in investment in productive assets 	<ul style="list-style-type: none"> - Consider higher allocation (10%) to BBB IG asset
Reform on MA - Liability eligibility	Not explicitly modelled given smaller impact relative to other impacts	PRA cost and benefit analysis expect to drive c50-£150m BEL reduction cross industry	N/A - remains unmodelled in sensitivities
Reform on MA - FS notching	Not explicitly modelled given smaller impact relative to other impacts	PRA cost and benefit analysis expects the proposed change will slightly increase TP but could be mitigated through re-balancing if firms chose to do so	N/A - remains unmodelled in sensitivities
Simplification of IM/MA/VA application	Not explicitly modelled given smaller impact relative to other impacts / do not expect immediate impact	Potential release of cost of capital for reinvestment / better NB pricing (non-annuities life business)	N/A - remains unmodelled in sensitivities
Branch reporting	Not explicitly modelled given smaller impact relative to other impacts / do not expect immediate impact	3rd country branches are potentially more competitive	N/A - remains unmodelled in sensitivities
Savings from reporting changes - e.g., simplification on current reporting	Not explicitly modelled as it is expected the benefit from simplifications on current reporting will be offset by the effort required to support attestations	Do not expect material impact on economic terms	N/A - remains unmodelled in sensitivities
Costs of implementation for new regulatory requirement			

4.2.2.1 Reduction of risk margin

The central scenario has modelled a 65% reduction in RM for long-term life business and a 30% reduction in RM for non-life business. The reduction is applied to RM net of TMTP, to avoid double counting the release of TMTP due to the reduction in RM. The quantum of reduction in RM is taken as given by the scenario defined by both the HMT and PRA consultation papers and not subject to further sensitivity analysis given the purpose of this report is to evaluate the benefits in line with the latest consultation papers.

We have considered the material economic impacts on existing business for the whole life block in Section 4.3.1, and on new business of annuity business and non-life business in Sections 4.3.2.2 and 4.3.6 respectively

4.2.2.2 Reform on matching adjustment – HP asset eligibility

The central scenario assumes that 10% of MA assets move from fixed cash flow to HP assets.

These HP assets are in asset classes which would be expected to have highly predictable cashflows. We note that depending on the duration of the assets selected for take up, the HP assets could be as little as 2% of total MA assets at long durations, or as much as 20% of MA assets at shorter durations as the 10% threshold is applied by MA contribution.

These asset classes may include assets such as:

- Infrastructure loans;
- Real estate loans;
- ERM assets, including lower-rated tranches of ERM securitisations;
- Callable bonds or corporate bonds with other optionality; or
- ABSs such as CLOs or RMBS.

Compared to fixed assets, these assets have the additional risk of uncertainty in timing and amount of cashflow leading to the potential for liquidity risk or reinvestment risk depending on whether cash flows arise later or earlier than expected. Investors would expect additional compensation for the increased uncertainty arising from these HP assets. Therefore, we expect there would be increased returns, however indications from the consultation papers are that the FS would also be increased by a similar amount to reflect the additional risks and offset the additional gains. Our working assumption is that there is no net MA benefit from investing in HP assets versus a similar fixed asset, i.e., the increase in yield is offset by the increase in FS from a MA perspective.

Based on the above, we believe allowing HP assets within MA portfolios would not lead to an immediate reduction of required assets within the MA portfolio as the liabilities they need to back remain unchanged. However, there are still incentives for insurers to invest into these assets for higher yield and diversification benefits. Further economic implications include increased profits for insurers over time as a result of increased investment income.

To set the assumption for the additional investment return uplift of these HP assets, we have referenced market data for callable bonds and the structured credit investment space.

Callable bonds

We have consulted with an investment bank DCM desk for some market insight on callable

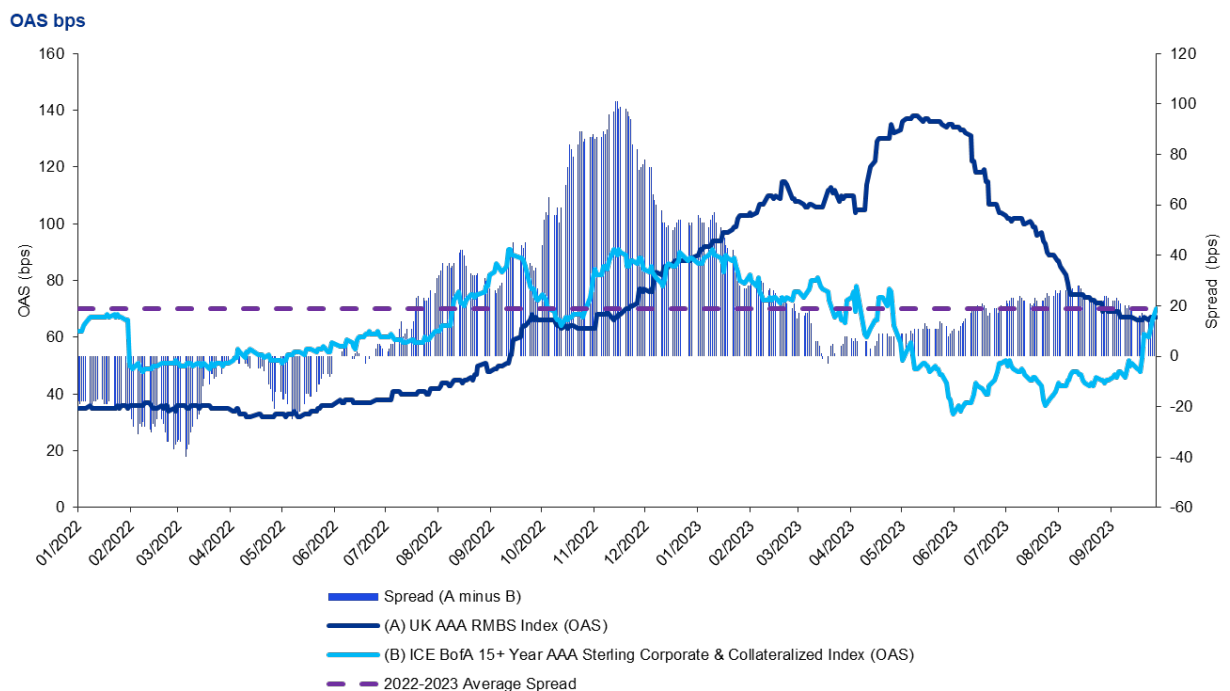
bond new issuance premiums versus fixed bullet repayment bonds. Some examples of pricing in the GBP and EUR markets are set out below:

- Call premium for short dated 1-year call senior instruments issued by banks for the purpose of MREL efficiency³⁶ is currently worth around 10-15 bps p.a. Historically this premium has moved between 0-25bps depending on market conditions.
- Call premium for the most common callable bank Tier 2 is currently worth around 10bps p.a.³⁷ and for less common longer dated callable bonds with 10-year duration is worth around 25-40bps p.a.³⁸ depending on issuers, or shape of the yield curves.
- Call premium for longer dated Insurance Tier 2 instruments is currently worth around 35-40bps p.a. in GBP and 50+bps in Euro p.a.³⁹.

Structured Credit Investment

We have assessed the yield uplift for structured credit investment by looking at a GBP AAA RMBS (Residential Mortgage-Backed Securities) index over recent years and compared it with the spread on a AAA GBP corporate bond index e.g. ICE BofA 15+ Year AAA Sterling Corporate & Collateralised Index. The spread difference between the two indexes is illustrated by dotted purple line in the graph below.

Figure 4.2.2 Spread difference of AAA RMBS index vs. AAA GBP Corp bond index



Source: KPMG 2023, spread difference of GBP AAA RMBS index vs. ICE BofA 15+ Year AAA Sterling Corporate & Collateralised Index

³⁶ Senior non preferred, senior preferred, HoldCo senior

³⁷ Referenced to common bank Tier 2 instruments, such as 10NC5 (10-year maturity bond and is not callable for the first 5 years) or slightly longer 5NC11 / 12NC7. The market price for 10NC5 is referenced to a 5-year swap rate as standard market practice.

³⁸ Referenced to 15NC10 (15-year maturity bond and is not callable for the first 10 years). The market price for 15NC10 is referenced to a 10-year swap rate as standard market practice

³⁹ Referenced to 20NC10 / 30NC10. The market price for 20NC10 / 30NC10 is referenced to a 10-year swap rate as standard market practice

From the graph the average uplift over the past year has been around c20bps p.a. but is reasonably volatile. We would expect a higher uplift in yield for lower rated tranches (e.g. AA, A-rated).

It is possible if UK insurers start buying a sizeable amount of HP assets, this will impact the demand for these assets and may drive down spreads. In forming our baseline assumption, we do not make explicit allowance for this and we have used the current market data to form our base view. Given there is no visibility on the mix of sub-asset classes to be invested by insurers within the HP asset bucket, we have adopted a 25bps uplift in investment return for HP assets, representing a mid-range of the market data in the above analysis.

It can be expected, given increased uncertainty of the cashflows arising from the HP assets, that there would be an increase in capital requirements, dampening the increase in the return from these holdings. We have assumed a 7.5bps p.a. offset due to the cost of increased capital requirements, based on:

- Increase in required capital for a combination of 5 year tenor extension under stress of c. 1%;
- A fall in asset value due to spread widening and the tenor extension;
- A cost of securing liquidity for delayed principal repayment; and,
- An insurer cost of capital of c.6.5% over gilt yields of c.4.5%.

This equates to an annual cost of capital after corporation tax at 25% of $1\% * (11\% - (1 - 25\%) * 4.5\%) = c.7.5\text{bps p.a.}$. Noting the materiality of this assumption is relatively low given it is applied on the 25bps assumption for overall return uplift, we have not further validated the assumption but instead allowed for different views on the assumptions through sensitivity analysis.

In summary, an overall higher yield net of CoC of 17.5bps has been assumed for these assets in the central scenario. This increased yield is assumed to be met by an equal increase in FS, with no net MA benefit.

Sensitivities to this central scenario have been produced to take into account the following:

- Reducing the percentage of assets moved into HP assets from 10% to 5% due to market constraints;
- Changing the level of higher yield net of CoC through in investment in the HP assets to 0bps and to 35bps to reflect different views on investment return achievable from these assets; and
- Assuming 50% of the net yield increase get recognised as net MA benefit in new business annuity pricing

These sensitivities are discussed further in Section 4.3.2.3.

4.2.2.3 Reform of matching adjustment – removal of sub-investment grade restrictions

The central scenario assumes that 5% of corporate bond assets within the MAP move from AA or A rated bonds to BBB rated bonds. The assumption is that the removal of the sub-investment grade restrictions may not lead directly to an increase in sub-investment grade assets but rather increase the appetite for investment in lower grade (i.e. BBB) corporate bonds. This is because there is now reduced risk to the insurer if these instruments were to downgrade further.

This would lead to an increase to the MA benefit, which in turn would reduce the premiums for new business and reduce the best estimate of liabilities (BEL) for in-force business. Other economic implications which could follow include increased investment income given the higher returns associated with lower rated assets.

We assume there is no offsetting frictional cost of capital relating on increased capital requirements in our scenario, because there are two areas where opposite SCR impacts would broadly offset each other.

- The shift downwards in assets would, all else being equal, act to increase credit risk in the Solvency Capital Requirement (SCR), as the credit risk capital requirement on the additional allocation to BBB would be higher than the previous allocation to higher ratings; and
- The overall credit risk SCR charge on BBB allocations will reduce, as the cost of downgrade element of credit risk capital requirement which reflects the risk of BBB assets downgrading to BB or lower, will now be reduced with the cliff edge removed at these levels.

The PRA proposes removing the cap on the MA earned from any sub-investment grade assets held in the MAP. However, as the central scenario assumes there will be no investment in sub-investment grade assets, this is not relevant in our modelling here.

We have considered the sensitivity of this assumption by observing the impact of increasing the percentage of corporate bonds moved from 5% to 10% and allowing for some sub-investment grade holdings to be invested in with the move. The sensitivities are discussed further in Section 4.3.1.3.

4.2.3 Reform areas considered, but not modelled

We considered the full set of proposals from the HMT and PRA papers when considering which elements, in our view, had material economic implications. While many of these issues may be material for individual insurers, our view is that they would not all be material at an aggregate industry level, and correspondingly at a national economic level, given their smaller impact, or the lack of an immediate impact. These elements listed below were considered, but are not explicitly modelled due to materiality:

- **The inclusion of income protection and the guaranteed components of with-profit annuities in the matching adjustment portfolio.** This is estimated to lead to a relatively small £50-150m impact on BEL overall. This would lead to a small immediate release, and a potential expansion of the income protection and potentially with-profit markets, due to the lower costs of writing new business. However, this is not considered significant relative to other scenarios.

- **The change in FS to take account of credit rating notches rather than credit rating letters only.** This would likely lead to an increase in BEL of approximately £1bn, as has been estimated by the PRA⁴⁰ that assets invested at a certain credit rating letter may be spread towards the lower notches leading to a lower matching adjustment. This lower MA could lead to increased premiums for new business also. There may be a further cost to the rebalancing of assets towards the higher notch assets. However, the impact is not considered material relative to the other scenarios. Insurers can also rebalance and optimise for the changes in new business pricing.
- **The simplification of application for use of the internal model, matching adjustment or volatility adjustment.** A simplified application process may increase uptake in these areas. This could mean an increase in partial internal model uptake or the MA or volatility adjustment for some smaller portfolios. This could reduce the capital requirements for insurers, with more bespoke capital requirements and increased discount rates. This in turn would reduce the new business strain for insurers too. However, the exact impact of the application of these aspects, as well as the increase in take up or acceptance of these applications, is difficult to quantify.
- **The removal of third-country branch capital requirements.** There is the potential that new third country branches enter the UK market as a result. However, the precise financial impact of this is unclear to be able to quantify.

4.3 Impact analysis by product group

In this section, we analyse the impact of the reforms set out above to each of the identified product groups in Section 4.1.3.4. For each product group we consider the impact of the reform areas from each of these components:

- Economic benefit from prospective new business; and
- Cost of capital savings resulting from changes to the current balance sheet.

The new business component is driven by new business over a one-year horizon, written on more competitive terms. The existing business component is driven by one-year's cost of capital on the quantum of capital released, or additional investment income earned, as a result of the proposed regulatory changes.

We have represented the impact over a one-year time horizon in order to best align with the SCGE model, where the insurance sector output is expressed as a per annum quantum.

The cost of capital throughout the calculation is assumed to be 5.57%. This represents the 3.5% real discount rate used by HMT for project appraisals, and the 2% CPI which underpins a representative proportion of inflation-linked insurance contracts. The resulting cost of capital is found by compounding the two rates i.e. $(1 + 3.5\%) * (1 + 2\%)$. This is a long-term view of the rate of return required for government project appraisals. Note that this is different to the fixed 6% cost of capital rate used in the calculation of the risk margin.

The impact of the risk margin reforms on existing business is described in aggregate across the product groups initially, due to the similar nature of its calculation across these groups. Each product group is then considered in turn, with the residual impact of the reduction of risk margin on new business, and the impact of all other reform areas, described.

⁴⁰ PRA, 2023, [CP19/23 – Review of Solvency II: Reform of the Matching Adjustment | Bank of England](#)

4.3.1 Reduction of Risk Margin – impact across all product groups

The size of the risk margin post TMTP for UK insurers was £16.6bn at YE 22 based on Solvency II balance sheets. It should be noted that this figure does not include risk margin amounts implicitly captured within Technical Provisions that are calculated ‘as a whole’ (i.e. for firms with Technical Provisions disclosed where the BEL and RM are not separated) and hence is likely to underestimate the overall impact of removing the RM.

Figure 4.3.1 Proportion of risk margin across different business lines

YE 22 QRT Item	Risk margin (£bn)
Non-life (excluding health)	7.5
Health (similar to non-life)	0.2
Health (similar to life)	0.3
Life (excluding health and index-linked and unit-linked)	4.7
Index-linked and unit-linked	3.9
Total	16.6

Source: YE 2022 QRT S.12.01.02 (Life & Health SLT Technical Provisions), QRT S.17.01.02 (Non-Life Technical Provisions)

To estimate the gain from the release of the full RM on the existing business under the central scenario we have considered 65% of the total risk margin post TMTP, excluding non-life is released, (£8.8bn * 65% = £5.8bn) and multiplied it by the assumed cost of capital of 5.57% to give an assumed benefit of £0.3bn.

The above calculation does not include the non-life RM for existing business. This is given the generally shorter-term nature of the liabilities and to avoid double counting of the benefit quantified for non-life new business in Section 4.3.5.

We have considered whether the impact of the risk margin reform would influence certain produce groups in a way other than the 65% for long-term life business assumed in our scenario:

- **With-profits** – the impact can be considered similar to that assumed for long-term life business. The source of this capital could be considered as different to other lines of business, as this is not primarily shareholder backed, and therefore a different approach may be considered to find the impact of the risk margin reforms. However, as noted in Figure 4.1.3, the RM attributed to with-profits business is £0.5bn, and therefore considering this impact separately is unlikely to lead to a material difference.
- **Unit-linked business** – the impact can also be considered similar to that assumed for long-term life business overall because of the assumed similar durations of the business. The impact of the RM reform of 65% for long-term life business is driven primarily by the longer duration of the business. Because we do not consider the duration for unit-linked business to be materially different to that of long-term life business, the 65% reduction is deemed appropriate to apply here.

We have only considered the RM reduction as proposed by the PRA, and have not modelled other alternative approaches to RM reduction.

Total impact

The table below sets out the total impact of the changes to the risk margin.

Figure 4.3.2 Impact of RM reform on existing business

(£bn)	Central UK market scenario	Potential Range
Existing business impact – Total	0.3	0.3*

Source: KPMG 2023
 *Sensitivities were not performed

4.3.2 Individual and Bulk annuities

4.3.2.1 Regulatory drivers

This product group is where the most material benefit can be derived from the proposed regulatory changes. We have identified changes to the existing RM and MA framework as the most impactful reform areas. The potential impact of these changes for annuities had been described in Section 4.2.2., as part of the description of the reform areas, given the significance of these reform areas to the annuity business.

4.3.2.2 Impact quantification – Risk margin

New business

To assess the direct impact of reducing the RM on annuities new business pricing, we have modelled the central scenario by removing 65% of the risk margin on an illustrative annuity policy using market annuity rates and inferred the amount of required capital from the QRT of monoline annuity providers.

We have assumed the volume of annuity business written each year in the UK of c.£40bn⁴¹, which had considered both the actual trend observed and the market participants' expectations. Under our modelling, using a 5.57% cost of capital gives a benefit on one year's new annuity business of £0.1bn.

The increase in productivity from RM reforms in new business pricing would have reduced in recent years, due to the significant change in interest rate environment. Firstly, the increased interest rates have led to a reduction in the overall RM, with the EM on annuities at approximately 3%⁴² of BEL, nearly half of the market average when interest rates were lower in 2019. There is also an increased take up of longevity reinsurance in the sector, which has further contributed to the lower RM values. Secondly, the increase in the risk free rate has narrowed the difference between the liability discount rate and the cost of capital and, therefore, the cost of holding the RM has reduced.

We have validated the impact by using the 5.57% cost of capital, 5% RFR plus MA⁴³, and assumed annuity duration of around 10 years (based on an example policy projection discounted using the cost of capital) as a crude estimate of the impact of £0.1bn (£40bn * 3% proportion of BEL equal to RM * (5.57%-5%) gain from release in RM * 10Y = £0.1bn).

We have considered the likelihood of firms changing their reinsurance usage as minimal, as industry participants have indicated limited expected changes. We therefore have not explicitly modelled any economic benefit from this.

⁴¹ Section 4.1.3.1

⁴² Sourced from QRT disclosures of three major monoline annuity providers

⁴³ Based on YE22 SONIA + KPMG TPS 2023 average MA

The impact of £0.1bn in the central scenario will understate the overall impact on new business, as there will also be gains on new business in other insurance product groups. However, these gains are likely to be significantly less than for annuities.

Based on the BPA market trend described in section 4.1.3.1, we considered alternative scenarios around the volume of annuity business written each year in the UK. We took £30bn as the 'low' case sensitivity and £60bn as the 'high' case sensitivity. The sensitivity gives a range of £0.1bn to £0.2bn benefit in this area.

We have only considered the RM reduction as proposed by the PRA, and have not modelled other alternative approaches to RM reduction

Total impact

The table below sets out the total impact of the changes to the risk margin under the scenarios.

Figure 4.3.3 Impact of Risk Margin reform on individual and bulk annuities for new business

(£bn)	Central UK market scenario	Potential Range
New business impact	0.1	0.1 - 0.2

Source: KPMG 2023

4.3.2.3 Impact quantification – Matching adjustment portfolio

The impact of the MA portfolio reforms is divided into two components – the allowance for investment into HP assets and the removal of restrictions for investments in sub-investment grade holdings. We have assessed the impact of these changes on annuities, as this will be the line of business affected by matching adjustment reforms.

Investment in highly predictable assets

The impact on productivity from the investment in HP assets arises from the uplift in returns assumed to arise from HP assets. In our central scenario, we have modelled the assumption that 10% of the assets held in corporate bonds within the MAP would be reinvested in HP assets, and this would lead to a 25bps increase in investment return on the HP assets invested in only, offset by a 7.5bps cost of capital, leading to a 17.5bps overall return with no net MA benefit assumed. Please refer to Section 4.2.2.2 for details on the derivation of these assumptions.

New business

To assess the impact of this investment in HP assets, we derived the relationship between an increase in FS and productivity. This is because the increase in returns from the investment in the HP assets is assumed to be absorbed fully within the FS, with no MA increase. The assumption of no MA uplift reflects the uncertainty around how much MA benefit can realistically be derived from investing in these HP assets.

The relationship between the FS and productivity was derived by estimating the reduction in premium deemed equivalent to the discounted value of the additional investment return for an annuity at a typical insurance pricing hurdle rate. This was deduced using an annuity cashflow projection, with similar assumptions as used in the RM quantification exercise. The

overall increase in FS resulting from investment in HP assets, combined with the relationship between FS and productivity, provided the overall impact of the change.

As mentioned in Section 4.3.1.3, we have assumed the volume of annuity business written each year in the UK to be c.£40bn. This NB GWP, combined with assumed impact on productivity due to the increased FS, leads to an estimated impact of £0.1bn.

We have considered alternative scenarios for the high case sensitivity and the low case sensitivity.

- **‘High’ case** – the volume of annuity business written each year in the UK is £60bn, and there is a 35bps increase in overall return for HP asset, with 17.5bps uplift in the FS, and 17.5bps uplift in the MA. There is no change in the proportion of assets in the MAP moved from corporate bonds to HP assets (10%). As a result of the increased premium and MA benefit, this leads to an impact of £0.2bn.
- **‘Low’ case** – the volume of annuity business written each year in the UK is £30bn, 5% of assets in the MAP are moved from corporate bonds into HP assets, and there is no corresponding increase in overall return for HP asset. These changes lead to having no material impact on productivity (c.£0.05bn).

Existing business

For existing business, any portfolio change in existing asset portfolio is one-off. The approach for determining the impact on productivity is found by quantifying the economic impact of one years’ worth of investment return uplift as a per annum quantum to avoid double counting of the wider supply side benefit quantified by the SCGE model.

The size of the total annuity assets within the MAP is assumed to be £250bn. Therefore, this defines the quantum of the impact. The increase in FS within the MAP from the movement into HP assets is diluted by the size of the MAP for the remaining assets, for which the investments are unchanged. Therefore, the 17.5bps uplift assumed for the newly invested assets leads to an approximate $10\% * 17.5\text{bps} = 1.75\text{bps}$ uplift in the MAP for existing business. This leads to an impact on productivity that is not material ($£250\text{bn} * 1.75\text{bps} = \text{c.£}0.05\text{bn}$).

We have considered alternative scenarios for the high case sensitivity and the low case sensitivity.

- **‘High’ case** – there is a 35bps increase in overall return for HP asset, with a 35bps uplift in FS, and no uplift in the MA. This leads to an impact of £0.1bn.
- **‘Low’ case** – there is no corresponding increase in overall return for HP asset. This leads to having no material impact on productivity

In neither case is there a change to the quantum of estimated assets in the total MAP, or an MA uplift (all additional spread is offset by additional FS).

Total impact

The table below sets out the total impact of the changes relating to the investment in HP assets under the central scenario and the sensitivity scenarios.

Figure 4.3.4 Impact of investment in HP assets for individual and bulk annuities

(£bn)	Central UK market scenario	Additional sensitivity
New business impact	0.1	0.0 - 0.2
Existing business impact	0.0	0.0 - 0.1
Total	0.1	0.0 - 0.3

Source: KPMG 2023
 Figures are rounded to the nearest £0.1bn

Removal of sub-investment grade restrictions

The impact from the removal of the restrictions on sub-investment grade holdings within the MAP arises due to the increased MA from holding assets at a lower credit rating. In our central scenario, we have modelled based on the assumption that 5% of the corporate bond holdings within the MAP are moved from AA or A rating bonds to BBB rated bonds. The increased matching adjustment would then directly lead to an economic impact. There is no assumed offsetting impact from the frictional cost of holding additional capital.

New business

To deduce the impact of increased holdings in BBB corporates, we have estimated the impact of these changes to the matching adjustment for an average MAP.

Using an estimated duration of the corporates of 10 years, we can estimate the overall spread using observable corporate credit spreads, find the FS, and as a result, determine the matching adjustment for corporate bonds of different ratings.

To establish the split of corporate bonds across different ratings, we analysed the YE22 disclosures for major UK annuity providers and found the weighted average of their corporate holdings by credit rating.

The table below illustrates the split of corporate bonds by rating for major UK annuity providers.

Figure 4.3.5 Credit rating split of corporate bonds for major UK annuity providers

Entity (£m)	AAA	AA	A	BBB	<BBB	Unrated
Aviva	2,159	3,669	8,418	4,533	0	2,806
Just	984	2,138	3,845	6,034	580	287
L&G	2,263	6,813	15,526	18,116	516	0*
M&G	1,368	2,952	9,623	13,527	3,250	9,235
Phoenix	2,147	9,147	9,661	5,883	516	0
Sample Total	8,921	24,719	47,073	48,093	4,862	12,328
Percentage Split	6%	17%	32%	33%	3%	8%

Source: YE22 Disclosures
 *L&G include a significant amount in internally rated assets classed as 'unrated' in their disclosures. This has not been included in our analysis.

The impact on the matching adjustment for the MAP is then found by moving 5% of the corporate bond holdings from AA and A ratings evenly to BBB. This change leads to an estimated increase in the matching adjustment for the MAP of 1.5bps.

The corresponding impact on productivity of an increase in the matching adjustment is found through sensitivity analysis. This has been carried out on the impact on new business premiums for an increase in the new business matching adjustment. This sensitivity analysis found that for every 10bps of matching adjustment increase, there is a 1% reduction in new business premium. This is then assumed to directly relate to a 1% impact on productivity.

As mentioned in Section 4.3.1.3, we have assumed the volume of annuity business written each year in the UK to be c.£40bn. Therefore, the overall impact of this change is estimated as $£40bn * 1.5bps * 1\% = £0.1bn$.

We have considered alternative scenarios for the high case sensitivity and the low case sensitivity.

- **‘High’ case** – the volume of annuity business written each year in the UK is £60bn and 10% of corporate bonds are moved from AA and A to BBB ratings, leading to an increase in the matching adjustment of 3bps. This leads to an impact of £0.2bn.
- **‘Low’ case** – the volume of annuity business written each year in the UK is £30bn and the percentage of corporate bonds moved from AA and A to BBB is unchanged from the central scenario, leading to an increase in the matching adjustment of 1.5bps. This leads to an impact which is not material (<£0.05bn)

Existing business

For existing business, any portfolio change in existing asset portfolio is one-off. The approach for determining the impact on productivity is found by quantifying the economic impact of one years’ worth of investment return uplift as a per annum quantum to avoid double counting of the wider supply side benefit quantified by the SCGE model.

The increase in the matching adjustment for the corporate holdings only directly is ascertained. This uses the same method as described for new business, for finding the overall matching adjustment impact for the portfolio. The increase in the matching adjustment for the corporate holdings is 2.5bps. For existing business, the increase in matching adjustment directly relates to productivity.

The size of the total annuity assets within the matching adjustment portfolio is assumed to be £250bn with c.60% corporate bond holdings. The amount of the corporate assets being moved across credit buckets is £7.5bn. Therefore, the gain in productivity is given as $2.5bps = 0.025\% * £7.5bn = <£0.05bn$.

We have considered alternative scenario for the high case sensitivity only.

- **‘High’ case** – 10% of corporate bonds are moved from AA and A to BBB ratings, leading to an increase in the matching adjustment for corporates of 5.1bps. The impact of not material (<£0.05bn)

Total impact

The table below sets out the total impact of the changes relating to the removal of the restrictions in sub-investment grade holdings under the central scenario and the sensitivities.

Figure 4.3.6 Impact of removal of sub-IG restrictions for individual and bulk annuities

(£bn)	Central UK market scenario	Potential Range
New business impact	0.1	0.0 - 0.2
Existing business impact	0.0	0.0 - 0.0
Total	0.1	0.0 - 0.2

4.3.3 With-Profits Funds

We estimate that there is currently c.£210bn invested asset in with-profits funds across the UK⁴⁴. However, there are reservations over the incentive of reinvesting a large proportion of policyholders' assets, given most with-profits funds are either contracting or in run-off which will likely give rise to asset liability matching (ALM) constraints, as well as communications regarding policyholders' expectation and risk appetite. We assess that the proposed reform on matching adjustment would not materially change how insurers manage their With-Profits funds. We therefore have made no further allowance for any economic benefit on With-Profits funds besides the back book risk margin reduction considered in Section 4.3.1.

4.3.4 Unit-Linked

Unit fund assets and unit reserves are well-matched and future profits arising are taken credit for via negative non-unit reserves. This allows insurers to reduce capital strain. The insurance, credit and market risk components of the SCR predominantly represent a stress of the negative non-unit reserve and hence are proportionate to the magnitude of this reserve. However, we have noted the key strain in pricing of unit-linked products are typically driven by liquidity such as expenses. We assess that a reduction in regulatory capital strain would not give a material impact on pricing or cost of manufacture of unit-linked products. In addition, the insurers have a more secondary role in directing the investment choices. The role of the wealth management industry in directing more unit-linked fund investments towards long-term productive assets is beyond the scope of this report. We therefore have made no further allowance for any economic benefit on unit-linked products besides the back book risk margin reduction considered in Section 4.3.1.

4.3.5 Protection and other life products

A reduction in capital requirements and RM is a potential lever to enhance productivity through more competitive premiums, which in turn increases household spending in other sectors. However, protection products generally have lower reserves and RM compared to annuities with assets backing reserves (these typically invest in gilts and cash-like instruments to provide the necessary liquidity). For this reason, we expect that the potential impact on pricing or cost of manufacture from this product group will be a fraction of the benefit from annuity business and therefore immaterial to the overall economic benefit impact. We therefore have made no further allowance for any economic benefit on unit-linked products besides the back book RM reduction considered in Section 4.3.1.

⁴⁴ See Figure 4.1.2

4.3.6 Non-Life

4.3.6.1 Regulatory drivers

The proposed RM reform is a potential lever to enhance productivity through more competitive premiums, which in turn increases household spending in other sectors. Whilst we recognise that premiums are highly dependent on underwriting cycles and are not necessarily driven by costs, the benefit from lower costs to the insurer would ultimately benefit the economy.

4.3.6.2 Impact quantification

As mentioned in Section 4.3.1, we will only quantify the impact from new business production gain for non-life business.

New business

We have modelled the central scenario by removing 30% of the RM on non-life business. Assuming the total non-life RM of c.£7.8bn⁴⁵ has an average duration of 1 year, we estimate a 0.13% per annum contribution of new business premium to productivity. This is calculated by $30\% * 7.8bn * 5.57\%$ cost of capital.

We have assumed the volume of non-life new business written each year in the UK to be c.£120bn⁴⁶. This gives an impact on productivity of one year's new business of £0.2bn ($£120bn * 0.13\%$).

We have only considered the RM reduction as proposed by the PRA, and have not modelled other alternative approaches to RM reduction.

4.4 Overall impact breakdown by modelled scenario

This tables below provide an overview of total estimated benefits and the 1-year economic impact from proposed Solvency II regulatory changes summarised in Figure 4.2.1, for both the central scenario and the 'high/low' sensitivities.

⁴⁵ Figure 4.3.1

⁴⁶ Figure 4.1.7

Figure 4.4.1 Summary of key benefits from proposed Solvency II regulatory changes in ‘Central UK Market Scenario’

Areas	No reform – ‘Status Quo’	Proposed Reform – ‘Central UK Market Scenario’	Linkage to ‘1-year’ economic impact
Total risk margin (net of TMTP ¹)	£16.6bn	£8.5bn , driven by reduction of 65% reduction in RM from Life back book and 30% reduction in RM from Non-Life assumed in RM reform	£0.3bn impact represents 1-yr cost of capital saving from RM reform.
Indicative investment return (and MA) uplift ² and MA assets redeployed to long-term productive assets over 3-5 years	N/A – impact shown as marginal benefit	5bps uplift in total return (with 3bps net MA uplift with the remaining offset by FS) £25bn shift in allocation to HP assets <i>Driven by 5% of BBB IG allocation, 10% of HP allocation with 17.5bps net of CoC yield assumed in MA reform</i>	£0.2bn impact represents increase in investment income from MA reform. The split of the benefit between HP assets and removal of SIG restrictions is shown in Figure 2.3.
Pricing benefit to policyholders ³		Annuity: Up to 0.6% reduction on Annuity NB premiums, driven by all the above assumptions for RM and MA reform Non-Life: Up to 0.1% reduction on Non-Life products premiums, based on 30% reduction in Non-Life RM assumed in RM reform	£0.3bn impact represents reduction in annuity and non-life premiums achieved by reduced in capital cost by RM reform and increase in return by MA reform.

Source: KPMG 2023

Note 1: Transitional measures on Technical Provisions

2: Yield uplift is presented net of cost of capital and additional expected defaults

3: An industry-wide aggregated impact on annuity premiums has been estimated for modelling purposes. In practice, the actual impacts will vary significantly between insurer and new business liabilities. In addition, the benefits of the impacts could be realised either as premium reductions to policyholders, profitability increase to insurers or as a cost of capital benefit to borrowers in other sectors. The latter impact is illustrated through Tests B and C presented in the Computable General Equilibrium (CGE) analysis in section 5.

Figure 4.4.2 Overall 1-year economic impact breakdown

Estimated 1-year economic impact from proposed Solvency II regulatory changes (£bn)	Central UK market scenario	Potential Range
(a) Risk Margin reduction – Existing business	0.3	0.3*
(b) Risk Margin reduction – Annuities (New business)	0.1	0.1 - 0.2
(c) Risk Margin reduction – Non-Life (New business)	0.2	0.2*
(d) Matching Adjustment portfolio – Investment in HP assets	0.1	0.0 - 0.3
(e) Matching Adjustment portfolio – Removal of sub-investment grade restrictions	0.1	0.0 - 0.2
Total	0.8	0.6 - 1.1

Source: KPMG 2023

*Sensitivities not performed

4.4.1 Key Assumptions

A number of assumptions are required to in order to estimate economic impacts from regulatory outcomes, we have included some of the pivotal assumptions below:

- All benefits from the productivity-related regulatory outcomes are passed onto new policyholders, both individual and corporate, through lower premiums. We did not make any deductions for any associated costs for implementation;
- The composition of an average MAP, with MA and FS by asset class, has been observed from market survey;

- The balance sheet relief and capital released are quantified as savings in cost of capital over a 1-year horizon, this is to align with how the CGE model is parameterised;
- The cost of capital is determined at 5.57% throughout the calculations. This comprises the HMT project appraisal real rate of 3.5%⁴⁷, and the 2% inflation target set by the government⁴⁸. Note that this is different to the fixed 6% cost of capital rate used in the calculation of the RM;
 - For our sensitivity analysis, we do not consider varying the cost of capital rate described above. The portion of that rate which applies to HMT project appraisals is an established figure published by the government and can be considered stable. We set the long-term consumer price index (CPI) at 2% because this is the Bank of England's long-term target rate of inflation.
 - We have considered using market-consistent rates for 10-year or 15-year Retail Price Index (RPI), which are 3.9% and 3.7%⁴⁹ respectively as opposed to the long-term 2% target inflation rate. As these figures are higher than 2%, this would lead to an increase in the cost of capital, and would have a follow on impact on certain areas of the reform described, changing the 1-yr productivity impact, as well as the future economic growth impacts produced by the SCGE model.
 - For example, for the risk margin reforms, this would have led to offsetting impacts to the 1-yr productivity estimate across new and existing business. For new business, an increase in the cost of capital would increase the discount rate used to find the present value of the cost associated with writing an annuity contract. This would dampen the impact of the risk margin reduction on productivity. However, for existing business, the higher cost of capital means the amount of back book risk margin released leads to an increased impact on productivity.
 - For the matching adjustment reform relating to the removal of sub-investment grade restrictions, the cost of capital would not have a direct impact, as we have assumed a direct link between the increase in matching adjustment and productivity, unrelated to the cost of capital. However, for the matching adjustment reform relating to the investment in HP assets, this would have an impact on the productivity calculated for new business only. The relationship between the increase in investment return and productivity is influenced by the cost of capital. In a similar exercise to that carried out for the risk margin new business, the cost of writing an annuity contract to the insurer is assessed under two different investment income environments. This requires discounting at the cost of capital to derive it. Therefore, the impact on investment income on productivity would also be dampened slightly by the increased cost of capital, leading to a reduced impact.
 - However, we have assumed that for the long term inflation assumption the targeted rate is appropriate, as it is unlikely to vary due to short-term fluctuations.
- The risk-free rate in the annuity cashflow projections is the Solvency II risk-free rate published by the PRA as at December 2022; and
- The relationship between BEL, RM and SCR assumed in the annuity cashflow projections are split proportionally at the outset for new business based on values provided in YE22 QRTs for Pension Insurance Corporation, Just and Rothesay. These firms are chosen as they are specialist, monoline annuity writers, and can isolate impacts on annuities only.

⁴⁷ HMT, 2020, [The Green Book](#)

⁴⁸ Bank of England, 2023, [Inflation and the 2% target | Bank of England](#)

⁴⁹ Refinitiv, UK RPI Zero Coupon Inflation Linked Swap Data, 31/12/2022

5 Modelling the macro-economic impacts

5.1 Introduction

After defining the Central UK market scenario under Solvency II, and estimating the insurance balance sheet impacts of the scenario, it is necessary to estimate the changes these will have on the UK economy. These changes are both as a result of impacts within the insurance sector and as a result of wider effects that come about because of:

- the important role insurance plays in the supply chains of other sectors;
- the impact on households as consumers of insurance;
- effects as a result of the role the insurance sector plays in UK capital markets; and,
- impacts via the government's tax revenues.

This chapter outlines the approach used to convert the regulatory impacts into initial economic impacts or 'shocks' in the economy, the approach to CGE modelling undertaken to estimate the wider impacts within the economy of these shocks, and results of this analysis. Finally, this chapter illustrates how the economic outcomes achieved as a result of the regulatory changes align with HMG policy objectives. Specifically, we discuss how improved productivity in the insurance industry and beyond, supports the wider economy, contributes positively to taxation, and helps to enable the tackling of climate change.

This chapter is structured as follows:

5.2 Modelling wider impacts

5.2 Understanding economic output, inputs and linkages in the Insurance sector

5.3 Initial impacts

5.4 Headline CGE results

5.5 Assessing modelled economic impacts against policy objectives

To estimate the medium to long-term economic impacts on the UK economy from the regulatory changes outlined in this paper, we use a CGE model.

5.1.1 What are CGE models and why do they allow us to estimate wider economic impacts in the economy?

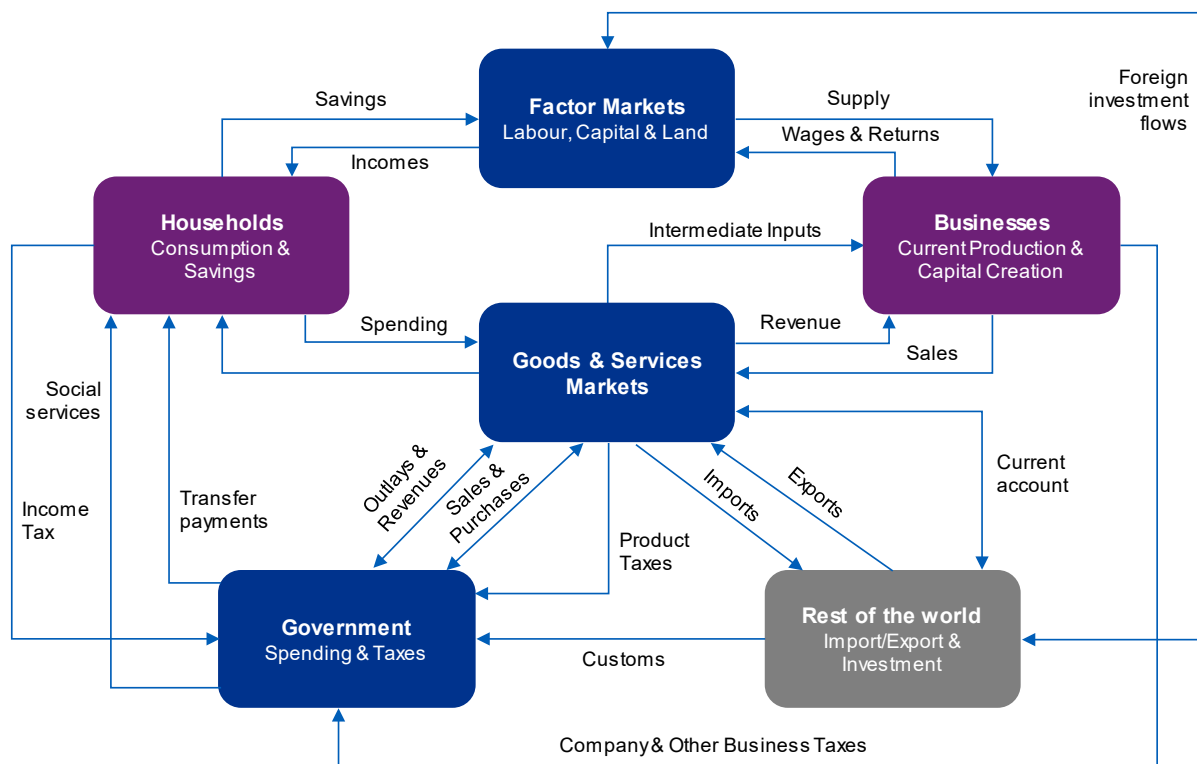
Computable General Equilibrium models are a sophisticated form of economic modelling which combines real economic data with economic theory to simulate the behavioural response and market interactions from a particular economic change or intervention. Specifically they capture the complex interactions between different economic agents –

including households, businesses, government and the rest of the world – operating in competitive markets with explicit resource and budget constraints.

Economic theory is used to specify the behaviour and market interactions of these different economic agents. Through these linkages, CGE models capture how changes in one part of the economy can have knock-on effects on others; this includes effects on inter-sector trade (supply chains), capital markets (investment and saving), international trade (imports and exports), labour markets, household consumption and government spending and taxes.

Without capturing these impacts, economic modelling is limited to estimating impacts to a given sector or area only, and without the feedback from the rest of the economy. This is commonly referred to as ‘partial equilibrium’. Figure 5.1.1 below illustrates how the linkages between different agents and markets are reflected in a CGE.

Figure 5.1.1 Overview of agents and transactions flows in KPMG's SCGE Model



Source: KPMG 2023

A robust feature of CGE models is that when analysing a change or ‘shock’ in one part of the economy, growth in the whole economy is constrained by available resources, meaning over time the economy must converge to a new “general equilibrium” or “steady-state” (after adjusting for changes in prices and a new allocation of resources). This contrasts with static input-output analysis (I-O), which is a partial equilibrium approach to measuring wider economic impacts that does not capture budget and resource constraints and the interactions/ competition between different economic agents for those resources. Other limitations of input-output analysis are outlined in Figure 5.1.2 below, as well as the differences between national CGEs and CGEs that are disaggregated spatially (aka Spatial CGEs or SCGE)

Figure 5.1.2 Features of different forms of wider economic impact modelling

	Input-output analysis	CGE (national)	CGE (spatial)
Supply side constraints	— None	— National level constraints	— Regional level constraints (allows displacement and competition)
Endogenous prices	— None (assumes prices are fixed)	— National level price changes, so markets clear	— Regional level price changes, so markets (allows displacement and competition)
Different ratios for intermediate inputs and production	— None (assume fixed ratio)	<ul style="list-style-type: none"> — Substitution across factors and products (domestic and international) i.e. accounts for displacement — Diminishing marginal returns 	<ul style="list-style-type: none"> — Substitution across factors and products (regional, domestic and international) i.e. accounts for displacement — Diminishing marginal returns
Budget constraints	— None	<ul style="list-style-type: none"> — Households and government have budget constraints — Firms have profit maximisation functions 	<ul style="list-style-type: none"> — Households and government have budget constraints and differ at a regional level — Firms have profit maximisation functions
Allowance for purchases marginal response to change	— None	— Households and firms budget shares can change	— Households and firms budget shares can change
Applicable for small regions	— Not applicable (interlinkages are shallower than regional level)	— Not applicable (interlinkages are shallower than regional level)	— Applicable (incorporates regional differences and allows for regional shocks)

Source: KPMG 2023, based on information from the [ABS 2019](#)

The robust properties of CGE models, which is sometimes described as the “no free lunch” assumption, means they consider the interaction between demand and supply, and robustly account for all necessary economic considerations when estimating the potential net additional impacts of an intervention, in line with HM Treasury’s Green Book appraisal guidance. That is, after allowing for the fact that when more resources are used in one sector or location it means fewer are available elsewhere. These considerations are commonly referred to as displacement effects, substitution effects, leakage, and dead weight loss.⁵⁰

As a result, CGE models are widely used by governments and international organisations. In the UK, this includes HMRC and HM Treasury, which use SCGE models to assess the impact of tax and trade policies on the UK economy.⁵¹ Examples include:

HMT, 2018: HMT used CGE modelling to estimate the impact of changes in trade costs on the UK economy due to EU Exit⁵². The CGE modelling results provided an estimate of the

⁵⁰ HMT 2020, [The Green Book](#), p. 93-94

⁵¹ HMRC, 2013, [Analysis of the dynamic effects of Corporation Tax reductions](#), [Analysis of the dynamic effects of fuel duty reductions](#), HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#)

⁵² HMG, 2018, [EU Exit: Long-Term Economic Analysis Technical Reference Paper](#)

changes in the total value of exports and domestic demand by sector. Regional analysis then apportioned these changes to regions to estimate their exposure to a particular scenario.

HMRC, 2013: HMRC developed a CGE model, capable of modelling the dynamic macroeconomic effects, and subsequent Exchequer revenue effects of major policy changes, including tax changes, and HMRC have published reports based on the application of this modelling to a selection of illustrative tax changes⁵³.

DfIT, 2020: DfIT used a CGE model to estimate the macroeconomic effects of the trade impacts of a UK-Australian Free Trade agreement.⁵⁴

5.1.2 Introduction to KPMG’s Spatial General Equilibrium (SCGE) Model

KPMG has developed a spatial CGE (SCGE) Model⁵⁵ of the UK economy using CGE theory and detailed economic data from the ONS and other HMG public available information, as well as academic empirical studies. The SCGE Model disaggregates the UK economy into up to 105 sectors, including the insurance sector and its supply chain, and up to 109 sub-regions of the UK which operate as separate economies linked by inter-regional trade flows.

The key economic disciplines underpinning KPMG’s SCGE Model are:

- Optimising behaviour by households and firms in the context of competitive markets with explicit resource constraints and budget constraints.
- The price mechanism which operates to clear markets for goods and factors such as labour and capital (i.e. prices adjust so that supply equals demand);
- At the margin, costs (including required returns) are equal to revenues in all economic activities; and
- In the long run Exchequer receipts and revenues must balance, which means the modelling operates with its own “fiscal rule”⁵⁶

For the purposes of this analysis, the SCGE model has been aggregated to 36 key sectors of interest (see appendix Appendix 6.1) and the 12 NUTS 1 geographic regions. This aggregation allows the model to run efficiently, whilst maintaining a sufficient level of detail to estimate robust impacts. Model aggregation is typical in calibration modelling (e.g., transport modelling)⁵⁷.

This aggregation was driven by the relevance of specific sectors that CAM expected to be affected by productivity improvements, including the downstream and upstream sectors they are related to. This view was arrived at through relying on previous stakeholder/and sector analysis.

⁵³ HMRC, 2013, [Analysis of the dynamic effects of Corporation Tax reductions](#), and [Analysis of the dynamic effects of fuel duty reductions](#)

⁵⁴ DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#)

⁵⁵ KPMG’s SCGE model uses GEMPACK software; Horridge, Jerie, Mustakinov & Schiffmann 2018, GEMPACK manual, GEMPACK Software, ISBN 978-1-921654-34-3

⁵⁶ This is a standard fiscal rule in CGE modelling which aids transparency; if Government expenditure were allowed to change in response to changes in GDP it would be necessary to make assumptions about the impact of the additional government spending – or savings if GDP fell – on productivity. The assumption that expenditure is constant when combined with the long-term balanced budget assumptions (the stabilisation of long-term government debt) results in modest reductions in assumed income tax rates as GDP increases in response to a productivity impact in Insurance. HMG apply the same adjustments in their own CGE modelling, see HMG 2014, [Analysis of the dynamic effects of fuel duty](#), p. 25

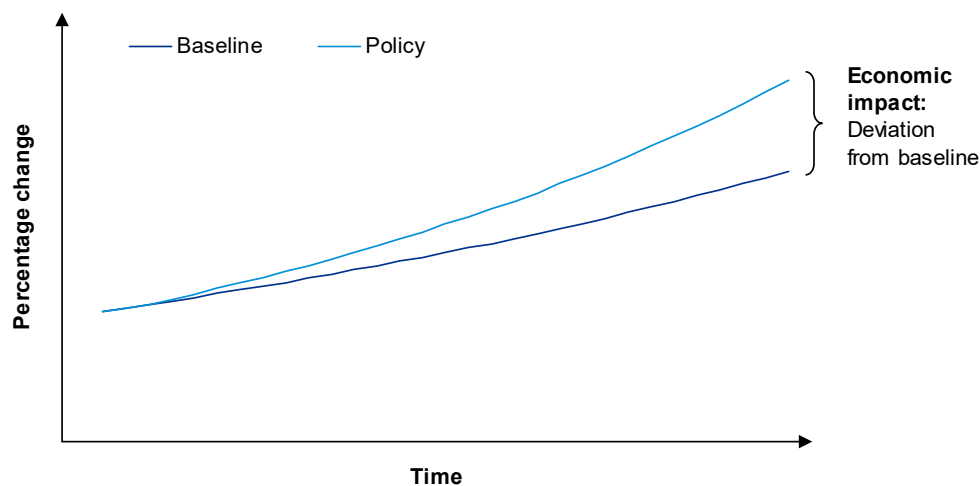
⁵⁷ Department of Transport, 2014, [TAG Unit M1.1 Principles of Modelling and Forecasting](#)

In the model, each of these 26 sectors has its own requirement for intermediate goods and services and primary factor inputs (labour, capital and land). Intermediate goods and services in the model are either sourced locally, imported from other UK regions, or imported from abroad (distinguishing between EU and non-EU trade). It is possible to ‘shock’ the productivity of these individual sectors and report the results of the change at this sectoral level.

5.1.3 Understanding the ‘Incremental impact’ in the economy

To understand the change in the economy as a result of a policy impact or intervention, the CGE estimates the difference or ‘incremental’ between two modelled scenarios, the with Policy (“Do Something”) and the Baseline (“business as usual”) scenario (see) This is a standard approach in economic modelling and aligns with the principles of the UK Green Book. Results are then presented as a percent or pound deviation from the baseline.

Figure 5.1.3 Illustration of Incremental impact



Source: KPMG 2023

The results for the “baseline” and “with policy” is *not* an attempt to predict everything that might occur in the future, but instead a projection or representation of the future growth path of the economy based on today’s available information.

While this long-term growth path may differ in both the baseline and policy scenarios to what occurs in reality, what is most important is the incremental difference between these two scenarios themselves.

We have adjusted the baseline growth path in the model to align with the historical and forecast estimates of GDP, population and household growth from ONS and OBR.⁵⁸

5.2 Understanding economic output, inputs and linkages in the Insurance sector

Before analysing impacts to the wider economy, it is worth understanding how the Insurance sector and its linkages are defined in the ONS National Accounts, and in the SCGE model.

⁵⁸ SCGE estimates were adjusted to reflect the latest historical and OBR forecast baseline GDP estimates, and adjusted to today’s (2023) prices using the GDP deflator. These were sourced from the [DfT TAG databook](#).

The Insurance sector, as defined in the ONS Supply and Use tables, has four key subcategories. These include Non-life Insurance, Life Insurance, Reinsurance and Pension funding (excluding compulsory insurance.)

The UK National Accounts reflects the output of the insurance sector in two ways. The first is through the cost of all the resources needed to create the output. This can be broadly broken down into the payments to Factors of production (rents to Land, wages to Labour and profits/rents to real Capital), and cost of Intermediate Inputs, which is the price of the goods and services used in the production of insurance (see Figure 5.2.2).

Figure 5.2.1 Inputs in production



What is 'Capital', and how is it represented?

It is worth noting the distinction in capital as represented in the UK National Accounts, also referred to as 'real capital' or 'economic' capital, and other terms such as intermediate inputs and financial capital.

Real capital, (aka Capital assets or Capital goods), are already produced durable (non-financial assets) used as 'tools' in production of goods or services, e.g. buildings, computers, software etc. Capital is produced by distinct sectors of the economy (e.g. Construction sector) and accumulated by businesses over time. It also depreciates with age and must be replaced if output levels are to be sustained. Net increases in total capital stock can make a material difference to total output, but in a CGE world this comes at the price of lower consumption in the meantime since additional investment has to be paid for somehow.

Capital in the CGE is distinct from intermediate inputs, which are the goods and services (including energy, raw materials, semi-finished goods, and services that are purchased from all sources) that are used in the production process to produce other goods or services rather than for final consumption.

Real capital on the above definition is also distinct from financial capital – i.e debt and equity measured in monetary terms, used by organisations to finance operations and investment through capital markets, and in the insurance sector to back its exposure under the insurance contracts it issues. This financial capital is a critical enabler of production (including by facilitating real capital, labour, land, and intermediate inputs), but is not itself an additional factor of production.

In the SCGE model, real capital is ultimately owned by households, reflecting their role as 'shareholders' or lenders in the economy through their savings. Therefore, the operating surplus (profit) of firms flows back to households in the form of rents on real capital. This is akin to owning equity/debt in a business, as these instruments provide a claim on that organisation's assets (should it be liquidated).

Assumptions are required about the efficiency or otherwise of financial capital markets impact on CGE modelling via the implications for the costs of real capital and production more generally. Improvements in the efficiency of financial capital markets can be an important driver of the overall productivity of a given set of real inputs (i.e. of total factor productivity), but CGE modelling requires external estimates of the scale and distribution of these changes in order to generate forecasts of the impact on real output, real capital stock, labour supply etc.

Source: KPMG 2023

The second way the national accounts reflects output is through the demand for insurance. Unlike other sectors in the economy, where the value of the output is as simple as the goods or services purchased by its users, Insurance produces intangible products used to control risk, where the product incorporates a significant redistribution of funds.

Therefore, the principle adopted by the European System of Accounts (and the ONS), is that the value of the output produced by the sector is the price the policy holders ‘actually’ pay for the risk pooling, risk bearing, and other insurance services received.⁵⁹ This reflects the premiums (P) earned by insurers net of the claims/benefits due to policy holders (C), plus income (I) earned from the investment of the insurance technical reserves of the insurers, or (P-C+I).⁶⁰

This could also be viewed as the ‘revenue’ of the sector from the product itself. This is not perfect (no set of statistical definition ever is) claims can be volatile over time and could exceed premiums in a given year resulting in a negative output estimate. The ONS therefore must adjust to account for this volatility.

5.2.1 Insurance sector in ONS

The latest available ONS statistics on the Insurance sector, the interrelationships between the cost of its inputs, and outputs, and gross value added are reflected in Figure 5.2.2 on the next page, which are based on the 2020 supply use tables, grown to today’s prices.

Figure 5.2.2 shows that the Insurance sector draws on goods and services from a number of other sectors (represented in blue on the left) in its ‘production’ process. In addition, it uses the factors of production including labour (to which it pays wages), and land and real capital (which it pays rents/profits) and taxes (which it pays to the government). The addition of the intermediate costs as well as returns to the factors of production (known as Gross Value Added) equals the total output of the sector (£65.8bn)⁶¹ sold in the economy (box on the bottom left).

Adding the output in all sectors of the economy would overestimate the value of total domestic output (GDP). This is because the intermediate inputs used in a given sector, reflect the added value of land, labour and capital of one or more other sectors (which would be double counting or worse). It is therefore the sum of all sectors gross value added (GVA) which (after some tax adjustments) equals the total economic output in the economy. The Insurance sector’s GVA (£32.5bn) reflects its contribution (i.e. value added) towards UK GDP.

The output of the insurance sector, is consumed by other sectors in the economy (as an intermediate input), presented in the purple column on the right of the diagram, which includes other insurance firms within the sector itself. In addition, a large proportion of insurance is consumed directly by households or exported overseas.

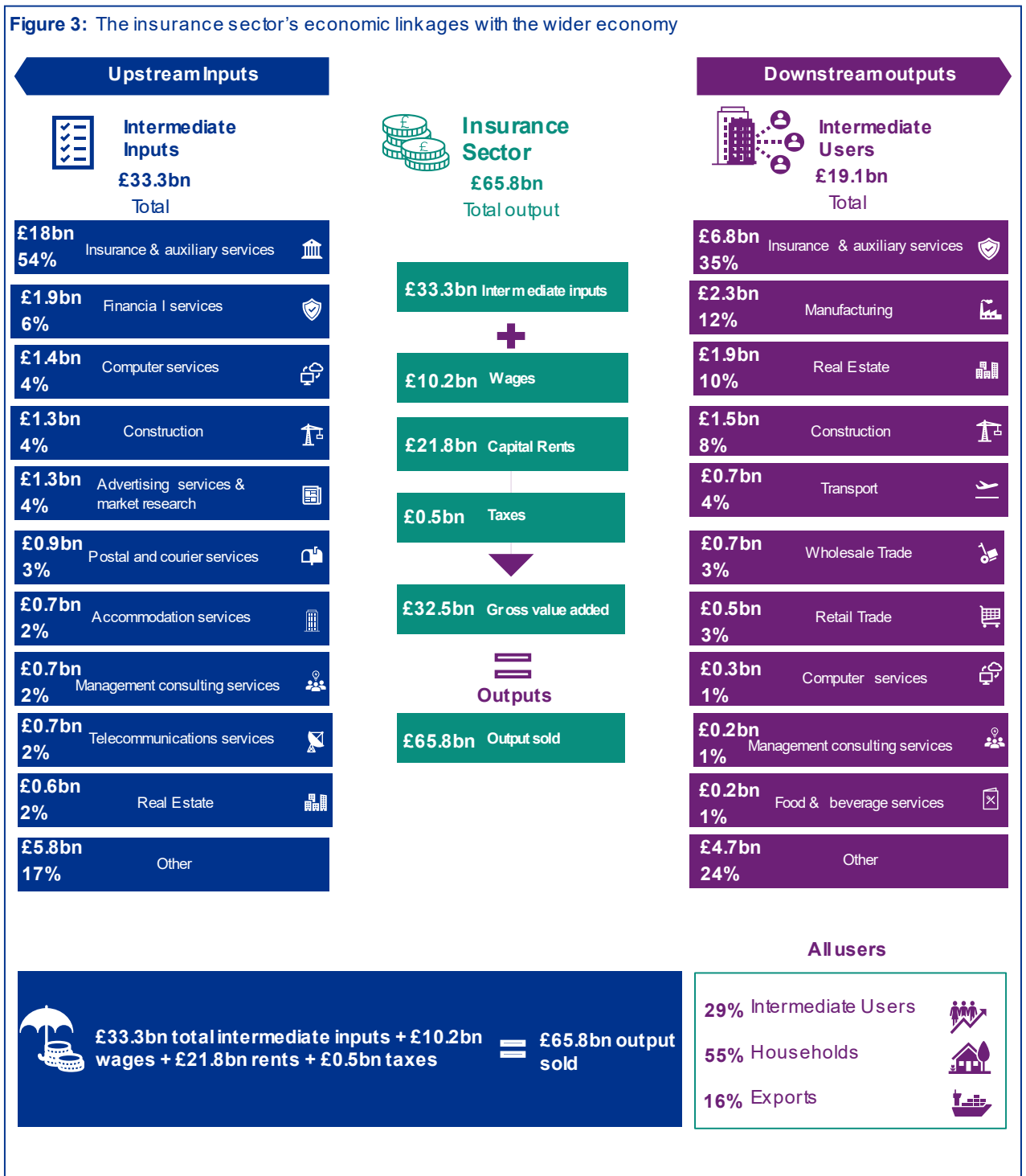
⁵⁹ Eurostat, 2013, [European system of accounts ESA 2010](#), Ch16

⁶⁰ Strict calculations differ across types of insurance (non-life, Life and Reinsurance), but the overarching principle remains the same

⁶¹ ONS, 2023, 2020 Supply and Use tables, inflated to 2023 prices by KPMG. This is the amount consumed by other sectors, households or exported overseas, and is further discussed in Section 5.2.1. Note that this output value (made up of intermediate inputs and sector GVA) has changed significantly in 2020 compared to more historic estimates in the 2016 and 2018 Supply and Use tables. There are possibly two reasons for this. First, COVID may have affected insurance returns and this may have had a material impact on the way ONS estimates output. Second, the ONS has adjusted the classification of the insurance and finance sectors in recent years (see House of Commons Library 2022, [Financial services: contribution to the UK economy](#), p8), such that certain insurance and financial auxiliary services have been moved from insurance, and are instead reclassified in other sectors. We have reported the latest available data to provide a snapshot of what the insurance sector looks like, but for the purposes of the SCGE modelling it is based on the 2016 database, recalibrated to OBR and ONS latest forecasts. This should not materially impact reliability of results in the modelling, given that the productivity improvement is estimated in £s, and then converted into a % for the modelling to derive the supply side multiplier to be applied to the original estimate in £s.

The interlinkages above reflect the importance of the insurance sector to the wider UK economy. Impacts to the insurance sector directly will have flow on impacts to sectors that provide its intermediate inputs and capital, as well as the sectors and households and international users that purchased its outputs, and the households that supply its labour.

Figure 5.2.2 Insurance Sector Economic Linkages



Source: ONS, 2023, 2020 Supply and Use tables, escalated to 2023 prices by KPMG

5.3 Initial impacts

The input/output linkages presented above Figure 5.1.1 and reflected in the data presented in Figure 5.2.2 show the routes by which changes in the insurance sector impact the rest of the economy, and which areas of the economy would experience additional demand as a result of an expansion of the sector. (Of course, these sectors also have their own supply chains, which means these demand effects spread further.) All the sectors in the modelling also draw on factor inputs – labour, land and capital – and in practice are in competition for these inputs, which means when one sector demands more the price goes up and others demand less. The modelling also reflects the reality that labour and capital supply are not fixed, but also respond to changes in price (wages or rates of return on real capital). As noted above the impact of changes in rates of return on real capital is often a critical part of the ultimate impact albeit that increased investment has consequences for consumption in the short term.

The modelling seeks to incorporate these linkages, supply chain and factor responses, thereby allowing us to translate any Solvency II regime changes into wider impacts whilst adhering to economic disciplines, ensuring prices are endogenous and all markets clear.

5.3.1 Initial impact routes

The Central UK market scenario outlined in Section 4 leads to initial impacts in the economy through two routes.

5.3.1.1 Route 1: Initial improvement in productivity in the Insurance sector

If the Solvency II review proposals are implemented, this would initially improve the returns in the insurance sector. This amounts to a total factor productivity improvement, as it reflects lower costs incurred for the same amount of inputs⁶² (labour, real capital, intermediate goods) to deliver a given level of output.

While the initial effects of a productivity improvement are felt within the insurance sector, in a competitive market economy, impacts would quickly flow through the rest of the economy. Improvements would be passed on to consumers in the form of lower premiums (prices), allowing them to save and consume more insurance, or consume more of other goods and services (reflecting downward sloping demand curves). It would also flow to downstream sectors that purchase insurance for use as an intermediate input, lowering their input costs and allowing them to expand production. The savings also represent an increase in real wages raising the returns to labour at the margin.

⁶² It is more prudent to only shock productivity for just the factors of production i.e. GVA. This is because intermediate inputs reflect the factors of production of other sectors, and so an all input shock may result in overestimation of improvements in the economy.

The improvements in return also allow the insurance sector to expand, demanding more inputs from sectors upstream, improving upstream sector returns and allowing them to expand production. With the expansion of insurance and other sectors, this also drives demand in factor markets including demand for Labour and Capital, further increasing real wages and returns to capital, as well as increasing employment⁶³ and leading to an accumulation of real capital through greater investment, which in turns helps drive further growth in the economy.

Importantly, impacts will not necessarily be positive for all sectors. For instance, while the Finance and Insurance sectors are interlinked, they also compete with each other for similar inputs. The CGE models these competing demands across sectors and regions.

Overall, as output expands in many sectors, and in aggregate, prices fall until profit (returns on capital) also falls back to its 'normal' levels. This reflects a world of increasing marginal costs (i.e. upward sloping supply curves), and of competition where 'abnormal' returns are competed away. The economy finally settles at a new steady state equilibrium, with greater output, higher wages, higher employment, and more accumulated capital than it had before.

5.3.1.2 Route 2: Initial improvement in productivity in other sectors

If the Solvency II review proposals are implemented, they will allow for a redeployment of financial capital, affecting other sectors in the economy directly. That is, some of the improvement is not initially gained through the insurance sector itself as described in Route 1 (flowing through the economy via lower products prices or greater demands for inputs), but instead the initial gain is felt in other sectors via financial markets where the redeployment lowers the cost of financial capital compared with what those sectors experienced before. This means these other sectors experience their own direct total factor productivity gain, reflecting a lower cost incurred for the same amount of inputs⁶⁴ (labour, real capital, intermediate goods).

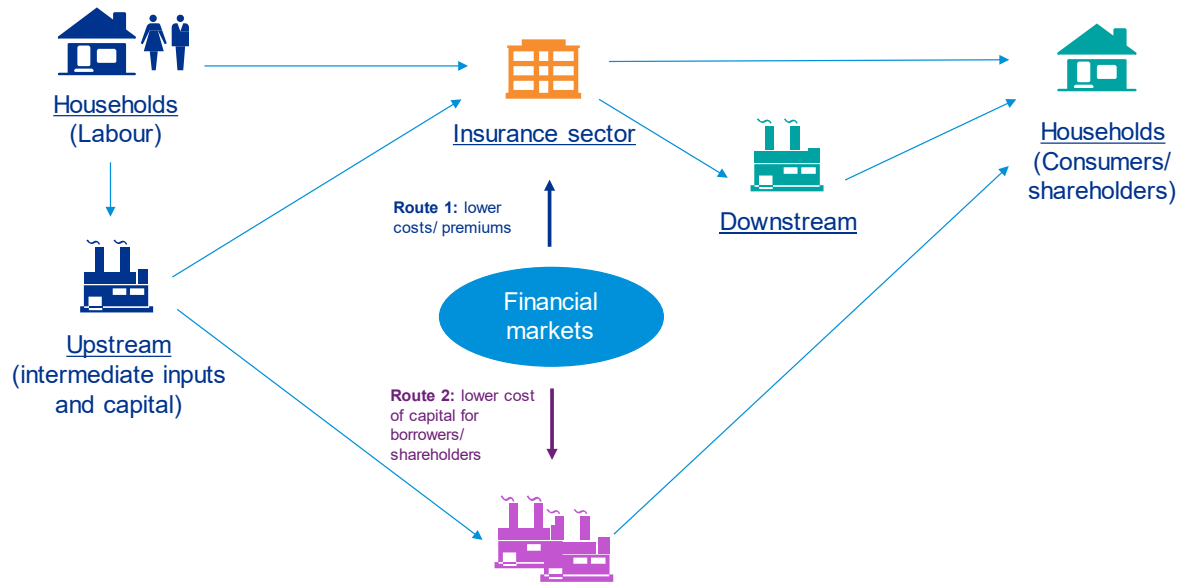
These improvements allow sectors across the economy to expand, as well as up and downstream sectors. Under this route our modelling reflects two alternative sub-scenarios: one where the initial improvement is diversified across all sectors, and a second where the impact is concentrated in key growth sectors of the economy.

Figure 5.3.1 below is a stylised/simplified version of Figure 5.1.1, and focuses on the two key routes and interlinkages between different agents in the economy, specifically those impacted by the initial impact. The SCGE model does not model financial markets, just real capital markets, and so the divvy up the precise divvy up between Route 1 and Route 2 of the initial improvement is difficult to predict.

⁶³ Under both the baseline and the policy scenario, we assume 'Full employment' from a structural and cyclical point of view. Therefore, the vast majority of employment changes in certain sectors/regions reflect displacement in others. However, while labour supply at an aggregate level is inelastic, it is not assumed to be perfectly inelastic. This is because even in an economy at Full Employment in equilibrium, a work/leisure trade off exists and needs to be accounted for. As real wages improve in the economy, households will, on average, tend to substitute towards work, and this leads to small increases in hours worked (employment) in the economy at a national level. This level of substitutability is small, and this is because it is partly offset by the income effect, where people in economy will work less at the margin, as their real wage improves.

⁶⁴ While financial capital is used to fund all inputs, it is more prudent to only shock productivity for just the factors of production. This is because intermediate inputs reflect the factors of production of other sectors, and so an all input, all sectors shock may result in overestimation of improvements in the economy.

Figure 5.3.1 Key impacts and interlinkages



Source: KPMG 2023

5.3.2 Derivation of the initial shocks

In the Section 4, we calculated the initial financial impacts from various regulatory levers, under our Central UK market scenario.

These impacts capture both productivity gains within the insurance sectors, through lower cost of capital and lower insurance costs, and capital redeployed to other sectors through reinvestment of existing assets held by insurers in a way that improves the overall efficiency of financial capital markets by removing barriers to financial capital flowing to its most productive use.

To simplify the analysis, it was assumed that these initial effects occur in a single year, reflecting an ongoing improvement that grows over time in line with the expansion of the sector estimated endogenously in the CGE model. This is considered a proportionate approach, given that the majority of the productivity impact is expected to occur almost immediately, and because the strength of CGE modelling lies in its long-term forecasting of policy impacts relative to a baseline. Whether the initial impact is modelled in a single year or ramped up over many, this should not materially impact the long-term economic outcomes once the dynamic effects in the modelling have stabilised, and the economy is back in a 'steady state equilibrium'. Any short-term outcomes, therefore, should be read with caution, as they will be a product of this assumption, as well as the limitations of CGE modelling in short-term forecasting, covered in more detail in Section 5.4.3.

The CGE definition of insurance sector output, as prescribed by the ONS (see Section 1), is broadly defined as premiums less claims plus interest earned⁶⁵, which is akin to IFRS profit and loss accounts. We have therefore estimated initial economic gains in a way that is designed to align with the way the CGE model interprets its inputs. For instance, we have assumed that the new business volumes will continue to grow in the bulk annuities market,

⁶⁵ Eurostat, 2013, [European system of accounts ESA 2010](#), ch16

thereby benefitting from the lower cost of capital afforded by the regulatory levers as there is likely to be a net capital strain.

We implicitly assume that the productivity gains and capital savings achieved over one year are maintained for the foreseeable future, relative to the base case, which is the way CGE model interprets the ‘day one’ shock to the economy and projecting the GDP gain 30 years into the future relative to the baseline. The baseline is itself a 30-year forecast, but one that does not include the shock.

Drawing on from analysis in Section 4 and the outputs in Section 4.4, the initial shocks that reflect the productivity gains and capital savings achieved presented in Figure 5.3.2 below. The table reflects three tests in total.

Under the Test A, the estimated £0.8bn initial economic impact is felt entirely in the insurance sector, and its impact on the wider economy flows through this sector (Route 1 as described in Section 5.3.1.1).

In Test B, it is recognised that not all of the cost impact will be felt initially in the insurance sector, as redeployment of financial capital is expected to lower the cost of financial capital in other sectors relative to what was experienced before (Route 2 as describe in Section 5.3.1.2). This has been estimated to be £0.2bn, as it captures impact from reinvesting MAP assets into long-term productive assets such as assets with BBB rating and assets with HP cashflows, and as such the benefit can be realised in the form of reduced cost of capital for other sectors in the wider economy, instead of through more competitive insurance pricing. It is assumed that this benefit is spread proportionally across the sectors in the economy, reflecting the expectation that the insurance sector would seek to diversify its investments across different sectors.

In Test C, we look at a hypothetical situation where the potential for gain is felt in key targeted sectors, recognising the risk profile of the BBB and HP type assets. These specific sectors and assumptions are outlined in further detail in Section 5.3.3 below.

Figure 5.3.2 Tests modelled in KPMG SCGE, £billions 2023 prices

Scenario	Test	Route 1 shock to Insurance sector	Route 2 shock in other sectors
Solvency II	A	0.8	-
	B	0.6	0.2 diversified
	C	0.6	0.2 targeted (1/3 Construction 1/3 Real estate 1/3 diversified)

Source: KPMG 2023

To reflect these values in the model as TFP shocks, the 2023 values are converted into the same price base as the SCGE (2016), and then divided by the base level of GVA (i.e. payments to factors of production) to derive the shock in percentage terms. For example, Test A is calculated as 1.9% TFP shock in Insurance GVA. All modelling results are then adjusted back up to 2023 prices for presentation.

5.3.3 Defining target sectors for Test B and C

The general expectation reflected and validated amongst insurers is that:

- investment portfolios would remain reasonably well-diversified across sectors;
- for life insurers, investing in longer-term and illiquid assets is preferred to shorter-term and liquid assets. This is because the longer-term duration of these assets provides a better ALM to the long duration of annuities’ liabilities, and also because illiquid assets tend to offer a small premium in the return available to investors who do not require liquidity;

Therefore, for the purposes of Test B, we diversify the additional gain proportionally across all sectors in the economy. In Test C, we have proposed a scenario that is targeted towards sectors that drive long-term infrastructure assets and are likely to appear in BBB and HP asset classes. For simplicity, the gain is assumed to be divided proportionally (1/3 each) across these sectors targeted. These are 1/3rd in the construction sector, 1/3rd in the real estate sector and the remaining 1/3rd diversified across the rest of the economy.

Figure 5.3.3 Key target sectors used for Test C, as reflected in the SCGE

Sector name	Full definition
Construction	CONSTRUCTION General construction is the construction of entire dwellings, office buildings, stores and other public and utility buildings, farm buildings etc., or the construction of civil engineering works such as motorways, streets, bridges, tunnels, railways, airfields, harbours and other water projects, irrigation systems, sewerage systems, industrial facilities, pipelines and electric lines, sports facilities etc. ⁶⁶
Real Estate	Real estate services, excluding on a fee or contract basis and imputed rent

Source: KPMG developed scenario based on a range of government sources including HMT, IPCC, ONS

5.3.4 Key CGE appraisal assumptions

There are a number of key assumptions that underpin our economic modelling and appraisal. These are outlined in Figure 5.3.4 below.

Figure 5.3.4 Key modelling assumptions

Assumptions	Model inputs
Discount/price year:	2023
Shock year:	2024
End Year:	2053
Appraisal length:	30 years
Discount rate:	3.5% HMT Green Book rate
Baseline growth rates:	GDP, household and population growth aligned with ONS and OBR historical and forecast.
Government budget:	No changes in government spending in base and policy scenarios, meaning additional GDP translates into lower tax rates rather than higher public expenditure (lower tax rates stimulating additional GDP) ⁶⁷

Source: KPMG 2023

⁶⁶ ONS, 2007, [UK Standard Industrial Classification of Economic Activities 2007](#)

⁶⁷ This is a standard fiscal rule in CGE modelling which aids transparency; if Government expenditure were allowed to change in response to changes in GDP it would be necessary to make assumptions about the impact of the additional government spending – or savings if GDP fell – on productivity. The assumption that expenditure is constant when combined with the long-term balanced budget assumptions (the stabilisation of long-term government debt) results in modest reductions in assumed income tax rates as GDP increases in response to a productivity impact in Insurance. HMG apply the same adjustments in their own CGE modelling, see HMG 2014, [Analysis of the dynamic effects of fuel duty](#), p. 25

5.4 Headline CGE results

This section presents the key results of the CGE modelling. It also outlines key limitations of the modelling. Section 5.5 presents implications for key priority objectives and provides further results specific to these objectives.

5.4.1 Test A, Solvency II regulatory scenario Route 1

Figure 5.4.1 presents the UK-wide results from Test A. Under the assumptions made for this scenario, we find that the £0.8 billion initial impact in the insurance sector could result in an additional £2.5 billion in annual Gross Domestic Product (GDP) in real terms in the UK by 2053, or 0.05% higher GDP per annum relative to a baseline scenario. This amounts to a supply-side multiplier of 3.1 between the initial impact in 2024 and the expected Gross Domestic Product (GDP) gain in 2053. It is also equivalent to a present value economic benefit of £32 billion in additional GDP aggregated over the 30-year appraised period, applying a 3.5% real discount rate in line with HMT Green Book guidance.

This additional GDP growth in the economy is driven by the accumulation of real capital stock. By 2053 the UK real capital stock is projected to be £4.7bn larger than what it would be in a baseline scenario. This comes about as a result of additional business investment of roughly £3bn over the first ten years, and £10bn by 2053.⁶⁸

To put the GDP growth into perspective, this impact is of similar magnitude to the UK-Australia Free Trade Agreement, which DfIT estimated would increase GDP by roughly 0.08% above the baseline by the end of the modelled period.⁶⁹ There are parallels in how trade agreements generate their effects by lowering barriers to resources shifting to more productive uses and in increasing returns to investment and thus capital stock accumulation. Albeit trade agreements work via changing costs in nearly all traded products and services to a specific country, whereas our Central Scenario improves productivity in UK Insurance.

As a further comparison, our Central Scenario is materially smaller than the Corporate Tax cuts announced back in 2010, and modelled by HMRC using their CGE.⁷⁰ HMRC estimated that cutting corporate taxes across the entire UK economy from 28% to 20% would increase GDP by 0.60% and 0.80%, albeit with a material fall in tax revenue. This Corporate Tax cut scenario is very different to ours, it is a tax cut that spans across the entire UK economy, directly impacted businesses in all sectors rather than just one. It is also of very material size (akin to a roughly 6% reduction in business investment costs). Therefore it is not at all surprising that an impact of this magnitude would create a much larger effect on UK GDP, with the key policy trade off being the much lower tax receipts for the Exchequer.⁷¹ Contrastingly our Central Scenario improves both GDP and tax receipts, but on a smaller scale, with wider effects on all sectors in the economy primarily coming through interlinkages with the insurance sector, where the direct productivity gain is initially experienced.⁷²

⁶⁸ The incremental accumulation in real capital stock is not as large as the summation of incremental business investment over the same period, simply because all capital depreciates and must be replaced.

⁶⁹ DfIT 2020, [Impact assessment of the Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and Australia](#), p 5

⁷⁰ HMRC, 2013, [Analysis of the dynamic effects of Corporation Tax reductions](#), and [Analysis of the dynamic effects of fuel duty reductions](#)

⁷¹ The modelling found that after 20 years 58% of this loss would be recovered by increased growth in the economy due to the tax cuts

⁷² Or at least under Test A

Figure 5.4.1 Summary of CGE on UK economic impact results of UK Central Scenario Test A

Results	2028	2053
Baseline values		
GDP in the baseline (£ billions, 2023 prices) ⁷³	3,277	4,703
Incremental GDP values		
Additional real GDP (£ billions, 2023 prices)	1.4	2.5
Difference on the baseline (%)	0.0417%	0.0521%
Shock 2024 to real GDP output year multiplier (Ratio)	1.7	3.1
Additional real GDP Undiscounted (appraisal from 2023, £ billions, 2023 prices)	6.3	55.0
Additional real GDP Present Value (appraisal from 2023, HMT 3.5% discount rate, £ billions, 2023 prices)	5.7	31.7
Incremental tax receipts		
Illustrative additional tax receipts based on long term tax to GDP ratio of 37.7% (£ billions, 2023 prices) ⁷⁴	0.5	0.9
Incremental business investment		
Additional real business investment (£ billions, 2023 prices)	0.3	0.4

Source: KPMG 2023

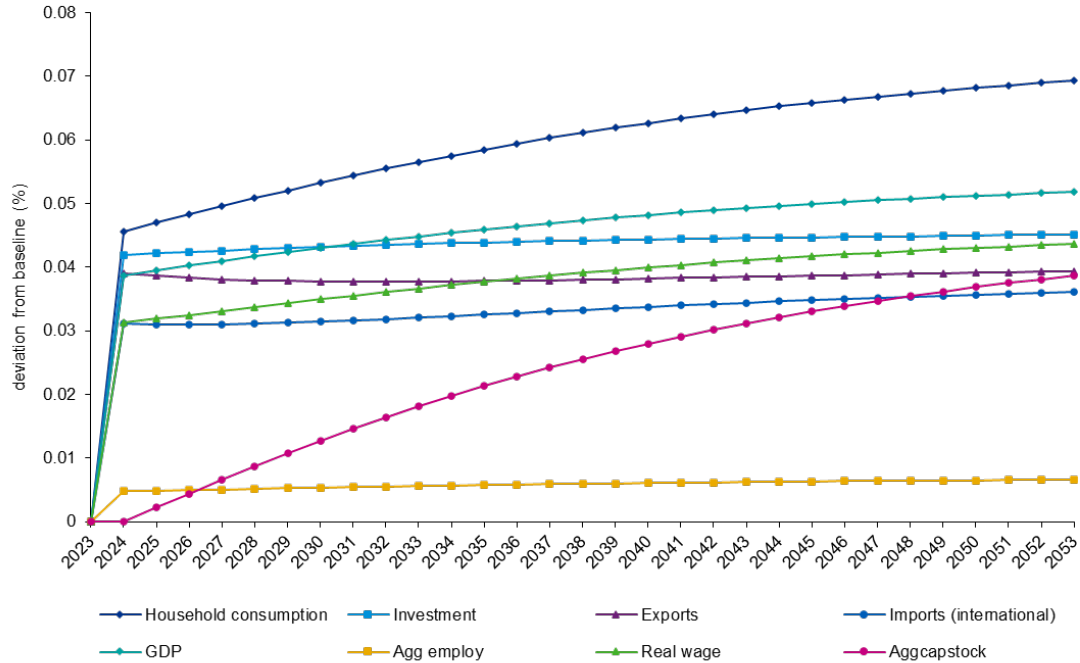
Figure 5.4.2 below presents the key macroeconomic factors in Test A (% deviation from the baseline scenario) that are driving this gain, and how these factors change over the appraised period. Importantly it demonstrates that the improved productivity drives additional investment and subsequent capital accumulation, which in turn drives growth in GDP,

⁷³ SCGE estimates were adjusted to reflect the latest historical and OBR forecast baseline GDP estimates, and further adjusted to today's (2023) prices using the GDP deflator. These were sourced from the [DIT TAG databook](#),

⁷⁴ Consistent with the usual convention in CGE modelling, the analysis reported here holds public expenditure constant between scenarios. This means that the long term balanced budget "fiscal rule" the modelling operates with translates additional GDP into lower tax rates rather than additional Exchequer revenues. At an illustrative long term tax to GDP ratio of some 37%, the long term GDP changes being projected by the modelling suggests some £0.9bn annually of potential Exchequer revenue being fed back into lower tax rates in the longer term (2053). The 37% is an illustrative assumption, the OBR notes that the OECD estimates the UK tax burden will rise to 37.7% by 2028, and that it might grow even further with fiscal pressures, but this has to be balanced with the possibility of returning to a longer term historic tax/GDP ratio which is lower, OBR 2023, [The UK's tax burden in historical and international context](#)

consumption, real wages, exports and imports across the UK economy. It also shows that much of the gain is felt by households (reflected in their additional consumption).

Figure 5.4.2: Key macroeconomic factors under test A, (% deviation from baseline)

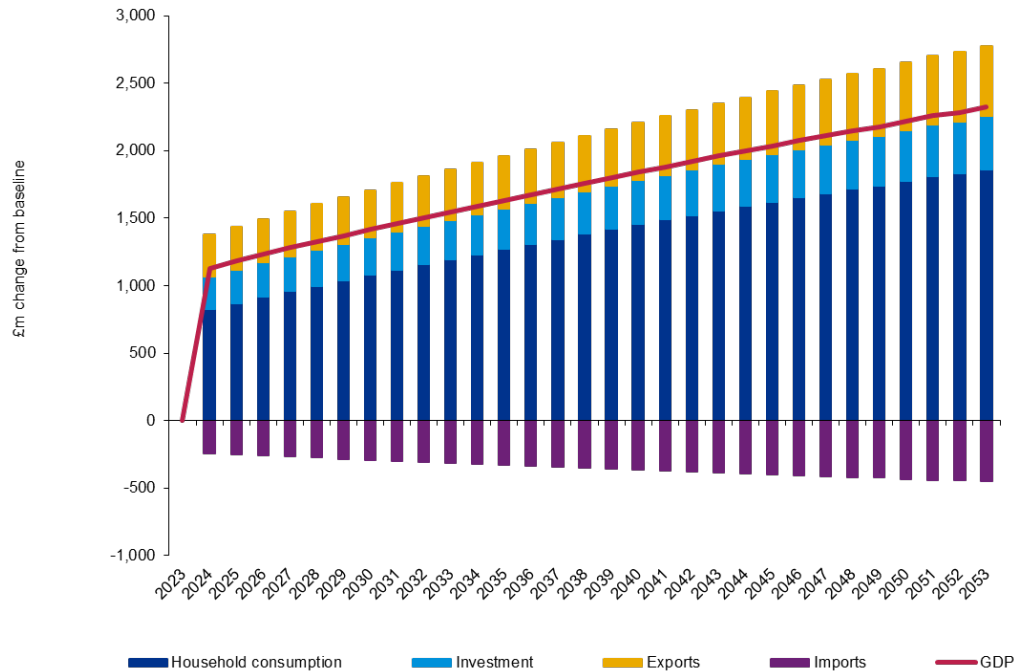


Source: KPMG 2023

Note: To simplify the analysis, it was assumed that these initial effects occur in a single year, reflecting an ongoing improvement that grows over time in line with the expansion of the sector estimated endogenously in the CGE model. This is considered a proportionate approach, given that the majority of the productivity impact is expected to occur almost immediately, and because the strength of CGE modelling lies in its long-term forecasting of policy impacts relative to a baseline. Whether the initial impact is modelled in a single year or ramped up over many, should not materially impact the long-term economic outcomes once the dynamic effects in the modelling have stabilised, and the economy is back in a 'steady state equilibrium'. Any short-term outcomes, therefore, should be read with caution, as they will be a product of this assumption, as well as the limitations of CGE modelling in short-term forecasting, covered in more detail in Section 5.4.3.

Figure 5.4.3 below presents the decomposition of GDP by expenditure in £m over time, relative to the baseline. Net GDP is a function of positives (exports, investment, household consumption), less negatives (additional imports). It shows significantly more trade and investment (greater imports representing a negative), but most importantly greater household consumption, reflecting how much of the gain is felt directly by consumers through lower insurance premiums, lower prices from upstream firms, greater labour income, and capital rents retained domestically.

Figure 5.4.3 GDP expenditure decomposition, (£m deviation from baseline, 2023 prices)



Source: KPMG 2023

- Note:
- 1) the size of the gains between the baseline and the policy is increasing over time. This is because the additional investment adds to capital stock and thus output and consumption over time, but also because of underlying growth in the economy means the productivity gain itself increases in value. This differs from the graph above which shows % deviation from the baseline, and therefore the economy converging to a new steady state.
 - 2) To simplify the analysis, it was assumed that these initial effects occur in a single year, reflecting an ongoing improvement that grows over time in line with the expansion of the sector estimated endogenously in the CGE model. This is considered a proportionate approach, given that the majority of the productivity impact is expected to occur almost immediately, and because the strength of CGE modelling lies in its long-term forecasting of policy impacts relative to a baseline. Whether the initial impact is modelled in a single year or ramped up over many, should not materially impact the long-term economic outcomes once the dynamic effects in the modelling have stabilised, and the economy is back in a 'steady state equilibrium'. Any short-term outcomes, therefore, should be read with caution, as they will be a product of this assumption, as well as the limitations of CGE modelling in short-term forecasting, covered in more detail in Section 5.4.3.

5.4.2 Test B and C, includes Route 2 with diversified and targeted investment scenarios

As outlined in Section 5.4.2, Test B and C recognise that not all of the cost impact may be felt initially in the insurance sector, as redeployment of financial capital is expected to lower the cost of financial capital in other sectors relative to what was experienced before (Route 2 as described in Section 5.3.1.2). Under Test B, it is assumed this redeployment benefit is spread proportionally across all sectors in the economy (reflecting diversified investment strategy). In Test C we look at a hypothetical situation where the potential for gain is felt in key targeted sectors (See Section 5.3.3 for details).

Figure 5.4.4 below presents the UK-wide results from Tests B and C. Here we find that the impact is slightly lower to Test A. This reflects the fact that the majority of the gain still remains within the Insurance sector, and that total factor productivity gains in this sector, £ for £ deliver more than on average for the economy as a whole as a result of this sector's role in supply chains and exports.

It is also worth noting that in common with other forms of CGE modelling, the analysis presented here does *not* take into account the potential positive externalities associated with investing in these (or indeed any) sectors. For example, investments in real estate leads to a larger housing stock that supports health and wellbeing, reduces crime, and provides stability for a workforce that has flow on effects economic growth and wellbeing. Investment in construction and construction related assets, especially social infrastructure like transport,

also has large positive externalities for the economy, such as reduced carbon or agglomeration economies. Excluding these effects, directing this investment towards these sectors generates a broadly similar overall impact on the economy and a broadly comparable multiplier in terms of capital stock to Test A.

Figure 5.4.4 Summary of CGE on UK economic impact results of Central Scenario Test B and C

Results	Test B 2053	Test C 2053
Baseline values		
GDP in the baseline ⁷⁵ (£ billions, 2023 prices)	3,277	4,703
Incremental GDP values		
Additional real GDP (£ billions, 2023 prices)	2.4	2.3
Difference on the baseline (%)	0.0503%	0.0494%
Shock 2024 to real GDP output year multiplier (Ratio)	3.0	2.9
Additional real GDP Undiscounted (appraisal from 2023, £ billions, 2023 prices)	53.6	52.8
Additional real GDP Present Value (appraisal from 2023, HMT 3.5% discount rate, £ billions, 2023 prices)	30.9	30.5
Incremental tax receipts		
Illustrative additional tax receipts based on long term tax to GDP ratio of 37.7% (£ billions, 2023 prices) ⁷⁶	0.9	0.9
Incremental investment		
Additional real business investment (£ billions, 2023 prices)	0.3	0.3

Source: KPMG 2023

5.4.3 Limitations of the modelling

The report aims to cover the key areas of impact typically reported as part of an economic impact study, which were agreed with the ABI. However, a limitation of the report is that it

⁷⁵ SCGE estimates were adjusted to reflect the latest historical and OBR forecast baseline GDP estimates, and adjusted to today's (2023) prices using the GDP deflator. These were sourced from the [DfT TAG databook](#),

⁷⁶ Consistent with the usual convention in CGE modelling, the analysis reported here holds public expenditure constant between scenarios. This means that the long term balanced budget "fiscal rule" the modelling operates with translates additional GDP into lower tax rates rather than additional Exchequer revenues. At an illustrative long term tax to GDP ratio of some 37.7%, the long term GDP changes being projected by the modelling suggests some £0.9bn annually of potential Exchequer revenue being fed back into lower tax rates in the longer term (2053). The 37% is an illustrative assumption, the OBR notes that the OECD estimates the UK tax burden will rise to 37.7% by 2028, and that it might grow even further with fiscal pressures, but this has to be balanced with the possibility of returning to a longer term historic tax/GDP ratio which is lower, OBR 2023, [The UK's tax burden in historical and international context](#).

does not cover all possible areas of economic and social contributions, both positive and negative.

All models, including CGE models, are subject to some uncertainty. These uncertainties relate both to the assumptions made about the way markets operate in the model (e.g., the steepness of the relevant supply and demand curves), and (perhaps more fundamentally) about the scenario specific inputs to the model; if the regulatory scenario being tested generates a different scale or distribution of shock than assumed under the model, this would be reflected in a different CGE forecast.

It should also be noted that CGE models are not designed for short-term forecasting. Their strength lies in their internally consistent and disciplined approach to modelling the long-term economic effects of policies when compared to a baseline, rather than short-term economic fluctuations relative to GDP today. Cyclical and other short-term uncertainties are not captured by the model, and while these effects would principally affect both the baseline and the policy scenario, and therefore net out, we cannot discount the possibility of short-term effects that disproportionately affect either the policy or the baseline and thereby affect the differences reported by the modelling.

To simplify the analysis, it was assumed that these initial effects occur in a single year, reflecting an ongoing improvement that grows over time in line with the expansion of the sector estimated endogenously in the CGE model. This is considered a proportionate approach, given that the majority of the productivity impact is expected to occur almost immediately, and because the strength of CGE modelling lies in its long-term forecasting of policy impacts relative to a baseline. Whether the initial impact is modelled in a single year or ramped up over many, should not materially impact the long-term economic outcomes once the dynamic effects in the modelling have stabilised, and the economy is back in a 'steady state equilibrium'. However, any very short-term outcomes should be read with caution, as they will be in part a product of this simplifying initial effect assumption, as well as the more general limitations of CGE modelling as a short-term forecasting tool.

As mentioned previously, the ONS data is the basis of the modelling, specially 2016 ONS the ONS input output symmetrical analytical tables on which the SCGE is based. This means that while the modelling assumes growth across the economy over time in the baseline, it does not take into account any realised trends (e.g., increased investment in green sectors) beyond 2016 or any projected/potential future trends not already reflected in this data.

For instance, it will not incorporate long-term impacts of COVID-19 on the makeup of the economy. While updating the database and recalibrating the relationship in the model to using the most recent statistics is usually a fruitful endeavour, there are trade-offs to be considered. Recalibrations of this sort are major exercises, which require careful planning and are ideally based on data that is unaffected by one off events. Given how fundamentally COVID is likely to have affected the 2020 supply and use data (the latest version from the ONS) our intention is to wait for post COVID data for the next full recalibration and rely instead on aggregate adjustments in the meantime. Taking the 2020 values would include all the short term changes of COVID, many of which no longer apply, but will not include the long term impacts because they will not yet have manifested themselves in the 2020 data.

While recalibration of the entire database will need to await new data, we do recalibrate for the baseline UK growth path in the model to align with the historical and forecast estimates of GDP, population and household growth from ONS and OBR.⁷⁷

As noted above, the modelling also does not consider positive or negative externalities, instead it only values marketable transactions. For example, if the model estimated an increase in car production, it would not include the effects on pollution, if it included modelled changes in education sector, it would not assume more productive human capital and changes in skills or labour productivity endogenously in the model, and any expected investments in the transport sector would not lead to agglomeration economies and further increases in GVA beyond what would occur from changes in market costs.

Finally, it is worth noting that the way CGE models operate may also preclude the effects of other types of 'market failure' being reflected in the results. An important implication of this in the labour market is that any increase in jobs brought about by an increase in demand in one part of the economy will lead to a reduction elsewhere (An HMT Green Book principle when estimating net national gains), i.e., there are no additional job impacts at the national level except for potentially some increased labour force participation at the margin arising from higher wages incentivising people to choose to work more hours rather than take leisure. In reality, there are sometimes strong regional variations in structural unemployment / underemployment. Interventions that increase economic activity in such areas may result in additional workers joining the workforce at a faster rate than the higher wage effect which reflects a general clearing market assumption. These factors, however, matter most where policy impacts are focused on particular regions. This is not the case with Solvency II.

5.5 Assessing modelled economic impacts against policy objectives

5.5.1 Introduction

A robust and proportionate prudential regulatory regime is necessary for the UK to remain a world leader as an open 'hub' in the provision of insurance products and home to an insurance sector which is internationally competitive. This regime should enable the insurance sector to play a significant role in supporting the Government's objectives in terms of levelling-up and delivering long-term capital to support growth, including adding investment capacity to support additional investment in infrastructure and other long-term productive assets. The Solvency II review presents an opportunity to address part of this agenda by increasing investment returns in the wider economy and by improving the effectiveness of UK capital markets.

The results of the economic modelling set out in this report are consistent with the objectives of the Solvency II review, showing how improved productivity in the insurance industry and its role in capital markets:

- Supports the wider economy
- Contributes positively to taxation
- Helps to enable the tackling of climate change

5.5.2 Supporting the wider economy

The financial services sector plays a crucial role in supporting the wider economy, creating jobs across the UK, supporting SMEs, contributing taxes, driving regional growth and

⁷⁷ SCGE estimates were adjusted to reflect the latest historical and OBR forecast baseline GDP estimates, and adjusted to today's (2023) prices using the GDP deflator. These were sourced from the [DfT TAG databook](#).

investment, tackling climate change and embracing technology and innovation. The insurance industry is an important part of this and manages investment of £2 trillion⁷⁸, which is equivalent to around 25% of the UK's total net worth⁷⁹. It also helps the UK thrive in its global role, adding £29.1 billion a year to the UK economy.⁸⁰

The Government is committed to 'levelling up' the UK by raising productivity and growth in all nations and regions, creating opportunity for all, and addressing disparities in economic and social outcomes. Levelling up according to the Centre for Cities⁸¹ is aimed at improving the quality of life throughout the country by reducing the disparities between regions through types of public investment and policy (e.g. health, education, transport, employment opportunities). The objective of 'levelling up' is to enable every place to realise its full productivity potential. Notably, the UK exhibits pronounced regional disparities, surpassing those of numerous other advanced countries, across several metrics such as productivity, income levels, educational achievements, health and political influence⁸². By improving productivity in the insurance sector, we are able to estimate how different areas are affected by the changes and underpin the aim of incentivising economic growth and competitiveness.

Under Central UK market scenario (Test A), our modelling shows that by 2053, household consumption is expected to increase by £2bn relative to a baseline, driven by higher wages, and higher employment via higher labour market participation. Firms spend an additional £1.2bn on labour by 2053 and importantly, almost 85% of that expenditure is experienced outside the insurance sector. This reflects its linkages with the rest of the economy, which mean productivity gains in the sector translate into higher returns and thus investment elsewhere. At a UK level there is also expected to be slightly higher employment with an additional 2,500 FTE of labour inputs by 2053⁸³. UK GDP per person is expected to be £35 higher, reflecting a wealthier society, with growth across all NUTS 1⁸⁴ regions in the UK and above average per capita gains in Scotland and Wales.

5.5.2.1 The role of capital accumulation

A significant portion of this growth is driven by investment and capital accumulation in the economy. It has been well acknowledged for centuries that capital accumulation is an important driver of growth⁸⁵, and this is consistent with empirical studies that have shown that 50-60% of the GDP impact of a cost change can be missed if effects in capital markets are not modelled.⁸⁶

The UK has long had an historical challenge with investment rates. Most recently these rates have been shaped by significant global challenges, including 2008 financial crisis, Brexit, and the disruptive impact of the COVID-19 pandemic.⁸⁷ The UK's investment-to-GDP ratio for 2022 placed it at 131st among 170 countries with available data and 36th among the 38 OECD countries. In GDP per capita PPP for 2022, the UK ranks 29th, behind the likes of

⁷⁸ YE 2022 QRTs S.02.01.02 (Balance Sheet)

⁷⁹ [ABI](#), 2021

⁸⁰ [ABI](#), 2021

⁸¹ Centre for Cities, 2020, [How should levelling up be measured?](#)

⁸² Levelling Up the United Kingdom White Paper Executive Summary, 2023, [Levelling Up the United Kingdom: Executive Summary](#)

⁸³ FTE is the hours worked by one employee on a full-time basis. The concept is used to convert the hours worked by several part-time employees into the hours worked by full-time employees. Additional Labour FTE employment could reflect more workers in employment, or workers in employment working more hours, or a mix. See Footnote 63 for more information on treatment of additional employment in the modelling.

⁸⁴ NUTS is the geocode standard by Eurostat for referencing the subdivisions of the United Kingdom of Great Britain and Northern Ireland for statistical purposes

⁸⁵ Smith, A, 1776, [The Wealth of Nations Book II](#), Ch 1

⁸⁶ HMG, 2019, EU Exit: Long-term Economic Analysis Technical Reference paper, p32

⁸⁷ ABI, 2023, [Pension Investment Report](#), p9

France, Germany, Australia, Canada, the United States, Denmark, Norway, Austria, Ireland and others.⁸⁸ The UK's business investment in 2019 is also only 10% of GDP in contrast to the G7 average of 13% GDP⁸⁹.

The 2017 Patient Capital Review exposed this long term, or 'patient capital', gap⁹⁰. It detailed the difficult transformation of start-ups into large scale businesses, indicating that many UK-based businesses are unable to reach their full potential and either remain "stuck" in a mode of incremental growth, or accept a trade sale as the most convenient exit, both of which are ultimately to the detriment of the UK economy, tax receipts and job creation.

The review noted that there was c.£3bn of equity investment deployed to scale-up businesses annually within the UK, and there was an opportunity to improve the UK ecosystem and increase this supply with more patient capital, collectively of the order of billions of pounds annually.

The Business Growth Fund also warned of a serious rising shortfall in equity funding and calls for the pensions industry, insurance companies, quoted investment trusts, private clients and the UK government to back an investment-led renewal plan⁹¹. It highlighted the persistent shortfall in equity funding for the growth economy, owing to a shortage of appropriate funding options, artificial barriers to access, and a poor level of awareness of the benefits of long-term, patient, equity capital.

In addressing the capital gap, our analysis shows that the capital multiplier of Central UK market scenario (Test A) analysis is likely to be 5.9 the size of the initial productivity impact, reflecting £4.7bn more real capital in the UK economy by 2053.

5.5.3 Tax contribution

Alongside the contribution of the insurance industry to the UK economy, it also

The analysis set out in this report suggests an increase to this wider contribution under our Central UK market scenario (Test A). However, consistent with the usual convention in CGE modelling, the analysis reported here holds public expenditure constant between scenarios. This means that the long term balanced budget "fiscal rule" the modelling operates with translates additional GDP into lower tax rates rather than additional Exchequer revenues.

⁸⁸ IMF, 2023, World Economic Outlook, [Report for Selected Countries and Subjects \(imf.org\)](https://www.imf.org)

⁸⁹ Confederation of British Industry, 2020, [Green light for investment](#)

⁹⁰ HMT 2017, [Patient Capital Review](#)

⁹¹ Seldon. A, and Welton. S, 2020, [From survive to thrive](#): Funding the growth economy to kickstart an investment-led recovery, p3

⁹² [ABI](#), 2021

⁹³ This is a standard fiscal rule in CGE modelling which aids transparency; if Government expenditure were allowed to change in response to changes in GDP it would be necessary to make assumptions about the impact of the additional government spending – or savings if GDP fell – on productivity. The assumption that expenditure is constant when combined with the long-term balanced budget assumptions (the stabilisation of long-term government debt) results in modest reductions in assumed income tax rates as GDP increases in response to a productivity impact in Insurance. HMG apply the same adjustments in their own CGE modelling, see HMG 2014, [Analysis of the dynamic effects of fuel duty](#), p. 25

At an illustrative, long term tax to GDP ratio of 37.7%⁹⁴ the long term GDP changes being projected by the modelling suggests some £0.9bn annually of potential Exchequer revenue being fed back into lower tax rates in the longer term.

5.5.4 Tackling climate change

Global efforts to address climate change are integral to the long-term prosperity, productivity, and competitiveness of the UK. The UK has made substantial headway in decarbonising its economy while maintaining economic growth. The transition to a net-zero emissions future will necessitate a profound transformation of the UK's economic landscape over the next 30 years.

The UK has been a pioneer in global climate action, leading the G7 nations in decarbonising its economy and committing to a legally binding target of achieving net-zero greenhouse gas emissions by 2050.⁹⁵ While the transition to Net Zero requires a substantial increase in investment, it has the potential to boost the UK's economy, albeit with consequential structural changes as resources and jobs shift from high- to low-carbon industries.

Predicting the overall economic impact is challenging, but current estimates suggest it will have a relatively modest effect on GDP compared to the costs of inaction. The impact will vary across sectors and regions, depending on policy choices and economic adaptability. Significantly, higher levels of investment are needed to transition infrastructure, businesses, residences, and transportation to clean energy sources, reducing reliance on fossil fuels.⁹⁶

Green investments required to decarbonise the UK's economy are substantial and will have to increase fivefold from 2020 levels⁹⁷, meaning the overall investment share of GDP in the UK economy will need to increase by 1-3% above the baseline if the UK wants to meet its carbon targets. This is a challenge, given the investment difficulties the UK has faced historically and recently (as mentioned in 5.5.2.1 above).

Fortunately, green investments in renewables also exhibit substantial GDP multipliers, ranging from 2.2 to 2.5 times larger than fossil fuel energy investments, contingent on timeframes and specifications. This underscores the potential for net-zero investments to bolster productivity and long-term economic growth in the UK and further investment⁹⁸.

According to the ONS⁹⁹ in 2021, the UK's Low Carbon and Renewable Energy Economy (LCREE) displayed robust performance, generating an impressive £54.4 billion in total turnover among contributing businesses. This marked a substantial uptick of 30.8% compared to the previous year, underscoring the sector's remarkable growth. Furthermore, this economic vitality translated into employment opportunities, as the LCREE accounted for a workforce of 247,400 FTEs, reflecting a notable 16.4% increase from 2020.

We must acknowledge that there are limitations in isolating the impact of insurance on low carbon sectors in terms of statistical modelling used in the SCGE to understand input and output relationships between sectors. This is due to the broad nature of sector classification. Both defining and examining the green sector presents a number of problems, because the

⁹⁴ The 37% is an illustrative assumption, the OBR notes that the OECD estimates the UK tax burden will rise to 37.7% by 2028, and that it might grow even further with fiscal pressures, but this has to be balanced with possibility of returning to a longer term historic tax/GDP ratio which is lower, OBR 2023, [The UK's tax burden in historical and international context](#)

⁹⁵ HMT 2020, [Net Zero Review: Interim Report](#), p6

⁹⁶ HMT 2021, [Net Zero Review, Analysis exploring the key issues](#) p9

⁹⁷ Climate Change Committee 2021, [Sixth Carbon Budget](#), Ch 5

⁹⁸ HMT 2021, [Net Zero Review, Analysis exploring the key issues](#), p14

⁹⁹ ONS, 2021, [Low carbon and renewable energy economy, UK - Office for National Statistics \(ons.gov.uk\)](#)

sector is diverse in its nature and does not fit easily within any existing Standard Industrial Classification (SIC) structure.¹⁰⁰ For example, 'environmental consultants' would match most closely with 'consultants' using SIC codes – this would overestimate the size of the sector. Simply aggregating LCREE subsectors into one also would not be helpful, because the input-output relationships in the various subsectors would differ immensely.

These limitations notwithstanding, as outlined above, the economy will need more/new capital to achieve Net Zero objectives; and to do this we need to achieve new investment in Net Zero sectors. The modelled capital accumulation multiplier of 5.9 the size of the initial productivity impact reflects £4.7bn more capital in the UK economy by 2053. It would be reasonable to assume that a significant proportion of this additional investment capacity is steered towards Net Zero carbon sectors given the significant growth and investment demand required now and into the future to reach Net Zero objectives, as well as the impressive growth and performance in these sectors in recent times.

¹⁰⁰ GLA 2010, [Current Issues Note 25: How big is London's green sector?](#)

6 Appendices

6.1 Sectors in KPMG SCGE model

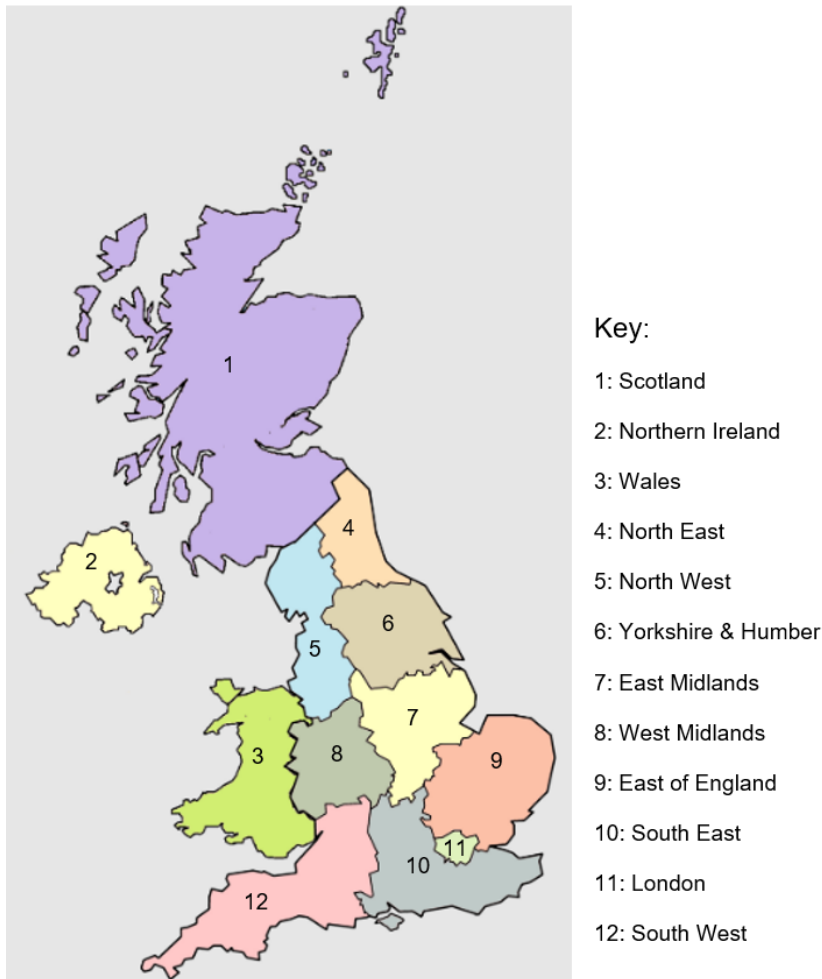
For the purposes of this analysis, the SCGE model has been aggregated to 36 key sectors of interest, and 12 statistical regional geographies, allowing the model to run efficiently, whilst maintaining a sufficient level of detail and robust impact. These are outlined below:

Figure 6.1 Aggregation of sectors in KPMG SCGE model

Sector	Full name
Primary	AGRICULTURE, FORESTRY AND FISHING, AND MINING AND QUARRYING
Manuf	MANUFACTURING: General
ChemManuf	MANUFACTURING: Chemicals
PharmManuf	MANUFACTURING: Basic pharmaceutical products and pharmaceutical preparations
Elec	Electricity, transmission and distribution
Gas	Gas; distribution of gaseous fuels through mains; steam and air conditioning supply
WaterWaste	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES
Construction	CONSTRUCTION
WholeRetail	WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES
RailTrn	TRANSPORTATION AND STORAGE: Rail transport services
LandTrn	TRANSPORTATION AND STORAGE: Land transport services and transport services via pipelines, excluding rail transport
AirWatTrn	TRANSPORTATION AND STORAGE: Air and Water transport services
WarTrnSrv	TRANSPORTATION AND STORAGE: Warehousing and support services for transportation
PostCourSrv	TRANSPORTATION AND STORAGE: Postal and courier services
AccomFoodSrv	ACCOMMODATION AND FOOD SERVICE ACTIVITIES
InfoComm	INFORMATION AND COMMUNICATION
Finance	Financial services, except insurance and pension funding
Insurance	Insurance and reinsurance, except compulsory social security & Pension funding
AuxFinInsSrv	Services auxiliary to financial services and insurance services
RealEst	Real estate services, excluding on a fee or contract basis and imputed rent
OwnOccHou	Owner-Occupiers' Housing Services
RealEstOth	Real estate services on a fee or contract basis
Legal	Legal services
Accounting	Accounting, bookkeeping and auditing services; tax consulting services
MngConSrv	Services of head offices; management consulting services
ArchEngSrv	Architectural and engineering services; technical testing and analysis services
SciResSrv	Scientific research and development services

Sector	Full name
AdvMktRes	Advertising and market research services
OthProfSrv	Other professional, scientific and technical services
VetSrv	Veterinary services
AdminSuppSrv	ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES
PubAdmin	PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY
Education	EDUCATION
Health	Human health services
ResCarSoc	Residential Care & Social Work Activities
OthSrv	OTHER SERVICE ACTIVITIES

Figure 6.2: NUTS1 Statistical Regions of the UK



Source: Wikimedia Commons 2023

6.2 Glossary

Abbr./term	Description
ABS	Asset-backed securities
ALM	Asset liability management
BPA	Bulk Purchase Annuities
CLO	Collateralised Loan Obligations
CoC	Cost of Capital
ESG	Environmental, Social and Governance
FS	Fundamental Spread
GDP	Gross Domestic Product. Monetary measure of the market value of all the final goods and services produced in the economy
GVA	Gross Value Added: value of output minus the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry or sector; (e.g. Insurance sector uses intermediate inputs from other sectors, and combines them with Labour and Capital (the value added) to produce output.
GWP	Gross Written Premium
IG / SIG	Investment Grade / Sub-Investment Grade
Intermediate inputs	The goods and services (including energy, raw materials, semi-finished goods, and services that are purchased from all sources) that are used in the production process to produce other goods or services rather than for final consumption
MA / MAP	Matching adjustment / Matching adjustment portfolio
MREL	Minimum Requirements for own funds and Eligible Liabilities
NB	New Business
ONS	Office for National Statistics
PPFM	Principles and Practices of Financial Management
Productivity	Reflects Outputs/Inputs (or at a firm level Revenue/Costs)
QRT	Quantitative Reporting Templates
Real capital	Aka Capital assets or Capital goods, are already produced durable (non-financial assets) used in production of goods or services.
RM	Risk margin
RMBS	Residential Mortgage Backed Securities
SCGE	Spatial Computable General Equilibrium Model: A model capable of simulating a wide range of policies across trade, transport, productivity, and labour and capital markets.
SCR	Solvency Capital Requirement
SIG	Sub-investment grade
TMTF	Transitional measure Technical Provisions
YExx	Year End 20xx

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