Oxera

How to assess overcompensation in the Irish PHI market?

Methodology and data requirements

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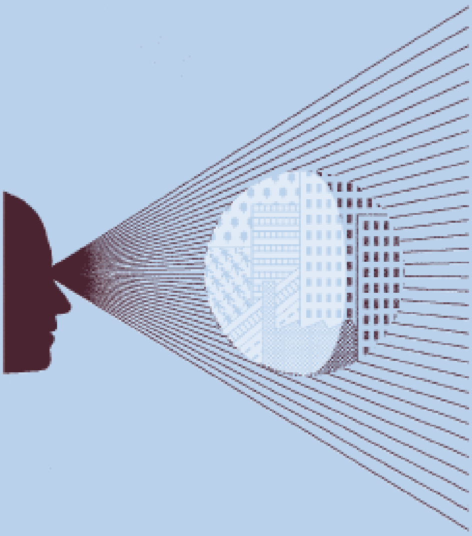
(The information that is redacted are quotations from EC (2009) “State Aid No 582/2008-Ireland: Health Insurance Intergenerational Solidarity Relief” which are redacted in the publicly available version)



Final report

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1.1 Background and objectives

In July 2009, the Irish government introduced a levy and tax credit scheme to promote intergenerational solidarity in the provision of private health insurance (PHI).[1] Insurers receive higher premiums in respect of insuring people over the age of 50, who in turn receive age-related tax credits equal to the amount of the additional premium so that all people continue to pay the same amount for their health insurance. (The tax credits are administered at source by the insurer.) The fiscal cost of the age-related tax credits is funded by a levy on insurers that is based on the number of customers with health insurance.

The Health Insurance Authority (HIA) has commissioned Oxera to develop an analytical approach to estimating the 'reasonable profit' for Irish health insurance providers in the context of assessing whether they are being 'overcompensated' through the levy and tax credit scheme.

The context for this assessment is the European Commission's decision[2] that the levy and tax credit scheme satisfied the third criterion of the 'Community framework for state aid in the form of public service compensation'—hereafter, the service of general economic interest (SGEI) Framework.[3] This criterion requires that the compensation for providing an SGEI should not exceed the costs incurred, and that these costs should include a 'reasonable profit'.

The purpose of this report is to set out a methodology for fulfilling this requirement in accordance with Section 7F of the Health Insurance (Miscellaneous Provisions) Act 2009. The implementation of the approach and assessment of overcompensation will be performed separately.

1.2 Overall approach

The Health Insurance (Miscellaneous Provisions) Act 2009, which provides for the levy and tax credit scheme, sets out the steps to be followed when seeking to establish whether an undertaking has been overcompensated for providing the SGEI:

– determine what would constitute a reasonable profit in respect of its health insurance business (Section 7F(4));
– identify net beneficiaries to the scheme (Section 7F(5)); and
– calculate whether the net beneficiary has made a profit in excess of a reasonable profit (Section 7F(6)).

This report discusses the practical steps for the HIA to fulfil this requirement. It does not set out the methodology and data required to identify net beneficiaries to the scheme. Identifying the net beneficiary or beneficiaries would require the firms that have received more in tax credits than they have paid in levies to be identified. The tax credits and levies are determined annually by the government following recommendations from the Minister for

[1] As part of the Health Insurance (Miscellaneous Provisions) Act 2009, passed July 19th 2009.

[2] European Commission (2009), 'State Aid No N 582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief'',June 17th.

[3] OJ C 297 November 2005, included as Schedule 2 to the Health Insurance (Miscellaneous Provisions) Act 2009.

Health and Children, which receives a report from the HIA that includes recommended amounts of tax credits and levies. (This scheme is described in section 2 below.)

Three health insurers currently participate in the levy and tax credit scheme in Ireland: Vhi, Quinn Healthcare and Aviva. At present, Vhi is the only net beneficiary, although this may change if, for example, sufficient numbers of older customers switch to other providers, or a new provider with a relatively high proportion of older customers enters the market.[4] The framework developed in this report therefore focuses on Vhi, although, assuming similar data availability, the methodology would be equally applicable for a net beneficiary other than Vhi.

1.3 Reasonable profit

As noted above, the methodology is developed in reference to Vhi. In this context, in determining reasonable profit, it is a reasonable profit for Vhi that is relevant.

Reasonable profit can be determined with reference to both internal and external benchmarks.[5]

– Internal benchmarks consist of Vhi's own cost of equity[6] and cost of capital.
– External benchmarks consist of the profitability measures for comparable firms in Ireland and possibly in other countries.

In fulfilling the requirements of the Act, the approach adopted is to start by estimating the cost of equity and cost of capital for Vhi as the net beneficiary. This provides a basis for estimating the reasonable profit of Vhi for the purposes of assessing overcompensation. In a competition analysis context, the internal benchmarks normally provide the most robust estimates of what constitutes a reasonable profit.

The cost of equity can be estimated using the capital asset pricing model (CAPM).[7] The cost of equity using the CAPM can be estimated as the risk-free rate + the equity beta × the equity risk premium (ERP). The risk-free rate represents the cost of risk-free borrowing, while a multiple of the equity beta and the ERP captures Vhi's market risk premium. The cost of capital can be estimated as the weighted average cost of capital (WACC), which takes into account the cost of equity capital, cost of debt capital, and the ratio of equity capital to debt capital.

Consistent with the requirements of the Act, the reasonable profit should not only be consistent with the internal benchmark but should also not normally exceed profitability in the sector (external benchmarks) over recent years. The degree to which profitability of the sector provides a valid benchmark for the maximum reasonable profit of Vhi depends on whether risk and business characteristics of firms used to estimate external benchmarks are close to those of Vhi, and on whether profitability in the sector over recent years provides a reliable benchmark for a reasonable current profitability level.

In the Irish PHI sector, given changes in the legal structure over recent years and the specific environment and type of services offered, the emphasis at present should be put on the internal benchmarks. As more data is accumulated going forward and the quality of external

[4] In its decision approving the scheme, the European Commission noted that the identity of the net beneficiary could change if a sufficient number of older customers switched from Vhi to other providers. European Commission (2009), 'State Aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, para 22.

[5] Internal benchmarks exist for standard measures of profitability developed in this report (return on equity and return on capital employed) only, not for other measures (eg, the combined ratio or return on revenues).

[6] As a not-for-profit entity, Vhi does not have equity. Section 4 of Part 2 of this report discusses how an appropriate estimate of Vhi's equity could be made with reference to, for example, Vhi's own general reserves or the capital structure of comparable companies. The cost of equity can be estimated in a way that is consistent with the risk of this notional equity.

[7] The CAPM is the model most widely used by firms and regulators to estimate the cost of equity capital. Alternative models include the Fama–French and multi-factor asset pricing models.

benchmarks improves, the analysis can increasingly rely on these external benchmarks to provide an indication of the maximum reasonable profit of Vhi as a net beneficiary.

In terms of comparators that can be used to estimate external benchmarks, a number of options exist.

– PHI firms in Ireland—in addition to Vhi, the two other firms that provided SGEI-related services in Ireland in 2009 were Quinn and Aviva.[8] The profitability levels of SGEI-related activities of Quinn and Aviva provide the best external benchmarks to the profitability of Vhi as a net beneficiary. Due to the changes in the SGEI framework, currently data on SGEI-related activities for 2009 only provides a reliable indication of the profitability of other firms operating in this sector. The analysis of overcompensation therefore can only use profitability levels observed in 2009. Going forward, as more data is accumulated, the profitability of PHI firms in Ireland might provide a reliable external metric, although this depends on whether there are any material changes to the levy and tax credit scheme.

– PHI firms in other EU countries—while Quinn and Aviva differ in some significant respects from Vhi (eg, for-profit status and ownership structure), it is unlikely that more comparable firms exist at present in other Member States. Nevertheless, there could be circumstances under which it would become necessary to use external comparators. As regards specific circumstances that could arise which might affect the need for using comparators from outside Ireland, it is not possible to identify these in advance. Such judgements would have to be made when undertaking the assessment of overcompensation.

1.4 Determining the extent of any overcompensation

Determining the extent of any overcompensation to the net beneficiary involves two sub-steps: measuring the profitability of Vhi, and then comparing this to the level of reasonable profit identified previously with reference to both internal and external benchmarks.

1.4.1 Measuring the profitability of Vhi

As part of the assessment of whether Vhi has been overcompensated, it is necessary to determine the actual profitability of Vhi.

The level of profits can be estimated using standard measures of profitability. The return on equity (ROE) and return on capital employed (ROCE) are two measures that are best suited conceptually for assessing the profitability of SGEI-related activities, and that are feasible given data availability. The results of analysis based on the standard measures can be cross-checked with assessments based on other profitability measures—including the combined ratio and return on revenues.

The ROE and ROCE of Vhi's SGEI-related activities can be estimated using estimates of profits and capital associated with these activities.

– A measure of *net profits* can be used when estimating the ROE, and a measure of *operating profits* or earnings before interest and tax (EBIT) can be used when estimating the ROCE.

– A measure of total equity shareholder funds can be used when estimating the ROE, and a measure of the total capital can be used when estimating the ROCE.

While simple to calculate, these measures can have several shortcomings, and they may require a number of adjustments to provide more meaningful measures of the underlying

[8] In 2009, these three firms thus constituted the health insurance sector in Ireland, as referred to in the Health Insurance (Miscellaneous Provisions) Act 2009, quoting the SGEI Framework.

economic profitability of a firm. The main objective of these adjustments is to ensure that these items provide the best possible proxy for profits associated with ongoing activities.

The profit and loss (P&L) items that may require adjustments include some elements of technical provisions, investment income/loss and taxes. At the same time, balance sheet items may require adjustments for the value of intangible assets. In practice, adjustments to the accounting items that may be required depend on the particular circumstances of a given firm in a given financial year.

Since the analysis focuses on the profitability of SGEI activities, the profitability measures need to be estimated in relation to the SGEI-related activities of Vhi in isolation (as opposed to all of its activities). This analysis requires the allocation of the total P&L account and balance sheet of Vhi between SGEI and non-SGEI activities. This is a difficult process in practice, in which often neither revenues nor common costs can be explicitly allocated.

The SGEI Framework provides general guidance on revenues and costs that need to be included.[9]

– Revenues to be included—the revenue to be taken into account must include at least the entire revenue earned from the SGEI. If the undertaking in question holds special or exclusive rights linked to an SGEI that generates profit in excess of the reasonable profit, or benefits from other advantages granted by the state, these must be taken into consideration.

– Costs to be included—the costs allocated to the SGEI may cover all the variable costs incurred in providing the service, an appropriate contribution to fixed costs common to both the SGEI and other activities, and an adequate return on the own capital assigned to the SGEI.

1.4.2 Establishing the extent of any overcompensation

Having measured the profitability of the SGEI activities carried out by Vhi (as the current net beneficiary), as well as estimates of 'reasonable profit' with reference to both internal and external benchmarks, it is then possible to determine whether Vhi has been overcompensated.

Determining whether a net beneficiary has been overcompensated can be accomplished by comparing realised profitability with the estimates of reasonable profit. If these comparisons do not yield conclusive results, it may be necessary to carry out further analysis of the underlying drivers of results and any differences in conclusions arising from different measures of profitability. For example, it may be informative to compare the level of compensation that the net beneficiary receives with the additional costs (a bottom-up analysis of incremental costs) that it incurs in order to provide the SGEI-related services. This would allow an assessment, for example, of the extent to which the net effect of the levy and tax credit scheme is an important source of any differences in profitability between the net beneficiary and other Irish comparators.

Importantly, when considering whether profits are reasonable, it is necessary to assess whether any differences observed between actual measured profits of the net beneficiary and benchmarks are *persistent* and *significant*—ie, differences between profits and benchmarks are observed over a sufficiently long period of time and are material.

In the current context, due to the fact that the levy and tax scheme was first applied in 2009, implementation of the profitability analysis in 2010 can utilise only one year of data. In order to draw conclusions on whether the net beneficiary's profits are reasonable, it will be necessary to assume that 2009 provides a representative picture of profitability at this point in time. Going forward, applying this methodology on an annual basis will allow an increase

[9] SGEI Framework, paras 16 and 17.

in the period over which the profitability of the net beneficiary is considered, and provide further insights into the degree to which any observed results are persistent and significant.

1.5 Data requirements

The analysis outlined in this report requires detailed P&L and balance sheet data. Data relating specifically to the SGEI activities is required for Vhi (as the net beneficiary) and its Irish comparators (which would be used to benchmark Vhi's profitability). For firms in other countries, data relating to their total health insurance activities is desirable.

Measuring Vhi's profitability based on the methodology set out in this report requires:

– accounting data for Vhi, and its comparators;
– market data related to Vhi's comparators (eg, total shareholder returns);
– market data on economic parameters (eg, government bond yields).

In terms of the accounting data, the following items are required.

– Selected P&L items, including gross premiums written, premiums ceded to re-insurers, claims paid (gross), and claims paid (reinsurers' share).

– Selected balance sheet items, including total equity shareholder funds and general reserve, the provision for unearned premiums, and the provision for claims (gross).

For Vhi and its Irish comparators, these accounting items need to be allocated between SGEI-related and non-SGEI-related activities.

1.6 Practical implementation

The practical implementation consists of the following three elements:

– data collection;
– measurement of profitability;
– assessment of overcompensation.

Together, these three elements ensure that the requirements set out in Section 7F of the Health Insurance (Miscellaneous Provisions) Act 2009 are fulfilled. Measuring the profitability of the different firms in the Irish market is necessary both to determine what a reasonable profit might be and also to establish whether Vhi (as the net beneficiary) is earning a profit in excess of this level, thereby allowing an assessment of overcompensation.

Figure 1.1 summarises the key components of these three elements.

Figure 1.1 Practical implementation

Data collection

(1) Collection of accounting data from Irish health insurance firms
- P&L and balance sheet data
- detailed cost data by age group, etc

(2) Selection of comparator firms based on business mix and risk characteristics, etc

(3) Collection of accounting data on non-Irish comparator firms
- P&L and balance sheet data

(4) Collection of market data on non-Irish comparator firms.

(5) Collection of general market evidence (primary sources, academic literature).
- equity market returns, government bond yields, ERP, etc

Measurement of profitability

(1) Estimation of profits
- based on P&L data (with adjustments)

(2) Estimation of capital
- based on P&L data (with adjustments)

(3) Estimation of standard profitability measures
- based on estimates of profits and capital

(4) Estimation of other profitability measures

Assessment of overcompensation

(1) Estimation of benchmarks
- internal benchmarks (eg, cost of equity), based on balance sheet and market data
- external benchmarks (eg, ROE of comparator firms) based on P&L, and balance sheet data

(2) Comparison of profitability with benchmarks

(3) Implementation of the bottom-up analysis of incremental costs

(4) Interpretation of results

Source: Oxera.

Part 2—Detailed description of the approach

1 Introduction

The HIA has commissioned Oxera to develop the analytical framework and specific approaches in estimating the 'reasonable profit' for Irish health insurance providers in the context of assessing any 'overcompensation' of the net beneficiary (currently Vhi). This assessment is done in accordance with Section 7F of the Health Insurance Act 1994 (as inserted by the Health Insurance (Miscellaneous Provisions) Act 2009) by carrying out the following steps:

– determination of 'reasonable profit' for Vhi in respect of its health insurance business (Section 7F(4));
– identification of net beneficiaries to the scheme (Section 7F(5));
– calculation of whether the net beneficiary has made a profit in excess of a reasonable profit (Section 7F(6)).

In discussing any of these steps, it should be noted that the present report merely sets out the methodology that would be followed in carrying out these steps, rather than actually implementing them. Analysing the profitability of health insurance firms in Ireland and assessing whether there is overcompensation in the Irish PHI market is beyond the scope of the current stage of the project, and will be undertaken at a later stage.

In assessing reasonable profit, the analysis in this report sets out the approaches that can be adopted, building on the economic literature on profitability measurement in the context of competition analysis as well as evidence on approaches used by the competition authorities in the UK and other European countries.

The report discusses the following types of measures:

– standard profitability measures—return on equity (ROE), return on capital employed (ROCE) and internal rate of return (IRR);
– other profitability measures—combined ratio and return on revenues.

With respect to the second step, the EU Commission identified Vhi as the likely net beneficiary in its decision approving the scheme.[10] The framework developed in this report therefore focuses on Vhi, although the identity of the net beneficiary could change if, for example, sufficient older customers switch to other providers, or if a new provider with a relatively high proportion of older customers enters the market. For convenience, however, this report refers to Vhi as the net beneficiary.

The final step, determination of whether the net beneficiary has made a profit in excess of what is reasonable, requires first measuring Vhi's profitability during the relevant period and then comparing it to the relevant internal and external benchmarks.

The remainder of this report is structured as follows.

[10] European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, para 22.

– Section 2 describes the Irish health insurance market and details of the levy and tax credit scheme.

– Section 3 sets out the Commission's guidelines and a high-level outline of possible approaches that can be taken to estimate profitability and evaluate overcompensation. This section also touches on benchmarking these profitability measures in order to assess overcompensation.

– Section 4 explores profitability measurement in greater detail, as applied to the insurance industry. This section also outlines the data required to carry out the practical implementation.

– Section 5 outlines how the profitability measures set out in section 4 may be evaluated against both internal and external benchmarks, highlighting the data that would be required in each case.

Appendix 1 outlines the Commission's approach to measuring overcompensation. Appendix 2 outlines the IRR and NPV calculations in the profitability context.

2 Background

Key points and outline

- The provision of PHI in Ireland, as described in section 2.2, has been accepted by the EU Commission as an SGEI.
- PHI in Ireland is provided by three companies: Vhi, Quinn Insurance and Aviva Health.
- All three companies must provide insurance, subject to conditions intended to support intergenerational solidarity.
- The interim levy and age-related tax credit scheme was introduced by the Irish government in 2009. It is intended to support community rating and promote intergenerational solidarity by compensating for a portion of the additional costs associated with older customers
- To qualify as compatible state aid, net beneficiaries must not be overcompensated.

To understand the context for the study, it is useful to set out some background on the Irish PHI market. As discussed in section 2.1, PHI in Ireland covers approximately half the population and is provided largely through three companies: Vhi, Quinn Healthcare and Aviva. The Commission has accepted that the provision of PHI in Ireland is an SGEI.

Section 2.2 sets out the conditions under which PHI must be provided, which are intended to encourage intergenerational solidarity, whereby younger customers cross-subsidise older customers. The Commission has concluded that some sort of scheme is necessary to support the objective of intergenerational solidarity.

The levy and age-related tax credit scheme is described in section 2.3. Since Vhi has a disproportionate share of older customers, it is the current net beneficiary of the scheme. As noted above, however, it would be possible for other firms to be the net beneficiary if, for example, a sufficient number of older customers were to switch from Vhi.

2.1 Size of market and companies involved

Most healthcare expenditure in Ireland is tax-funded. All Irish residents are entitled to care in a public hospital upon payment of a statutory daily charge of €75, up to an annual maximum of €750. Drug prescriptions and visits to general practitioners carry relatively little fiscal subsidy for most of the population, and are provided free to the 30% of the population on the lowest incomes. PHI is voluntary and is mainly purchased to provide insurance cover for hospital accommodation and consultant treatment, whether in a public or private hospital. More than 90% of claim payments are hospital in-patient related. Approximately half the population has PHI (see Table 2.1).

Table 2.1 Market size

	Market size	Change in period (%)	% of population covered
December 2001	1,871,000		48
December 2002	1,941,000	4	49
December 2003	2,000,000	3	50
December 2004	2,054,000	3	50
December 2005	2,115,000	3	51
December 2006	2,174,000	3	51
December 2007	2,245,000	3	51
December 2008	2,299,000	2	52
December 2009	2,262,000	–2	51

Source: Health Insurance Authority.

The following three companies are currently active in the Irish PHI market.

– **Vhi** is the longest-established PHI provider. It is state-owned and run on a not-for-profit basis. Prior to the entry of BUPA Ireland (forerunner of Quinn Healthcare), it was the only provider of PHI in Ireland. It is not currently authorised or regulated by the Irish Financial Regulator and it is not subject to the solvency requirements to which Quinn and Aviva are subject.[11]

– **Quinn Insurance Ltd** (currently under administration) purchased BUPA Ireland (which itself entered the Irish market in 1996) in 2007.[12]

– **Aviva** Health purchased Vivas Health in 2008, which itself originally entered the Irish PHI market in 2004. Aviva Health is an Irish majority owned subsidiary of Aviva Group. Along with Quinn Insurance Ltd, Aviva Health is subject to solvency requirements set by the Irish Financial Regulator.

Table 2.2 below shows the market shares for Vhi, Quinn and Aviva from 2001 through 2009. As can be seen, Vhi's market share has declined throughout the period, while that of Quinn Healthcare has been stable since the entry of Aviva.

[11] European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, para 8.

[12] In 2010, joint administrators were appointed by the High Court to Quinn Insurance Ltd on the application of the Financial Regulator. Quinn Insurance Ltd trades as Quinn Healthcare in the health insurance market. Quinn Healthcare Ltd is a marketing and administrative subsidiary of the Quinn Group.

Table 2.2 Market shares (%)

	Vhi Healthcare	Quinn Healthcare*	Aviva**
2001	83	12	-
2002	81	14	-
2003	78	17	-
2004	76	19	-
2005	74	21	1
2006	72	21	3
2007	70	21	5
2008	67	21	7
2009	64	22	10

Notes: *Prior to 2007 figures relate to BUPA Ireland.
**Prior to 2008 figures relate to Vivas Health.
Source: Health Insurance Authority (2009), 'Submission of the Health Insurance Authority to the Oireachtas Joint Committee on Health and Children', Appendix 2.

2.2 Principles of private medical insurance

Health insurers in Ireland are subject to the requirements of community rating, open enrolment, lifetime cover and minimum benefits.

– Community rating means that insurers must charge the same premium to all customers, regardless of age, gender or health status. This is intended to promote intergenerational solidarity in the sense that younger PHI members will cross-subsidise older members

– Open enrolment means that insurers may not refuse to cover to anyone.

– Lifetime cover prevents insurers from refusing to renew coverage of existing customers.

– Minimum Benefits obliges insurers to provide a minimum level of benefit payment, which mainly affects claim payments for hospital in-patient stays.

These obligations are collectively referred to as the PHI obligations. The European Commission has accepted that the provision of PHI in the Irish market under these conditions constitutes an SGEI activity.[13,]

The legal requirements of providing PHI in Ireland are interrelated with legal status and the order in which the three PHI providers entered the market. As Vhi was the sole provider of PHI before 1996, it has a disproportionate share of older customers (see Table 2.3) and consequently also has higher average claim costs than Quinn or Aviva. The European Commission has accepted that it is justified for the Irish government to introduce a scheme to address this imbalance in risk profiles between insurers, since the imbalance threatens the objective of intergenerational solidarity.[14]

[13] Case T-289/03. Detailed provisions in the health insurance legislation provide for insurers being registered with the Health Insurance Authority and being exempt from some of these obligations in certain situations, including where in-patient indemnity payments are not offered as part of an insurance contract or arrangement.
[14] European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, paras 54–55.

Table 2.3 Market share by age bracket (%)

Age bracket	Vhi Healthcare	Quinn Healthcare	Aviva
0–49	63	26	11
50–59	71	21	8
60–69	80	16	4
70–79	90	8	2
80+	95	3	1

Source: Health Insurance Authority (2009), 'Submission of the Health Insurance Authority to the Oireachtas Joint Committee on Health and Children', Appendix 2.

2.3 Description of levy and tax credit scheme

The intention of the interim health insurance scheme of age-related tax credits and levy is to support community rating and promote intergenerational solidarity by compensating for a portion of the additional costs associated with older customers. The Health Insurance (Miscellaneous Provisions) Act 2009 imposes a levy on all private health insurers based on overall membership, while providing an age-related tax credit for individuals over 50, which increases with age.

The amount of the tax credit is designed to cover 50% of the incremental costs (over and above the market average) of insuring a set level of benefits to older customers.[15] Thus if the average cost per person in the PHI market were €500 per month, and the average cost of insuring a person in the age range 60 to 69 were €1,000 per month, the tax credit for this age band would be €250.

2.3.1 Application of scheme

In 2009, the tax credits associated with each age bracket were as follows:

- €200 for ages 50–59;
- €500 for ages 60–69;
- €950 for ages 70–79;
- €1,175 for ages 80 years+.[16]

In order to recover the cost to the national exchequer of the age-related tax credits, the scheme imposes an annual levy on insurers in proportion to the number of people that they insure. In 2009, this was set at €160 (children €55). From the standpoint of the individual, premiums are charged net of the tax relief so that older and younger customers face the same net premium, promoting intergenerational solidarity.

The level of the levy and tax relief is set in advance, based on the expected age profile of the population and expected market average medical costs for each age band. The level of the levy and tax relief is then reviewed each year to reflect medical cost inflation and ageing.

In 2010, the levy increased to €185 (€55 for children was unchanged), while the tax credits rose to the following levels:

- €200 for ages 50–59 (no change);
- €525 for ages 60–69;
- €975 for ages 70–79;

[15] Ibid., para 21.

[16] Health Insurance (Miscellaneous Provisions) Act 2009.

– €1,250 for ages 80 years+.[17]

Insurers get the financial benefit of the higher gross premiums for those of their customers aged over 50. The levy represents a cost to insurers, which they are entitled to recoup through premium income. Since Vhi has a disproportionate number of customers over the age of 50 (and especially over age 70), the net effect of the scheme is to transfer resources from Quinn and Aviva (via the national exchequer) to Vhi (ie, Vhi is the net beneficiary of the scheme). In 2009, the EU Commission projected that Vhi would pay a levy of €Xm and would receive a net benefit from the tax credits of €Xm; a net benefit of €Xm.[18]

2.3.2 Benefits covered

The SGEI obligation covered by the levy and age-related tax credit scheme is confined to hospitalisation costs. Hospitalisation plans offered by insurance companies cover patients' treatment and accommodation expenses while in hospital, and also include a degree of international and maternity cover. Most elective treatments are covered on the basis of fixed prices negotiated between insurers and hospitals.

Vhi's hospitalisation plans differ mainly in the type of accommodation offered at public and private hospitals and range from Plan A, which offers 'semi-private' accommodation in a public hospital, to Plan E, which offers private accommodation at both public and private hospitals. Quinn Healthcare and Aviva both offer comparable plans.[19]

The component of these plans which is considered to be an SGEI is set out in the Information Returns Regulations. The European Commission described the SGEI benefits as being roughly equivalent[20] to the most popular Vhi plan,[21] Plan B, which offers a private room in public hospitals or a semi-private room in private hospitals.[22] In fact, the SGEI benefits are significantly less than the benefits offered by Plan B and other comparable insurance policies offered by Vhi, Quinn (eg, Essential Plus) and Aviva (eg, Level 2 policies), because of the limits in the Information Returns Regulations. For instance, only 90% of the cost of fixed-price procedures is allowable when calculating the benefits paid for the purposes of the recommendations for age-related tax credits.

All three companies offer plans with coverage for day-to-day medical expenses (such as GP visits). These benefits are not considered part of the SGEI. Similarly, non-health-related products such as travel insurance would be excluded from the SGEI.

[17] Finance Act 2010.

[18] European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, para 17.

[19] Ibid., para 36.

[20] Ibid., para 36.

[21] Ibid., para 61.

[22] http://www.vhi.ie/info/core/productDetails.jsp?key=Plan_B.

3 Overview of analytical framework

Key points and outline

– Compensation to providers of SGEI must not be greater than the costs incurred in providing the SGEI and a reasonable profit. Assessing overcompensation involves two key steps: determining profitability and assessing a reasonable profit.

– A reasonable profit is defined with reference to both internal benchmarks (the cost of equity and cost of capital of Vhi) and external benchmarks (the profitability measures of Vhi's comparators).

– The standard measure of economic profitability is the internal rate of return (IRR), together with some well-accepted proxies, the return on equity (ROE) and return on capital employed (ROCE).

– Other profitability measures are the combined ratio and return on revenues.

3.1 Overview

The levy and tax credit scheme is approved by the European Commission as compatible state aid for the provision of a SGEI. One of the conditions for compatibility is that the measure should not overcompensate the provider of the SGEI. In its decision approving the scheme, the Commission identified Vhi as the likely net beneficiary of the scheme.[23] The methodology developed in this report therefore focuses on Vhi, although, if the required data is available, the methodology would be equally applicable for a net beneficiary other than Vhi.

Overcompensation is assessed with reference to the SGEI Framework, which states that:

> The amount of compensation may not exceed what is necessary to cover the costs incurred in discharging the public service obligations, taking into account the relevant receipts and reasonable profit for discharging those obligations.[24]

This definition suggests that, to avoid overcompensation, it would be necessary both to measure the profitability of Vhi, as the net beneficiary of the scheme, as well as to assess the level of 'reasonable profit' in the Irish health insurance industry. In other words, determining whether there has been overcompensation involves two key components:

– assessment of the actual profitability of the public service obligation to Vhi in the relevant period;

– assessment of the 'reasonable' level of profitability for a health insurer carrying out these activities, having regard to the provisions of the SGEI Framework. Only after developing this benchmark would it be possible to determine whether the actual level of profitability was reasonable.

Together, these analyses set out a methodology for fulfilling the requirements of Section 7F of the Health Insurance (Miscellaneous Provisions) Act 2009, by establishing a level of 'reasonable profit' and determining whether the net beneficiary (assumed here to be Vhi) has made a profit in excess of this level.

[23] Ibid., para 22.

[24] SGEI Framework, para 14.

Before describing the different approaches that can be used to measure profitability, however, it is important to discuss the relevant guidelines from the Commission as well as the Commission's own ex ante approach in its decision on the compatibility of the levy and tax credit scheme (section 3.2). While the Commission did assess Vhi's profitability related to the public service obligation as measured by the operating margin or return on revenue, it does not establish a benchmark against which this profitability can be measured. Section 3.3 discusses measures that can be used to measure profitability. These measures include the standard measure of economic profitability, the IRR, as well as two well-accepted proxies, the ROE and ROCE. This section also discusses other commonly used ratios, such as the combined ratio, which can be used to cross-check results.

Section 3.4 discusses the measure of reasonable profit. This is the second key component discussed above and can be calculated with reference either to the firm's own cost of capital and cost of equity (internal benchmarks) or to the profitability of comparator firms (external benchmarks).

3.2 The Commission's approach

Before introducing the profitability metrics and categories of benchmark measurement that can be employed in the current context, this sub-section presents some background information. Sub-section 3.2.1 discusses the Commission's guidance on how to assess overcompensation, as set out in the SGEI Framework.[25] The Framework provides additional clarity on both key steps of the process of determining overcompensation, namely measuring profitability and establishing an appropriate benchmark.

Sub-section 3.2.2 then describes the Commission's own application of its guidelines in the decision on the compatibility of the levy and tax credit scheme. However, the Commission's decision does not establish a benchmark for what a reasonable level of profit may be. This suggests that alternative approaches are required in order to fully evaluate overcompensation. The remainder of the section then sets out these alternative approaches.

3.2.1 Rules

The SGEI Framework provides general guidance on measuring profitability and assessing what a reasonable level of profit might be (ie, establishing a benchmark) by setting out what revenues and costs may be included in calculating profits, as well as defining 'reasonable profit' more precisely.

The overall objective with regard to compensation for an SGEI is to ensure that compensation is confined to what is necessary to undertake the service:

> The amount of compensation may not exceed what is necessary to cover the costs incurred in discharging the public service obligations, taking into account the relevant receipts and reasonable profit for discharging those obligations. [26]

Box 3.1 sets out additional details on revenues and costs.

[25] OJ C 297/04, published November 29th 2005.

[26] SGEI Framework, para 14.

Box 3.1 SGEI Framework

Revenues to be included:

> The revenue to be taken into account must include at least the entire revenue earned from the service of general economic interest. If the undertaking in question holds special or exclusive rights linked to a service of general economic interest that generates profit in excess of the reasonable profit, or benefits from other advantages granted by the State, these must be taken into consideration.[27]

Costs to be included:

> The costs allocated to the service of general economic interest may cover all the variable costs incurred in providing the service of general economic interest, an appropriate contribution to fixed costs common to both the service of general economic interest and other activities and an adequate return on the own capital assigned to the service of general economic interest.[28]

Source: SGEI Framework.

The SGEI Framework also provides additional detail on what can be considered as reasonable profit:

> 'Reasonable profit' should be taken to mean a rate of return on own capital that takes account of the risk, or absence of risk, incurred by the undertaking by virtue of the intervention by the Member State, particularly if the latter grants exclusive or special rights. This rate must normally not exceed the average rate for the sector concerned in recent years.[29]

This suggests that there are two ways that reasonable profit must be benchmarked. The first is with reference to the firm's own cost of capital (an internal benchmark) and the second is in relation to the profitability observed in the industry (an external benchmark). The Framework states that external benchmarking can also be undertaken with reference to firms in other countries:

> In sectors where there is no undertaking comparable to the undertaking entrusted with the operation of the service of general economic interest, a comparison may be made with undertakings situated in other Member States, or if necessary, in other sectors, provided that the particular characteristics of each sector are taken into account.[30]

Using the measure of profitability and evaluation of internal and external benchmarks, the Member State is then under an obligation to ensure on an ex post basis that there has been no overcompensation:

> Member States must check regularly, or arrange for checks to be made, to ensure that there has been no overcompensation. Since over-compensation is not necessary for the operation of the service of general economic interest, it constitutes incompatible State aid that must be repaid to the State.[31]

3.2.2 Implementation

The Commission's decision set out an ex ante assessment of the likely profitability of Vhi, as the net beneficiary of the scheme, evaluating revenues and costs in line with the provisions of the SGEI Framework. Table 3.1 shows the revenues and costs included by the

[27] Ibid., para 17.
[28] Ibid., para 16.
[29] Ibid., para 18.
[30] Ibid., para 18.
[31] Ibid., para 20.

Commission in its analysis, as well as the allocation between SGEI and non-SGEI categories. A more detailed discussion is set out in Appendix 1.

Table 3.1 Revenue and cost items included by Commission

Category	SGEI share (%)	Non-SGEI share (%)
Revenues		
'Core' healthcare premiums		
HealthSteps		
Travel insurance		
Investment income		
Tax credit		
Costs		
'Core' health insurance costs		
HealthSteps costs		
Travel insurance costs		
Unexpired risk reserve		
Levy costs		
Administrative costs		
Taxes		
Reinsurance		

Source: European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th.

Allocating revenues and costs as shown in Table 3.1 produces profitability forecast figures for 2009–12 as presented in Table 3.2.

Table 3.2 Vhi projections (SGEI business only)

(000's)	31/12/2009	31/12/2010	31/12/2011	31/12/2012
	Budget	Projection	Projection	Projection
Subscription income				
Net benefit of levy/tax credit scheme				
Total claims charge—core				
Administration expenses				
Underwriting profit/(loss)				
Investment return				
Corporation tax				
Profit after tax				
Profit as % subscription income				

Source: European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, p. 17.

As can be seen, the resulting profit was Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.[32] The Commission judged that this level of profitability, measured by the return on revenues, was not excessive.

The Commission did not specify what level of profit would be excessive. Thus, if actual results differed from projected results in any way (and it is unlikely that they would match exactly), it would not be possible to use the Commission's assessment of projected profits in order to determine whether actual profits were excessive.

Thus while the Commission's approach can be used to inform the ex post analysis for measuring Vhi's own profitability (in terms of the line items chosen and the allocation of revenues and costs, for example), it is not possible to use the approach to determine the appropriate comparator.

In practice, on the basis of the financial statements provided by registered undertakings satisfactory profitability metrics will have to be established in conjunction with the determination of what would constitute a reasonable profit.

3.3 Profitability measures

From an economic perspective, and on the basis of the principles of capital budgeting theory, economic measures of profitability—and not accounting measures—are the most appropriate for assessing the returns on a company's investments in the context of a competition analysis.[33]

The profitability of an activity can be defined in terms of net increases in value resulting from that activity and realised over time. The IRR and NPV are two well-established methods for measuring the economic profitability of an activity. To approximate economic profitability, European competition authorities sometimes use a measure of ROCE or ROE.[34] While the ROCE is equivalent to the IRR only under specific circumstances, it has a number of advantages in terms of data requirements, which significantly increase its practical application.

3.3.1 Standard profitability measures (ROE and ROCE)

The IRR and the NPV are well-established methods for measuring profitability. They take into account the inflows and outflows of an activity over time, and reflect the economic principle of time preference of money. They are also the two most frequently used profitability measures in the business world,[35] and are discussed in more detail in Appendix 2. Difficulties in valuing assets and isolating cash flows, as well as the need for data over time, however, limit the practical usefulness of the IRR approach in the current context. The remainder of this sub-section therefore focuses on alternative measures which make direct use of accounting data, the ROE and the ROCE.

The ROCE is calculated by dividing earnings before interest and tax (EBIT) by total capital (ie, debt and equity). Under certain conditions, the ROCE will be equal to the IRR. In practice, these conditions are unlikely to hold exactly, so the IRR will differ from the ROCE. Given the practical difficulties in implementing the IRR, however, the ROCE is likely to

[32] European Commission (2009), 'State aid No N582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief', June 17th, p. 18.

[33] See, for example, Morris, D. (2003), 'Dominant Firm Behaviour under UK Competition Law', paper presented to the Fordham Corporate Law Institute, Thirtieth Annual Conference on International Antitrust Law and Policy, October.

[34] See, for example, UK Competition Commission (2002), 'The Supply of Banking Services by Clearing Banks to Small and Medium-sized Enterprises', March; Competition Commission (2006), 'Store Cards Market Investigation', March; NMa (2004), 'Decision on Investigation into Interpay', case 2910-700, April; and NMa (2005), 'Decision on Investigation into Interpay—Appeal', Case 2910-864, December.

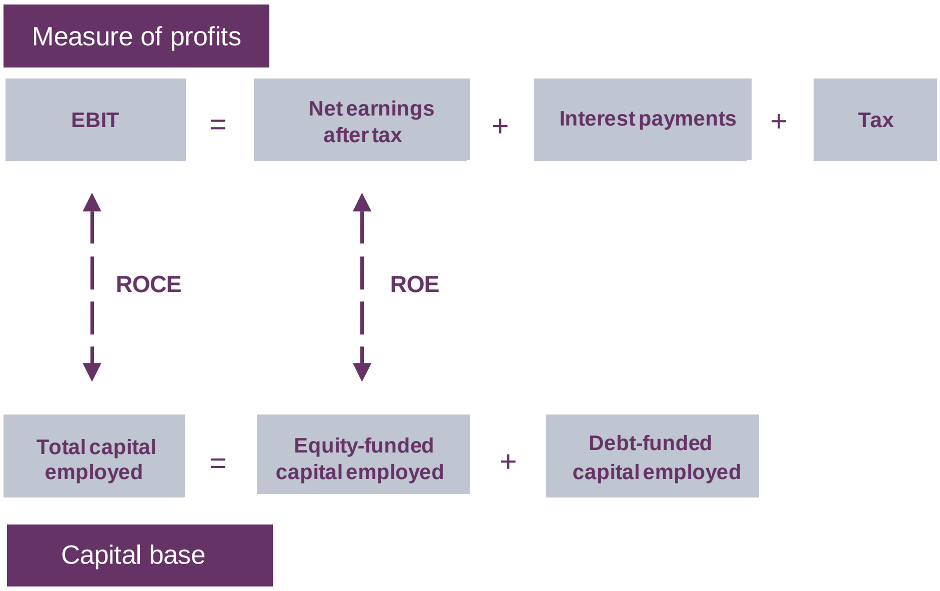
[35] Graham, J.R. and Harvey, C.R. (2001), 'The Theory and Practice of Corporate Finance: Evidence from the Field', *Journal of Financial Economics*, **60**, pp. 187–243.

generate a more robust estimate. As noted above, European competition authorities have made frequent use of the ROCE as a proxy measure of economic profitability.

Like any annual estimate of profitability (including a short-term IRR), the numerator of the ROCE (eg, EBIT) is sensitive to issues such as cyclicality and reserve adjustments. For these reasons, it is normally desirable to measure profitability (regardless of what metric is used) over a number of time periods to minimise distortions resulting from timing issues.

Another useful accounting measure is the ROE, which is a component of the ROCE, as shown in Figure 3.1.

Figure 3.1 ROCE and the ROE



Source: Oxera.

Both the ROE and the ROCE involve measuring equity capital, either in isolation or as a component of total capital. In the case of Vhi, a further complication is introduced by the fact that it is not publicly owned and therefore does not have equity capital. In this context, two high-level approaches can be adopted.

– **Accounting approach**—a proxy for equity capital can be estimated from various items on the balance sheet, considering which of the items are akin to equity capital and total capital in a privately owned health insurance firm.

– **External measures**—a proxy for equity capital can be estimated by first considering the capital structure of comparator firms, and then applying this hypothetical capital structure to Vhi.

These approaches are discussed in more detail in section 4.

3.3.2 Other profitability measures

In addition to the standard profitability measures, it is useful to consider other measures employed within the insurance industry by analysts and credit rating agencies. These measures can be used as cross-checks and include:

– combined ratio;
– return on revenues (or operating margin).

The combined ratio is one of the most common measures of underwriting profitability.[36] It measures claims and administrative expenses as a share of premiums and so does not rely on estimates of capital. It can therefore usefully be employed to compare profitability across for-profit and non-profit companies, or companies with different reserve requirements.

On the other hand, the combined ratio has a number of drawbacks. For example, the combined ratio does not explicitly take investment income into account, thus potentially distorting any inference that can be made using this measure. In addition, as with other profitability measures discussed in this report, in certain circumstance the results might be affected by, for example, changes in the approach to calculations of technical provisions.

Finally, measuring profitability using the combined ratio does not allow one to determine objectively how a reasonable profit would be measured with a combined ratio; it is only possible to use as a benchmark against other firms.

Another measure, also used by the Commission, is the return on revenue (ROR). Standard & Poor's states that this measure, also known as the operating margin, is one of its preferred measures in analysing non-life insurance companies:

> … we believe that the key driver of profitability is the profit margin on a company's operating revenues. This margin is best measured using pre-tax ROR, which, unlike ROE, is somewhat insulated from the effects of leverage and partly adjusts for the duration of the liability. ROR includes both underwriting and investment components and thus captures both sources of an insurance company's earnings. It also blends easily with the traditional loss ratio or combined ratio analysis, which are widely used by the broader analytical community."[37]

S&P notes that ROR is particularly useful when comparisons include companies in different jurisdictions.

3.3.3 Summary

This section has discussed profitability metrics, all of which involve allocating revenues and costs between SGEI and non-SGEI activities. In addition:

– economic profitability can be defined in terms of net increases in value resulting from a given activity and realised over time. The IRR and NPV are two well-established methods for measuring the profitability of an activity, and the IRR can be compared with a firm's own cost of capital (or an external benchmark) to determine overcompensation. At a practical level, however, it is typically not possible to determine relevant cash flows and asset values with sufficient precision to enable the IRR methodology to be used;

– two common proxies for the IRR are the ROCE and the ROE. These are both accounting measures which are, under certain conditions, related to the IRR. Both have been used by European authorities as proxies of economic profitability.

Oxera's review of data availability in the current context suggests that the ROCE and ROE will provide the most useful and conceptually correct measures of Vhi's profitability relating to the SGEI. Additional measures such as the return on revenues and the combined ratio can be used to cross-check the results obtained from the ROCE and the ROE.

3.4 Reasonable profit

Once a profitability metric is established, both internal and external benchmarks can be used to determine whether there has been any overcompensation. This sub-section discusses two categories of benchmark which can be used to assess whether a firm's profitability is

[36] Swiss Re (2006), 'Sigma: Measuring Underwriting Profitability of the Non-life Insurance Industry' (No 3/2006), p. 7.
[37] Standard & Poor's (2009), 'Analysis of Nonlife Insurance Operating Performance', April 22nd, p. 2.

reasonable. The first is internal benchmarks such as the firm's own cost of capital or cost of equity, while the second category would cover external benchmarks such as profitability of comparator firms.

3.4.1 Internal benchmark

The own cost of capital approach (ie, the internal benchmark) analyses the presence or indeed the degree of over-/undercompensation by comparing the firm's calculated profitability metric (be it the ROE or ROCE) with its own actual cost of equity or cost of capital. Conceptually, this is the most appropriate way to measure profitability and is in line with the guidelines in the Irish and European legislation. Section 3.5 discusses what inferences in relation to overcompensation can be made by comparing the profitability of firms with internal benchmarks.

The cost of equity can be calculated using the CAPM, while the cost of capital can be calculated by combining the cost of equity capital and direct estimates of the cost of debt and gearing of a given firm.

In the case of Vhi (or non-listed firms more generally), measuring the cost of capital is complicated by the lack of equity market data (total shareholder returns) required to estimate the cost of equity capital using the CAPM. Alternative approaches, involving comparator firms, can be adopted to estimate the cost of equity of Vhi.

3.4.2 External benchmark

The external benchmarks approach compares the ROE, ROCE and other measures of profitability for the firm against the equivalent profitability measures of its comparator firms. Section 3.5 discusses what inference in relation to overcompensation can be made by comparing the profitability of firms with external benchmarks.

In terms of the choice of comparators, the SGEI Framework states that the beneficiary's cost of capital must not normally exceed that for the industry in recent years.

> A rate of return on own capital that takes account of the risk, or absence of risk, incurred by the undertaking by virtue of the intervention by the Member State … must normally not exceed the average rate for the sector concerned in recent years.[38]

In Ireland, two other firms that currently provide the SGEI-related services are Quinn and Aviva. Together with Vhi, they comprise the PHI sector in Ireland, as referred to in the Health Insurance (Miscellaneous Provisions) Act 2009, quoting the SGEI Framework. Both Quinn and Aviva can be used as comparators to Vhi. However, as their characteristics (eg, size, maturity of business, ownership structure) are different in some respects to Vhi, benchmarking Vhi's profitability against the profitability of these two firms has some limitations.

Further complications arise when attempting historical comparisons due to the regulatory uncertainty in Ireland prior to the introduction of the levy and tax credit scheme in 2009. Until July 2008, there was a risk equalisation scheme (RES) in force in Ireland, which had similar objectives to the levy/tax credit scheme in promoting intergenerational solidarity. However, the RES was subject to legal challenge by BUPA in 2005 and finally struck down in the Irish Supreme Court in July 2008. No payments were made prior to the Supreme Court decision because the Court suspended payments during the legal challenge. The levy and tax credit scheme was then introduced in early 2009. If the three health insurers accounted for this regulatory uncertainty in different ways, this would complicate the comparison of profits.

The SGEI Framework provides that comparisons can be made with firms in other countries in certain circumstances.

[38] SGEI Framework, para 18.

> In sectors where there is no undertaking comparable to the undertaking entrusted with the operation of the service of general economic interest, a comparison may be made with undertakings situated in other Member States, or if necessary, in other sectors, provided that the particular characteristics of each sector are taken into account.[39]

Therefore, if firms from the sector in Ireland are not sufficiently comparable to the net beneficiary in terms of their risk and business mix, and if there are firms outside Ireland that are more comparable, it is appropriate to seek comparators in other countries. As regards specific circumstances that could arise which might affect the need for using comparators from outside Ireland, it is not possible to identify these in advance. Such judgements would have to be made when assessing the overcompensation.

Measurement of internal and external benchmarks is discussed in section 5.

3.5 Interpretation

This section has outlined approaches to measuring the profitability of firms and benchmarks that can be used to assess whether the level of profitability observed over a given period is 'reasonable'. Importantly, when considering whether profits are reasonable, it is necessary to assess whether any differences observed between profits and benchmarks are *persistent* and *significant*—ie, differences between profits and benchmarks are observed over a sufficiently long period of time and they are material.

In the case of Vhi, because the levy and tax scheme was first applied in 2009, a profitability analysis in 2010 can use only one year of data on Vhi's activities.[40] To draw conclusions on whether Vhi's profits are reasonable, it will be necessary to assume that 2009 provides a representative picture of its profitability at this point in time. Going forward, applying this methodology on an annual basis will allow an increase in the period over which Vhi's profitability is considered, and provide further insights into the degree to which any observed results are persistent.

In terms of different measures, the main focus of profitability assessment should be on the standard profitability measures (ROE and ROCE). Applying other measures of profitability (combined ratio and return on revenues) can be used as a cross-check of the results obtained from the ROE and ROCE analysis.

If the profitability analysis does not yield conclusive results, it may be necessary to conduct a further analysis of underlying drivers of results and any differences in conclusions arising from different measures of profitability. For instance, it is possible that in a given year external benchmarks based on profitability of Vhi's Irish comparators are distorted due to some specific circumstances of Quinn and/or Aviva. In such a case, it may be appropriate to place more emphasis on internal benchmarks, and base the conclusion on whether Vhi is overcompensated on a comparison of Vhi's profits with its own cost of equity and cost of capital.

[39] Ibid.

[40] Historical data on the profitability of Vhi and its comparators might be used for the purposes of estimating benchmarks for Vhi's profitability.

4 Measuring profitability

Key points and outline

- The ROE and ROCE of Vhi's SGEI-related activities can be estimated using measures of profits and capital associated with these activities.
  - Profits—a measure of net profits can be used when estimating the ROE, and a measure of operating profits or EBIT when estimating the ROCE.
  - Capital—a measure of the total equity shareholder funds can be used when estimating the ROE, and a measure of the total capital when estimating the ROCE.
- These accounting measures may require a number of adjustments to ensure that they provide the best possible proxy for economic profits associated with ongoing activities.
- The P&L items that may require adjustments include some technical provisions items, investment income/losses and taxes. At the same time, balance sheet items may require adjustments for the value of intangible assets.
- The analysis based on standard profitability metrics can be supplemented with:
  - profitability analysis based on the other profitability measures—the combined ratio and return on revenues;
  - a more direct assessment of how the level of compensation that Vhi receives compares with the additional costs that it incurs in order to provide SGEI-related services.
- Practical implementation of the standard and alternative profitability measures requires detailed P&L and balance sheet data for the SGEI-related activities.

This section sets out the practical approach that can be adopted for measuring the profitability of SGEI-related activities of firms in the competition analysis context. Sections 4.1–4.3 outline how various profitability measures can be implemented in practice, taking into account characteristics of health insurance firms in general, and Vhi in particular. Section 4.4 outlines a set of accounting data that would be required from Vhi and its comparators in order to complete the profitability analysis.

Measuring the profitability of the net beneficiary of the scheme (in this case Vhi) is crucial to fulfilling the requirements of Section 7F of the Health Insurance (Miscellaneous Provisions) Act 2009. It facilitates the determination of what constitutes a reasonable profit and also allows comparisons to be made in order to determine whether Vhi has been overcompensated.

4.1 Standard profitability measures—profits estimates

The profitability analysis based on standard profitability measures requires an estimation of the profits and capital used to generate these profits. This sub-section considers an approach that can be used to obtain relevant measures of profits for Vhi and its comparators. Section 4.2 discusses an approach that can be used to obtain relevant measures of capital.

Estimating relevant measures of profits is a key part of the profitability analysis. The approach that is most commonly adopted in this context is to start with accounting measures of profits, and then consider what adjustments may be required to arrive at relevant measures for the profitability analysis.

In the health insurance industry (as in other industries):

– a measure of *net profits* can be used when estimating the ROE;
– a measure of *operating profits* or EBIT when estimating the ROCE.

The remainder of this sub-section sets out the approach that can be adopted to calculate adjusted measures of net profits and operating profits. The analysis considers first the health insurance industry in general, and, second, issues that arise specifically in relation to assessing the profitability of the SGEI-related activities.

4.1.1 Accounting measures of profits and required adjustments

Net profits and operating profits reported by firms can be used as a starting point to estimate the ROE and ROCE profitability measures. While simple to calculate, these accounting measures may require a number of adjustments.

Figure 4.1 sets out the main components of the P&L statement of health insurance firms.

Figure 4.1 Accounting P&L items

Gross premiums written
– premiums ceded to reinsurers
+ (changes in) the provision for unearned premiums
– gross claims paid
+ reinsurers' share of claims paid
– (changes in) the gross provision for claims
+ (changes in) reinsurers' share of the provision for claims
+ (changes in) other technical provisions
+ investment income/loss
– operating expenses
= operating profit
– interest
– tax
= net profit

Source: Oxera.

This list of P&L items provides a basis for considering net profit and operating profit adjustments that could be required when measuring profitability. The main objective of these adjustments is to ensure that P&L items that do not form part of ongoing operating activities are removed.

Specific adjustments that may be required for health insurance firms include the following.

– **Selected technical provisions**. Changes in technical provisions are all reflected in accounting measures of operating and net profits. In general, no adjustment is required for these accounting items, unless, for example, changes in provisions reflect changes in the approach used to estimate them, or they reflect longer-term structural shifts in the provision of particular services (eg, increased service-level requirements).

– **Investment income/loss**. A significant part of the income for insurance firms is derived from their investments in financial and non-financial assets. The returns (eg, capital gains, dividends, interest) from these investments are, however, inherently volatile. For example, in 2008 the stock market in Ireland and other countries around the world experienced a dramatic drop in value, while 2009 saw a recovery in values in the majority of countries. Directly reflecting this volatility in income, and therefore profits, may provide a distorted picture of profitability in a given year. An approach that can be adopted in this context is to use the long-run expected income on the investment portfolio in estimation of profits. In Vhi's case, for example, the firm already makes a distinction between (i) allocated investment return (ie, long-run expected return); and (ii) short-term fluctuations in investment return.

– **Taxes**. In general, only taxes (paid and payable) relating to the profits earned in a given financial year are relevant in the context of profitability analysis covering a specific period. An accounting measure of net profits should therefore be adjusted for any deferred taxes that have been taken into account when calculating net profits. In Vhi's case, for example, the firm currently uses an accounting approach which separates out deferred taxes.

In practice, adjustments that may be required to the accounting P&L items depend on the particular circumstances of a given firm in a given financial year, and may require additional adjustments not discussed above.

4.1.2 Accounting measures of profits and required adjustments—SGEI-related activities

The focus of the profitability analysis is on SGEI-related activities. In this context, a conceptually correct approach is to consider measures of profitability of the SGEI-related activities in isolation. Following the approach set out in section 4.1.1, this would require obtaining relevant P&L items specifically related to SGEI activities, and considering the required adjustments to these accounting measures.

Allocation of P&L items between different activities of a firm is an inherently difficult process, in which often neither revenues nor common costs can be explicitly allocated. The health insurance industry is not an exception, and allocation of most of the P&L items to the SGEI-related and non-SGEI-related activities cannot be done explicitly.

The allocation of P&L items can be undertaken based on a bottom-up analysis of the economic characteristics of a particular item. For example, it may be possible to consider what proportion of gross premiums can be allocated to SGEI activities based on the analysis of benefits covered by these policies; at the same time, it may be possible to allocate claims based on actual claims paid in relation to SGEI and non-SGEI activities.

For P&L items where the bottom-up analysis is not feasible, it is possible to use the allocations of other P&L items as a proxy (eg, using allocations of gross claims as a proxy).

In the context of Vhi's profitability analysis, the following approach should be adopted (where feasible).

– For claims (gross, reinsurers' share and provisions for claims outstanding) and premiums (gross, reinsurers' share and provisions for unearned premiums), use estimates based on a bottom-up analysis of the economic characteristics of these items.

– For other items, use the allocation of claims (gross, reinsurers' share or provisions for claims outstanding) or premiums (gross, reinsurers' share or provisions for unearned premiums) as a proxy. The choice between different proxies depends on whether particular P&L items are, for example, more related to premiums or to claims.

The allocation employed by the European Commission is summarised in Table 3.1, and discussed in more detail in Appendix 1.

4.2 Standard profitability measures—capital estimates

Once actual net profits or operating profits are calculated, based on the process outlined in section 4.1, determining the ROE or ROCE also requires measuring equity, either in isolation or as a component of total capital. In the health insurance industry (as in other industries):

– a measure of *the total equity shareholder funds* can be used when estimating the ROE;
– a measure of *the total capital* can be used when estimating the ROCE.

This part of the analysis sets out estimations of total equity shareholder funds and total capital measures that can be used in the profitability analysis.

The approach that is most commonly adopted in this context is to start with accounting measures of the total equity shareholder funds and total capital, and then consider what adjustments may be required to arrive at relevant measures. In the case of Vhi, a further complication is introduced by the fact that it is not privately owned and does not have equity capital.

In order to take into account the specific ownership structure of Vhi, the following two high-level approaches can be adopted to estimate equity capital.

– **Accounting measures**. A proxy for equity capital can be estimated from various items on the balance sheet, considering which items are most akin to equity shareholder funds and total capital in a privately owned health insurance firm.

– **External measures**. Using this approach, a proxy for equity capital can be estimated by first considering the capital structure of comparator firms, and then applying this hypothetical capital structure to Vhi.

These approaches can also be adopted when estimating the total capital of privately owned health insurance firms in Ireland and other countries.

The remainder of this sub-section sets out both approaches in more detail.

4.2.1 Accounting measures

For non-state-owned insurance firms, measures of the total equity shareholder funds and total capital (consisting of total equity shareholder funds and other forms of capital, including hybrid securities and bonds issued by the firm and borrowing from banks) can be used to estimate the ROE and ROCE profitability measures. As in the case of profits (section 4.1), it is important to consider whether any adjustments to these measures are required to obtain relevant measures of capital.

Where state-owned health insurance firms such as Vhi are involved, the estimation of measures of the total equity shareholder funds and total capital is more challenging. In contrast to non-state-owned health insurance firms, Vhi does not have total shareholder funds (a breakdown of reported total liabilities of Vhi is presented in Figure 4.2). However, it can be argued that Vhi's 'general reserve' plays a similar economic role to equity capital, and therefore could provide a potentially good proxy for equity capital, although it is necessary to consider the potential impact of Vhi's derogation from the solvency requirement. From an accounting perspective, the general reserve serves as a repository for accumulated profits and losses.

Figure 4.2 Breakdown of Vhi's balance sheet (liabilities)

Technical provisions
Provision for unearned premiums
Claims outstanding
Other technical provisions
Creditors
Creditors arising out of insurance operations
Other creditors and accruals
Bank overdraft
Retirement Benefits Liability
Deferred taxation
Reserves
General reserve

Source: Vhi Annual Report 2008.

A proxy for total capital in this context can be obtained by considering other forms of capital employed by Vhi. Total capital can be obtained by adding together such items as general reserve, other creditors and bank overdraft. A detailed consideration of each individual item, however, is required in order to take into account the characteristics of the balance sheet of a particular firm in a given year.

These measures of equity and total capital may require a number of adjustments. For example, the book value of equity and total capital may need to be adjusted for intangible value embedded in the firms' operations. These intangible assets may include such items as the value of customer relationships.[41]

There are several approaches that can be adopted to obtain estimates of intangible assets. One approach is to use estimates of intangible assets used in the profitability analyses carried out by other competition authorities in the EU. For example, the UK Competition Commission's SME banking inquiry may provide a useful input for an assessment of the value of intangible assets for the purposes of assessing overcompensation. In the SME banking inquiry, the Competition Commission estimated the depreciated replacement cost of staff, customers and IT by capitalising past expenses for two of the banks. It then calculated the corresponding adjustment to the 'baseline equity' for the two banks, which amounted to 13%, and applied this notional adjustment to the other banks. To the extent that intangible assets represented by Vhi's customer relationships are similar to those valued by the Competition Commission, it may be appropriate to use this figure as a basis for adjusting Vhi's asset base.

4.2.2 External measures

For the purposes of profitability analysis, the equity capital and total capital of a given firm can be obtained by considering the capital structure of relevant comparators. This is particularly relevant in the case of Vhi, where direct measures of the total equity shareholder funds and total capital are not available.

The external measures approach assumes that for a given level of premiums or total assets, health insurance firms tend to hold a certain amount of equity and total capital. This does not need to be an efficient level, but rather representative of what is being held in the industry.

[41] It should be noted that in the Irish context, relationships with older customers are less valuable than those with younger customers due to differences in profitability.

Using this approach, a proxy for the accounting value of Vhi's total equity shareholder funds can be obtained by applying to Vhi ratios of total equity shareholder funds to gross written premiums and to total assets of comparator firms. For example, if a ratio of total equity shareholder funds to gross written premiums of comparators is 20%, and Vhi's gross written premiums in that year equal €1,000m, then the proxy for Vhi's total equity shareholder funds would be equal to €200m, or 20% of €1,000m.

Similarly, a proxy for the value of Vhi's total capital can be obtained by applying ratios of total capital to gross written premiums and total capital to total assets of comparator firms.

As in the case of direct estimates of the total equity shareholder funds and total capital, estimates obtained using this approach may require further adjustments (eg, for intangible assets). These adjustments are equivalent to those that would be estimated for the purposes of adjusting direct measures of equity and total capital.

Two groups of comparators can be used for the purposes of this analysis:

– other Irish health insurance firms; and
– health insurance firms in other countries.

Section 5.4 discusses the choice of comparators in more detail.

4.2.3 Capital—SGEI-related activities

The focus of the profitability analysis is on SGEI-related activities. In this context, a conceptually correct approach is to consider measures of profitability of the SGEI-related activities in isolation. This would require obtaining relevant measures of capital specifically related to SGEI activities.

The approach that can be used for allocation of capital is essentially identical to that described for the allocation of P&L items (section 4.1.2). Where actual allocations are possible, this approach provides the best possible allocation. In the instances where actual allocation is not possible, either claims (gross, reinsurers' share or provisions) or premiums (gross, reinsurers' share or provisions) can be used. The choice between the two depends on whether particular balance sheet items are more related to premiums or to claims items.

4.3 Other profitability measures

As discussed in section 3, profitability in an insurance context can also be measured with reference to income. Such alternative measures are particularly useful in cases where the results from the ROE and ROCE analyses are inconclusive. The measures that can be used include the combined ratio and return on revenues.

4.3.1 Combined ratio

The combined ratio is one of the most common measures of underwriting profitability for insurance firms.[42] As the name suggests, it is a combination of the claims ratio and the expense ratio. The claims ratio, sometimes known as the medical cost ratio, is the percentage of each euro of premiums that is spent on medical claims.

The expense ratio measures the share of premiums spent on general and administrative expenses. A combined ratio of less than 100%, therefore, means that the insurance undertaking is spending less on claims and expenses than it is earning in premiums, and is therefore profitable on an underwriting basis. If the company is able to earn investment income from its reserves, it may be profitable overall, even if its combined ratio is above 100%.

[42] Swiss Re (2006), 'Sigma: Measuring Underwriting Profitability of the Non-life Insurance Industry' (No 3/2006), p. 7.

While estimations of the combined ratio are relatively straightforward, it also provides a correspondingly incomplete picture due to, for example, omission of investment income from the calculations.

4.3.2 Return on revenues

Calculating the return on revenue, also known as the operating margin, requires calculating both operating profits and revenue attributable to the SGEI. As noted above, this is the measure used by the Commission in its decision, and the results are set out in Table 3.2.

In comparison with the combined ratio, the return on revenues is a more complete measure but also requires correspondingly more information to calculate. On the revenue side, it would incorporate investment income. On the cost side, the operating margin would include costs other than claims costs and administrative expenses, such as the levy and corporation tax.

4.4 Practical data requirements

The analysis outlined in this section requires detailed P&L and balance sheet data. For Vhi and its Irish comparators (which would be used to benchmark Vhi's profitability), data relating specifically to the SGEI activities is required. For firms in other countries, data relating to their total activities or (where available) their health insurance activities are required.

Accounting P&L items required to carry out this analysis include:

– gross premiums written;
– premiums ceded to reinsurers;
– change in the provision for unearned premiums;
– claims paid (gross);
– claims paid (reinsurers' share);
– change in the provision for claims (gross);
– change in the provision for claims (reinsurers' share);
– unexpired risk reserve;
– age-related tax credit;
– levy paid;
– net operating expenses—administrative expenses and acquisition costs;
– allocated investment return transferred to the health insurance technical account;
– short-term fluctuations in investment return;
– profit before tax;
– corporation tax—current taxation for year, and deferred taxation—credit;
– profit after tax.

Some of these items may not be relevant for all health insurance firms.

For Vhi, Quinn and Aviva, these accounting items need to be allocated between SGEI-related and non-SGEI-related activities. For the following seven items, allocation should ideally be done based on a bottom-up analysis of the economic characteristics of these items:

– gross premiums written;
– premiums ceded to reinsurers;
– change in the provision for unearned premiums;
– claims paid (gross);
– claims paid (reinsurers' share);
– change in the provision for claims (gross);
– change in the provision for claims (reinsurers' share).

For other items, allocation can be done either based on a bottom-up analysis or the allocation obtained for one of the above items can be used as a proxy.

Accounting balance sheet items required to carry out this analysis include:

– total equity shareholder funds;
– general reserves;
– creditors;
– hybrid securities.

Some of these items may not be relevant for all health insurance firms.

For Vhi, Quinn and Aviva, these accounting items need to be allocated between SGEI-related and non-SGEI-related activities. For the following three items, allocation should ideally be based on a bottom-up analysis of the economic characteristics of these items:

– the provision for unearned premiums;
– the provision for claims (gross);
– the provision for claims (reinsurers' share).

For other items, either a bottom-up or a proxy allocation can be used.

The data required for the analysis is not produced by firms as a matter of normal business operations. In particular, Vhi, Quinn and Aviva do not produce detailed allocations between SGEI-related and non-SGEI-related activities. The implementation of the overcompensation assessment therefore requires firms to generate some additional information over and above what they are producing as a matter of normal business operations.

5 Assessment of overcompensation

Key points and outline

- Internal and external benchmarks can be used to determine whether Vhi's profits as measured by ROE and ROCE are 'reasonable', and therefore whether there is any overcompensation.
  - Internal benchmarks consist of Vhi's own cost of equity and cost of capital.
  - External benchmarks consist of the profitability metrics for comparable firms, either in Ireland or other countries.
- The cost of equity can be estimated using the CAPM. The cost of capital can be estimated as the WACC, which takes into account the cost of equity capital, cost of debt capital and ratio of equity and debt capital.
- In terms of comparators for external benchmarks:
  - in Ireland, two other firms that currently provide the SGEI-related services (Quinn Healthcare and Aviva) can be used as comparators;
  - to the extent that they are necessary, the choice of comparators from the other countries requires identifying a set of firms that have a business mix and risk characteristics similar to those of Vhi.
- Estimations of the internal and external benchmarks require market data, P&L and balance sheet data (for comparator firms), and evidence from the academic and professional literature.

5.1 Overview

According to the Commission's guidelines, an assessment of overcompensation must include:

- the actual profitability of the SGEI for the undertaking concerned in the relevant period;
- a reasonable profit for an undertaking carrying out these activities. Only after developing this benchmark would it be possible to determine whether the actual level of profitability was in excess of a reasonable profit.

These requirements are also reflected in Section 7F of the Health Insurance (Miscellaneous Provisions) Act 2009, which is designed to ensure that the net beneficiary (currently Vhi) is not overcompensated. Measuring the profitability of Vhi and its comparators facilitates the determination of a 'reasonable profit' with reference to both internal and external benchmarks, and thereby also shows whether Vhi has been overcompensated.

Section 4 set out a framework for calculating the firm's profitability using ROE and ROCE measures. Once a profitability metric (or metrics) is established, both internal and external benchmarks can be used to determine whether there has been any overcompensation.

- Internal benchmarks in this case consist of Vhi's own cost of equity and cost of capital.
- External benchmarks consist of the profitability metrics (eg, ROE and ROCEs) for comparable firms, either in Ireland or other countries. The Commission's guidelines specify that a 'reasonable' rate of return would normally not exceed the average for the

industry; as such, these external benchmarks are useful complements to internal benchmarks.

The comparison of Vhi's ROE and ROCE to its cost of equity and cost of capital provide the (conceptually) most appropriate way to assess whether Vhi is overcompensated. On a more practical level, it is also useful to compare Vhi's ROE and ROCE measures with those of its comparators. A further check could be provided by comparing other profitability measures—such as the combined ratio and operating margin—with those of comparable firms.

It could be informative to compare the level of compensation that Vhi receives with the additional costs that it incurs in order to provide the SGEI-related services. This would indicate whether the net effect of the levy and tax credit scheme is the main source of any differences in profitability between the net beneficiary and other Irish comparators.

The remainder of this section sets out the approaches to estimating 'normal' profits under different methodologies, and considers practical data requirements for implementing these approaches.

5.2 Internal benchmarks

The internal benchmark approach considers whether a firm earns reasonable profits by comparing the ROE (or the ROCE) with its actual cost of equity (or the cost of capital). The approach to calculating ROE and ROCE is set out in detail in section 4, while this sub-section outlines the approach to estimating firms' cost of equity and cost of capital.

The cost of equity can be estimated using the CAPM. The cost of capital can be estimated as the WACC, which takes into account the cost of equity capital, the cost of debt capital and the ratio of equity and debt capital (or leverage).

The cost of equity using the CAPM can be estimated as:

$$\text{the cost of equity} = \text{risk-free rate} + \text{equity beta} \times \text{ERP}$$

The risk-free rate represents a cost of risk-free borrowing. The equity beta captures the level of systematic risk that investors face from investing in a particular firm, while the ERP captures a premium that investors, on average, require from investing in equities (as opposed to risk-free assets). A multiple of the equity beta and the ERP captures a market risk premium for a particular firm.

The risk-free rate can be estimated by considering redemption yields on government bonds. When estimating the cost of equity for Vhi, estimates of the risk-free rate would be based on government bonds issued by Germany, since these bonds provide the best proxy for virtually 'risk-free' investment. The estimation of the risk-free rate using this approach needs to take into account current levels of yields, as well as yields observed on these bonds over recent years.

The appropriate ERP can be estimated by considering historical data on equity and risk-free returns. Notably, there is a large body of academic literature that provides evidence on the ERP across countries, and various adjustments that may be required when using an ERP for the purposes of estimating the forward-looking cost of equity capital.

For a publicly listed firm, the equity beta can be estimated by regressing daily and/or monthly total shareholder returns (ie, capital gains and dividends) of the stock observed over the last three to five years on the returns of a well-diversified market portfolio. It would also be necessary to consider the effect of the financial crisis on the quality of estimates, and potentially use alternative measures that more effectively reflect forward-looking risk (eg, by using a pre-crisis estimation period).

For state-owned (or more generally for non-listed) firms such as Vhi, the risk inherent in its equity cannot be estimated directly. Instead, the standard approach is to identify relevant publicly listed comparator firms, and to estimate the equity beta for these firms. The estimates of the equity beta of comparators can then be used to infer a proxy for the equity beta of a given non-listed firm.[43] It should be noted that in the current case, the objective is to measure the riskiness of Vhi's SGEI-related activities only, rather than the firm as a whole. Thus the most suitable comparator firms would have risk characteristics comparable to Vhi's SGEI-related activities.

The WACC can be estimated using the cost of equity, the cost of debt and gearing. The cost of debt can be obtained from yields on outstanding debt or credit default swaps (CDS) of a firm or its comparator firms. For a state-owned firm such as Vhi, the cost of debt is likely to converge to the government's cost of borrowing, with additional premiums reflecting such factors as differences in liquidity between government bonds and the bonds of state-owned firms.

The gearing can be estimated using either a bottom-up approach (looking at adjusted reserves) or a top-down approach (looking at the financial structure across comparators). The approach to assessing capital structure is discussed in section 4.2.

5.3 External benchmarks

This approach benchmarks Vhi's profitability against that of its comparators. The main focus of this analysis is on comparing the ROE and ROCE measures. The estimates of ROE and ROCE of comparator firms indicate the level of reasonable profit of Vhi as a net beneficiary. In addition, comparison of the other profitability measures could provide an important cross-check.

The ROE and ROCE of comparator firms can be estimated using the approach outlined in section 4 of this report. In this context, a number of issues need to be considered, including:

– **the characteristics of comparators**—the relevance of the profitability of comparator firms for assessing whether Vhi is overcompensated depends on the similarity and availability of data for those comparator firms (the choice of comparator is discussed in section 5.4). At the same time, it is possible that in any given year, the profitability of comparator firms is affected by idiosyncratic factors that are not relevant to Vhi—eg, changes in regulations;

– **ROE and ROCE measurement issues**—the measurement issues described in section 4 (eg, adjustments required to P&L and balance sheet items) also affect comparator firms, potentially introducing distortions.

– **differences in capital structure**—the ROE metric is particularly sensitive to differences in capital structure. Therefore, if the capital structure of comparators is significantly different from that of Vhi, this can introduce biases in the comparison.

The degree to which these issues affect conclusions will need to be considered at the implementation stage.

5.4 Choice of comparators

Comparators are required to estimate Vhi's equity and total capital using the external measures (ie, using proxies of comparators' capital structure to infer the capital structure of

[43] The equity beta of comparators is 'unlevered' to estimate the asset beta for the comparator firm, and subsequently levered to estimate the equity beta for the firm under consideration and hence can be used to estimate the cost of equity.

Vhi). In addition, both the internal and external profitability benchmarks require the use of comparators.

– In the case of internal benchmarks, generating Vhi's own cost of equity would require finding publicly listed comparators in order to estimate the equity beta. Similarly, generating Vhi's cost of capital could require external estimates of borrowing costs.

– In the case of external benchmarks, Vhi's profitability is compared with the profitability of its comparator firms.

It should be noted that it is not necessary for the same set of comparators to be used for all calculations. External profitability benchmarks, for example, could include divisions of privately held firms, whereas comparators used for equity beta calculations need to be publicly listed companies. The choice of comparator firms should include consideration of the following factors.

– **Business mix and risk characteristics**. Ideally, one would find a publicly listed health insurance company whose sole activity was providing SGEIs. This company's return on equity and return on capital would provide the best indication of reasonable profit for Vhi's SGEI activities. Failing this, it is nevertheless desirable that a comparator company has a significant share of health insurance business or has risk characteristics similar to those of Vhi.

– **Location**. The Commission's guidelines specify that comparators would ideally come from the same industry as Vhi (eg, the Irish PHI market), but that it would under some circumstances also be appropriate to use undertakings in other countries.

– **Listed status**. In order to use comparators to estimate equity betas, comparators must be publicly listed companies.

On a practical level, it is highly unlikely that an ideal comparator exists. In particular, it may be difficult to find so-called 'pure-play' comparators in other countries, whose main activity is PHI.

In terms of comparators that can be used to estimate external benchmarks, there are a number of options.

– PHI firms in Ireland—in addition to Vhi, the two other firms that provided SGEI-related services in Ireland in 2009 were Quinn and Aviva.[44] The profitability levels of SGEI-related activities of Quinn and Aviva provide the best external benchmarks to the profitability of Vhi as a net beneficiary. Due to the changes in the SGEI framework, currently data on SGEI-related activities for 2009 only provides a reliable indication of the profitability of other firms operating in this sector. The analysis of overcompensation therefore only uses profitability levels observed in 2009. Going forward, as more data is accumulated, the profitability of PHI firms in Ireland might provide a reliable external metric, although this depends on whether there are any material changes to the levy and tax credit scheme.

– PHI firms in other EU countries (PHI divisions of full-line insurance firms can also be used for this analysis)—while Quinn and Aviva differ in some significant respects from Vhi (eg, for-profit status and ownership structure), it is unlikely that more comparable firms exist at present in other Member States. Nevertheless, there could be circumstances under which it would become necessary to use external comparators. As regards specific circumstances that could arise which might affect the need for using comparators from outside Ireland, it is not possible to identify these in advance. Such

[44] In 2009, these three firms thus constituted the health insurance sector in Ireland, as referred to in the Health Insurance (Miscellaneous Provisions) Act 2009, quoting the SGEI Framework.

judgements would have to be made when undertaking the assessment of overcompensation.

To estimate the equity beta, it may be necessary to use publicly listed insurance companies in the EU and then make adjustments based on the riskiness of the health insurance business relative to other insurance lines. Comparisons of the riskiness of US pure-play health insurance firms compared with general insurance firms could be used for this purpose.

5.5 Direct estimates of the effect of the levy/tax credit scheme

In the event that comparisons of Vhi's profitability and various internal and external benchmarks do not yield conclusive results, it may be necessary to carry out further analysis of the underlying drivers of results and any differences in conclusions arising from different measures of profitability.

This sub-section discusses a direct measure of the costs associated with different age brackets compared with the amount of the levy and tax credit scheme. This analysis allows an assessment of the extent to which the net effect of the levy and tax credit scheme is an important source of any differences in profitability between the net beneficiary and other Irish comparators.

As shown in Table 5.1, a larger share of Vhi's population is over the age of 50 compared with Quinn or Aviva.

Table 5.1 Age profile of insurers' population (Q4 2009) (%)

Age group	Vhi	Quinn	Aviva
0–17	22	29	26
18–29	14	14	20
30–39	15	20	21
40–49	15	17	15
50–59	13	12	12
60–69	11	7	5
70–79	6	2	1
80+	3	0	0

Note: Based on average population during the quarter.
Source: Information returns to HIA.

Measuring the cost to Vhi of its above-average age profile could be done by comparing the age profile of Vhi's population with that of the market average, and calculating how much it would cost Vhi to insure a population of equal size that had the market-average age profile. The difference between the actual cost to Vhi of insuring its own population and that of this hypothetical population would provide an estimate of the incremental cost to Vhi of the above-average age profile.

This could be undertaken as follows.

– For each quarter, use the returns from all three insurers to calculate the market average age profile.

– Calculate how many people Vhi would have in each age group if its population had the market-average age profile.

– Assess Vhi's cost of insuring this hypothetical population, based on its own cost per insured person in each age group of providing the SGEI benefits.

– Compare the cost of providing the SGEI benefits with the hypothetical market average population with the cost of providing these benefits to Vhi's population; the difference represents the cost to Vhi of its above-average age profile.

– Compare the cost of the above-average age profile with the net benefit received by the levy and tax credit scheme.

Calculating the extra costs associated with Vhi's above-average age profile as compared with the net benefit from the levy/tax credit scheme may help to explain any significant differences in profitability between Vhi and its comparators.

5.6 Practical data requirements

The data required to estimate internal and external benchmarks consists of the following.

– **P&L and balance sheet data**. P&L and balance sheet data for Vhi's Irish and non-Irish comparators is required, including such P&L items as gross premiums written, claims paid and administrative expenses; and such balance sheet items as total equity shareholder funds and provisions for claims. For Vhi's Irish comparators, these accounting items need to be allocated between SGEI-related and non-SGEI-related activities. A more detailed data description of requirements from the Irish comparators is provided in section 4.4.

– **Market data**. In addition to accounting data, the analysis of benchmarks also requires market data. This data relates to insurance firms used as comparators for Vhi (eg, equity returns and bond yields of these firms), and to wider Irish and European markets (eg, yields on government bonds and returns on equity market indices).

– **Academic and professional literature**. Some evidence relevant to this analysis can also be obtained from academic and professional literature (eg, evidence on the ERP and market risk of insurance firms). This is particularly relevant for the purposes of estimating internal benchmarks.

Market data is available from public sources and from such databases as Thomson Financial Datastream and Bloomberg. The P&L and balance sheet data related to SGEI activities required from Irish health insurers needs to be obtained through special data requests and is not generated by these firms as a matter of normal business operations. The P&L and balance sheet data for non-Irish comparator firms is available on a non-separated basis from public sources (eg, annual reports) and from such databases as Thomson Financial Datastream. Academic and professional literature is generally available from subscription databases.

The direct estimates of the additional costs associated with different age brackets compared with the amount of the levy and tax credit scheme requires further data. For Vhi, Quinn and Aviva, the following additional data items would be required: age profile; the cost of providing SGEI benefits by age bracket; the levy paid; and the tax credit. This information is already contained in the Information Returns collected by the HIA.

A1 Commission’s methodology in assessing overcompensation

The Commission’s decision on the levy/tax credit scheme set out an ex ante assessment of Vhi’s likely profitability, as the net beneficiary of the scheme, evaluating revenues and costs in line with the provisions of the SGEI Framework[45] As discussed, the Commission did not set out what the required benchmark would be.

Revenues

In forecasting both revenues and costs, it was necessary to distinguish between those revenues and costs related to the SGEI and those that were related to Vhi’s other business activities.

On the premium revenue side, premiums related to travel insurance and Vhi’s non-hospitalisation plans (HealthSteps) were excluded. Within the hospitalisation plans, revenue related to ‘luxury’ benefits (see section 2.3.2 above) was also excluded, so that only the X% of health insurance premiums deemed to be related to hospitalisation plans were considered to be related to the SGEI.[46]

It was also necessary to distinguish between premiums written and earned. If a policy was written on December 1st 2009, for example, 100% of this revenue would be included in written premiums, but as the policy was only in force for one month of the year, only 1/12th would be included in earned premiums. For the purposes of measuring profitability in a given year, it is more appropriate to use earned premiums rather than written premiums.

The Commission’s underwriting revenue forecasts contain two additional line items. The first is the revenue related to the tax credit scheme, which is specific to the SGEI and so is fully included.

The second is reinsurance; it is also necessary to make an adjustment to revenue to account for reinsurance. By purchasing proportional reinsurance, the primary insurer (the company writing the policy) will not be responsible for associated costs and so is essentially passing on a portion of its business to the reinsurer.[47] It is therefore appropriate to reduce revenues by the amount of the reinsurance premium.

Another element of revenue that is not directly related to the company’s underwriting business is investment income. Since an insurer typically receives premium revenue before paying out claims, it is possible to earn investment income on any positive cash balance that arises from normal underwriting operations.

In Vhi’s case, the anticipated investment return in the years 2010 through 2012 compensates for a negative underwriting result. Since only a portion of premiums relate to the SGEI, it is appropriate to include only the portion of the investment income which relates to these premiums. The forecasts therefore include just X% of Vhi’s total investment income.

Costs

On the cost side, a similar allocation procedure can be made to ensure that only the costs associated with providing the SGEI are included. As on the revenue side, therefore, costs associated with HealthSteps and travel insurance are excluded. In relation to its

[45] European Commission (2009), ‘State Aid No N 582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief’’,June 17th.

[46] Ibid, pp. 18–19.

[47] Note that the type of reinsurance used in the Irish market is known as quota share reinsurance, whereby the reinsurer receives a set share of premiums and accepts the same share of the associated claims costs.

hospitalisation plans, Vhi has determined that X% of total claims costs are associated with providing SGEI benefits.

This same percentage is applied to the unexpired risk reserve (URR). This reserve is created to cover any anticipated excess of claims over earned premiums on in-force policies. The Commission's projections do not contain any URR. In its 2008 Annual Report, Vhi states that it is not creating a URR for the period starting in February 2008 as it anticipates that written business following its price increase will not be loss-making.[48]

The costs from the levy, a flat charge based on the number of subscribers, is wholly related to the SGEI and so is counted in full. Set against the revenue from the tax credit, it can be seen that Vhi is forecast to receive a net benefit of €Xm in 2009, €Xm in 2010, €Xm in 2011, and €Xm in 2012.

It is also necessary to include a portion of administrative costs. The Commission's decision states that costs have been directly allocated where possible, and otherwise apportioned on the same basis as premium revenue (ie, X% to the SGEI).

Taxes were apportioned on the same basis as revenues.

Profitability

Allocating revenues and costs as discussed above produced profitability forecast figures for 2009–12, as shown in Table A1.1 below.

Table A1.1 Vhi projections (SGEI business only)

	31/12/2009	31/12/2010	31/12/2011	31/12/2012
	Budget	Projection	Projection	Projection
Earned income—core				
HealthSteps				
Age-related TRS				
Reinsurance				
Subscription income				
Total claims charge—core				
Insurance levy				
Administration expenses				
Underwriting profit/(loss)				
Investment return				
Profit before tax				
Corporation tax				
Profit after tax				
Profit as % subscription income				
Net benefit of levy/tax credit scheme				

Source: European Commission (2009), 'State Aid No N 582/2008—Ireland: Health Insurance Intergenerational Solidarity Relief',' June 17th, p. 17.

[48] Vhi Annual Report and Accounts 2008, p. 45.

As can be seen, the resulting profit was Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.[49] The Commission judged that this level of profitability, measured by the operating margin, was reasonable.

Importantly, however, the Commission did not specify what level of profit would be reasonable. Thus if actual results differed from projected results in any way (and it is unlikely that they would match exactly), it would not be possible to use the Commission's assessment of projected profits in order to determine whether actual profits were reasonable.

Therefore, while the Commission's approach can be used to inform the ex post analysis for measuring Vhi's own profitability (in terms of the line items chosen and the allocation of revenues and costs, for example), it is not possible to use the approach to determine the appropriate comparator.

[49] Commission decision N582/2008, p. 18.

A2 IRR and NPV

As noted above, the IRR and the NPV are well-established methods for measuring economic profitability. They take into account the inflows and outflows of an activity over time, and reflect the economic principle of the time preference of money. Intuitively, the IRR can be explained by considering the decision steps an investor would take when considering whether to make an investment, as illustrated in the simple example below.

– Suppose a company can choose to invest €1,000 in an asset that will generate €1,000 in income and can be sold for €1,000 after ten years. Thus over the life of the project, the change in asset value is zero and the company gets €1,000 in income. Whether the project is profitable, however, depends on the timing of the cash flows and how this timing affects the value.

– If the €1,000 in income comes in the first year, this is more valuable to the company than if the income is spread evenly over the years, since the company would have use of the income sooner.

– To determine how much more profitable it would be for the company to have the income early, it is necessary to consider the discount rate, which is essentially a measure of the time value of money. The IRR is the discount rate such that the value of the project is zero. In this example, if the income arrives in the first year, the IRR is 19.75%, while if it is spread evenly over the years, then the IRR is 10%.

– Whether the company would choose to pursue the project essentially depends on whether it would be profitable for the company to raise the €1,000 in capital markets to make this investment. In other words, the investment decision depends on the relationship between the company's cost of capital and the IRR.

The example above is clearly simplified, but it highlights the logic behind the IRR analysis and also the types of information required to implement it. In the current context, applying the IRR approach would require the following.

– **Determination of the timing of cash inflows (revenues) and outflows (costs)**. This is necessary to determine the net income from the SGEI in each period.[50] This may be complicated by, for example, the differences between written and earned premiums.

– **Identification and valuation of assets**. Valuing the assets is necessary to place the performance of the SGEI into the context of an investment; profitability would be considered as the returns made on the investment made into the assets. In the current case, it would be necessary to have the starting and ending value of the assets.[51] In Vhi's case, these may include some intangible assets associated with customer relationships.

Strictly speaking, the IRR methodology should be applied over the entire life of a project, which makes it more difficult to apply to ongoing activities. While there are ways to apply the IRR approach to discrete time periods,[52] it then becomes necessary to value the assets

[50] Strictly speaking, the IRR methodology requires all cash flows for an activity, which makes it difficult to apply in the case of ongoing activities.
[51] To be precise, this would be a truncated IRR analysis, since it is performed over a year rather than the life of the SGEI commitment. For a complete discussion of the truncated IRR, see Office of Fair Trading (2003), 'Assessing Profitability in Competition Policy Analysis', Economic Discussion Paper 6, July.
[52] Referred to as a 'truncated' IRR analysis.

related to the performance of the SGEI at the start and end of each period, since these approximate the value of the 'investment' necessary to generate the cash flows.

While conceptually correct, the IRR approach can be impractical to apply due to difficulties in valuing assets and isolating cash flows. For these reasons, the current analysis uses measures that make use of accounting data, which is more readily available.

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