Risk Equalisation

Updated Guide to the Risk Equalisation Scheme, 2003 as prescribed in Statutory Instruments No. 261 of 2003, No. 710 of 2003, No. 334 of 2005 and No. 220 of 2007.

March 2008

The intention of The Health Insurance Authority (the Authority) in publishing this document is to give general guidance on the Risk Equalisation Scheme. The document is not a legal interpretation. Its purpose is to present, in non-legal language, an outline of the calculations set out in the Scheme. This document does not purport to set out all the requirements of the legislation and so it should not be relied upon for the purpose of ensuring compliance with the law.

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1. Introduction

The role of The Health Insurance Authority (the Authority) in relation to risk equalisation, is set out in the Health Insurance Acts, 1994 - 2007 and the Risk Equalisation Scheme, 2003 as amended (the Scheme). As the Minister decided to commence payments from 1 January 2006, the Authority's current role is the following:

- Manage and administer the Risk Equalisation Scheme
- Report on its evaluation and analysis of returns under the Scheme and on developments in relation to health insurance generally to the Minister for Health and Children (the Minister)
- Monitor the operation of the Scheme with respect to its effects on the best overall interests of consumers

In this document we will describe the regulatory structure of the Irish private health insurance market. We will also explain how the Scheme operates. In doing this we will outline the roles of the Minister, the Authority and insurers and explain how risk equalisation calculations operate in practice. There is currently a stay on payments being made under the Scheme pending a decision by the Supreme Court.

2. Evolution of the Private Health Insurance Market in Ireland

The system of private health insurance was formally inaugurated in 1957, when, as a result of the Voluntary Health Insurance Act, 1957, the Voluntary Health Insurance Board (later to become Vhi Healthcare) was established. Between 1957 and 1994, the provision of private health insurance in Ireland was subject to the terms of this Act. During this time Vhi Healthcare were the only providers of private health insurance in Ireland, apart from a number of restricted membership undertakings that may only provide cover to members of certain groups (these groups are normally vocational, e.g. the Garda Síochána).

Following the introduction of the European Council Directive 92/49/EEC (the Third Non Life Directive) in 1992, the Health Insurance Act, 1994 was introduced. This Act made provision for the opening of the health insurance market to competition and gave legal effect to the principles of community rating, open enrolment, lifetime cover and minimum benefits. The Act also included provision for the establishment of the Authority and for a Risk Equalisation Scheme. BUPA Ireland was the first to enter the health insurance market following the Act (in 1997) and VIVAS Health commenced trading in 2004. BUPA Ireland sold its Irish business in 2007 to Quinn Healthcare.

Risk Equalisation Regulations were introduced in 1996. The 1996 Regulations provided for the commencement of risk equalisation payments when the risk differences between health insurers reached a specified level. Payments were never commenced under these Regulations.

From 1997 the Risk Equalisation Regulations received significant analysis. An independent group, the Advisory Group on the Risk Equalisation Scheme, was established by the Minister to assess the 1996 Regulations. The Minister also engaged in a consultation process as part of the preparatory work on the White Paper on "Private Health Insurance". The White Paper was published in 1999 and set out the Government's policy objectives and proposals regarding, *inter alia*, the role of private health insurance in the overall healthcare system. During this time, the 1996 Risk Equalisation Regulations were revoked.

The Advisory Group strongly recommended that the Authority be established and the White Paper reaffirmed the Government's intention to do so.

The Authority was established on 1 February 2001. The Authority's role, as set out in the Health Insurance Act, 1994 was amended by the Health Insurance (Amendment) Act, 2001. The role of the Authority as set out in this legislation includes, *inter alia*, specific responsibilities with regard to risk equalisation as well as a provision that the Authority may advise the Minister on matters relating to the functions of the Minister under the Health Insurance Acts, 1994 –2003, the functions of the Authority and health insurance generally.

On 1 July, 2003 a new Risk Equalisation Scheme came into effect. This Risk Equalisation Scheme differs significantly from the Scheme defined in 1996. One

difference is that the 2003 Scheme invested significant responsibilities in an independent statutory body (the Authority) in relation to the operation of the Scheme and in particular and crucially in relation to whether or not payments under the Scheme would commence.

There is an allowance in the Risk Equalisation Scheme, 2003 for restricted membership undertakings to opt out of the Scheme if they were registered as health insurance undertakings on 1 May, 2000 and if they were carrying on business in the State before 19 November, 2001. In order to opt out of the Scheme, a restricted membership undertaking must have served a notice on the Minister stating that it did not wish the Scheme to apply to it on or before 30 September, 2003. ESB Staff Medical Provident Fund was the only restricted membership undertaking that did not opt out of the Scheme.

The Authority receives returns from insurers every 6 months. The first half-year for which insurers made a return was the half-year commencing on 1 July, 2003. Following analysis of the returns for the fourth period (January to June 2005), the Authority recommended the commencement of risk equalisation payments and the Minister decided to commence payments starting with those due in respect of the period from 1st January 2006. The High Court, on 30th May 2005, determined that a stay on risk equalisation payments would apply until the conclusions of High Court proceedings. The stay on payments remains in place.

For the first 12 months after payments under the Scheme commenced i.e. 2006, payments to and from the risk equalisation fund were halved due to phasing arrangements contained in the Risk Equalisation Scheme, 2003.

The Risk Equalisation Scheme was amended in 2007. On 21 February 2007, the Health Insurance (Amendment) Act 2007 was enacted. The stated objects of the Act were to remove a three year exemption from risk equalisation payments in respect of new entrants to the market and to put beyond doubt that the Risk Equalisation Scheme is to apply to registered undertakings that cease to be registered. The Risk Equalisation Scheme, 2003 was amended on 26 April 2007 through S.I. no 220 of 2007. The new Scheme allowed for the impact of the Health Insurance (Amendment) Act, 2007. It also made other amendments, including a reduction in the level of payments by multiplying calculated transfers by 80%.[1]

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[1] See Appendix II for amendments made to the Risk Equalisation Scheme since 2003.

3. The Current Regulatory Structure

The key principles of community rating, open enrolment, lifetime cover and minimum benefit have played a crucial role in the Irish Private Health Insurance Market. They aim to make cover more accessible to a substantial proportion of the Irish population and, in particular, to higher risk groups such as the elderly and the chronically ill.

Community rating means that the level of risk that a consumer poses to an insurer does not affect the premium paid. This has the effect that all insurers must charge all consumers, with certain exceptions, the same premium for a given level of cover regardless of their age, gender or health. A discounted premium is available for children and may be available for full time students up to age 23. A discounted premium may also be available for members of group schemes.

Open enrolment is a practice whereby all applicants for private health insurance must be accepted by a health insurer regardless of their risk status, subject to prescribed maximum waiting periods.

Lifetime cover guarantees health insurance consumers the right to renew their policies irrespective of factors such as age, risk status or claims history. Under normal circumstances, an insurer is obliged to renew an insured person's policy and may not terminate the policy.

Minimum Benefit Regulations were introduced by the Minister for Health and Children in 1996, which set out minimum levels of benefit that must be provided by all insurance contracts sold in Ireland that provide cover for in-patient hospital services. Given the complex and specialist nature of private health insurance products, in the absence of regulation, consumers could be sold policies that do not provide a sufficiently comprehensive level of cover.

The Irish private health insurance regulatory system is designed to benefit consumers, by ensuring that private health insurance does not cost more for those who need it most. Under the current system, community rating relies on inter-generational solidarity, which means that younger, healthier people effectively subsidise older people, who have higher claims, the underlying premise being that they (the younger people) themselves will be subsidised by future generations. This happens because people pay more than is actuarially required in their younger years, but less than actuarially required in their later years. The current system is also unfunded, in that there is no fund built up over an insured person's lifetime to cover their expected claims cost; rather the money contributed by all of the insured people to a particular insurer is pooled and the cost of claims in any given year taken from that pool.

Risk equalisation involves payments by health insurers with lower risk members to health insurers with higher risk members. In broad terms, this is a mechanism to spread some of the claims costs of high risk members amongst all the private health insurers in the market in proportion to their market share. Risk equalisation is a common mechanism in countries with community rated health insurance systems.

4. The Role of the Health Insurance Authority

The Authority's role in relation to risk equalisation is set out in the Health Insurance (Amendment) Act, 2001. The Authority had a key role in recommending whether or not risk equalisation payments should be commenced. As the Minister decided to commence payments from 1 January 2006, the Authority's current role is to manage and administer payments made under the Scheme, report on the Scheme to the Minister and monitor the operation of the Scheme in the best overall interests of consumers. It also has a role in determining whether a health status weight (HSW) of greater than zero should be introduced.

The Health Status Weight is a parameter used in the calculation of risk equalisation transfers that enables the Authority to take account of differences in the risk profiles of insurers that are not reflected in the insurers' age and gender profiles. The legislation initially sets the HSW equal to zero. With the HSW equal to 0, the aim of the calculations is to partially equalise age and gender profiles across the market but not to equalise individual insurers' costs (per insured person) within each age and gender cell. Significant differences in risk profile, other than those reflected in the age and gender profiles of insurers, may exist and such differences would not be equalised with a HSW=0.

If the Health Status Weight was increased to 0.5 (which is the maximum permitted by legislation), two sets of calculations would be performed. One would aim to partially equalise only age and gender profiles (i.e. as with the HSW equal to zero) and the other would in addition aim to equalise the level of utilisation of hospital services (measured by treatment days per member) within each cell. The transfers between insurers would then be calculated as the average of the transfers found using each calculation. This would partially equalise differences in health status due to factors other than age / gender but it might also result in the sharing of efficiencies between insurers, which could have consequences for insurers' incentives to reduce medical costs.

The Scheme sets out the circumstances under which the HSW may be increased from its initial value of 0. The Authority must as follows:

- Observe in its analysis of the risk equalisation returns that there are material differences in claims experience within prescribed age and gender cells as between scheme undertakings and
- Have carried out an investigation into the reasons for such material differences and
- As a result of the investigation has concluded that the material differences are wholly or substantially attributable to variations between scheme undertakings in the health status of covered persons rather than in the respective efficiency levels of those undertakings and
- Consider that the making of such a determination is in the best overall interests of health insurance consumers.

The HSW currently remains at 0.

5. Risk Equalisation Calculations

While the detail of the risk equalisation calculations may appear complex, the principle behind the calculations is straightforward and involves calculating the claim cost that each insurer would have had if they had the market risk profile rather than their own risk profile. In this section we will describe how this principle is applied in broad terms. In Appendix I we will consider the calculations in more detail and in particular we will consider how, for example, children are allowed for and how different ways of measuring risk profiles are allowed for in the calculations.
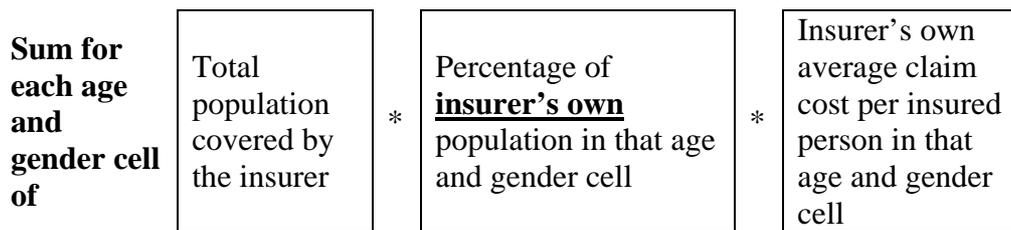
The first step when attempting to equalise levels of risk for different insurers is to decide how the risk profiles of different groups can be measured. Clearly the level of risk that policyholders pose to an insurer is related to their age and gender. Therefore, the proportion of the insurer's membership in each age and gender group is one way of estimating the insurer's risk profile. The Risk Equalisation Scheme, 2003 initially uses the age and gender profile of the insurer's membership as a proxy for its risk profile.

As noted earlier in this document, if the Authority considers that the age and gender profiles of the insurers' populations do not adequately reflect the underlying risk profiles and the conditions specified in the Scheme are satisfied, the Authority may take account of the extent to which an insurer's population uses healthcare services in attempting to measure the level of risk that each insurer has. This would be through the use of a Health Status Weight of greater than 0 (subject to a maximum HSW of 0.5). A disadvantage of incorporating the extent to which an insurer's population uses healthcare services is that it may result in insurers sharing efficiencies that they achieved in respect of their memberships' use of healthcare services.

In this section we will describe how the calculations would be performed if age and gender profiles only were used as a proxy for risk profile. The process is broadly as follows:
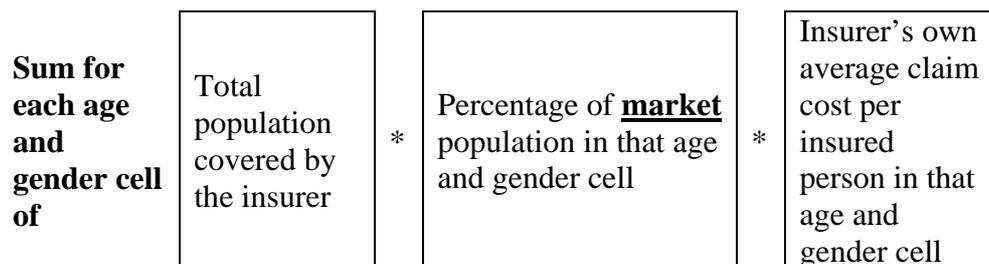
1. Each insurer makes returns to the Authority, which specify its age and gender profile and its pre-equalisation claim costs for each age and gender group.
2. The Authority uses the data provided by insurers to calculate each insurer's average cost per person in each age and gender group.
3. The pre-equalisation claim cost can then be expressed as follows:

Pre-equalisation claims cost:

Sum for each age and gender cell of	Total population covered by the insurer	*	Percentage of **insurer's own** population in that age and gender cell	*	Insurer's own average claim cost per insured person in that age and gender cell

4. The Authority then uses the data supplied by insurers to calculate the age and gender profile of the market as a whole.
5. The percentage of the market population in each age and gender cell is substituted for the percentage of the insurers' own populations in each age and gender cell in order to calculate the claim cost using the market age and gender profile (which is being used to approximate the market risk profile). Therefore, for each insurer:

Claims cost using the market profile =

Sum for each age and gender cell of	Total population covered by the insurer	*	Percentage of **market** population in that age and gender cell	*	Insurer's own average claim cost per insured person in that age and gender cell

In calculating the costs this way every insurer is given the same age / sex profile, but each insurer uses their own average claim cost.

6. Where the claims cost using the market profile is more than the pre-equalisation cost, the insurer pays a risk equalisation contribution to the Fund. Conversely, where the pre-equalisation cost is more than the cost using the market profile, the insurer receives a risk equalisation contribution from the Fund.

7. The risk equalisation contribution payable by each insurer paying into the Risk Equalisation Fund is calculated as 80% of the difference between the claims cost using the market profile (point 5 above) and the pre-equalisation claims cost (point 3 above). Contributions due in respect of periods ended before 2007 did not have the 80% factor applied.

8. In order for the Risk Equalisation Scheme to be self financing the total of the risk equalisation contributions paid to the Fund must equal the total of the contributions paid out by the fund. This means that an adjustment has to be made to the transfers for those receiving payments from the fund. This adjustment means that the total payments made out of the fund are ratioed up or down as appropriate so that they equal the total payments into the fund.

Example:

Suppose there are two insurers, A and B. Insurer A insures a total of 800,000 people and Insurer B insures a total of 200,000 people. The market population is the sum of the populations of A and B, i.e. 1,000,000 people. Each insurer's population can be divided into age groups and the average claim cost for each individual in the different age groups can be determined. (For simplicity, in this example, we have taken age as the only risk factor).

Using the formula in step 3 above, the pre-equalisation claims cost can be expressed as follows:

Insurer A Population = 800,000

Age Cell	% of Insurer's Own Population in Cell	Insurer's Own Average Claim Cost per Insured Person in Cell	Pre-equalisation Claims Cost ('000's)
Aged 18 to age 29	12.50	200.00	800,000 * 12.50% * € 200 = €20,000
Aged 30 to age 39	13.75	240.00	800,000 * 13.75% * € 240 = €26,400
Aged 40 to age 49	15.00	360.00	800,000 * 15.00% * € 360 = €43,200
Aged 50 to age 59	18.75	500.00	800,000 * 18.75% * € 500 = €75,000
Aged 60 to age 69	15.00	650.00	800,000 * 15.00% * € 650 = €78,000
Aged 70 to age 79	12.50	1,000.00	800,000 * 12.50% * € 1,000 = €100,000
Aged 80 and over	12.50	1,200.00	800,000 * 12.50% * € 1,200 = €120,000
Total			€462,600

Insurer B Population = 200,000

Age Cell	% of Insurer's Own Population in Cell	Insurer's Own Average Claim Cost per Insured Person in Cell	Pre-equalisation Claims Cost ('000's)
Aged 18 to age 29	32.00	181.82	200,000 * 32% * € 181.82 = €11,636
Aged 30 to age 39	20.00	218.18	200,000 * 20% * € 218.18 = €8,727
Aged 40 to age 49	20.00	327.27	200,000 * 20% * € 327.27 = €13,090
Aged 50 to age 59	16.00	454.55	200,000 * 16% * € 454.55 = €14,545
Aged 60 to age 69	6.00	590.91	200,000 * 6% * € 590.91 = €7,090
Aged 70 to age 79	3.00	909.09	200,000 * 3% * € 909.09 = €5,454
Aged 80 and over	3.00	1,090.91	200,000 * 3% * € 1090.91 = €6,545
Total			€67,091

We then calculate the age profile of the market, which we use as a proxy for the market risk profile.

Market Population = **1,000,000**

Age Cell	% of Market Population in Cell
Aged 18 to age 29	16.40
Aged 30 to age 39	15.00
Aged 40 to age 49	16.00
Aged 50 to age 59	18.20
Aged 60 to age 69	13.20
Aged 70 to age 79	10.60
Aged 80 and over	10.60

We now substitute the age profile of the market for each insurer's age profile.

Insurer A Population = 800,000

Age Cell	% of Market Population in Cell	Insurer's Own Average Claim Cost per Insured Person in Cell	Claims Cost using market risk profile ('000's)
Aged 18 to age 29	16.4%	200.00	800,000 * 16.4% * €200 = €26,240
Aged 30 to age 39	15.0%	240.00	800,000 * 15.0% * €240 = €28,800
Aged 40 to age 49	16.0%	360.00	800,000 * 16.0% * €360 = €46,080
Aged 50 to age 59	18.2%	500.00	800,000 * 18.2% * €500 = €72,800
Aged 60 to age 69	13.2%	650.00	800,000 * 13.2% * €650 = €68,640
Aged 70 to age 79	10.6%	1,000.00	800,000 * 10.6% * €1000 = €84,800
Aged 80 and over	10.6%	1,200.00	800,000 * 10.6% * €1200 = €101,760
Total			**€429,120**

Insurer B Population = 200,000

Age Cell	% of Market Population in Cell	Insurer's Own Average Claim Cost per Insured Person in Cell	Claims Cost using market risk profile ('000's)
Aged 18 to age 29	16.4%	181.82	200,000 * 16.4% * € 181.82 = €5,964
Aged 30 to age 39	15.0%	218.18	200,000 * 15.0% * € 218.18 = €6,545
Aged 40 to age 49	16.0%	327.27	200,000 * 16.0% * € 327.27 = €10,473
Aged 50 to age 59	18.2%	454.55	200,000 * 18.2% * € 454.55 = €16,545
Aged 60 to age 69	13.2%	590.91	200,000 * 13.2% * € 590.91 = €15,600
Aged 70 to age 79	10.6%	909.09	200,000 * 10.6% * € 909.09 = €19,273
Aged 80 and over	10.6%	1,090.91	200,000 * 10.6% * € 1090.91 = €23,127
Total			**€97,527**

In other words, we attempt to estimate the claim cost that each insurer would have paid if they all had the same age profile (i.e. the market profile).

Before allowing for the self-financing adjustment, the amount that each insurer will receive from, or contribute to, the risk equalisation fund, is equal to 80% of the difference between their pre-equalisation claims cost and the claims costs using the market risk profile. However, in order to ensure the system is self-financing and that the total amount transferred to the fund is equal to the total amount transferred from the fund, the amount due to Insurer A is ratioed down so that it equals the amount paid out by Insurer B, which equals 80% of (€97,527 minus €67,091) = €24,349.

Therefore the post-equalisation claim costs for insurers A and B are:

.

	Insurer A	Insurer B
Pre-equalisation		
Total Claims Cost ('000s)	€462,600	€67,091
Post-equalisation		
Claims Cost using market risk profile ('000s)	€429,120	€97,527
Transfer to (from) Fund before self-financing adjustment	(€26,784)	€24,349
Transfers to (from) Fund after self-financing adjustment ('000s)	(€24,349)	€24,349

Appendix I - Guide to the Risk Equalisation Calculations in the Risk Equalisation Scheme, 2003.

A. Introduction.

This appendix describes the risk equalisation calculations in detail. In this appendix

- We begin by giving an overview of the calculations specified in the Risk Equalisation Scheme, 2003 (Section A);
- We then step through the calculations as specified in the Risk Equalisation Scheme, 2003 as prescribed by S.I. No. 261 of 2003, No. 710 of 2003, No. 334 of 2005 and S.I. No 220 of 2007 explaining how the calculations specified in the Scheme allow for children, allow for phasing, cater for situations in which data might be sparse, allow for new entrants and limit the level of benefits subject to risk equalisation (Section B); and
- We include a glossary of the abbreviations used in the Scheme (Section C).

B. Overview of Risk Equalisation Formulae.

In this overview, in order to simplify matters, we will assume that all benefits paid by insurance undertakings are subject to risk equalisation. In reality the "Maximum Equalised Payments" amounts set out in the First Schedule of the Scheme place limits on the types and amounts of benefits that are subject to risk equalisation. Furthermore, we will not consider adjustments for children or for sparse data until a later section.

The methodology for the risk equalisation calculations is outlined in the following steps:

1. **Estimate the risk profile for the overall market.**

    The Risk Equalisation Scheme, 2003 approximates the market risk profile in two different ways:
    1. According to the age and gender profile of the market, i.e., the proportion of the market in each age and gender cell is calculated.
    2. According to the age and gender profile of the market combined with a measure of the extent to which members of that age and gender cell utilise healthcare services, which for this purpose is taken as the average, for the market as a whole, of the number of days that someone in an age and gender cell spends in hospital.

2. **Substitute the market risk profile for each undertaking's own risk profile.**
    Each undertaking's pre-equalisation claim costs can be expressed as the sum over all age and gender cells of:
    Undertaking Membership * Undertaking Proportion in cell
                   * Undertaking Cost per person in cell
    It can also be expressed as the sum over all age and gender cells of:
    Undertaking membership * Undertaking Proportion in Cell
           * Undertaking average no. of days a person in the cell stays in hospital
              * Undertaking cost for a day in hospital for a person in the cell

Depending on how we estimate the market risk profile we can substitute it for the undertaking's risk profile by either
1. Substituting the "Undertaking Proportion in Cell" with "Market Proportion in Cell" in the first formula or by
2. Substituting "Undertaking proportion in cell * Undertaking Average no. of days a person in the cell spends in hospital" with "Market Proportion in Cell * Market average number of days a person in the cell spends in hospital" in the second formula.

This provides an estimate of the costs undertakings would have incurred if they had the same risk profile as the overall market ("the post-equalisation claims cost").

3. **Calculation of risk equalisation contributions**
   The amount of the risk equalisation contribution payable to or from the Fund, before applying the adjustment so that payments in equal payments out, is calculated as 80% of the difference between the post equalisation claims cost and the actual claims cost. A positive contribution represents a payment to the Fund, whereas a negative contribution represents a payment from the Fund to the undertaking.

   However, if we sum these contributions, we will find that they will not total to zero, i.e. payments from the Fund do not equal payments to the Fund. The reason for this is because each undertaking's cost per unit of risk is likely to be different so that when risk is moved from one undertaking to another, the cost of that risk changes. In order for the Risk Equalisation Scheme to be self – financing, the risk equalisation payments for each undertaking receiving a contribution from the fund is ratioed up or down as appropriate so that the total payments out of the fund equal the payments into the fund.

4. **The Market Equalisation Percentage**

   The Market Equalisation Percentage is calculated as being equal to the total amount that would be transferred, if there was no phasing (and if payments were not reduced by 20%, as allowed for in the S.I. No 220 of 2007), expressed as a percentage of the total benefits in the market that are subject to risk equalisation.

C. Calculation of Equalisation Adjustments as in the Risk Equalisation Scheme, 2003 with Explanatory Notes

In this section we step through the risk equalisation calculations as specified in Sections 7, 8 and 9 of the Second Schedule of the Scheme and we include explanatory notes wherever necessary.

- Section 7 of the Second Schedule describes how the post-equalisation claim costs are calculated using age, gender and "health status"
- Section 8 of the Second Schedule describes how the post-equalisation claim costs are calculated using age and gender only.
- Section 9 of the Second Schedule describes how the Market Equalisation Percentage and Equalisation Contributions are calculated.

We begin by stepping through Section 7 of the Second Schedule of the Scheme. This section begins by describing how the post equalisation claim cost for a particular cell is calculated using the market profile with respect to age, gender and "health status":

"7. Age, Gender and Health Status (AGHS) Calculations shall be determined in accordance with the following provisions:

"cell standardised benefits ▪ AGHS" and **"CSBAGHS"** with respect to a specific period, each scheme undertaking and a specified cell, means an amount calculated in accordance with the formula:

$$CEBA * MP(Cell) * MU(Cell) * UIP$$

Explanatory Note:
In the above formula:
CEBA = The cost of equalised benefits per day in hospital for a particular undertaking, in a particular cell.
MP(Cell) = The proportion of insured persons in the market that are in a particular age and gender cell.
MU(Cell) = The average number of days a person in a particular cell spends in hospital over all undertakings in the market.
UIP = The membership of the undertaking.

Thus we calculate the cost for the cell using the undertaking's own average cost per day in hospital (CEBA) and the undertaking's own size (UIP), but we use the market proportion in the cell (MP(Cell)) and the market level of utilisation (based on the average days spent in hospital) in the cell (MU(Cell)).

Except where the CEB is less than €5,000, or if CIP is less than 20, or if CCV is less than 20 for that cell, in which case, CSBAGHS shall be calculated in accordance with the formula:

$$80\%* \text{ MEBA(Cell)} * \text{MP(Cell)} * \text{MU(Cell)} * \text{UIP}$$

Explanatory Note :

CCV = Total number of days members of the undertaking in a particular age and gender cell spend in private accommodation in hospital.

MEBA(Cell) = Market average cost per day in hospital for people in a particular age and gender cell.

MP(Cell) = The proportion of insured persons in the market that are in a particular age and gender cell.

MU(Cell) = The average number of days a person in a particular cell spends in hospital over all undertakings in the market.

UIP = The membership of the undertaking.

When the data values are small CEBA may be subject to significant random variations; hence 80% of market rate (MEBA(Cell)) is used, which is based on a larger sample size.

"undertaking standardised benefits AGHS - first calculation " and **"USBAGHSl"** with respect to a specific period and each scheme undertaking means the sum for **all** cells of

CSBAGHS

"undertaking standardised benefits AGHS" and **"USBAGHS"** with respect to a specific period and each scheme undertaking means an amount determined in accordance with the formula:

$$\text{USBAGHS1} * \frac{\text{UEAR}}{\text{MEAR}}$$

Where UEAR is the Undertaking Equivalent Adult Ratio and MEAR is the Market Equivalent Adult Ratio.

"undertaking equalisation adjustment ‐ age, gender and health status " and **"UEAAGHS"** with respect to a specific period and each scheme undertaking shall be determined in accordance with the formula:

USBAGHS-UEB

8. Age and Gender (AG) Calculations shall be determined in accordance with the following provisions:

"cell standardised benefits - age and gender basis" and **"CSBAG"** with respect to a specific period, each scheme undertaking and a specified cell means an amount calculated in accordance with the formula:

$$\frac{CEB}{CIP} * UIP * MP(Cell)$$

Explanatory Note :
CEB = The total equalised benefits paid for a particular undertaking for members in a particular age and gender cell.
CIP = The total number of people in a particular undertaking that are in a particular age and gender cell.
UIP = The total membership of the undertaking.
MP(Cell) = The proportion of people in the market that are in a particular age and gender cell.

Thus we calculate the cost for the cell using the undertakings own average cost per person in the cell and the undertakings own size, but we use the market proportion in the cell.

Except where CEB is less than €5000, or where CIP is less than 20, in which case CSBAG shall be calculated in accordance with the following formula:

$$80\% * \frac{MEB(Cell)}{MIP(Cell)} * UIP * MP(Cell)$$

Explanatory Note:
MEB(Cell) = The total equalised benefits paid in the market for a particular age and gender cell.
MIP(Cell) = The total number of people in the market in a particular age and gender cell.

When the data values are small, the value of CEB per insured person in the cell may be subject to significant random variations; hence 80% of market average cost (MEB(Cell)/MIP(Cell)) is used, which is based on a larger sample size.

"undertaking standardised benefits - age and gender basis - first calculation"
and **"USBAGl"** with respect to a specific period and each scheme undertaking means
the sum for all cells of

$$CSBAG$$

"undertaking standardised benefits - age and gender basis" and **"USBAG"** with
respect to a specific period and each scheme undertaking means a value determined in
accordance with the formula

$$\frac{USBAG1*UEAR}{MEAR}$$

Explanatory Note:
UEAR = The membership of the undertaking, counting each child as 1/3, divided by
the membership of the undertaking, counting each child as 1.
MEAR = The total membership in the market, counting each child as 1/3, divided by
the total membership in the market, counting each child as 1.

This adjustment is to allow for children in the insured population. Because children
are charged a lower premium, undertaking standardised benefits should be reduced if
a greater proportion of the undertaking's insured population are children than in the
rest of the market.

"undertaking equalisation adjustment - age and gender" and **"UEAAG"** with
respect to a specific period and each scheme undertaking means an amount
determined in accordance with the formula :

$$USBAG - UEB$$

9. **Determination of Market Equalisation Percentage and Equalisation
Contributions** shall be in accordance with the following provisions:

"undertaking equalisation adjustment" and **"UEA"** with respect to a specific
period and each scheme undertaking means an amount determined in accordance with
the following formula:

$$HSW * UEAAGHS + (100\% - HSW) * UEAAG$$

Explanatory Note:
We have calculated the undertaking equalisation adjustments for each undertaking on the basis of age, gender and "health status" (UEAAGHS) and on the basis of age and gender only (UEAAG). We now calculate a weighted average of these adjustments under these bases. The higher the value of HSW, the greater the influence of the calculations performed using the "health status" basis. The Authority has discretion to vary the HSW factor, however the current value of HSW is 0. Therefore, the risk equalisation calculations are currently performed on the basis of age and gender only and calculations performed on the health status basis have no effect on the overall result.

"undertaking phased positive equalisation adjustment" and **"UPPEA"** with respect to a specific period and each scheme undertaking means for all scheme undertakings in respect of which the determined **UEA** is greater than zero an amount determined in accordance with the following formula:

$$UEA * P$$

where **P** is 0.8

provided that in the case of a scheme undertaking which became a registered undertaking on the 18th October, 2004, a value for **P** determined in accordance with the following table should be substituted for the above, if lower,

Total number of periods (including part periods) from the commencement date of that undertaking up to the current period inclusive	Value
6 or less	0
7	T/365
8	0.5
9 or more	1.00

Where "T" is the number of days from, and including, the third anniversary of the commencement date of that undertaking to the end of the period in which it acquired that status.

Explanatory Note:
The above adjustment to the value of P details how payments are phased in for VIVAS Health. VIVAS Health chose to be exempted from making or receiving payments to or from the Scheme for 36 months after the date on which they commence carrying on health insurance business. Thereafter their payments are phased in.

"market positive equalisation adjustments" and **"MPEA"** (with respect to a specific period), means the sum, for all scheme undertakings in respect of which the determined **UEA** is greater than zero of

$$UEA$$

"market negative equalisation adjustments" or **"MNEA"** (with respect to a specific period) means the mathematically absolute value of the sum, for all scheme undertakings in respect of which the determined **UEA** is less than or equal to zero, of

$$UEA$$

"market positive phased equalisation adjustments" and **"MPPEA"** (with respect to a specific period) means the sum, for all scheme undertakings in respect of which the determined **UEA** is greater than zero of

$$UPPEA$$

"undertaking phased negative equalisation adjustment" and **"UPNEA"** (with respect to a specific period and each scheme undertaking) means, for all scheme undertakings in respect of which the determined **UEA** is less than or equal to zero an amount determined in accordance with the following formula:

$$UEA * \frac{MPPEA}{MNEA}$$

"equalisation contribution" (with respect to a specific period and each scheme undertaking) means:

a)   **UPPEA** for all scheme undertakings in respect of which the determined **UEA** is greater than zero and/or
b)   **UPNEA** for all scheme undertakings in respect of which the determined **UEA** is less than or equal to zero.

"market equalisation percentage" with respect to a specific period shall be a percentage determined in accordance with the following formula:

$$\frac{MPEA * 100}{MEB(Total)} \text{,,}$$

D. Glossary of Abbreviations:

The purpose of the following glossary is to define the many abbreviations used in the Risk Equalisation formulae in straightforward terms, rather than the mathematical / legalistic terms that are used in the Risk Equalisation Scheme. However the abbreviations represent mathematical / legalistic entities and hence some accuracy may be lost when defining them in more straightforward terms. Therefore, if an exact definition is required you should consult the Scheme.

CCV Cell Claim Value = The sum of all in-patient and day-patient days, in respect of settled claims which acquired that status during that period, to or on behalf of covered persons.

CEB Cell Equalised Benefits = The sum of all equalised benefits paid by a particular undertaking, for a particular cell.

CEBA Cell Equalised Benefit Average $= \dfrac{\text{CEB}}{\text{CCV}}$ = The cost of equalised benefits per day in hospital for a particular undertaking, in a particular cell.

CIP Cell Insured Population = One sixth of the sum of [half (the number of insured persons in that cell on the first day of the period and on the first day of the following period) and the number of insured persons in that cell on the first day of each month within the period but excluding the first day of the period], i.e.

$$\frac{1}{6} * \left[\frac{1}{2} * MembershipforMonth(1+7) + MembershipforMonth(2-6) \right]$$

CSBAG Cell Standardised Benefits (Age and Gender) = An estimate of the cost of equalised benefits that a particular undertaking would pay in a particular cell if that undertaking had, proportionately, the same level of risk in that cell as the market. For CSBAG market risk is measured in relation to its age and gender profile.

CSBAGHS Cell Standardised Benefits (Age, Gender and Health Status) = An estimate of the cost of equalised benefits that a particular undertaking would pay in a particular cell if that undertaking had, proportionately, the same level of risk in that cell as the market. For CSBAGHS market risk is measured using both the age and gender profile and the extent to which healthcare services are used.

CU Cell Utilisation $= \dfrac{\text{CCV}}{\text{CIP}}$ = The number of days in hospital per insured person for a particular cell for a particular undertaking.

HSW　　　　The Health Status Weight is a factor, which is initially set to 0 but can be altered by the Authority. This factor is used to determine the extent to which the risk equalisation calculations will be based on the age, gender and "health status" basis as opposed to age and gender only.

MCV(Cell)　Market Claim Value(Cell) = Days in hospital (CCV) summed over all scheme undertakings for a particular cell.

MCV(Total)　Market Claim Value(Total) = Total number of days in hospital (CCV) for all cells and for all scheme undertakings in the market.

MEAL　　　Market Equivalent Adult Lives = A measure of the number of insured persons in the market with each adult counting as 1 and each child counting as $1/3^{rd}$ = the sum over all undertakings of UEAL.

MEAR　　　Market Equivalent Adult Ratio = Market equivalent adult lives divided by the total market insured population $= \dfrac{\text{MEAL}}{\text{MIP(Total)}}$.

MEB(Cell)　Market Equalised Benefit(Cell) = The sum of the cost of equalised benefits paid by scheme undertakings for a particular cell = the sum of CEB for all undertakings and a particular cell.

MEB(Total)　Market Equalised Benefit(Total) = The total of equalised benefits paid by all undertakings in the market = the sum of CEB for all cells and all undertakings in the market.

MEBA(Cell)　Market Equalised Benefits Average = The cost of equalised benefits per day in hospital for a particular cell over all scheme undertakings = $\dfrac{\text{MEB(Cell)}}{\text{MCV(Cell)}}$.

MEP　　　　Market Equalisation Percentage = a measure of the risk difference between insurers $= \dfrac{\textbf{MPEA} * \textbf{100}}{\textbf{MEB(Total)}}$."

MIP(Cell)　Market Insured Population (Cell) = Number of persons in a particular cell insured by any undertaking in the market = the sum of CIP for all undertakings and a particular cell.

MIP(Total)　Market Insured Population (Total) = The total number of persons insured by any scheme undertaking in the market = the sum of CIP for all cells and all scheme undertakings.

MNEA　　　Market Negative Equalisation Adjustment = the mathematical absolute total amount that would be paid out of the fund in the period under risk equalisation if there were no phasing, no P factor of 0.8 and no adjustment so the fund is self financing .

MP(Cell) Market Proportion = The proportion of insured persons in the market that are in a particular age and gender cell $= \dfrac{\text{MIP(Cell)}}{\text{MIP(Total)}}$

MPEA Market Positive Equalisation Adjustment = The total amount that would be paid into the fund in the period under risk equalisation if there were no phasing and no P factor of 0.8.

MPPEA Market Positive Phased Equalisation Adjustments = the total amount that would be paid into the fund in the period under risk equalisation, which is equal to the sum of UPPEA for all undertakings that have a value of UEA greater than zero.

MU(Cell) Market Utilisation = The average number of days in hospital per person for a particular cell over all scheme undertakings $= \dfrac{\text{MCV(Cell)}}{\text{MIP(Cell)}}$

UAL Undertaking Adult Lives = The total number of adults insured by an undertaking = The sum for all cells except the child cell of CIP.

UCL Undertaking Child Lives = The number of children insured by an undertaking = The value of CIP for an undertaking's "age 17 and under" cell.

UEA Undertaking Equalisation Adjustment = A weighted average of the undertaking equalisation adjustment calculated on the basis of Age and Gender (UEAAG) and the adjustment calculated on the basis of Age, Gender and Health Status (UEAAGHS). The weight given to the health status based calculations is the HSW, which is initially 0 and thereafter determined by the Authority.

UEAAG Undertaking Equalisation Adjustment (Age and Gender) = The difference between the Undertaking standardised benefits calculated on the basis of Age and Gender and the Undertaking Equalised Benefits = USBAG – UEB.

UEAAGHS Undertaking Equalisation Adjustment (Age, Gender and Health Status) = The difference between the Undertaking standardised benefits calculated on the basis of Age, Gender and "Health Status" and the Undertaking Equalised Benefits = USBAGHS – UEB.

UEAL Undertaking Equivalent Adult Lives = A measure of the number of insured persons with each adult counting as 1 and each child counting as $1/3^{\text{rd}}$ = UAL +UCL/3

UEAR Undertaking Equivalent Adult Ratio = Undertaking equivalent adult lives divided by the undertaking insured population $= \dfrac{\text{UEAL}}{\text{UIP}}$.

UEB   Undertaking Equalised benefits = The total equalised benefits paid by an undertaking = The sum for all cells in an undertaking of CEB.

UIP   Undertaking Insured Population = The total number of persons insured by a particular undertaking = The sum for all cells in an undertaking of CIP.

UPNEA   Undertaking Phased Negative Equalisation Adjustment = The value of the UEA, where the UEA is negative, adjusted so that the fund is self-financing = UEA * MPPEA/MNEA = the amount transferred in the period to an undertaking receiving risk equalisation payments.

UPPEA   Undertaking Phased Positive Equalisation Adjustment = The value of the UEA, where the UEA is positive, adjusted by a factor P = the amount transferred in the period by an undertaking making risk equalisation payments.

USBAG   Undertaking Standardised Benefits (Age and Gender basis). An estimate of the cost of equalised benefits that a particular undertaking would pay if that undertaking had the same risk profile (allowing for age and gender only) as the market, adjusted for the number of children insured by the undertaking, i.e.

$$USBAG = USBAG1 * \frac{UEAR}{MEAR}.$$

USBAG1   Undertaking Standardised Benefits (Age and Gender) – first calculation = An estimate of the cost of equalised benefits that a particular undertaking would pay if that undertaking had the same risk profile as the market. For USBAG1, risk is measured in relation to the Age and Gender profile. USBAG1 = The sum for all cells in the undertaking of CSBAG.

USBAGHS   Undertaking Standardised Benefits (Age, Gender and Health Status basis). An estimate of the cost of the equalised benefits that a particular undertaking would pay if that undertaking had the same risk profile (allowing for age, gender and "health status") as the market, adjusted for the number of children insured by the undertaking, i.e.

$$USBAGHS = USBAGHS1 * \frac{UEAR}{MEAR}.$$

USBAGHS1   Undertaking Standardised Benefits (Age, Gender and Health Status) – first calculation = An estimate of the cost of equalised benefits that a particular undertaking would pay if that undertaking had the same risk profile as the market. For USBAGHS1 risk is measured in relation to age, gender and "health status". USBAGHS1 = The sum for all cells in the undertaking of CSBAGHS.

E. Example of Calculations:

Invented Undertaking Data and Market Totals

Cell	Undertaking 1 Cell Insured Persons	Cell Equalised Benefits for the Period	Cell Claim Value for the Period	Undertaking 2 Cell Insured Persons	Cell Equalised Benefits for the Period	Cell Claim Value for the Period	Market Market Insured Persons (Cell)	Cell Equalised Benefits for the Period	Cell Weighted Claim Value for the Period	Market Proportion
	CIP	CEB	CCV	CIP	CEB	CCV	MIP(Cell)	MEB(Cell)	MCV(Cell)	MP(Cell)
Males Age 17 and Under	117500	11,468,000	28,671	28,670	2,203,576	6,295	146,170	13,671,576	34,966	0.121808
Males Age 18 to age 29	98700	5,724,600	14,311	23,500	1,073,362	3,066	122,200	6,797,962	17,377	0.101833
Males Age 30 to age 39	84600	8,256,960	20,642	19,740	1,517,216	4,334	104,340	9,774,176	24,976	0.08695
Males Age 40 to age 49	56400	10,355,040	23,011	11,280	1,656,806	4,142	67,680	12,011,846	27,153	0.0564
Males Age 50 to age 59	47000	16,074,000	32,148	7,520	2,083,190	4,629	54,520	18,157,190	36,777	0.045433
Males Age 60 to age 69	32900	20,718,775	37,670	1,880	968,670	1,937	34,780	21,687,445	39,607	0.028983
Males Age 70 to age 79	18800	21,657,600	36,096	940	893,376	1,624	19,740	22,550,976	37,720	0.01645
Males Age 80 and Over	14100	29,492,970	45,373	470	816,728	1,361	14,570	30,309,698	46,734	0.012142
Females Age 17 and Under	132500	12,932,000	32,330	32,330	2,484,883	7,099	164,830	15,416,883	39,429	0.137358
Females Age 18 to age 29	111300	6,455,400	16,138	26,500	1,210,387	3,458	137,800	7,665,787	19,596	0.114833
Females Age 30 to age 39	95400	9,311,040	23,277	22,260	1,710,903	4,888	117,660	11,021,943	28,165	0.09805
Females Age 40 to age 49	63600	11,676,960	25,948	12,720	1,868,313	4,670	76,320	13,545,273	30,618	0.0636
Females Age 50 to age 59	53000	18,126,000	36,252	8,480	2,349,129	5,220	61,480	20,475,129	41,472	0.051233
Females Age 60 to age 69	37100	23,363,725	42,479	2,120	1,092,330	2,184	39,220	24,456,055	44,663	0.032683
Females Age 70 to age 79	21200	24,422,400	40,704	1,060	1,007,424	1,831	22,260	25,429,824	42,535	0.01855
Females Age 80 and Over	15900	33,258,030	51,166	530	920,991	1,534	16,430	34,179,021	52,700	0.013692
Total	1,000,000	€ 263,293,500	506,216	200,000	€23,857,284	58,272	1,200,000	€ 287,150,784	564,488	1
Adult Lives	750,000			139,000						
Child Lives	250,000			61,000						
Equivalent Adult Lives	833,333			159,333			992,666			
Equivalent Adult Ratio	0.833333			0.79666			0.827222			

Parameters And Calculations

Cell	Undertaking 1				Undertaking 2				Market			
	CEBA	CU	CSBAGHS	CSBAG	CEBA	CU	CSBAGHS	CSBAG	MEBA	MU	Market	Market
Males Age 17 and Under	400	0.244	11,654,927	11,888,493	350	0.219	2,039,985	1,872,438	391	0.239		
Males Age 18 to age 29	400	0.145	5,792,536	5,906,333	350	0.130	1,013,906	930,247	391	0.142		
Males Age 30 to age 39	400	0.244	8,325,495	8,486,320	350	0.220	1,457,237	1,336,595	391	0.239		
Males Age 40 to age 49	450	0.408	10,182,464	10,355,040	400	0.367	1,810,207	1,656,806	442	0.401		
Males Age 50 to age 59	500	0.684	15,323,750	15,538,200	450	0.616	2,758,460	2,517,188	494	0.675		
Males Age 60 to age 69	550	1.145	18,153,449	18,252,254	500	1.030	3,301,163	2,986,733	548	1.139		
Males Age 70 to age 79	600	1.920	18,860,000	18,950,400	550	1.728	3,458,348	3,126,816	598	1.911		
Males Age 80 and Over	650	3.217	25,314,696	25,396,724	600	2.896	4,674,133	4,219,761	649	3.208		
Females Age 17 and Under	400	0.244	13,143,000	13,406,173	350	0.219	2,300,241	2,111,472	391	0.239		
Females Age 18 to age 29	400	0.145	6,532,202	6,660,333	350	0.130	1,143,182	1,049,002	391	0.142		
Females Age 30 to age 39	400	0.244	9,388,575	9,569,680	350	0.220	1,643,057	1,507,224	391	0.239		
Females Age 40 to age 49	450	0.408	11,482,104	11,676,960	400	0.367	2,041,542	1,868,313	442	0.401		
Females Age 50 to age 59	500	0.684	17,280,000	17,521,800	450	0.616	3,110,571	2,838,531	494	0.675		
Females Age 60 to age 69	550	1.145	20,470,783	20,582,329	500	1.030	3,723,041	3,368,018	548	1.139		
Females Age 70 to age 79	600	1.920	21,267,500	21,369,600	550	1.728	3,900,490	3,525,984	598	1.911		
Females Age 80 and Over	650	3.217	28,545,945	28,638,859	600	2.896	5,273,384	4,758,454	649	3.208		
USBAG(HS)1			241,717,426	244,199,500			43,648,946	39,673,580				
USBAG(HS)			243,503,115	246,003,526			42,036,661	38,208,136				
UEAAG(HS)			-19,790,385	-17,289,974			18,179,377	14,350,852				

Parameters						
Sample HSW value	0.30	UEA	-18,040,097		15,499,409	
		UPPEA			12,399,527	
		UPNEA	-12,399,527			
		Equalisation contribution	-12,399,527		12,399,527	
	From previous page MEB(Total) = 287,150,784 => Market Equalisation Percentage = 5.40%					

Appendix II – Amendments to the Risk Equalisation Scheme

2003 Amending Scheme
- Amendments to certain definitions in the Scheme

2005 Amending Scheme
- Amendments to certain definitions in the Scheme
- Enabled the Authority to provide statutory guidance in relation to the making of returns

2007 Amending Scheme
- It reduced the level of payments by multiplying calculated transfers by 80%.
- It changed the membership data included in returns and used in calculations from quarterly data to monthly data.
- Under certain circumstances, it allowed the Authority to combine the risk equalisation return for an undertaking with a previous return from that undertaking, if the Authority considered that the undertaking had ceased to provide insurance cover or had very substantially curtailed its operations.
- For undertakings with cells of less than 20 insured persons, less than €5,000 in cell equalised benefits or less than 20 in cell claim value, the calculation of CSBAG was changed from using 100% of the market average equalised benefit per insured person to using 80% of the market average. A similar change was made to the calculation of CSBAGHS.
- Undertakings making risk equalisation payments would no longer have an adjustment made to the calculation of their transfers (called a Zero Sum Adjustment) so that transfers to the risk equalisation fund equalled transfers from the fund. To ensure that the fund was self financing, the adjustment would, in future, only be made to the transfers from the fund.