SOUTH AFRICAN ACTUARIAL JOURNAL
SAAJ **21** (2021) 93–118
https://dx.doi.org/10.4314/saaj.v21i1.5

Anti-selection in voluntary health insurance markets: A focus on medical schemes in South Africa

by R Harris and S Besesar

Submission date 6 August 2020
Acceptance date 8 October 2021

ABSTRACT

This paper discusses the role of voluntary health insurance (VHI) in relation to public healthcare systems and universal health coverage (UHC). The paper explores why VHI markets are particularly susceptible to anti-selection. As the largest VHI market globally, the South African medical scheme market is then examined in detail. An overview of the history of the South African healthcare system provides insight into the development of the medical scheme market. Thereafter, an analysis on the impact of anti-selection on medical schemes is conducted using the experience from the largest open medical scheme in the market. The results demonstrate how existing risk mitigation measures are ineffective at protecting medical schemes from the effects of anti-selection, and the subsequent negative impacts of this phenomenon on the industry and the healthcare system as a whole. The paper discusses alternative mechanisms for addressing anti-selection risks and concludes that mandatory membership in some form has the potential to improve the sustainability of medical schemes in South Africa, which will in turn support the country's transition towards UHC.

KEY WORDS

Anti-selection; private voluntary health insurance; medical schemes; South Africa

CONTACT DETAILS

Prof R Harris, University of the Witwatersrand, Tel: +27 (0)11 716 6273
Email: roseanne.harris@wits.ac.za
Ms S Besesar, Discovery Health, Tel: +27 (0)11 529 6265; Email: sarikab@discovery.co.za

1. INTRODUCTION

1.1 Universal health coverage

1.1.1 The World Health Organisation (WHO) states that universal health coverage (UHC) entails timely access to essential healthcare services for all, without financial hardship (WHO a, n.d.). The core tenets of UHC include, protecting the poorest and most vulnerable, reducing out-of-pocket (OOP) expenditure and strengthening the healthcare system. In 2012, the United Nations endorsed the movement towards UHC. Since then, the WHO and the World Bank Group have recognised the significance of UHC for sustainable development at a national and global level (WHO, 2014).

1.1.2 Countries across the world have now prioritised the transition towards UHC as a key policy objective. There is no one-size approach towards UHC, and each country is developing its own pathway based on current health infrastructure and available resources. The WHO and the World Bank Group have developed a framework that allows each country to measure its UHC progress. These metrics include the degree of financial protection and coverage of health services provided by the healthcare system (WHO, 2014). As per this indicator, South Africa scored 69 (out of 100) in 2017 (WHO, 2019).

1.2 The role of voluntary health insurance and universal health coverage

1.2.1 As acknowledged by the WHO, "[a]ll countries, rich and poor, struggle to raise the funds required to pay for the health services their populations need or demand. No country, no matter how rich, is able to provide its entire population with every technology or intervention that may improve health or prolong life" (WHO, 2010).

1.2.2 International evidence shows that characteristics of the public system, particularly the extent of public coverage, shapes the market for voluntary health insurance (VHI). Consequently, gaps in public coverage are a key determinant of VHI market development (Thomson, 2010). In the United Kingdom for example, VHI is purchased to avoid potential waiting lists for treatment provided by the National Health Service (Foubister & Richardson, 2016).

1.2.3 In mature healthcare systems, the principal means of healthcare finance is a statutory insurance scheme covering all citizens. This is typical in higher income countries where the statutory package is relatively comprehensive, ensuring all citizens have access to essential healthcare services (sometimes with a modest co-payment). VHI, purchased by those willing and able to pay, often supplements this scheme (Smith, 2007).

1.2.4 In lower income countries, financial resources for statutory health insurance depends on a lean fiscus and (sometimes) donor funds. Public healthcare services in these resource-constrained regions are focused on cost-effective interventions targeted at the sick and poor. These systems rely heavily on personal financing of healthcare usually in the form of user fees. Private insurance in non-rich countries is usually confined to the upper classes (Smith, 2007).

1.2.5 The emergence of VHI may therefore not only be a desirable alternative or addition to public provision but also an unavoidable one (Preker et al., 2010). While VHI has traditionally been associated with the notions of unequal access, unaffordability and elite care

for the rich, private voluntary health insurance has evolved into a valuable instrument when public insurance is too costly to be efficient (He, 2017).

1.2.6 Governments often rely on VHI as a means of addressing shortcomings of the health system. Policymakers may use private health insurance as a vehicle to generate additional funding or increase health system capacity. The competition and innovation that characterises private health insurance can enhance efficiencies of the health system and quality of care delivered, while providing consumers with a degree of choice. Consumers may perceive private health insurance to be more responsive and sensitive to their demands in comparison to public health systems plagued by bureaucratic slowness and rigidities (Colombo & Tapay, 2004).

1.2.7 Critics however argue that private health insurance drives inefficiency by spurring demand. In addition, multiple competing insurers increase administrative costs taking resources away from healthcare services. Private health insurance may also increase costs for the public purse by steering healthier lives and healthcare resources into the private sector. Further, a dual healthcare system, where one provides better access than the other, may create inequities in coverage and access to healthcare (Colombo & Tapay, 2004).

1.2.8 Policymakers rely on regulation to address the shortcomings of private health insurance. Generally, the degree of dominance of the private health insurance market dictates the extent of regulatory intervention (Colombo & Tapay, 2004).

1.2.9 However, regulation is no panacea for market failures in the private health insurance landscape. Regulation comes with its own associated costs that must be assessed relative to its benefits. When defining regulation, policymakers must therefore balance the conflicting goals of consumer protection and choice against equity and cost containment to identify optimal interventions (Sekhri et al., 2005).

1.3 The healthcare policy landscape in South Africa

1.3.1 After democracy in 1994, healthcare policymakers believed that the most feasible trajectory towards attaining UHC was via a two-tier system that enabled the public and private sectors to operate in parallel (Van den Heever, 2016).

1.3.2 Healthcare reform from 1994 was thus focused on developing the private medical schemes framework into a social health insurance (SHI) system for those that could afford to cover their own healthcare expenses. The tax-funded public sector was to serve as a safety net for the rest of the population, providing free services to those in need. This system was believed to be the optimal path to UHC; it would allow the State to focus its limited resources on those most vulnerable, while creating a social solidarity framework for those that chose to opt out of public provision (Van den Heever, 2016).

1.3.3 Policymakers implemented a number of reforms via the Medical Schemes Act of 1998 to create the SHI framework. This included provisions for a prescribed minimum benefit (PMB) package applicable across benefit options which cover almost 300 conditions, as well as the enforcement of community rating and open enrolment across the industry (McLeod & Ramjee, 2007).

1.3.4 To encourage those who can afford medical cover to provide for themselves,

tax relief was introduced on medical scheme contributions. This has evolved from a tax deduction to a system of tax credits, intended to be more beneficial to low income earners (National Treasury of South Africa, 2011; Nhamo & Mudimu, 2020).

1.3.5 Mandatory membership (for those earning above a defined income bracket) and a risk equalisation fund (to enhance risk and income cross-subsidies across the industry) were proposed to be implemented in 2008 to ensure the fiscal sustainability of the system; however the shadow period and implementation plans were suspended in 2011 (Van den Heever, 2016).

1.3.6 Policymakers expressed commitment to this route to UHC by establishing GEMS (the Government Employees Medical Scheme) in January 2005. GEMS is a medical scheme with eligibility restricted to government employees. Although membership is not mandatory, government incentivises membership to GEMS with employee contribution subsidies (Government Employees Medical Scheme, 2007).

1.3.7 A change in the political landscape in 2007 brought about a divergence in the policy trajectory towards UHC. Policymakers abruptly abandoned the SHI framework. The proposal to implement mandatory membership and the risk equalisation fund across the medical schemes were withdrawn and the policy of implementing a National Health Insurance (NHI) was adopted (Van den Heever, 2016).

1.3.8 The motivation for this policy change was based on growing concerns regarding the inequalities of the two-tier system. While the dual healthcare system provides excellent financial protection, (measured in terms of OOP expenditure as a percentage of current healthcare expenditure (WHO b, n.d.)), the healthcare system is largely divided along socio-economic lines (National Department of Health South Africa, 2015).

1.3.9 Despite attempts since 1994 to increase access to healthcare and integrate the health system through public-private partnerships, inequalities persisted between the public and private sectors (National Department of Health South Africa, 2015). For example in 2020, the average expenditure per medical scheme beneficiary was R2,053 per month (Council for Medical Schemes a, 2021). In comparison, expenditure per capita in the public sector was estimated at R412 per capita per month in 2020, excluding OOP (National Treasury of South Africa, 2021). However, it should be noted that the difference is funded by private expenditure since the value of the tax credit for medical scheme beneficiaries has been at a discount to average per-capita expenditure in the public sector since 2007/8 (Health Market Inquiry, 2018).

1.3.10 The disproportionate spend between the public and private sectors reflects the differences in costs (and quality) of services provided between public and private health providers (Armstrong et al., 2010). Competition for resources from medical schemes is perceived to have a negative impact on the quality of care in the public sector (Ramjee & Vieyra, 2014). Further, this has also led to concerns about perpetuating a two-tier framework, given the large disparities in the quality of healthcare accessed in the public and private sector (National Department of Health South Africa, 2015).

1.3.11 The 2007 proposal was to establish a single fund NHI system to enable centralised pooling. This is based on the belief that an NHI would allow for a more efficient

allocation of resources at a national level to reduce inequities and expedite progress towards UHC (Van den Heever, 2016).

1.3.12 With the policy departure from SHI, it is currently unclear as to what role medical schemes will play under the NHI framework. The NHI Bill of 2019 states that after the implementation of the NHI, medical schemes will only be allowed to provide complementary cover for services outside the NHI benefit package (Minister of Health South Africa, 2019).

1.3.13 There is a risk that with the policy shift towards NHI, the medical scheme industry will become a 'regulatory orphan'. The partial implementation of social health reforms has hampered the ability of medical schemes to contribute effectively to social solidarity and UHC (Ramjee & Vieyra, 2014).

2. BACKGROUND TO THE SOUTH AFRICAN MEDICAL SCHEMES MARKET

2.1 In 2018, total healthcare expenditure in South Africa amounted to 8.3% of GDP (WHO c, n.d.). Public sector financing amounted to R248.8 bn in 2020 (National Treasury of South Africa, 2021). Over the same period, medical schemes' total gross contribution income equalled R219 bn and the industry covered 8.9 million lives (Council for Medical Schemes a, 2021).

2.2 With almost 44% of current health expenditure (CHE) channelled through VHI (medical schemes), South Africa is an outlier to the rest of the world in the role VHI plays in healthcare financing (see Figure 1). This is largely due to the historical context of South Africa's history and health policy, as well as structural features of the healthcare system.

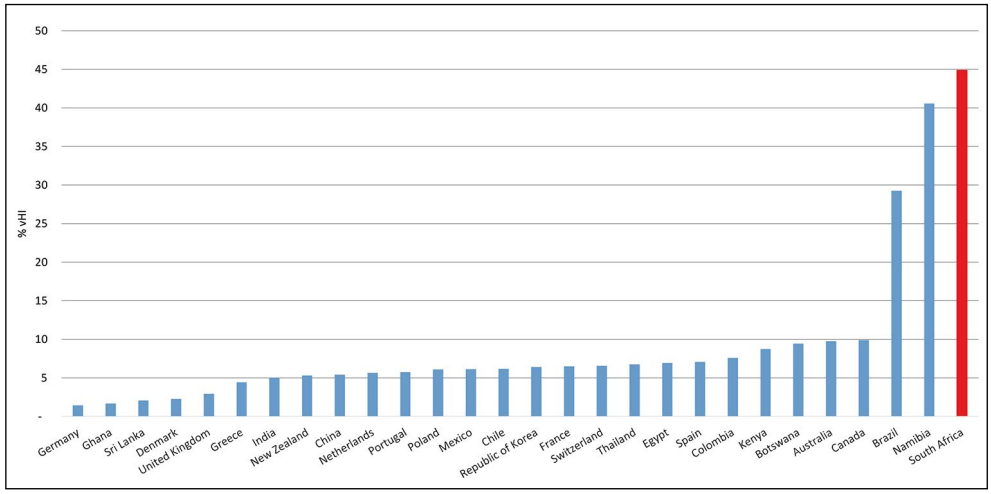

FIGURE 1. VHI as a percentage of CHE for selected countries (2018)
Source: World Health Organisation Global Health Observatory and authors' calculations

2.3 Overall, however, per capita health expenditure in South Africa is not comparable with high income countries. As shown in Figure 2, South Africa's public health expenditure, is similar to other low and middle-income countries such as Thailand, Sri Lanka and Egypt when measured in monetary terms (purchasing power parity (PPP) adjusted). Further, Figure 2 shows that when comparing the medical scheme expenditure per medical scheme beneficiary (PPP adjusted), it is evident that even medical scheme expenditure per capita is lower in comparison to CHE per capita of higher income countries including the United Kingdom, France and Germany.

2.4 Medical schemes are largely voluntary health insurance vehicles (Armstrong et al., 2010) and are regulated by the Council for Medical Schemes (CMS) (Ramjee & Vieyra, 2014). Contributions to medical schemes are privately funded, although members still receive a tax subsidy, equivalent to about 17.0% of gross contributions in 2020 (Council for Medical Schemes a, 2021; South African Revenue Service, n.d.). Coverage is concentrated amongst the higher income earners (Ramjee & Vieyra, 2014) relative to the total population, however it should be noted that 31.6% of medical scheme members earn less than R13,000 per month.[1]

2.5 Medical schemes are owned by their members, and are tax-exempt not-for-profit trusts. As mentioned above, the industry is governed by strict social solidarity principles, including community rating which prohibits differentiation of contribution rates by age or health status. Medical schemes typically purchase care from private providers (Ramjee & Vieyra, 2014).

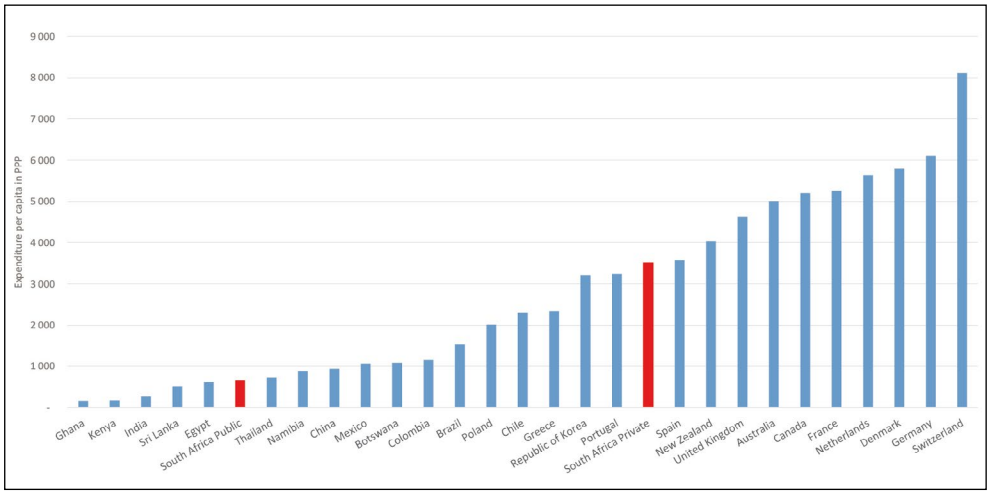

FIGURE 2. Healthcare expenditure per capita in PPP (2018) for selected countries
Source: World Health Organisation Global Health Observatory and authors' calculations

1 Calculated from the Finscope 2018 database

2.6 There are two types of medical schemes, open and restricted. Open schemes must accept anyone willing to join, while restricted schemes may limit membership to a particular employer, profession or industry (Armstrong et al., 2010). The Discovery Health Medical Scheme (DHMS) is an open scheme and is the largest funder in the market covering 2.8 million lives. The restricted scheme GEMS is the second largest scheme, covering more than 1.9 million lives (Council for Medical Schemes a, 2021).

2.7 Additionally, all medical schemes are required to cover Prescribed Minimum Benefits (PMBs) as set out in the regulations to the Medical Schemes Act. These benefits cover a comprehensive range of in-hospital benefits, treatment of a defined list of chronic conditions and some out-of-hospital cover (McLeod & Ramjee, 2007). The cost of PMBs effectively sets a minimum cost of cover and the CMS reports the cost of PMBs in 2020 at R883 per average beneficiary per month (Council for Medical Schemes a, 2021).

2.8 While medical schemes provide duplicative benefits, medical scheme members effectively purchase private cover as substitutive coverage to all services provided by the public sector. This is not unique to South Africa, but a characteristic of countries with similar wealth where higher income earners voluntarily choose to opt out of free public provision, in order to gain better access to healthcare in terms of waiting times and freedom of choice of provider. This is due to the perception that there is either an insufficient supply of providers in the public sector, or that private providers provide better quality of care (Armstrong et al., 2010).

3. ANTI-SELECTION IN VOLUNTARY HEALTH INSURANCE MARKETS

3.1 The Organisation for Economic Co-operation and Development (OECD) defines VHI markets as those insurance markets where participation or purchase of products is on a voluntary basis rather than being compelled by regulation. This includes instances where employers themselves choose to offer health insurance cover to their employees or by effecting group policy agreements with compulsory participation as part of conditions of employment. Though participation may be encouraged, for example with tax breaks or other fiscal incentives, it remains entirely voluntary. Even if group policy agreements require coverage as a condition of employment, the employer has voluntarily opted to effect such an agreement (Organisation for Economic Co-Operation and Development, 2004).

3.2 Due to the voluntary nature of these markets, VHI is prone to anti-selection. Anti-selection (or adverse-selection) is a concept where the insurance attracts patients who are likely to use services at a higher than the average rate. This is because potential beneficiaries are better informed than their insurer about their health status and their expected demand for healthcare services—a phenomenon known as asymmetry of information (Folland et al., 2013).

3.3 Anti-selection is the central cause that distorts smooth and efficient functioning of competitive health insurance markets (Geruso & Layton, 2017). Anti-selection often reduces the number of policies sold in the insurance market, can prevent the existence of a stable market, and might (though rarely) cause the market to disappear entirely (Pauly, 2007). The challenges posed by anti-selection represent the primary concerns for policymakers when regulating health insurance markets (Geruso & Layton, 2017). In South Africa, the incomplete regulatory framework, coupled with the voluntary nature of membership undermines the achievement of social solidarity as it not only permits, but also incentivises, anti-selection (Ramjee & Vieyra, 2014).

3.4 Anti-selection can also manifest itself in the manner in which beneficiaries choose a health plan within a health insurer, where higher risk individuals choose more comprehensive plans than those in better health (Belli, 2001). This is evident in South Africa, where consumers may switch annually between benefit packages according to their need and affordability constraints. While this provides consumers with a great degree of flexibility and freedom of choice, and allows medical schemes to be more responsive to consumer's needs, it can also lead to significant anti-selection, as better-informed consumers can choose the most suitable package for their expected upcoming expenditure (Ramjee & Vieyra, 2014).

3.5 Further, anti-selection effects can be exacerbated in markets where insurers are not permitted (by law or custom) to set premiums that reflect risk, even if better information is known (Pauly, 2007). Pricing restrictions typically exacerbate anti-selection, because community rating imposes an information asymmetry between the consumer and health insurer (Geruso & Layton, 2017). This suggests that the community rating structure in South Africa also contributes to anti-selection effects in the medical scheme industry.

3.6 Anti-selection may not only affect the prices of contracts, but may also impact the design of the products themselves. This is known as risk selection, where private insurers use benefit design to 'cream skim' healthier members, by tailoring each contract to attract or deter certain risk groups from coverage (Geruso & Layton, 2017). In South Africa, medical schemes have a strong incentive to use benefit design to cream skim healthier lives into their risk pools. While this may reduce anti-selection effects, it also goes against social solidarity principles, and is a particular concern in the absence of an industry risk-equalisation scheme (Ramjee & Vieyra, 2014).

4. ANTI-SELECTION ACROSS MEDICAL SCHEMES IN SOUTH AFRICA

4.1 In practice, identifying and quantifying anti-selection is not always straightforward. Comparisons of the chronic profile between those that elect comprehensive plans compared to those on less-generous plans may be a starting point. However, anti-selection may manifest itself in complex ways that go beyond the issue of who purchases cover and their subsequent choice of plan (Geruso & Layton, 2017).

4.2 Given the lack of a systemic framework to quantify anti-selection, the analysis below attempts to assess the extent of anti-selection in the South African private medical scheme industry by exploring trends in the available data.

4.3 An analysis of the demographics of medical schemes from the Council for Medical Schemes annual reports show that medical schemes are significantly older than the general South African population (Council for Medical Schemes, 2019). For example, for 2017 it is estimated that while only 26.8% of the South African population was over age 40, 39.2% of the medical scheme population is above this age.

4.4 Figure 3 illustrates the extent of anti-selection faced by the industry by showing the medical scheme population as a percentage of the total South African (RSA) population by age and gender for 2017.

4.5 From Figure 3 it is apparent that the medical scheme population is significantly older than the general South African population, with medical schemes carrying an increasing percentage of the South African population by age. For example, Figure 3 illustrates that 34.9% of South African males over 80 belong to medical schemes, while only 7.8% of males between ages 20–24 are covered.

4.6 Figure 3 also highlights the extent of anti-selection by females in their childbearing ages, with the percentage of females covered by medical schemes being about 30% higher than that of males during the ages of 25–39. The Prescribed Minimum Benefit package includes almost all maternity care, and thus, it has become a common phenomenon for women to join

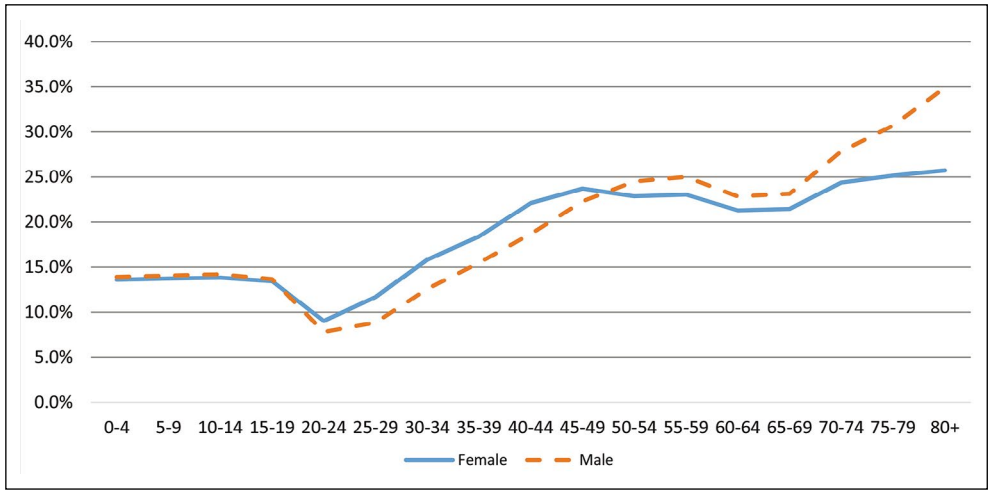

FIGURE 3. Medical scheme population as a percentage of total population by age and gender (2017)
Source: Authors' calculations using data from Statistics South Africa and Council for Medical Schemes' annual reports

a medical scheme to have their children and to leave if the children are healthy (McLeod, 2012).

4.7 Figure 4 highlights how the medical scheme population has aged in comparison to the general South African population between 2006 and 2017. Over the past 11 years, the medical scheme population has lost younger, healthier lives (those below 40) and are now carrying a significantly higher proportion of older and sicker South Africans. For example, Figure 4 shows that in 2006 medical schemes covered 18.9% of South Africans over age 80, but by 2017 medical schemes were carrying almost 30% of this population. As shown in the Council for Medical Schemes Annual Report 2018/19, there is strong correlation between age and healthcare costs. This higher uptake of medical scheme membership at the older ages relative to younger ages can therefore place significant cost pressures on medical schemes.

4.8 Figures 5 and 6 compare the age distribution for medical schemes members between 2006 and 2017 for restricted and open schemes respectively. From these figures the 'twin-peaks' phenomenon is apparent. This is due to the anti-selective effects mentioned above, exacerbated by the lower propensity by parents to cover older children (as well as children who no longer qualify to be dependants on their parents' medical scheme not taking up membership of their own). This is likely to be due to affordability and the fact that they can enter up to the age of 35 without penalty. This is as per the definition of late joiner penalties set out in the regulations to the Medical Schemes Act (National Department of Health South Africa, 1999).

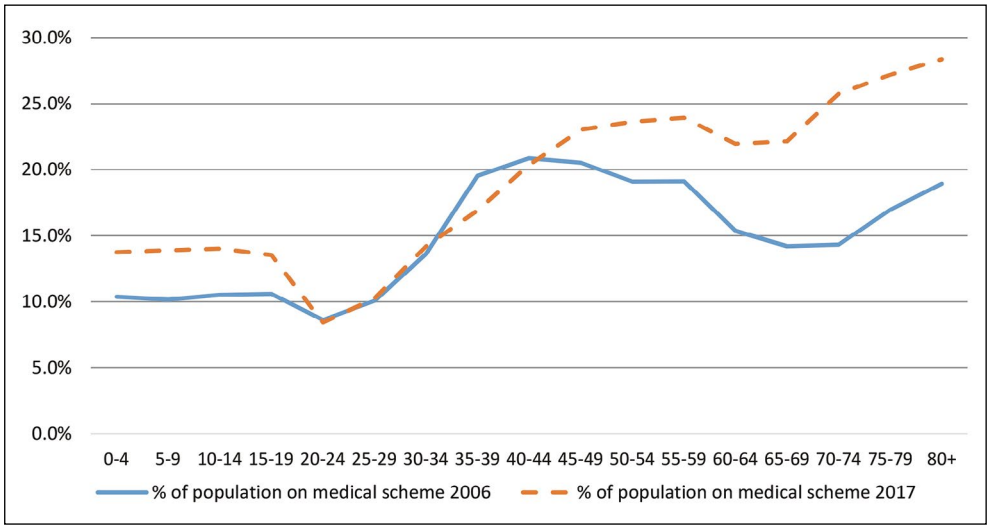

FIGURE 4. Medical scheme population as a percentage of total population by age 2006 vs 2017
Source: Authors' calculations using data from Statistics South Africa and Council for Medical Schemes' annual reports

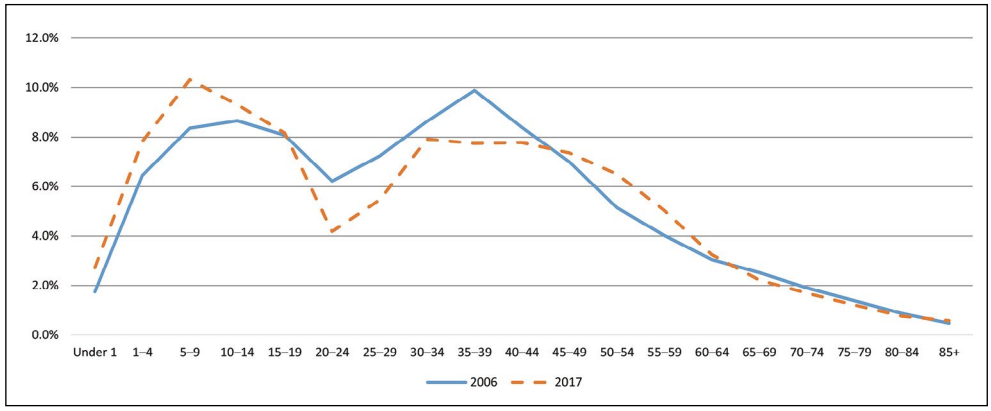

FIGURE 5. Distribution of restricted scheme population by age 2006 vs 2017
Source: Authors' calculations using data from Statistics South Africa and Council for Medical Schemes' annual reports

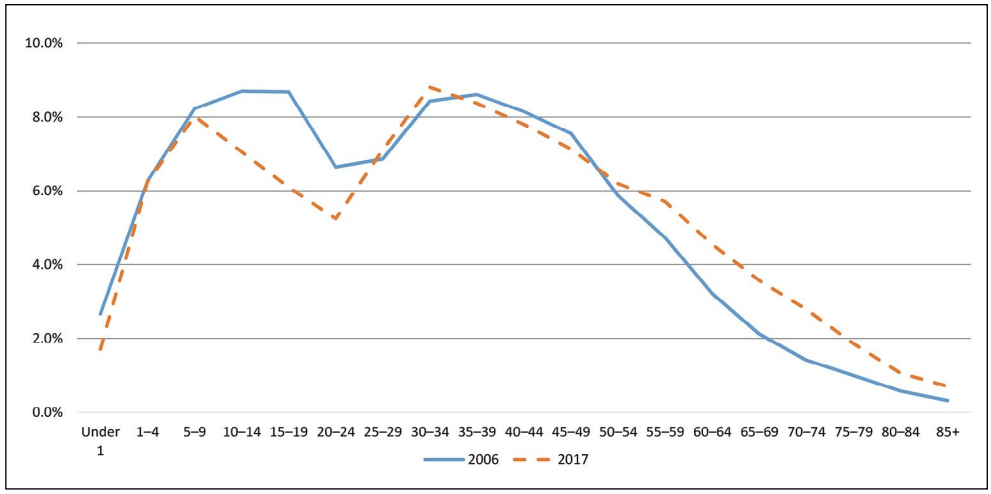

FIGURE 6. Distribution of open scheme population by age 2006 vs 2017
Source: Authors' calculations using data from Statistics South Africa and Council for Medical Schemes' annual reports

4.9 What is most concerning from the figures, though, is the extent of ageing that the open medical schemes have experienced in comparison to the restricted schemes. While the restricted schemes have gained younger and healthier lives between 2006 and 2017, the reverse is true for open schemes, which are highly exposed to risks of anti-selection. For example, in 2006, 17.1% of restricted scheme members were below age 35. By 2017, this figure had increased to 24.6%. In comparison, the percentage of open scheme lives below age 35 had decreased from 39.0% in 2006 to 28.1% in 2017 (Council for Medical Schemes, 2019).

4.10 These profile shifts have manifested in increasing healthcare expenditure, which have been borne by open medical scheme members in the form of higher contribution rates. This financial effect can be quantified by using cost estimates from the Risk Equalisation Tables (REF)[2] of 2010, which show the average industry cost of providing the PMBs by age. Ignoring the effect of changes in chronic disease prevalence and referring to the REF2010 table published by the CMS, the financial effect of the above shift on the cost of cover is an increase of 15.6% between 2006 and 2017 for open schemes before allowing for any inflation. In comparison, the effect on restricted schemes was only 1.1% for the same period, with the average for the entire industry at 9.4%.

4.11 The differences in experience between the open and restricted schemes is substantiated when analysing claims of DHMS between lives that join individually and those that join as part of an employer group.[3] The analysis shows individual members have an older age profile and higher chronic prevalence than group members do. This is manifested in the claims experience with individual members' claims 36.6% higher than group members for 2016, after adjusting for age, gender and chronic status.

4.12 As industry data on chronicity by age is not available, data was obtained from DHMS to quantify the impact of the change in the chronic prevalence and age on claims costs. Figure 7 shows the proportion of DHMS lives registered for a chronic condition by age, for selected years between 2005 and 2017.

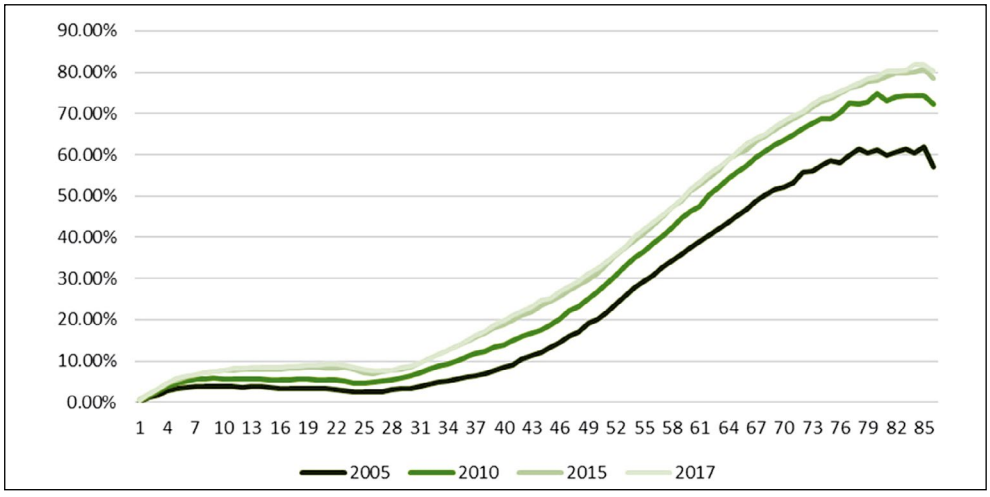

FIGURE 7. Change in DHMS chronic profile ratio by age and year
Source: Authors' calculations using data from Discovery Health

2 The Risk Equalisation Fund was run on a shadow basis from 2006 to 2011 and the tables are available at https://www.medicalschemes.com/Publications.aspx

3 Coverage under employer groups is more representative of mandatory cover, unlike individual coverage where membership is completely voluntary.

4.13 Combining the change in the age profile and the increase in chronic prevalence across ages increases the escalation in costs calculated with reference to the REF2010 table to 32.5% for DHMS over the period 2006 to 2017 (as compared to the 9.4% on age only noted above).

4.14 This shows the significant effect of the change in the age profile and the prevalence of chronic conditions which is influenced by anti-selection. This quantification does not include the effect of medical scheme members being able to buy up to more comprehensive cover without restriction on an annual basis.

5. TOOLS AVAILABLE TO MEDICAL SCHEMES TO MANAGE ANTI-SELECTION

5.1 The Medical Schemes Act permits the following tools to manage anti-selection:

— Late joiner penalties that can be applied from the age of 35.
— Condition-specific waiting period (12 months) that can be applied in respect of conditions for which the applicant received treatment or advice in the 12 months prior to application.
— General waiting periods of 3 months that can be applied to members who have no prior coverage (the waiting period also applies to PMBs) or who change schemes voluntarily (but in this case the waiting period does not apply to PMBs which must be covered in full).

5.2 Table 1 shows the percentage of members where such restrictions have been applied as at 31 December 2017 for DHMS.

TABLE 1. Percentage of DHMS members with underwriting restrictions

Restriction	Proportion of new entrants in 2017	Proportion of all beneficiaries at 31 December 2017
3-month general waiting period	13.6%	0.4%
12-month pre-existing condition exclusion	7.6%	0.9%
Later joiner penalty	4.7%	4.5%

Source: Authors' calculations using data from Discovery Health

5.3 From Table 1 it is evident that only a small percentage of new members receive a waiting period. As underwriting is discretionary, competitive pressures compelling schemes to waive waiting periods may contribute to these low levels.

5.4 This table highlights that current underwriting tools are clearly ineffective as risk mitigation tools to protect schemes from anti-selection. The large majority of members are able to enter the scheme without waiting periods or late joiner penalties, despite the levels of anti-selection observed in the industry.

5.5 Late joiner penalties (LJPS)

5.5.1 The later in life that members join a medical scheme, on average the higher the claims costs and contributions will be. A late joiner penalty (LJP) should theoretically be set at least at a level so that the higher claims costs are recovered by the scheme through the higher contribution. When doing this calculation, allowance should be made for expected mortality rates, future claims inflation and investment returns.

5.5.2 Figure 8 shows the quantum of the South African (medical scheme) LJP in comparison to that applied in the Australian private health sector. It is evident that the quantum of the medical scheme LJPs are on average very similar to the Australian system except for the older ages. It is also noted that, in addition, from April 2019, the Australian government introduced discounts to those aged 18–29 to incentivise younger people to join private health insurance (Australian Government Private Health Ombudsman, n.d.)

5.5.3 The United States Medicare system also applies premium penalties for those who choose to delay joining Medicare. In this case a penalty of 1% of the national premium multiplied by the number of uncovered months without creditable coverage is applied. This penalty remains the same for as long as someone belongs to Medicare ("Part D late enrollment penalty | Medicare," n.d.).

5.5.4 Figure 9 shows that the LJPs as prescribed by the Medical Schemes Act are more or less in line with the theoretical requirements, except at the old ages (greater than 65) where the LJPs are significantly too low. This was calculated using claims costs from DHMS by age to construct a theoretical LJP structure. The LJPs were calculated by age band using the present value of expected future claims divided by the present value of expected future contributions. Expected values were based on risk adjusted DHMS claims curves and allowing for mortality and discounting.[4]

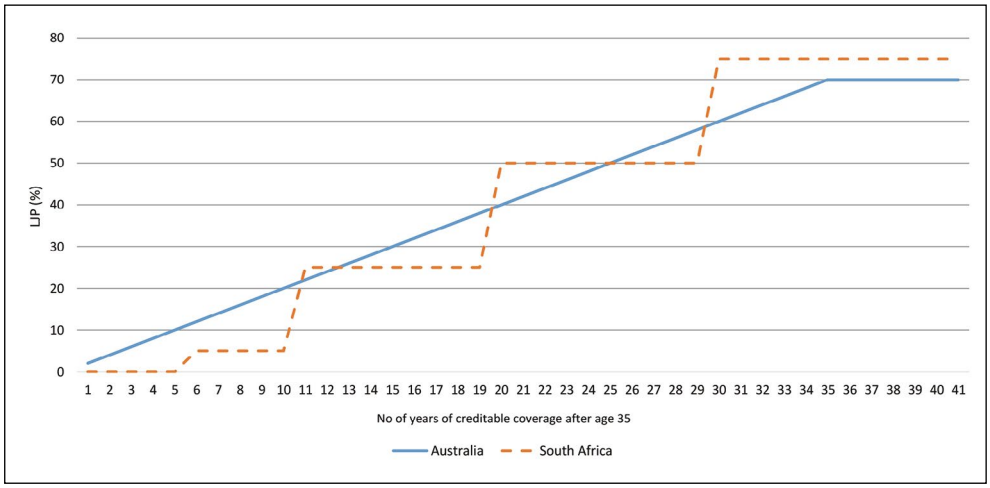

FIGURE 8. Comparison of South African and Australian LJPs
Source: Authors' calculations

4 Discount rate of 7%

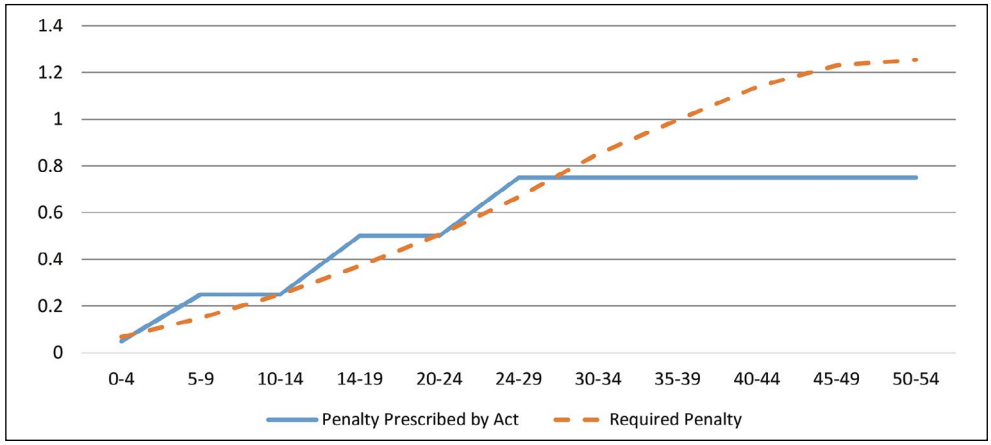

FIGURE 9. The theoretical LJP for someone joining per year after age 34 compared to the LJP prescribed by the Act

Source: Authors' calculation based on Discovery Health data

5.5.5 The above assumes that there is no anti-selection by members who only join later in life and are subject to an LJP. One would expect there to be some form of anti-selection from members who are given an LJP when joining a scheme as only members who really need the medical care would be willing to pay the LJP (Wayburne & Bradley, 2013).

5.5.6 An analysis of this was done using 2017 DHMS claims, comparing the risk-adjusted claims of joiners that received an LJP to the risk-adjusted claims of those that did not receive an LJP. As shown in Table 2, it was found that the members who did receive an LJP claimed between 16% and 23% more after adjusting for age than those that did not receive an LJP. This difference also increases as the LJP increases. In order to compensate schemes for taking on this anti-selection risk, the theoretical LJP calculated above should thus be increased in the order of 16%–23%.

TABLE 2. The difference in risk-adjusted claiming patterns between joiners with and without LJPs after adjusting for age

LJP	% difference in PLPM claims
5%	17%
25%	16%
50%	22%
75%	23%

Source: Authors' calculations based on Discovery Health data

5.6 Condition-specific waiting periods

5.6.1 Many serious and high-cost conditions require treatment over several years, or even the lifetime of the member. These thus have significant long-term financial

consequences for schemes, and the current 12-month condition-specific waiting period (CSWP) is not sufficient to counter the effect of anti-selection for these high cost long-term conditions. Some examples include rheumatoid arthritis (RA), ulcerative colitis (UC), haemophilia, Crohn's disease and multiple sclerosis (MS). Current treatment with biologics for RA typically cost DHMS approximately R71,000 per claimant per year, treatment with biologics for MS costs R106,000 per claimant per year, and haemophilia up to R220,000 per claimant per year.

5.6.2 Similarly, medical schemes face significant cost when obliged to fund certain expensive orphan drugs required by rare disease patients. For example, enzyme replacement therapies (ERTs) are orphan drugs that treat rare diseases such as Fabry's disease or Gaucher's disease. In 2018, the average treatment cost for an ERT patient was R2.2 million per year. This is equivalent to almost 105 times the average 2018 contribution per beneficiary per annum.

5.6.3 Since 2010, DHMS has funded ERT for selected conditions, on the perception that this was the prevailing level of care in the State, and therefore a PMB obligation. As the only open scheme funding ERT as a PMB, DHMS was exposed to significant anti-selection, and a number of new members joined the Scheme with the exclusive purpose of accessing coverage for ERT. For example, it was found that in 2014, DHMS was funding almost half of the country's patients on ERT with Gaucher's disease (23 out of 53 at the time).

5.6.4 As evident in Table 3, the number of unique ERT claimants across the Scheme increased from 40 in 2015 to 56 in 2018, an average annualised increase of 11.9%. The average ERT cost per claimant increased from R1.5 million in 2015 to R2.2 million in 2018, an average annualised increase of 13.8%. The cumulative effect of these impacts was an increase in the total ERT costs for the Scheme from R59 million in 2015 to R122 million in 2018, an average annualised increase of 27.3% over the four-year period.

TABLE 3. Number of ERT claimants on DHMS and their claims costs for ERT (2015–2018)

	2015	2016	2017	2018	Average annual increase
Unique ERT claimants	40	41	52	56	11.9%
Ave ERT cost per claimant	R1,483 mil	R1,883 mil	R1,947 mil	R2,185 mil	13.8%
Total ERT cost	R59 mil	R77 mil	R101 mil	R122 mil	27.3%

Source: Authors' calculations based on Discovery Health data

5.6.5 The CMS submission to the Health Market Inquiry (HMI) in January 2018[5] presents case studies on anti-selection relating to chronic renal failure and pregnancy as well as the way in which members make option selections on Polmed. This report found that studies indicated that anti-selection (in terms of age, chronic conditions and pregnancy) is a factor contributing to the escalation in health costs for medical schemes.

5 http://www.compcom.co.za/cms/

5.6.6 Considering high cost chronic conditions, DHMS has experienced a significant increase in the oncology prevalence rates of the Scheme for both male and female lives. In 2017, approximately 8 000 DHMS members were diagnosed with some form of cancer. It is estimated that the number of lives with cancer increased by 2.42 times and 2.75 times for females and males respectively between the period 2008 to 2017. Figure 10 and Figure 11 illustrate the increase in oncology prevalence rates by the most prevalent types of cancer for females and males respectively.

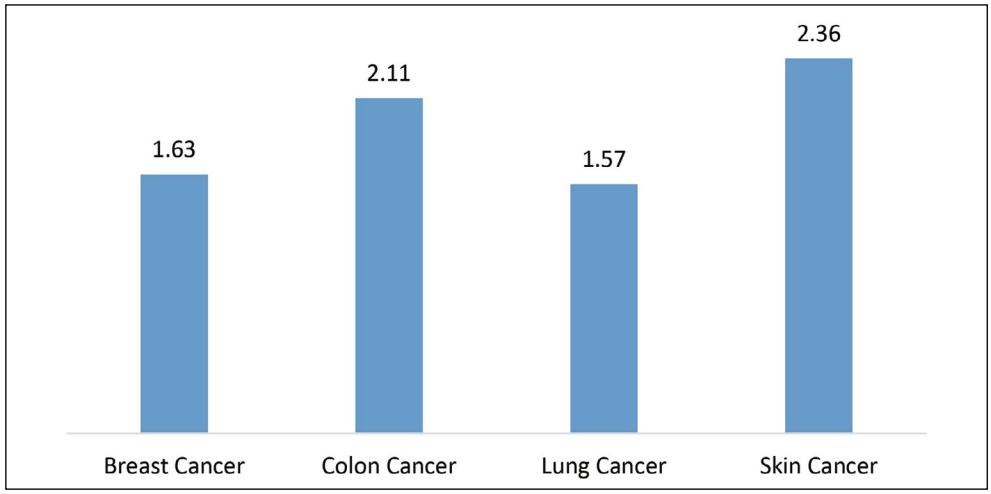

FIGURE 10. Increase in female cancer rates across DHMS between 2008 and 2017
Source: Authors' calculations based on Discovery Health data

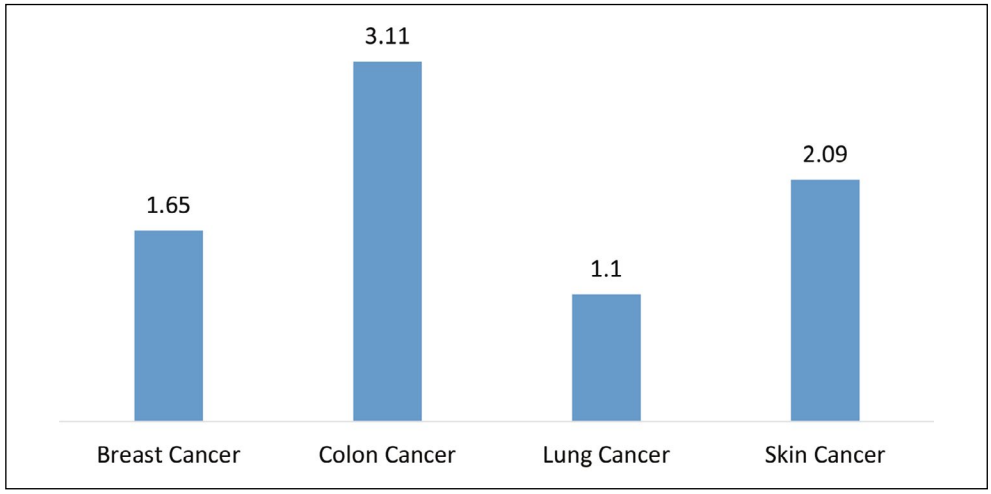

FIGURE 11. Increase in male cancer rates across DHMS between 2008 to 2017
Source: Authors' calculations based on Discovery Health data

5.6.7 The increase in oncology prevalence rates, together with the extensive oncology cover provided by DHMS, has led to significant expenditure for the Scheme. It is estimated that between 2011 and 2017, DHMS paid a total of R15 billion in cancer claims.

5.6.8 DHMS has reported that this degree of anti-selection is not limited to oncology alone, but is observed across all chronic conditions with the prevalence rates increasing at levels that cannot be explained by natural ageing of a Scheme. For example, hypertension prevalence rates increased 106% between 2008 and 2017, with 12.3% of members now being treated for this disease. Similarly, diabetes prevalence rates increased 159% across the Scheme between 2008 and 2017. DHMS has also observed an increase of 78% in members with mental illness between 2008 and 2017, with a concomitant increase of 58% in the number of depression-related hospital admissions over the same period.

5.6.9 To demonstrate the impact of the inadequacy of the CSWP as a tool for medical schemes to protect against adverse claims experience, the gross loss ratio (calculated as claims/contributions) was compared between new lives joining DHMS in 2017 with and without the 12-month condition-specific waiting period, in their first three years of membership. The results are illustrated in Figure 12 and have been age-adjusted.

5.6.10 From Figure 12 it is evident that lives entering the Scheme with a CSWP have a significantly lower loss ratio in Year 1 (due to the 12-month duration of the waiting period), than subsequent years once the CSWP has expired. The loss ratios for these members in Year 2 and Year 3 are also significantly higher when compared to new members without the CSWP. In fact, the loss ratios in Year 2 and Year 3 for members with a CSWP are well in excess of 100%, indicating that these members are claiming around 60% more than they are contributing.

5.6.11 In this context, a 12-month waiting period is thus not sufficient protection for the scheme and its members, as a person diagnosed with one of these conditions can wait

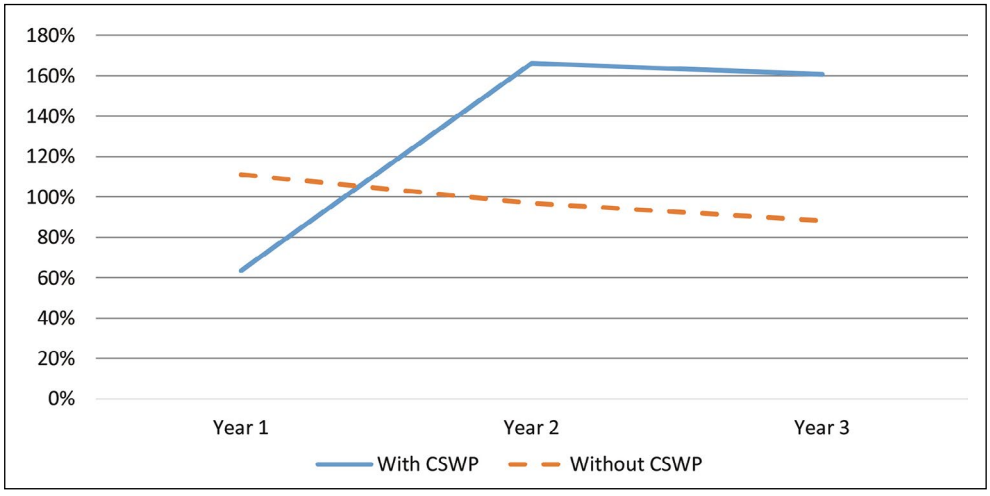

FIGURE 12. Loss ratios of new lives with and without CSWPs entering the Scheme in 2014
Source: Authors' calculations based on Discovery Health data

out the period and then claim substantially more than they pay in contributions for the rest of their life.

5.7 General waiting periods

5.7.1 Comparing the claims experience of those DHMS lives with and without the general waiting highlights similar inadequacies of the general waiting period. An analysis was done comparing the claims experience of those with and without general waiting periods at the time of enrolment for 2013–2016.

5.7.2 The average annual claims experience[6] of those with a general waiting period was 20.8% higher (on a risk-adjusted basis accounting for age, gender and benefit option) for those with a general waiting period compared to those without a waiting period.

5.7.3 The higher average annual claims for lives with the general waiting period is evidence that the majority of those joining schemes for the first time and those switching schemes largely do so on an anti-selective basis.

5.8 The impact of anti-selection on medical schemes

5.8.1 As mentioned above, the impacts of anti-selection manifest in a deteriorating risk profile for medical schemes, leading to higher claims, which must be funded by increasing contributions. As evident from Figure 13, medical scheme contribution inflation has been outstripping the consumer price index (CPI)[7] across the industry. This

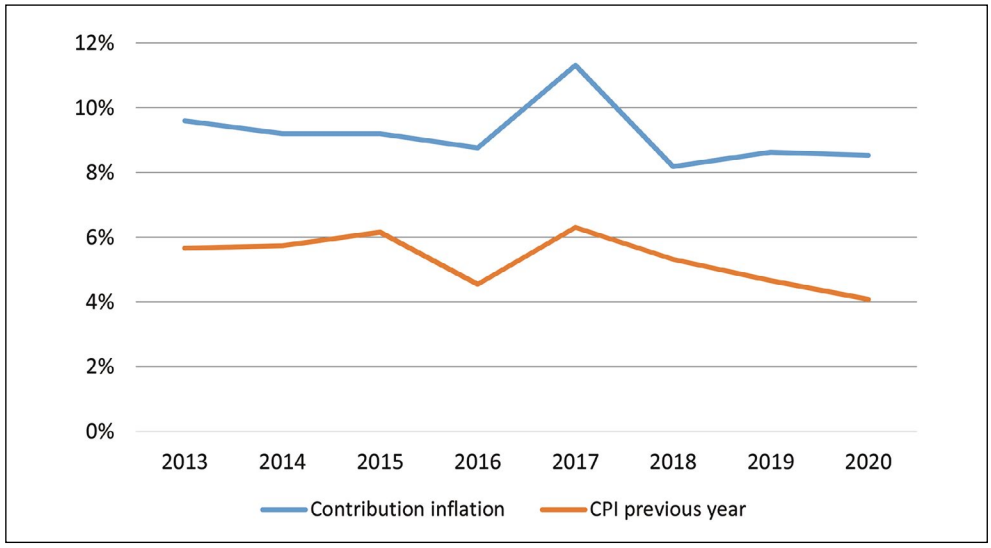

FIGURE 13. Medical scheme contribution increases vs CPI of the previous year (2013 to 2020)
Source: Council for Medical Schemes Circular 60 of 2021 and Statistics South Africa

6 Excluding claims incurred in the three months waiting period for both cohorts
7 Contribution inflation is benchmarked to CPI as a measure of affordability, given that salary inflation is often linked to CPI.

effect is greater for open schemes than for restricted schemes (Council for Medical Schemes b, 2021), and is a result of the trends discussed above.

5.8.2 This unsustainable inflation undermines solidarity in two key ways: it prevents new members from purchasing cover and it encourages medical scheme members to buy down to less extensive benefit options or withdraw from coverage altogether. This is most likely to affect younger and healthier beneficiaries, or lower income earners who are most price sensitive (McLeod & Ramjee, 2007).

6. DISCUSSION: HOW TO COMBAT ANTI-SELECTION IN SOUTH AFRICA

Regulations aimed at mitigating anti-selection in private health insurance markets include risk-rating contributions, risk equalisation funds, premium subsidies and penalties, waiting periods, exclusions and mandatory membership. The public sector can also subsidise insurance coverage for higher risk individuals to encourage their uptake of private cover (Geruso & Layton, 2017; Sekhri et al., 2005). The merits of these policy interventions are discussed below.

6.1 Risk rating of contributions

Risk rating contributions is the most obvious tool available to counter anti-selection across medical schemes. This will not only ensure that the level of contributions reflect the underlying risk profile of each applicant, but it will also encourage younger and healthier lives to purchase coverage earlier. However, risk rating is unpopular in healthcare insurance markets of higher income countries including the United States, as consumers and policymakers perceive it to be unfair practice. Moreover, risk-averse consumers are likely to prefer flat premiums that do not change with health status, given that health status is most likely to deteriorate with age (Geruso & Layton, 2017). Most importantly though, risk rating goes against social solidarity and UHC principles, which aim to protect those most vulnerable.

6.2 Risk equalisation

6.2.1 Where community rating is an inherent characteristic of the health insurance market, a risk equalisation fund (REF) is necessary to equalise risk amongst insurers. While the REF may not mitigate anti-selection at an industry level, an REF allows for an equitable distribution of the demographic profile across insurers to mitigate anti-selection at an individual insurer level. An REF will also hamper the incentive for insurers to compete on risk selection (cream skimming) (Geruso & Layton, 2017).

6.2.2 Further, risk equalisation can promote social solidarity at an industry level, by ensuring the healthy subsidise the sick irrespective of their choice of scheme or benefit option (Geruso & Layton, 2017). This is particularly relevant to the South African medical schemes industry, where current regulatory provisions require each of 254 benefit options to be self-sustaining, severely limiting the potential of cross-subsidisation (Council for Medical Schemes a, 2021; Ramjee & Vieyra, 2014). The implementation of an REF is in line with the recommendations made by the South African Competition Commission's Health Market Inquiry (HMI) in their final report (Health Market Inquiry, 2019).

6.3 Contribution subsidies and penalties

6.3.1 Contribution subsidies or penalties for not purchasing cover is another tool that policymakers may implement to combat selection problems, including the asymmetry of information created by community rating. However, in practice it may be difficult to quantify the optimum level of the subsidy that would maximise take-up while limiting the cost on the public purse. For this reason, contribution penalties may be more a more efficient tool. However, penalties may be politically unpopular, difficult to enforce, and may conflict with the goals of social solidarity particularly if the low-income or high-risk groups are disproportionately affected. A combination of penalties and subsidies may therefore be most effective and efficient to mitigate anti-selection (Geruso & Layton, 2017).

6.3.2 In this light, the HMI has recommended that the current medical scheme tax credit should be reformed to ensure that lower income households earning below the tax threshold also benefit from these subsidies (Health Market Inquiry, 2019). For example, instead of a tax credit for personal income taxpayers, all individuals purchasing medical scheme coverage could receive a partial subsidy from government. Including income as a factor in the REF can further promote income cross-subsidies and enhance social solidarity (Ramjee & Vieyra, 2014).

6.3.3 In addition, late joiner penalties should be bolstered to better reflect the claims experience of lives who defer coverage similar to the Australian system. This will have the dual effect of promoting early entry into medical schemes and improving the demographic profile of the industry, while enabling medical schemes to better meet the claims expenses of late joiners without penalising the rest of the risk pool. In their final recommendations, the HMI concurred that tighter late joiner penalties are required to curb anti-selection in the voluntary environment (Health Market Inquiry, 2019).

6.3.4 The HMI also suggested that contribution discounts be offered to those below age 35. However, it is critical to note that there is a real risk that the costs of this will not be fully funded by the number of new young joiners. This will then mean that the costs of the contribution discount will have to be borne by older members. This will erode risk-cross subsidies from the young to the old inherent in the social solidarity framework of medical schemes. Further, current late joiner penalties are already acting as a form of premium discount to those below age 35, yet they have proved to be unsuccessful in attracting young lives into the medical scheme environment. Any contribution discount to attract new young joiners should thus be very carefully designed, together with schemes and administrators, to ensure that the benefits outweigh the costs to schemes and their members.

6.3.5 Similarly, waiting periods discourage anti-selection and keep premiums affordable (Sekhri et al., 2005). However, as shown above, the current structure of waiting periods in South Africa is ineffective and needs to be lengthened, particularly for pre-existing conditions. This was also a key recommendation of the HMI, who recognised that longer waiting periods are necessary in order to deter anti-selection across the industry (Health Market Inquiry, 2019).

6.4 Exclusions

While exclusion relating to pre-existing conditions is another tool used by global insurers to combat anti-selection, these are unlikely to be effective in South Africa due to PMB regulations. Further, consumers may perceive exclusion of high-cost conditions such as cancer or AIDS, as unfair, as these are often the very conditions for which insurance is most needed (Sekhri et al., 2005). Such exclusions also work against social solidarity and UHC principles, as the vulnerable are left exposed. Policies across most developed countries permit exclusions for certain primary care services, but limit exclusions for higher cost services (Sekhri et al., 2005).

6.5 Mandatory membership

6.5.1 Nonetheless, the authors' view is that the best mechanism to address anti-selection is to mandate membership for a defined set of common benefits across all schemes for all those in formal employment earning above a defined income threshold. Further, given the maturity and magnitude of medical schemes in South Africa, completing the partial reforms to develop an SHI system is the most feasible pathway towards UHC.

6.5.2 This reasoning is in line with the literature. Mandatory membership may be justified in healthcare insurance markets on the basis that this promotes social solidarity by enabling an equitable distribution of payments for health services. Further, a mandatory private insurance sector may be used as a foundation to build a national health insurance system. This may be done by extending the mandate for coverage from the private sector to the public sector as the public sector evolves (Geruso & Layton, 2017).

6.5.3 It has been estimated that prices in a voluntary environment are some 17%–23% more expensive than they would be under mandatory cover (McLeod & Grobler, 2009). Similarly, it is estimated that open scheme contributions could be lower by 23% in an environment without anti-selection (Childs, 2012).

6.5.4 The influx of healthier and younger lives will not only have the direct once-off impact of significantly reducing medical scheme contributions, but will improve the demographic risk profile of schemes. This will strengthen schemes' resilience to claims volatility and improve the long-term financial sustainability of the industry.

7. CONCLUSIONS

7.1 The intentional nature of the purchasing decision of VHI makes it susceptible to anti-selection as those who are aware of their higher morbidity risk are more inclined to purchase cover. This paper has described how this is a global challenge in markets where VHI plays a role in the health system. The significance of the role played by VHI tends to be driven by the extent of coverage by the public health system as well as the accessibility and quality of care provided.

7.2 In South Africa, the susceptibility of VHI to anti-selection is exacerbated by the social solidarity framework under which VHI is regulated. This includes open enrolment PMBs,

and community rating but does not include risk equalisation or mandatory membership which results in medical scheme risk pools being even more exposed to anti-selection. The analysis of the deteriorating profile of medical scheme membership, particularly for open medical schemes demonstrates the effect of anti-selection on the cost of cover and the sustainability of risk pools.

7.3 Measures that can be considered for mitigating anti-selection risk include strengthened underwriting measures, however these can affect accessibility, particularly where lives are not aware of their health risk status until they require treatment. Mandatory membership of some form, related to income level or employment status is an alternative approach to addressing anti-selection as well as ensuring public resources are focused on vulnerable groups. VHI plays an important role in supporting access to healthcare, particularly in low- and middle-income countries, and so managing the sustainability of risk pools is a vital consideration for promoting UHC.

ACKNOWLEDGEMENTS

The authors would like to thank Discovery Health Medical Schemes for access to data and our colleagues at Discovery Health and particularly Pieter Grobler for their comments and input. All errors and opinions are our own.

DECLARATION

The authors confirm that they are employed by Discovery Health (Pty) Ltd which is an administrator of medical schemes and that this is their original work.

REFERENCES

Armstrong, J, Paolucci, F, McLeod, H & van de Ven, WPMM (2010). Risk equalisation in voluntary health insurance markets: A three country comparison. *Health Policy* 98. pp 39–49. Available at: https://doi.org/10.1016/j.healthpol.2010.06.009

Australian Government Private Health Ombudsman (n.d.). Age-based Discount. Available at: https://www.privatehealth.gov.au/health_insurance/surcharges_incentives/discount_age.htm (accessed 5 November 2021)

Belli, P (2001). How anti-selection affects the health insurance market. Policy Research working papers series. No 2574. World Bank. Washington DC. Available at: https://openknowledge.worldbank.org/handle/10986/19694

Childs, B (2012). Presentation: The impact of mandatory membership on affordability. Presented at the Board of Healthcare Funders Annual Conference 2012

Colombo, F & Tapay, N (2004). Private health insurance in OECD countries: The benefits and costs for individuals and health systems. Working Paper 15. Organisation for Economic Co-operation and Development. Available at: https://www.oecd.org/els/health-systems/33698043.pdf

Council for Medical Schemes a (2021). Annual Report 2020/21. Available at www.medicalschemes.com

Council for Medical Schemes b (2021). Circular 60 of 2021. Available at www.medicalschemes.com

Council for Medical Schemes (2019). CMS Annual Report 2018/19. Available at www.medicalschemes.com

Folland, S, Goodman, AC & Stano, M (2013). *The Economics of Health and Healthcare*, 7th edition. Upper Saddle River. New Jersey: Prentice Hall.

Foubister, T & Richardson, E (2016). 'Chapter 15: United Kingdom', in: Sagan, A & Thomson, S (eds) in: *Voluntary Health Insurance in Europe: Country Experience*. World Health Organisation. United Kingdom. pp. 157–161. Available at: https://www.euro.who.int/__data/assets/pdf_file/0011/310799/Voluntary-health-insurance-Europe-country-experience.pdf

Geruso, M & Layton, T (2017). Selection in health insurance markets and its policy remedies. *Journal of Economic Perspectives*. **31**(4), 23–50. Available at: https://www.aeaweb.org/articles?id=10.1257/jep.31.4.23

Government Employees Medical Scheme (2007). GEMS update to the Portfolio Committee on Public Service and Administration. Available at: https://www.slideserve.com/kevinc/portfolio-committee-on-public-service-and-administration-gems-update-2o-june-2007-powerpoint-ppt-presentation

He, AJ (2017). Introducing voluntary private health insurance in a mixed medical economy: are Hong Kong citizens willing to subscribe? *BioMed Central Health Services Research*. Available at: https://pubmed.ncbi.nlm.nih.gov/28841880/

Health Market Inquiry (2019). Final findings and recommendations report. Available at: https://www.compcom.co.za/wp-content/uploads/2020/01/Final-Findings-and-recommendations-report-Health-Market-Inquiry.pdf

Health Market Inquiry (2018). Provisional findings and recommendations report. Available at: https://www.compcom.co.za/wp-content/uploads/2020/02/Health-Market-Inquiry.pdf

McLeod, H & Grobler, P (2009). The role of risk equalization in moving from health voluntary private insurance to mandatory coverage: the experience in South Africa, in: *Advances in Health Economics and Health Services Research*. 21. pp 159–96. 10.1108/S0731-2199(2009)0000021010.

McLeod, H & Ramjee, S (2007). Medical Schemes, in: *South African Health Review 2007*. Health Systems Trust. Available at: https://www.hst.org.za/publications/South%20African%20Health%20Reviews/SAHR2007.pdf

Minister of Health South Africa (2019). National Health Insurance Bill. Number 11. National Assembly. Available at: https://www.gov.za/sites/default/files/gcis_document/201908/national-health-insurance-bill-b-11-2019.pdf

National Department of Health South Africa (2015). White Paper: National Health Insurance in South Africa. Version 40. Available at: https://www.gov.za/documents/national-health-insurance-10-dec-2015-0000

National Department of Health South Africa (1999). Medical Schemes Act number 131 of 1998 Regulations.

National Treasury of South Africa (2021). Budget Review 2021. Available at: http://www.treasury.gov.za/documents/National%20Budget/2021/review/FullBR.pdf

National Treasury of South Africa (2011). Conversion of medical deductions to medical tax credits – tax policy discussion document for public comment. Available at: http://www.treasury.gov.za/public%20comments/2011061701.pdf

Nhamo, S & Mudimu, E (2020). Shifting from deductions to credits: Unpacking the distributional effects of medical expenditure considerations in South Africa, Wider Working Paper 2020/30. United Nations University. Available at: https://ideas.repec.org/p/unu/wpaper/wp-2020-30.html

Organisation for Economic Co-Operation and Development (2004). Proposal for a taxonomy of health insurance. study on private health insurance. Available at: https://www.oecd.org/els/health-systems/31916207.pdf

Part D late enrollment penalty | Medicare (n.d.). Available at: https://www.medicare.gov/drug-coverage-part-d/costs-for-medicare-drug-coverage/part-d-late-enrollment-penalty (accessed 3 November 2021)

Pauly, MV (2007). Insight on demand for private voluntary health insurance in less developed countries in: Preker, AS, Sheffler, RM & Bassett, MC (eds) in: *Private Voluntary Health Insurance in Development: Friend or Foe*. World Bank Group. Washington DC. pp 25–53. Available at: https://openknowledge.worldbank.org/handle/10986/6641

Preker, AS, Schellekens, OP & Lindner, M (2010). Introduction: Strength in numbers, in: Preker, AS, Zweifel, P & Schellekens, OP (eds) in: *Global Marketplace for Private Health Insurance – Strength in Numbers*. World Bank. Washington DC. pp 1–26. Available at: https://openknowledge.worldbank.org/handle/10986/13085

Ramjee, S & Vieyra, T (2014). Neither here nor there: the South African medical scheme industry in limbo. Presented at the Actuarial Society of South Africa's 2014 Convention. Available at: https://www.actuarialsociety.org.za/convention/convention2014/assets/pdf/papers/2014%20ASSA%20Ramjee%20Vieyra.pdf

Sekhri, N, Savedoff, W & Thripathi, S (2005). Regulation private health insurance to serve the public interest policy issues for developing countries. World Health Organisation. Available at: https://apps.who.int/iris/handle/10665/69033

Smith, PC (2007). Provision of a public benefit package alongside private voluntary health insurance, in: Preker, AS, Sheffler, RM & Bassett, MC (eds) in: *Private Voluntary Health Insurance in Development: Friend or Foe*. World Bank. Washington DC. pp 147–67. Available at: https://openknowledge.worldbank.org/handle/10986/6641

South African Revenue Service (n.d.). Medical Credits – South African Revenue Service. Med. Credits. Available at: https://www.sars.gov.za/types-of-tax/personal-income-tax/medical-credits/ (accessed 20 October 2021)

Thomson, S (2010). What role for voluntary health insurance, in: Kutzin, J, Cashin, C & Jakab, M (eds) in: *Implementing Health Financing Reform: Lessons from Countries in Transitions*. World Health Organisation. United Kingdom. pp 299–325. Available at: https://www.euro.who.int/__data/assets/pdf_file/0014/120164/E94240.pdf

Van den Heever, AM (2016). South Africa's universal health coverage reforms in the post-apartheid period. Health Policy 120. pp 1420–28. Available at: https://doi.org/10.1016/j.healthpol.2016.05.012

Wayburne, L & Bradley, E (2013). Maintaining a balance: The impacts of ageing on the age cross-subsidy in medical scheme contributions. Presented at the Actuarial Society of South Africa's 2013 Convention. Available at: https://www.actuarialsociety.org.za/convention/convention2013registration/papers/12-821cd3c7ba1745dca4a75f334159954c.pdf

WHO (2019). Primary health care on the road to universal health coverage. 2019 Global Monitoring Report. Available at: https://www.who.int/healthinfo/universal_health_coverage/report/uhc_report_2019.pdf

WHO (2014). The global push for universal health coverage. Available at: https://www.who.int/health_financing/GlobalPushforUHC_final_11Jul14-1.pdf

WHO (2010). The World Health Report. Available at: https://www.who.int/publications/i/item/9789241564021

WHO a (n.d.). Universal Health Coverage. Available at: https://www.who.int/westernpacific/health-topics/universal-health-coverage (accessed 14 October 2021)

WHO b (n.d.). Global Health Observatory Data Repository. Out of pocket expenditure as a percentage of total health expenditure. Available at: https://apps.who.int/nha/database/ViewData/Indicators/en (accessed 20 October 2021)

WHO c (n.d.). Global Health Observatory Data Repository. Current health expenditure as a % of gross domestic product. Available at: https://apps.who.int/nha/database/ViewData/Indicators/en (accessed 18 October 2021)

