1 Introduction

In light of the market enquiry by the Competition Commission (CC), there has been renewed interest in the level of concentration in the private health sector. This note aims to provide a factual review of historical market concentration trends for private hospitals, medical schemes and medical scheme administrators.

There has been a number of mergers and acquisitions by the three listed private hospital groups (Mediclinic, Netcare and Life Healthcare) during the past decade. However, much of the private hospital industry consolidation occurred before a Competition Commission ruling in 2003/4 prohibiting central negotiation. More specifically, this ruling prohibited the Hospital Association of South Africa (HASA), the Board of Healthcare Funders (BHF) and the South African Medical Association (SAMA) to negotiate collectively on behalf of their respective members (which was the practice at the time).

Therefore, in this analysis all private hospital groups that negotiated collectively under HASA prior to 2004 were grouped together when calculating the concentration level of the market at that time. After the prohibition of collective bargaining in 2004, the concentration level of the private hospitals was calculated by considering each hospital group as a separate negotiating entity. The results therefore indicate a significant decrease in concentration in the private hospital market from 2003 to 2004, while after 2004 the concentration of the industry remained fairly constant.

This might be a counter intuitive result given that there were a number of mergers and acquisitions approved by the CC between 2004 and 2012. The fact that concentration did not increase much during this time relates to the increased capac-
ity of beds across all groups – most notably that of the National Hospital Network (NHN), a grouping of independently owned private hospital facilities. A number of new hospitals (not part of the NHN or other listed hospital groups) were also built, while existing independent groups (e.g. Anglogold, Clinix) expanded their hospitals.

While there has been no significant increase in concentration in the private hospital market over the last few years, the medical scheme and administrator markets show steady increases in market concentration from 2004 to 2012. The Herfindahl-Hirschman Index (HHI) of concentration indicates that the open medical schemes market was more concentrated than that of the private hospitals in 2012. This is due to consolidation amongst medical schemes and significant membership growth for a few large schemes.

2 Trends in market concentration

Before continuing to the analyses, we provide a brief technical framework in order to understand the context and interpretation of results. The level of market concentration is often an important consideration in competition economics. However, the way that it is used and interpreted differs between various jurisdictions. Specifically with regards to the HHI which we present below, different thresholds are used to indicate concentrated markets. In the European Union, for example, a market where the HHI is above 2,000 would indicate possible horizontal competition concerns. On the other hand, the United States of America Merger Guidelines state that HHI levels between 1,500 and 2,500 are indicative of moderately concentrated markets, while a HHI above 2,500 indicates a highly concentrated market. The point is that these thresholds are arbitrary and many other factors also affect market dynamics and especially market power (the relationship between market concentration and market power is discussed in more detail in section 3.2).

Concentration indices for each of the three markets (private hospitals, medical schemes and medical scheme administrators) are presented below. For private hospitals, we used the number of registered beds for each hospital in all of the years to calculate market shares. We had sufficient data on the number of hospital beds and other relevant information to consider the trend in concentration from 2000 to 2012; showing specifically the impact of the 2003 CC decision. This revised and significantly improved dataset for private hospitals provides valuable insights over the period observed. Instead of the number of beds, one could potentially have used patient days sold or some revenue variable to calculate market shares (and concentration). However, these indicators are not available for the NHN members and the other independently owned hospitals. It is also industry convention to use bed numbers for market concentration calculations (this is what was used in the private hospital merger and acquisition cases before the CC).

The analysis is focused on the period post 2004. Medical schemes and administrator markets are analysed from that time onwards, as prior to this, the medical scheme market would have had an HHI of 10,000 as all medical schemes negotiated collectively under BHF. (For the medical scheme

1. See the appendix for the formula and description of the HHI measure of concentration.
3. Available at: http://www.justice.gov/atr/public/guidelines/hmg-2010.html#5c
4. An HHI of 10,000 is the maximum value this index can take and would indicate a monopolistic market (highest level of concentration).
market and the administrator market we used the number of beneficiaries represented by each entity to determine the respective market shares.5)

2.1 Private hospitals

Using various datasets from the Health Annals publications, HASA and the NHN, a complete dataset of individual hospitals with their respective number of registered beds for each of the years from 2000 to 2012 was constructed. This information was supplemented by contacting some hospitals to verify the data on bed numbers, dates of acquisition, membership of HASA and/or the NHN, etc.

The data were further organised into the applicable tariff negotiating arrangements in each year. Prior to 2003, due to the collective bargaining that took place under HASA; Netcare, Mediclinic Life Healthcare and all NHN hospitals were grouped into one entity. The independent hospitals were counted as individual separate entities. After the CC ruling in 2003, which banned collective bargaining, each hospital group that was previously grouped under HASA was counted as a separate entity. Individual hospitals were treated in the same way as before, i.e. counting each entity separately.

Figure 1 provides a high level view of the underlying data that were used to calculate the concentration measures. Total hospital beds increased from 24,402 in 2000 to 34,600 in 2012. Netcare had the largest number of beds in 2012 with 9,143 registered beds across all their hospitals. The NHN showed the highest growth over the period: growing from 2,678 beds in 2000 to 7,198 beds in 2012 – more beds than all the Mediclinic hospitals in that year (7,005). [In Figure 1 “independents and other groups” refer to those hospitals which are not part of the NHN or the three listed hospital groups.]

Despite the increase in bed numbers over the past decade, the ratio of private hospital beds per 1,000 medical scheme beneficiaries has remained fairly constant. This indicates that the growth in the number of beds has been aligned with the growth of the medical scheme beneficiaries. Figure 2 shows that the private health sector has provided around 4 beds per 1,000 beneficiaries for the last 9 years.

The data presented in Figure 2 do not provide any information on the structural changes

5. Again, one could use different indicators to calculate market concentration in the medical schemes/ administrators markets. For example, net contribution income or perhaps real reserves per beneficiary. However, it is understood that one of the most important factors influencing negotiating power on the side of the funders, is beneficiary numbers. Funders may negotiate discounts on provider tariffs in return for larger volumes of potential patients.
in the market, and the stagnant trend of beds per beneficiary does not mean that the underlying market dynamics have remained the same. It is possible that changes in ownership or the growth of particular companies may have affected the structure of the market in a way that is not captured by looking at the number of beds or ratio of beds per beneficiary alone.

In Figure 3, we present the results from our market concentration analysis for private hospitals. (HASA and the NHN hospitals are grouped together prior to 2004 to reflect the collective bargaining that took place under HASA at that time). The HHI shows an increasing trend in concentration from 2000 to 2003. As explained before, the independent hospitals (those not part of HASA and/or the NHN at the time) negotiated individually, therefore these facilities were counted separately in the HHI calculations throughout the entire time period (which explains why we do not see an HHI value of 10,000 prior to 2003). The individual treatment of independent hospitals is a

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**Figure 2: Number of private hospital beds per 1,000 beneficiaries, 2004-2012**

![Graph showing number of private hospital beds per 1,000 beneficiaries from 2004 to 2012.](image1)

**Figure 3: Market concentration of private hospitals (HHI), 2000-2012**

![Graph showing market concentration of private hospitals (HHI) from 2000 to 2012.](image2)
notable improvement from previous concentration analyses as independent hospitals are often not counted separately, but incorrectly combined with the HASA hospitals. This artificially inflates the collective market share of independent hospitals and hence the HHI value or market concentration.

As much of the consolidation in the private hospital industry happened prior to 2003, this did not have a significant impact on the market concentration of the hospitals due to the collective bargaining that took place during this period. As expected though, after the CC ruling in 2003, market concentration in 2004 decreased significantly to 2,062 as each hospital group was treated as a separate entity from that year onwards (and not as a collective under HASA). Thereafter, the HHI remains around this level until 2012, with a value of 2,124. We do not see any meaningful increases in market concentration between 2004 and 2012.

A particularly interesting feature of the results shown in Figure 3, is the flat trend in market concentration for the private hospitals from 2004 to 2012. Given the number of mergers and acquisitions approved by the CC during this time, one would have expected an upward trend in concentration. In-depth consideration of the private hospital bed data does indicate many changes in ownership and growth in bed numbers for the various groups. However, the way in which the HHI is calculated implies that this indicator of market concentration will not vary much if bed numbers across all groups continue to increase – as opposed to increases in bed numbers for just one or two of the groups. In essence, the increased number of total beds meant that market shares remained more or less stable during this period.

The underlying data show that all of the three listed hospital groups built new hospitals after 2004 (e.g. Life Beacon Bay, Mediclinic Cape Gate, Netcare Blaauwberg), while all of them also acquired/merged with existing hospitals (e.g. Netcare Linkwood Clinic, Mediclinic Emfuleni (and the rest of the Protector group), Life Bayview). At the same time the NHN increased their members by adding new and existing independent hospitals to their network (e.g. Denmar Specialist Psychiatric hospital, Fochville hospital), but some hospitals also resigned from the NHN (e.g. Clinix group6, Medsac Private hospital). Some independent hospitals entered the market (e.g. Cullinan Private clinic, Lime Acres Clinic) – which would have a decreasing effect on the HHI – and some of the existing independent groups expanded their hospitals (e.g. AngloGold, Clinix). These market dynamics are not adequately captured in a simple measure of concentration, such as the HHI. Some of the changes in the institutional structure of the market, as described here, would have increased concentration, while others would have had the opposite effect. Overall, it seems that many of the changes in ownership and membership, as well as the increases in bed numbers, coincided in such a way that market concentration in 2012 was not much different from what it was in 2004 (keep in mind that many of the competitive changes are hidden by such a simplistic measure).

2.2 Medical schemes

Figure 4 gives the results of the HHI market concentration measures for the medical schemes market from 2004 to 2012. A steady upward trend in concentration is visible for this market. The HHI increases from 712 in 2004 to 1,331 in 2012. However, it is more appropriate to analyse the market for open schemes separately from that of restricted schemes, as open

6. The Clinix group had to resign from the NHN due to Netcare shareholding in one of the hospitals and the NHN exemption conditions stating that none of the three large hospital groups may have shareholding in any of the NHN member hospitals.
schemes are directly competing with each other in the market for beneficiaries. Competition for beneficiaries is almost non-existent between restricted schemes as employers mandate membership to the in-house scheme, if provided. It is for this reason that we consider the market concentration for open medical schemes separately.

From the evidence presented in Figure 4, it is clear that there has been a consistent increase in market concentration of the open medical schemes market. The HHI increases almost threefold from 1,040 in 2004 to 2,850 in 2012. The steady increase in market concentration is largely due to the significant growth in Discovery Health’s membership (and one or two other large open schemes), as well as many amalgamations among the schemes.

The increase in market concentration for open medical schemes is in stark contrast to the flat trend of market concentration for private hospitals over the same time period. This has certainly impacted on the institutional environment and market dynamics in the private health sector, and will be discussed in more detail in section 3.

2.3 Administrators

In Figure 5, the market concentration for medical scheme administrators is examined. We consider this market in addition to that of medical schemes, as administrators are important players in South Africa’s private healthcare sector. In most instances, it is the administrators who negotiate with the private hospitals each year to determine the national fee increases (prices for hospital services) for each of the medical schemes that the administrator provides services to.

Similar to the trend in concentration for all medical schemes, the administrator market is also characterised by steadily increasing levels of concentration, albeit at a lower level than that of open medical schemes. In 2004, the HHI

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Econex has extensive experience in competition economics, international trade and regulatory analysis. We have an established reputation for providing expert economic advice in high profile mergers and complaints that appear before the competition authorities. Some of the highlights include the complaint against British American Tobacco, the merger between MTN and iTalk, the complaint against Senwes and the acquisition of KayaFM by Primedia. More recently, Econex acted as expert economists in the Glencore/Xstrata merger. Apart from competition work, we have also been involved in trade matters, including the analysis of the effects of tariffs, export taxes and anti-dumping duties. As a result of our work in competition proceedings we have invaluable experience in some of the sectors of the South African economy where regulation continues to play an important role, e.g. the telecommunications, health and energy sectors. We use economic knowledge of these sectors to analyse specific problems for some of the larger telecommunications, health and energy companies.
The introduction and fast membership growth of the Government Employees Medical Scheme (GEMS) from 2006 onwards is one of the primary reasons for the trend observed. However, we also calculated the concentration of the administrator market, counting the GEMS beneficiaries separately from Metropolitan (i.e. treating GEMS as an ‘administrator’ on its own) as GEMS negotiates with providers directly, and not via their administrator.

Figure 5 indicates that, as one would expect, the levels of concentration are slightly lower for the administrator market when GEMS is treated separately. There is, however, still an upward trend for the index, showing that the market was more concentrated in 2012 than in 2004.

It is clear that there have been some changes in the private health sector over the past few years, with increases in market concentration levels specifically for the medical scheme and administrator markets. In the context of the above analysis, the following section considers the interaction of the funder and provider sides of this sector – aiming to determine how changes in market concentration may have influenced negotiating power during this time period.

3 The balance of power

This section provides an overview of the private health sector from 2004 to 2012, as far as changes in the market concentration of private hospitals, medical schemes and administrators have affected institutional dynamics and also, to an extent, market power. In Figure 6, the HHI measures of concentration are shown for the three markets analysed above. Given the unique features of the private healthcare market in South Africa and the practicalities regarding annual national tariff negotiations, we proceed to analyse open medical schemes and administrators treating GEMS separately.

3.1 Market concentration trends from 2004 to 2012

In 2004 there was a large difference between the HHI for private hospitals (2,062), and that for the administrators (1,069) and open medical schemes (1,040) markets.
Over time, this discrepancy decreased due to increases in concentration of the open medical schemes and administrator markets while concentration in the private hospital market remained fairly constant. By 2010 there was very little difference between concentration in the private hospitals and the open medical schemes market, at HHI levels of 2,088 and 2,049 respectively. The level of concentration continued to increase for administrators and also sharply increased for open medical schemes, reaching 1,677 for administrators (GEMS separate) and 2,850 for open medical schemes in 2012.

Such significant changes in the market concentration of administrators and open schemes in particular, would certainly have impacted on the balance of power in the private health sector. All in all, the results indicate that this increased concentration may have improved the medical schemes’ and administrators’ countervailing power vis-à-vis the private hospitals over the past few years.

3.2 Market concentration and market power

3.2.1 Benefits and limitations of concentration analyses

All other things being equal, the larger the number of independent firms operating in a market, the less likely the possibility of abuse of dominance by one or a small number of large firms. The use of concentration indices, such as those discussed above, is a good starting point for determining market structures. Concentration indices are simple to calculate and require elementary information about the markets under investigation. These indices provide valuable summary information on markets and are comparable across time, making it simpler to determine how market concentrations have increased or decreased over a given period. Furthermore, these indices are often published by the statistical agencies of governments, making them easily available and comparable across countries. In our analysis, we focussed specifically on the HHI as a summary concentration measure. It has become standard practice to

Figure 6: Market concentration (HHI) of private hospitals, medical schemes & administrators, 2004-2012

Source: Econex calculations (private hospital bed data; CMS annual reports)

calculate this index in South African mergers and also those that took place in the private hospital sector. These results can therefore be easily compared to previous work done by various economists during these merger proceedings.

However, there are various criticisms of the use of concentration indices, including the fact that it gives insight into only one dimension of competition, namely market structure. It is emphasised that concentration indices are simply a starting point for a competition economic analysis.

The conceptual disadvantage of the use of market concentration indices is that it relies heavily on the Structure-Conduct-Performance (SCP) paradigm. According to the SCP paradigm, the structure of a market determines the conduct of the companies, which in turn determines the performance. Thus, there is a clear direction of causality moving from structure, to conduct, to performance. Structure refers to the number and size distribution of firms in a relevant market. Conduct refers to the behaviour of firms, whether they act in a competitive or anti-competitive manner, whether they collude with each other, or whether certain firms control certain segments or even the whole market. Performance includes profit levels, efficiency, economies of scale, etc.

While we recognise that the SCP paradigm has evolved and new schools of thought have emerged — focussing more on the dynamics of competition, issues of causality and game theoretic interactions — summary concentration measures are nevertheless an important starting point for market analysis. Also, the HHI has received much attention during merger hearings in South Africa, and therefore remains a valid measure to analyse.

3.2.2 Concentration analyses in the healthcare sector

It is important to point out that there are various reasons why concentration indices like the HHI should be interpreted with care in the context of medical services markets specifically. While concentration can influence market power significantly, it is not the only factor important to the annual national tariff negotiation process between the schemes/ administrators and private hospitals.

The negotiation process involves many components, namely:

- The pricing model to be utilised (e.g. Fee-For-Service or Alternative Reimbursement Model);
- Price increases to be implemented, based on provider input cost drivers;
- Preferred network arrangements;
- Quality performance;
- Payment terms;
- Cooperation with managed care protocols;
- Administration systems;
- Credit risk; etc.

In most cases, administrators negotiate with hospitals on behalf of the collective group of medical schemes they represent, increasing an individual scheme’s bargaining power to the bargaining power of the administrator. In addition, medical schemes have a number of tools available to control private hospital expenditure, which also increases their bargaining power when negotiating prices with the hospitals. These include the following:

1. Hospital networks — Medical schemes enter into agreements with certain hospitals to form an exclusive network for that scheme’s members. Members are incentivised to use hospitals on the network through a co-payment of 25-40% of the hospital bill imposed, should the member use a hospital outside of the scheme’s network.
2. Managed care — Administrators manage utilisation through their contracted
managed care companies. This includes the authorisation of a hospital admission; management of level of care and length of stay; disease management protocols; and drug management protocols; etc.

3. Reimbursement models – Medical schemes are increasingly shifting risk to hospital providers with alternative reimbursement structures, which place a financial risk on the hospital if costs are not well controlled.

4. Doctor networks – Medical schemes enter into agreements with certain specialists at specific hospitals. Medical schemes then steer members to specialists on the network by imposing a co-payment when consulting a specialist outside the network. This co-payment is often quite a significant out-of-pocket payment faced by the member. Medical schemes usually reimburse the member for the consultation at the ‘scheme’ rate, whereas specialists are likely to charge twice, thrice or even quadruple this rate. This imposition of the high co-payment has the result of limiting the freedom of choice of the member by restricting the choice of both the specialist and the hospital.

5. Deductibles – Benefit plans often specify high deductibles for procedures with high utilisation rates, such as dental procedures and scopes. These deductibles are sometimes so high that the entire procedure must be covered out-of-pocket by the member, or forfeited.

6. Day clinics – Medical schemes can steer members towards day clinics and other alternative settings away from hospitals by imposing co-payments, should the patient visit a hospital instead.

7. Doctor incentives – Doctors are incentivised to move patients away from hospitals to lower levels of care, such as step down facilities and day clinics.

3.3 Market dynamics

The analyses presented in this research note showed increasing trends in market concentration for the administrators and medical schemes market, especially for open medical schemes. This happened while concentration of the private hospital market remained stable. Given the specific institutional arrangements and the nature of the annual national tariff negotiation processes, one can assume that this increase in concentration among the medical schemes and administrators would have positively impacted their negotiating power.

The fact that medical schemes are well positioned to exercise countervailing buyer power has been recognised by the competition authorities. The Competition Tribunal accepted in the Phodiclinics/Protector Group merger\(^{10}\) that medical schemes do enjoy some countervailing power and confirmed this view in the Netcare/Community Healthcare merger\(^{11}\) in 2007. In the case of the large administrators, they negotiate tariffs on behalf of significant membership and use their volumes to wield this countervailing power.

As described in section 3.2.2, medical schemes are able to restrict members’ access to a hospital in terms of limited benefit plans and by imposing

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11. Netcare Hospital Group (Pty) Ltd and Community Hospital Group (Pty) Ltd Case No. 68/LM/Aug06 at para 59.
co-payments on members that utilise hospitals not approved by their benefit plan. This ability is a powerful negotiation tool in the hands of the medical schemes and administrators.

4 Concluding remarks

This research note evaluated changes in the market concentration of private hospitals, medical schemes and administrators. We find that concentration in the private hospital market decreased subsequent to the CC ruling in 2003 — prohibiting collective bargaining by HASA, BHF and SAMA — and has since remained stable. In contrast, market concentration for administrators as well as medical schemes (open medical schemes, in particular) has increased to concentration levels close to or above those of the private hospitals. While we note that market concentration is not the only factor at play in negotiating prices for healthcare services, our results suggest that the bargaining dynamics within the private healthcare market have changed considerably over the past decade.
Appendix: Herfindahl-Hirschman Index (HHI)

The HHI is defined as the sum of the squares of the market shares of all firms within the industry, where the market shares are expressed as percentages. The index can range from 0 to 10,000, moving from a large number of very small firms to a single monopolistic producer. For example, in a monopolistic market where there is only one firm, its market share is 100% and the HHI would therefore be $100^2$, i.e. 10,000. The index is given by the following equation:

$$H = \sum_{i=1}^{N} s_i^2$$

Where $s_i$ is the market share of firm $i$ in the market and $N$ is the number of firms. The HHI thus takes into account both the number and size distribution of the firms in the industry. By squaring market share, more weight is attached to the influence of larger firms within an industry.