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The logo for PriceMetrics, featuring the word "PriceMetrics" in white serif font on a red rectangular background.

## Comments on the WHO/OECD Response to Critiques of OECD Health Working Paper No.85

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## Introduction

1. This note provides comments on the response by the World Health Organisation (“WHO”) and the Organisation for Economic Co-operation and Development (“OECD”) to critiques of the OECD Health Working Paper No. 85 *International Comparisons of South African Private Hospital Price Levels*<sup>1</sup> (“Working Paper”). The note is based on an assessment of two documents from WHO/OECD presented to the Panel of the Health Market Inquiry on 30 August 2016 at a seminar to discuss the Working Paper. Our comments also apply to the oral submissions made by the authors of the Working Paper and other members of the two organisations to the Panel in February 2016 and at the seminar. The note was commissioned by Mediclinic.
2. The first document is a copy of the presentation made at the seminar by representatives of the WHO/OECD. The second document is an attachment to the presentation document and consists of two parts, *Attachment 1A. Overview of Contents* and *Attachment 1B. Summary of Responses to Critiques*. The attachments provide more detailed comments by the WHO/OECD than the presentation made to the Panel.
3. The WHO/OECD’s presentation at the seminar was a response by the organisations to written comments on the Working Paper received by the Panel. The Panel received submissions from Discovery Health, Mediclinic, Netcare and Insight Actuaries and Consultants (IAC). PriceMetrics was commissioned by Mediclinic to assess the validity of the Working Paper’s methodologies and conclusions and its report was submitted by the company to the Panel in April 2016. Mediclinic also submitted reports on the Working Paper commissioned from Econex and Scenarium. PriceMetrics and Econex made a joint presentation of their analysis and conclusions to the Panel at the seminar.
4. The submissions commenting on the Working Paper outlined a number of flaws in the methodologies used in the Working Paper to compare prices between South African private hospitals and a sample of hospitals in 20 OECD countries. In the Working Paper the authors claimed to show prices in South African private hospitals are “high” relative to South Africa’s income level and “*private hospital price levels are the least affordable in South Africa in comparison with OECD countries.*” In addition, the critiques found unjustifiable the recommendation by the authors that that “*this study suggest efforts to control prices ... are needed.*”<sup>2</sup>

## Summary of our critique of the Working Paper

5. The primary purpose of our report was a technical one: to assess whether the data and methodologies used by the authors of the Working Paper were valid and supported its conclusions and recommendations. For example, was the data for OECD countries conceptually and empirically sound as well as consistent and accurate when compared to South Africa price data? The conclusion of the report<sup>3</sup> was:
  - 5.1. “Our assessment of the authors’ methodologies and data used to reach and justify these claims is that there are a number of flaws and weaknesses in their data and analysis that preclude a valid comparison of the prices charged by hospitals and specialists in South Africa to the price calculations in their sample of OECD countries.
  - 5.2. Their policy recommendations based on their methodologies are consequently invalid.”<sup>4</sup>

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<sup>1</sup> Lorenzoni, L., and Roubal, T., (2016). *International Comparison of South African Private Hospital Price Levels*. OECD Health Working Paper No. 85, OECD Paris.

<sup>2</sup> Ibid, page 37, paragraph 73.

<sup>3</sup> PriceMetrics (Pty) Ltd, *Assessment of the Methodologies and Data used in the OECD Working Paper “International Comparison of South African Private Hospital Price Levels”* 1 April 2016.

<sup>4</sup> Ibid, page 1, paragraph 4.

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6. Our primary finding was that the quasi-prices or non-market prices (essentially average costs rather than prices) in the sample of OECD countries are not comparable to the market prices of South African private hospitals. In addition, the quasi-prices used by the authors are unreliable and under-estimate their true values, preventing any meaningful comparison to market prices of hospital services in South Africa.
7. Specifically we found, inter alia:
- 7.1. The authors compare “quasi-prices” of *public sector* hospitals in OECD countries to market prices that *private sector* hospitals charge in South Africa. The quasi-prices of public sector hospitals in OECD countries used by the authors are not market prices. Instead they are obtained primarily from public sector hospital average costs of production which are assumed to be prices: according to the authors they are “unit costs as if they were prices”<sup>5</sup>. The result is that the Working Paper compares artificially constructed, non-market related “prices” of primarily public sector hospitals in OECD countries to actual market prices determined by demand and supply factors for private hospital services in South Africa. Comparing non-market prices to market prices is invalid.
  - 7.2. In defence of their argument that quasi-prices reflect private sector prices the authors claim that public sector quasi-prices are a benchmark for prices in the private sector. The authors provide no evidence to support their assertion which is contradicted by evidence in at least two OECD countries.<sup>6</sup>
  - 7.3. The quasi-prices in the OECD sample of countries are substantially under-estimated, making any conclusions largely meaningless. Examples are:
    - 7.3.1. The quasi-prices do not cover the operating costs of producing hospital services such as “research and development expenditure in health” and “training and education expenditure on health personnel.”<sup>7</sup>
    - 7.3.2. The quasi-prices do not include a hospital’s cost of capital. This is an important omission: Mediclinic’s cost of capital represented 25% of its total operating costs in 2013.<sup>8</sup>
    - 7.3.3. The estimates of the consumption of fixed capital (depreciation) were unreliable and under-estimated for the sample of OECD countries. For example, the authors used rates of depreciation from Germany for four other countries (Hungary, Ireland, Norway and Switzerland) even though the depreciation rates are available for these countries from their national income accounts. In addition, the depreciation rate of 4,8% is implausibly low. For example, in South Africa, for the calculation of National Income accounts the authorities use a depreciation rate of 10% for medical equipment and machinery and equipment and 20% for computers and related equipment.
    - 7.3.4. The authors do not adjust quasi-prices for informal and sometimes formal co-payments made by patients which add to the price paid for hospital services.
    - 7.3.5. The quasi-prices do not recover the full costs of production because of financial losses/deficits incurred by public hospitals.
    - 7.3.6. The quasi-prices are not adjusted for quality. This is recognised by the OECD. The Koechlin et al report states “Over the longer term, methodological advancement could occur by augmenting the analysis with an explicit quality adjustment based - as an example - on post-treatment survival, life expectancy and waiting times and patient-reported outcome measures.”<sup>9</sup>

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<sup>5</sup> See our report for details. PriceMetrics (Pty) Ltd, *Assessment of the Methodologies and Data used in the OECD Working Paper “International Comparison of South African Private Hospital Price Levels”* 1 April 2016.

<sup>6</sup> For example U.K. and U.S.A. See our report for details. Ibid.

<sup>7</sup> Koechlin, F., Konijn, P., Lorenzoni, L. and Schreyer, P (2014) *Comparing Hospital and Health Prices and Volumes Internationally. Results of a Eurostat/OECD Project*, OECD Health Working Paper No. 75, page 14, paragraph 32.

<sup>8</sup> Cf: our profitability report. PriceMetrics (Pty) Ltd. *Assessment of the Economic Profitability of Mediclinic’s South African Hospitals 2010 to 2014 Financial Years*. Submitted to HMI.

<sup>9</sup> Koechlin, F., Konijn, P., Lorenzoni, L. and Schreyer, P (2014) *Comparing Hospital and Health Prices and Volumes Internationally. Results of a Eurostat/OECD Project*, OECD Health Working Paper No. 75, page 23, paragraph 61.

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7.3.7. The quasi-prices are not adjusted for waiting times: the cost of waiting for a treatment needs to be added to the price of treatment or deducted from the estimated value of the treatment. Excessive waiting times are a problem in many OECD countries.

8. In our joint presentation with Econex at the seminar on 30 August 2016 we stated that the Working Paper was descriptive and contained no analytical model or framework to support its recommendation of price controls. Other presentations at the seminar on behalf of Netcare and by IAC also raised concerns about the comparability of the data and as well as highlighting other weaknesses of the Working Paper.

### **The response by WHO/OECD to the critiques**

9. After considering the submissions from us and other parties the WHO/OECD in the two documents stated above still contend that they “find no substantive issues related to the data and analysis that alter the main findings and conclusions,” namely that:
- 9.1. *“Prices in South African private hospitals are high relative to South Africa’s income level, and on par with the OECD average and much higher-income European countries (i.e. France, U.K, and Germany).”*
  - 9.2. *“Prices in South African private hospitals are increasing above the rate of increase for other goods and services in the South African economy.”*
  - 9.3. *“Prices in South African private hospitals are unaffordable for the vast majority of South Africans - even higher income groups.”*
  - 9.4. *“Among the countries in our study, prices in South African private hospitals are the least affordable, as measured by the largest difference between private hospital price levels and the price levels for all other goods in the economy.”*
  - 9.5. ***“We continue to support the technical and methodological soundness of the study.”***<sup>10</sup>

### **Comments on the WHO/OECD response**

10. Our comments are in three sections. The first section discusses the concessions the authors have made in response to our critique. The second addresses some specific comments by the authors on our paper. The third section expands our critique to include further conceptual flaws in the methodologies in the Working Paper that were highlighted at the seminar.

### **Section One: concessions made by the authors of the Working Paper**

11. The WHO/OECD’s statement that they “*continue to support the technical and methodological soundness of the study*” is surprising because both at the seminar and in the Attachments IA and 1B the authors admitted that a number of criticisms that we and other interested parties made in our comments on the methodologies in Working Paper were in fact correct. They are therefore acknowledging serious weaknesses in the Working Paper, inter alia, the application of incomparable and incomplete data and the use of quasi-prices which are defined differently to the market prices used in the sample of South African prices.
12. Before discussing these concessions it is important to note from the two documents submitted that the authors of the Working Paper and their associates at the WHO/OECD no longer argue that private hospital prices should be controlled. This is probably a recognition that such a policy recommendation cannot be drawn from the Working Paper which the organisations now admit is a purely descriptive review of the data. The fact that such an

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<sup>10</sup> WHO/OECD Attachment 1A. Overview of the Comments, page 1.

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uninformed, unwarrantable recommendation was made without any analytical framework or evidence to support it is regrettable particularly given the subsequent attention the Working Paper received in the media.

13. In the absence of any model or theory to explain their empirical data it appears now there is no policy recommendation by the WHO/OECD. A reader of the Working Paper is left with little except a comparison of two variables, a sample index of hospital prices in South Africa and 20 European countries, which have little in common with South Africa, to a macroeconomic indicator which, as we showed in our report and explain further below, has little relevance to those hospital price indices.

***The concessions by the authors to our criticisms***

14. The paper is descriptive and contains no analytical model to explain their assertions that “prices in South African private hospitals are high relative to South Africa’s income level” (page 1). The authors confirm in Attachment 1B at page 19, “*We demonstrated empirically that hospital prices correlate with income levels ... by comparing hospital price levels against GDP per capita and household consumption expenditure. This is not a model or theory; it is an empirical finding based on the analysis of the data.*” Yet despite admitting that the report is descriptive and not analytical, the authors decided in the Working Paper to recommend that private hospital prices should be controlled. The authors appear not to recognise a principle of statistical analysis: correlation between two variables does not imply causality or relevance.
15. Competition authorities conclude prices are sometimes considered “high” based on a rigorous analysis of market structure and the behaviour of firms in the market. The Working Paper states that prices were high without undertaking any analysis of competition in the market for private hospital services to justify their conclusion. The authors admit this omission on page 16 of Attachment 1B, “*While the study did not address the issue of competitiveness, it would be possible for the HMI to expand on the OECD methodology to analyse whether the prices are “anticompetitively” high by analysing the same sample of case types by individual medical schemes and individual hospitals comparing the prices and relative market powers within the relevant markets.*”
16. It is clear from this statement that the authors’ policy conclusion that prices are “high” is not based on any analysis of competition in the markets for South African private hospital services. Yet despite admitting there is no competitive analysis in the paper, the authors contradict themselves by stating, without evidence in Attachment 1B at page 29, “In South Africa hospital prices are negotiated and are not based on the results of transactions in an open and competitive market.”
17. The authors implicitly acknowledge that quasi-prices are not comparable to South African private hospital prices. Quasi-prices are not prices but average cost calculations because market prices do not exist in the OECD public sector hospitals. The authors state at page 29 in Attachment 1B, “*... such price observations are not always readily available in a number of sectors including health care.*” Conversely, South African private hospital prices exist and are market determined by demand and supply factors. It is worth noting that although private sector hospital prices for many of the case types in the paper are publicly available in OECD countries either from hospitals or from specialist medical services websites,<sup>11</sup> the authors declined to use this market data to compare to private hospital prices in South Africa.

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<sup>11</sup> For example: <https://www.medigo.com/en#tabs-3> and <http://www.privatehealth.co.uk/conditions-and-treatments/hip-replacement-total/costs/?pincode=>

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18. The authors admit the quasi-prices used in the Working Paper are under-estimated.
- 18.1. The quasi prices do not recover all operating costs of hospitals in OECD countries such as the recovery of research and development and staff training costs which are included in South African hospital prices. At page 33 Attachment 1B states, *“It is correct that prices do not include R&D and health worker training as per the agreed upon methodology.”*
- 18.2. The cost of capital is not included in the estimate of quasi-prices. The authors state in Attachment 1B at page 31 that the quasi-prices used in the paper are generally based on average costs of providing hospital services in OECD countries but do not include any *“profit margin.”* The *“profit margin”* as defined by the authors is the cost of using the capital that is provided by debt and equity investors to hospitals. The OECD/WHO Attachment 1B at page 31 states *“a profit margin analysis is outside of the scope of the study”* For Mediclinic in 2013, as mentioned earlier, the cost of capital was 25% of total supply costs. To be comparable to South African private hospital prices the quasi-prices need to include the cost of capital.
- 18.3. It is concerning that the authors appear not to understand that profits are required to ensure that private hospitals survive. On page 36 of the Attachment 1B the authors state in response to the comment in our report, *“If private sector hospitals used quasi-prices as a benchmark they would not be able to cover their costs and would go out of business”* that *“this is an anecdotal statement for which the authors have provided no supporting evidence.”* Our comment is neither anecdotal nor lacks evidence. In fact it is a fundamental economic principle and business common-sense that firms which do not make profits, i.e. include in their prices a positive return on their capital, eventually go out of business. In the public sector where state enterprises make losses they need to be subsidised by the government to keep them operating.
- 18.4. The paper has not adjusted quasi-prices for co-payments for hospital treatment: at page 31 of Attachment 1B the authors state, *“... informal payments are not included in the calculations.”*
19. The authors also concede that the rand exchange rate depreciation can partially explain both “high” prices and increases in the prices of private hospital and specialist services as well as adding to the measurement problems of whether prices are “high.” In their Working Paper the authors state at paragraph 35, *“Price levels depend on exchange rates and may be subject to large variations in line with exchange rates swings and should therefore be interpreted with caution.”*<sup>12</sup> We pointed out the problem in our critique by stating, *“The depreciation of the rand exchange rate is a good example. On 31 March 2011 the dollar/rand exchange rate was R6,77<sup>13</sup> to one dollar; on 31 March 2013 the dollar/rand exchange rate was R9,24 to one dollar.”*<sup>14</sup> The authors concede further in Attachment 1B at page 25, *“The study collected prices of hospital services, not on the cost components, which might be influenced by the prices of imported goods. The input costs of some imported goods might be influenced by changing exchange rate (sic), but it is not clear how such changes are reflected in the prices observed. With the current data, we are unable to determine the share of the hospital component dedicated to pharmaceuticals and medical devices.”* The authors then further acknowledge in relation to the impact of exchange rate fluctuations on page 25 of Attachment 1B another important weakness of the Working Paper. Although the Working Paper concludes that private hospital prices should be regulated in South Africa it does so without understanding why prices are high: *“... the study aims to carry out an international price comparison, but does not seek to explain fully the reasons for high prices.”*

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<sup>12</sup> Ibid, Lorenzoni, L., and Roubal, T., (2016). *International Comparison of South African Private Hospital Price Levels*. OECD Health Working Paper No. 85, OECD Paris, page 16, paragraph 35.

<sup>13</sup> Source: <http://www.exchange-rates.org/Rate/USD/ZAR/3-31-2011>

<sup>14</sup> Source: [http://www.exchangerates.org.uk/USD-ZAR-31\\_03\\_2013-exchange-rate-history.html](http://www.exchangerates.org.uk/USD-ZAR-31_03_2013-exchange-rate-history.html)

20. Besides these concessions the authors err by attempting to justify using depreciation rates for fixed capital which are not comparable to those used in South Africa. Attachment 1B states at page 33, “*The approach and the add-on figure of 4,8% for depreciation of assets were endorsed by both Eurostat and OECD countries.*” As mentioned earlier, South African authorities use a depreciation rate for measuring consumption of fixed capital in the country’s GDP accounts of 10% for medical equipment and 20% for computers and related equipment. Being “endorsed” does not mean the figures are correct or comparable to South African data. Before doing their comparisons the authors should have checked that the treatment of depreciation rates is different to their assumption of rates in OECD countries and made the appropriate adjustments to the data.

## **Section Two: replies to specific responses by the WHO/OECD to our critique**

21. In their Attachment 1B the authors attempt to answer some of our specific criticisms of the Working Paper. Their responses are generally inadequate or do not answer the criticisms. Examples are as follows:

*Different accounting systems, and measurement problems for quasi-prices reduce the reliability of the price indices*

22. In response to our comment that “Different accounting systems, and measurement problems for quasi-prices reduce the reliability of the price indices,” the authors on page 27 of Attachment 1B state, “...A metadata survey asks countries to provide information on costing/pricing methods” and, “Prices are then adjusted on the basis of the metadata survey findings in consultation with countries. Thus any differences in accounting methods are addressed in the survey.” The authors give no details or justification of the methodologies to make these adjustments and ignore the cautionary approach by an earlier OECD paper that does recognise the problems in using the same data set as the authors: Koechlin et al state: “Some of the results reported in this paper require further interpretation and analysis as there is the possibility of systematic under- or over-valuation of quasi-prices for some of the lower income, primarily CEE, countries.”<sup>15</sup>

*Possible biases in the survey responses*

23. We criticised the Working Paper’s for “possible biases in the survey responses” arising from large variations in response rates to the survey. In particular we noted, “low responses were received from France (5% of hospitals), Finland (17%), Ireland (23%) and Switzerland (38%). Calculating OECD averages from data with such different response rates by country is likely to yield unreliable results” and argued, “The wide range of quasi-prices in OECD countries reduces the reliability of the average price level indices used in the comparison to South Africa.”
24. The response of the authors to this criticism is inadequate. They state that “*in the Working Paper, the average across OECD countries is shown only for descriptive purposes.* Also, at page 30 the authors argue, “*The methodology compares South Africa to each other country in study on a case by case basis. It does not compare SA to an average across OECD countries.*” It is not correct to state that averages were not important to the Working Paper. Averages in the Working Paper were used to draw conclusions for policy recommendations. For example, in the Executive Summary<sup>16</sup> the Working Paper states, “*Given that South Africa has the lowest GDP per capita relative to OECD countries in this study, one would expect hospital price levels in South Africa to be significantly lower in comparison with OECD averages. However, South Africa is an exception to this trend. Despite having the lowest GDP per capita in the sample of countries, price levels for private hospital services are comparable to the average observed across OECD countries.*” (Bold emphasis added). In the next paragraph the authors state,

<sup>15</sup> Ibid, page 21, paragraph 47.

<sup>16</sup> Lorenzoni, L., and Roubal, T., (2016). *International Comparison of South African Private Hospital Price Levels*. OECD Health Working Paper No. 85, OECD Paris, page 4.

*“In examining volume, we find that admissions are relatively high based on the available data but average length of stay was lower for all conditions studied compared to OECD averages.”* (Bold emphasis added). In the next paragraph of the Executive Summary, the authors argue, using the averages as evidence, *“In summary, private hospital prices are expensive relative to what could reasonably be predicted given the country’s income and are likely to be expensive even for individuals with higher levels of income”* and *“This study suggests that policies to control price increases while ensuring accessibility and quality are needed. There is scope to improve the value provided to South Africans for their considerable spending on health care.”* It is clear from these quotations that the use of averages was an important element of the Working Paper’s conclusions.

25. Furthermore we do not agree with the argument of the authors when discussing response rates that, *“In most of the OECD countries studied, prices are regulated across the whole sector and are quite similar for both public and public providers.”* For example, our own research of private sector hospital prices in the U.K. and in Europe shows significant variations in prices in the private sector for hip replacements and knee replacements.<sup>17</sup> It is also difficult to understand the authors’ statement that prices are quite similar in the private sector and public sector in OECD countries when they acknowledge elsewhere in Attachment 1B that their quasi prices do not include a “profit margin” – private sector prices will always differ from a public sector because they need a profit margin to provide a return to their shareholders.

*Failure to include co-payments in quasi-prices*

26. We argue in our report that one of the flaws in the Working Paper’s methodology is to exclude co-payments which leads to an understatement of quasi-prices. The authors’ response to our critique is spurious. They state that *“the informal payments are usually directed to the physicians and not the hospitals - and thus are not used by hospitals as part of their incomes. The argument of the existence of informal payments is thus irrelevant to the price comparison.”* Here the authors ignore the fact that to make a valid comparison with the all-in prices charged to patients in South Africa for medical treatment by hospitals and physicians they do need to include all the costs of treatment in OECD countries.

*Lack of relevance of quasi-prices in former socialist republics in Eastern Europe to market prices in South Africa*

27. A further criticism we made in our report on the Working Paper is the relevance of using quasi-prices in former socialist republics where earlier OECD papers such as Koechlin et al question their reliability: *“Some of the results reported in this paper require further interpretation and analysis as there is the possibility of systematic under- or over-valuation of quasi-prices for some of the lower income, primarily CEE, countries.”*<sup>18</sup> In their response the WHO/OECD do not answer our main argument but state that such prices in those countries reflect *“where tight regulation price regulation achieved very low hospital prices.”* The authors ignore our critique by not recognising or answering Koechlin et al’s cautionary statement of the validity of quasi-prices in those countries. In addition, the authors ignore the possibility that low prices may in fact be the result of past high levels of subsidies which were a feature of socialist republics’ policies for health care. These “prices” did not reflect the actual costs of supply of hospital services in those countries and it is likely that, because of the continued predominance of the public sector provision of hospital services in those countries, prices have not risen to market levels since becoming capitalist economies. If this is the case, as is probable, quasi-prices in the former socialist republics,

<sup>17</sup> <sup>17</sup> For example: <https://www.medigo.com/en#tabs-3> and <http://www.privatehealth.co.uk/conditions-and-treatments/hip-replacement-total/costs/?pincode=>

<sup>18</sup> Koechlin, F., Konijn, P., Lorenzoni, L. and Schreyer, P (2014) *Comparing Hospital and Health Prices and Volumes Internationally. Results of a Eurostat/OECD Project*, OECD Health Working Paper No. 75, page 21, paragraph 47.



nor OECD averages including these countries, cannot be compared to the unsubsidised market prices charged by private hospitals in South Africa.

28. The authors offer another inadequate response to our criticism by commenting, “*prices for each country are collected and reported by national expert (sic) who verifies the reliability of the information for each country. Thus any differences in response rates would not be expected to influence the results.*” The authors do not state how the national experts verify the information or what they mean by verifying the information. For example, does the French expert verify the data contained in the 5% response rate or does he/she undertake further research to overcome that very low and possibly unreliable sample? In summary, the authors have not answered our criticism that taking averages of results of surveys in different countries’ with widely different response rates and in particular low response rates is likely to result in unreliable averages to compare to South African average price levels. Secondly, the authors fail to answer the criticism that a low response rate, for example in France with a 5% response rate, may provide unreliable estimates of actual prices in the country.

#### *Data in the United States and Slovakia*

29. In our report we included references to the U.S. and Slovakia. The authors point out that these countries were not in the sample of OECD countries which is correct. However, our arguments are still relevant unless the authors are claiming that these countries are unrepresentative of other OECD countries, which is highly doubtful.

#### *Structure of private sector health expenditure*

30. Finally, in our report we state that the total health expenditure spent in the private sector is very similar to other BRICs countries and in fact to developing countries. The authors argue that “*it is not relevant to compare countries such as China with high private out-of-pocket spending with South Africa where the source of private spending is private voluntary health insurance.*” We reject this criticism. The relevant expenditure **is the total** amount; where it is sourced from is irrelevant. In fact, instead of criticising South Africa, the authors should be commending South African medical aid schemes for innovative solutions recognised by the market for the funding of private medical care. The authors ignore basic economic principles of insurance economics which show that in the presence of risks such as ill-health the ability to insure in competitive markets improves consumer welfare substantially.<sup>19</sup> Consequently, patients in South Africa probably pay less in total expenditure on private medical care than they would if the current system of medical insurance did not exist in the country.

### **Section Three: further conceptual and flaws in the WHO/OECD methodologies**

31. Besides the lack of any conceptual framework to justify the policy conclusions and the use of incomparable and inaccurate data between the South African and OECD countries data, the methodologies adopted by the WHO/OECD have a number of other fundamental flaws. They include:
- 31.1. The use of GDP per capita to correlate with hospital prices as a measure of affordability. Even accepting the use of a macroeconomic variable to explain microeconomic market prices (which we argue below is inappropriate) there are more accurate and appropriate macroeconomic indicators such as GDP per employee that could have been compared to prices of hospital services. Using GDP per employee as a comparator to hospital price levels, we show that the claim that South African private hospital prices are “high” relative to OECD countries is seriously weakened.

<sup>19</sup> The issue is covered in most principles of economics text books. An example of a South African text is by Parkin, M. (2013) *Economics: Global and Southern African Perspectives* (2<sup>nd</sup> edition), Pearson Education South Africa, pages 432-434. An example of the application to medical insurance is Santerre, R.E. and Neun, S.P. (2013). *Health Economics: Theory, Insights and Industry Studies*, 6<sup>th</sup> edition, South-Western, Cengage Learning, chapter 6.

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- 31.2. The use of a macroeconomic variable to explain a microeconomic market price. Prices are determined in markets based on demand and supply factors specific to that market and not by macroeconomic variables.
- 31.3. The WHO/OECD methodology is inappropriate for many products and applied rigidly to standardised internationally tradable goods leads to absurd policy conclusions.
- 31.4. The WHO/OECD methodology is of little relevance to internationally non-tradable goods, which include South Africa hospital services. While prices of tradable goods are set in world markets, prices of non-tradable goods are determined by domestic demand and supply factors. Whether prices are “high” or not cannot be inferred from international comparisons of prices.
- 31.5. The WHO/OECD methodology of considering a price “high” is meaningless without understanding the relationship between the price, value and cost of a product or service or the institutional nature of a market.

32. We discuss these weaknesses in turn.

**GDP per capita is a relatively poor macroeconomic indicator of “affordability”**

33. The authors used as a measure of “affordability” a comparison of an index of hospital prices to PPP GDP per capita. This is an inferior indicator compared to other macroeconomic indicators that could have been used to compare to hospital prices. The problem with GDP per capita is that it is too broad a measure to assess the “affordability” of private hospital prices by international comparisons of the data. GDP per capita does not take into account the fact that countries vary considerably in the structure of their workforce, population and levels of income inequality. For example, the relatively low GDP per capita in South Africa compared to OECD countries is partly because of high unemployment in the country. The unemployed do not contribute to the production of GDP. Dividing GDP by the number of workers who are employed to produce GDP in South Africa will show a much higher GDP per capita figure. In addition, South Africa has different demographics than OECD countries with a higher proportion of children in its population who also do not contribute to producing GDP. The country also has high income inequality where a minority of the population have incomes at Western European levels and which are substantially higher than the GDP per capita would indicate. As a result the ability and desire of a sizeable number of South Africans to use private hospital services is hidden in GDP per capita data.
34. A better measure of “affordability” using a macroeconomic indicator is one that reflects the incomes of those who are creating the GDP, and excludes those who do not contribute to GDP. A more appropriate indicator that meets this criterion is GDP per employee. In the Appendix we use GDP per capita and GDP per employee data to compare to comparative hospital price levels. Our results show how the WHO/OECD’s concepts of “affordability” and “high” prices can vary considerably depending on how prices are measured and the macroeconomic indicator used. Specifically we find that after using GDP per employee and adjustments to the quasi-prices used in the report to make them more comparable to the South African data we find the Working Paper’s conclusion that private hospital prices in South Africa are “high” is difficult to justify even using the authors’ methodology.

**The WHO/OECD methodologies are inappropriate for standardised internationally traded goods**

35. However, as we have already mentioned above and in our previous submission, the WHO/OECD approach of using macroeconomic indicators in different countries to compare whether prices are “high” and to make policy recommendations has serious conceptual weaknesses.
36. For example, consider the case of prices of standardised commodities that are internationally traded. Examples are crude oil, basic metals and agricultural commodities like maize or wheat. These prices are set in world markets and usually expressed in U.S. dollars. The law of one price and arbitrage by international traders results in a world price which is the same throughout the world in a single currency after adjustments for logistics and transaction

costs. Dividing a world market price such as the oil price by a GDP per capita will show widely differing levels of affordability by country. By definition, poorer countries, those with a lower GDP per capita, will be perceived to have “high” or “unaffordable” prices for these commodities compared to developed countries with higher GDP per capita. Following the authors’ logic in the Working Paper *all* commodities which are set by global demand and supply forces need to be price controlled in poorer, i.e. developing countries and somehow reduced to below market levels to make them “affordable”. The poorer the country the greater the need for price controls according to the WHO/OECD methodology, an absurd recommendation devoid of any sound economic principle.

**The WHO/OECD methodologies are inappropriate for internationally non-tradable goods such as South African hospital services**

37. Another fundamental flaw is for non-traded goods. These are products and services where high logistics and transaction costs or restrictive market institutions preclude international trade. Hospital services in South Africa are an example. In these markets international comparisons have very limited use because prices are determined purely by domestic demand and supply factors a fact pointed out in international economics textbooks. It is therefore meaningless to describe a non-traded good in a pejorative manner as “high” or “unaffordable” based on international comparisons.”<sup>20</sup>

**The WHO/OECD methodologies ignore basic principles of economic analysis**

38. A more general argument against the authors’ methodology is that despite the continued claim that the comparisons are relevant to indicators of “affordability,” they ignore basic principles of economic analysis. To understand how prices are determined in a market for a specific product or service requires a microeconomic approach to establish and quantify those market demand and supply factors and the institutional framework in the market that influence the price.
39. The microeconomic approach applies whether the product is internationally traded or not. This includes a detailed analysis of the value created by the product, the technology of producing the product, barriers to entry and exit, the importance of substitutes and complements, the relative market power of buyers and sellers, conditions in input markets, the transaction costs of market exchanges and the laws and regulations affecting the sale and use of the product.
40. Macroeconomic indicators such as GDP per capita are of little use in this analysis. In particular a macroeconomic approach ignores the economic principle that an appraisal of market demand for a product or services *always* requires an identification of those consumers who are in the specific market based not only on their *willingness* to pay but also their *ability* to pay. GDP per capita as a measure of income is not a useful variable to use in assessing the demand for a product because it includes those who do not want to buy and those who cannot afford to pay.

**The WHO/OECD methodologies ignore the role of value and cost analysis in determining whether prices are “high”: or “affordable”**

41. Key variables in determining a market price include the value created by the product or service and the cost of supply. A product or service will be bought only if its perceived value or “utility” ( $V$ ) is greater than its price ( $P$ ). In economic terms this is stated as a buyer will only purchase a good if it generates a consumer surplus ( $V - P > 0$ ). The perceived value is defined as the physical and psychological benefits or satisfaction the product or service

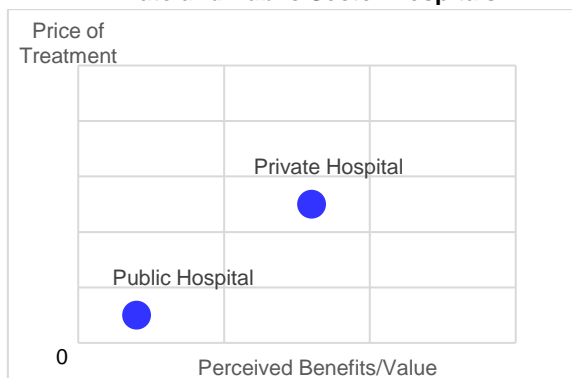
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<sup>20</sup> For example: Krugman, Obstfeld and Melitz, *International Economics* (10<sup>th</sup> International Edition, page 458), “... the price of a non-tradable is determined by its domestic supply and demand curves ...”

gives the buyer and is a function of the attributes of the product or service. Given the choice between two products or services a consumer will choose the one that generates the higher expected consumer surplus – where the difference between the perceived value created and the price is the greatest. Note that a product that has a higher value can be sold at a higher price and generally in competitive markets higher valued products and services sell for higher prices.

42. At the same time from a supplier perspective, a product or service will be supplied only if the price ( $P$ ) is greater than the costs of supply ( $C$ ), that is, the transaction generates producer surplus because it is profitable ( $P - C > 0$ ). In economic terms the total surplus generated is called the gains from trade since both parties benefit from the transaction.
43. In this context whether a price is “high” or “low,” “affordable” or “unaffordable” depends on the relationship between value, price and cost. Even with these concepts determining whether a price is “high” can be very difficult to assess. Is a price high because there is high demand and high value attached to the product? Or is it high because the cost of supply is high? Or is it high because of the market power of the supplier results in a price that is high relative to perceived value and substantially higher than the cost of supply? These issues are the domain of competition authorities to decide and judgements are based on detailed analysis of the relevant markets for a product and service and the behaviour of buyers and sellers in those markets. This analysis is far removed from the WHO/OECD approach of using a single macroeconomic indicator to argue that prices are “high.”
44. These economic principles of value, price and cost can be applied to private hospital markets in South Africa. People will use private hospitals if they perceive the value created less the cost of treatment is greater than the value less the cost of having the treatment in a public hospital. Since the price of private hospital care is higher than in the public sector, patients will only use private hospital services if the additional perceived benefits are greater than the additional cost of treatment. As purchasing treatment at a private hospital is a voluntary act this must be the case for people using private hospitals. Note that value for an individual is subjective. It is his or her perception of the expected benefits from the treatment compared to the cost that is greater for a private hospital service than that from a public sector hospital.
45. Figure 4 illustrates the relationship between value and price called a Price-Benefits map or Value-Price map. Typically, people who choose private hospital services to public sector hospital services do so because they perceive that while a private hospital’s price is higher compared to the public sector it is more than outweighed by the higher value created by the treatment compared to the value received in a public sector hospital.

**Figure 4: Value-Price Map for a Patient’s Treatment in Private and Public Sector Hospitals**



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46. People purchase private sector hospital services because of the *general* perception amongst the public that the benefits are likely to be superior to those they would receive in a public sector hospital (what economists call vertical differentiation) or because of personal preference: the belief they will receive more net value, i.e. additional net benefits, from treatment in a private sector hospital (what economists call horizontal differentiation).
47. The reasons for perceiving higher value in private hospitals varies by patient but are often stated as lower waiting times for treatment, higher quality medical care, better facilities and services in the hospital and the ability to choose a doctor and other medical staff. The authors' Working Paper at paragraph 15 confirms the benefits of private hospital care compared to the public sector, "*The benefits enjoyed include upgraded hospital accommodation, choice of treating doctors, lower waiting times and perception of higher quality services.*"
48. A major reason for using private hospitals is typically lower waiting times for treatment. This reflects a major problem with the public hospital sector. Because of limited funds the supply of beds and medical staff cannot meet demand. Since the cost of treatment is either zero or very low in public hospitals, the demand for treatment is not rationed by price as in the private sector but by alternative rationing methods. These are usually medical staff or administrators in public hospitals deciding on the priority of different treatments or by extended waiting times for all treatments. As our paper shows, in OECD countries waiting times for some procedures are lengthy and of concern. For example, a recent OECD document *Health at a Glance*,<sup>21</sup> states: "Long waiting times for health services is an important policy issue in many OECD countries. Long waiting times for elective (non-emergency) surgery, such as cataract surgery, hip and knee replacement, generates dissatisfaction for patients because the expected benefits of treatments are postponed, and the pain and disability remain."
49. In summary, the notion that a price is "high" or "excessive" in terms of competition policy is extremely difficult to establish even using detailed and sophisticated microeconomic analysis. It can be ascertained in principle by assessing the price in relation to the value created and the cost of supply. Since value is subjective and cost calculations controversial there is little hope of assessing objectively whether a price is "high" or affordable. Using the authors' methodology, the task is impossible.

## Conclusion

50. In their responses to our critique and the critiques of others the WHO/OECD made a number of concessions:
- 50.1. The authors no longer argue that price controls should be introduced on private hospitals in South Africa.
  - 50.2. The authors acknowledge there is no analytical framework to support the view that prices should be controlled.
  - 50.3. The authors implicitly admit that quasi-price data are not comparable to the market price data in South Africa.
  - 50.4. The authors implicitly acknowledge that quasi-prices are understated and are not comparable to the market price data in South Africa.
51. Despite these concessions the WHO/OECD still contend that South African hospital prices are "high" and "unaffordable." We find that their conclusions are unjustifiable and are based on flawed methodologies that cannot be used to support their conclusions. We also demonstrated that even using their methodologies the conclusion that prices are "high" cannot necessarily be drawn from the available macroeconomic data.

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<sup>21</sup> OECD, *Health at a Glance 2015*, page 128.

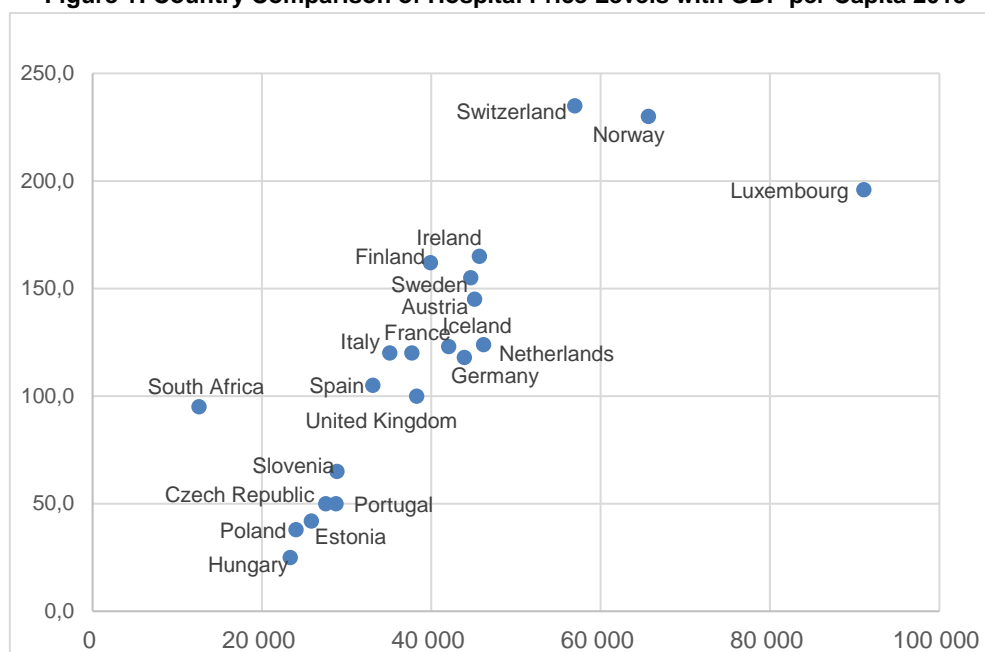
## Appendix

## Hospital Price Indices and Macroeconomic Indicators of Incomes

52. We have stated earlier in this Note that GDP per capita is a flawed macroeconomic measure of “affordability” of a product or service. A better measure of “affordability” using a macroeconomic indicator is one that reflects the incomes of those who are creating the GDP, and excludes those who do not contribute to GDP. An appropriate indicator that meets this criterion is GDP per employee. In the following three graphs we use GDP per capita and GDP per employee data to compare to comparative hospital price levels. Our results show how the WHO/OECD’s concepts of “affordability” and “high” prices can vary considerably depending on how prices are measured and the macroeconomic indicator used.

53. Figure 1 is a reproduction of Figure 5 in the Working Paper.<sup>22</sup> Because the Working Paper provides no data, the graph was created by visual inspection of the price indices in 2013 for each country and using OECD data for GDP per capita for that year. South Africa looks an outlier and the authors consider the position on the graph to indicate “high” prices and low “affordability” of private hospital services in the country.

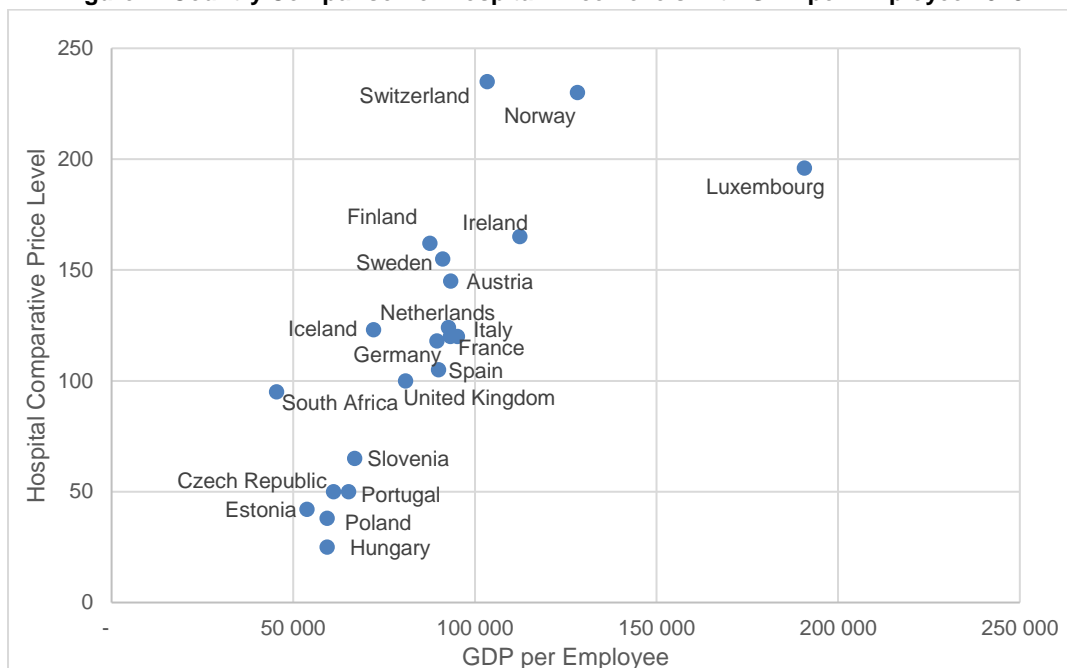
**Figure 1: Country Comparison of Hospital Price Levels with GDP per Capita 2013**



Source: OECD Working Paper and own estimation

54. However, a somewhat different picture emerges when GDP per employee based on OECD data is used to compare the same set of hospital prices for the same year. The results are shown in Figure 2. South Africa no longer looks such an outlier by visual inspection and is now perceived as less “high” and more ‘affordable’ compared to the OECD countries in the authors’ sample.

<sup>22</sup> Figure 5 Hospital comparative price levels and GDP per capita. South African sample and OECD countries, 2013. Lorenzoni, L., and Roubal, T., (2016). *International Comparison of South African Private Hospital Price Levels*. OECD Health Working Paper No. 85, OECD Paris, page 25.

**Figure 2: Country Comparison of Hospital Price Levels with GDP per Employee 2013**

Source: Working paper, OECD database and own calculations

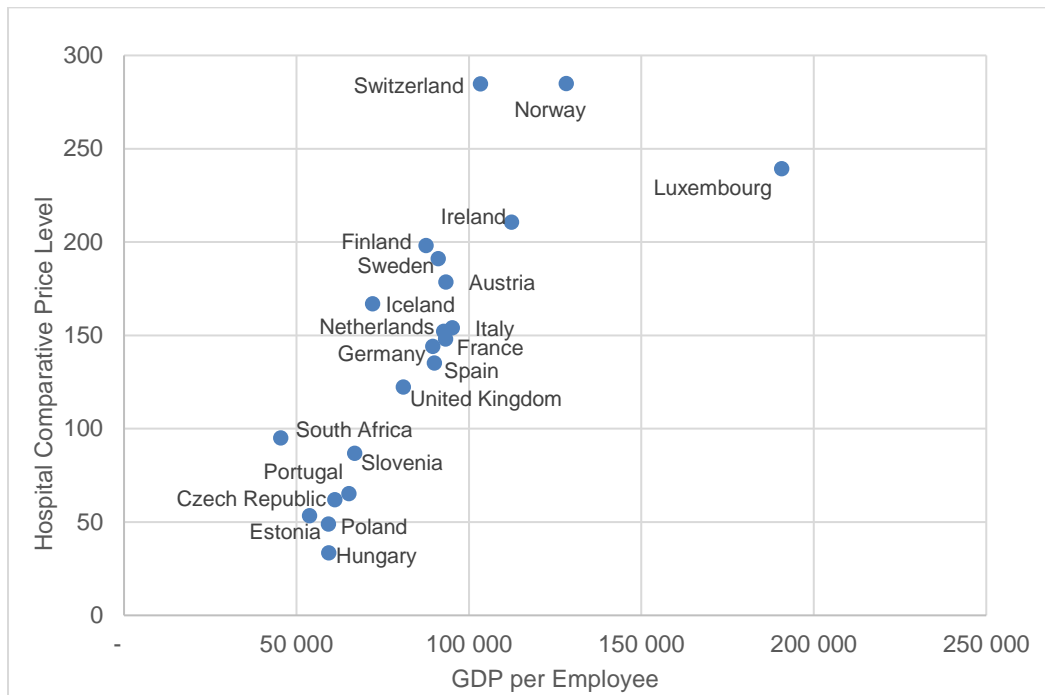
55. Figure 3 shows hospital prices compared to GDP per employee but with the hospital quasi-prices adjusted for OECD countries to make them more “comparable” to South African private hospital prices. We have added a cost of capital (the authors’ “*profit margin*”) to the quasi-prices using Mediclinic’s operating cost structure as typical of a hospital. The pre-tax cost of capital represented 25% of Mediclinic’s total operating costs in 2013.<sup>23</sup> Mediclinic’s percentage cost of capital calculation is based on the financing costs in South Africa using the CAPM model for equity capital, (a risk-free interest rate of 6,5%, a beta of one, a market risk premium of 7,0) and a debt capital/capital employed ratio of 50%. Debt capital for Mediclinic was assumed to cost 1,0% more than the risk-free interest rate. The same calculation was made to estimate the percentage cost of capital for each OECD country using the countries’ data on CAPM variables and the average risk-free interest rate existing in each country in 2013.<sup>24</sup>
56. The quasi-prices were also adjusted to include a depreciation rate closer to the norm in South Africa; to include R&D and staff training expenses; to include an allowance for co-payments and for deficits (losses) of public health services providers in OECD countries. As a broad “*guestimate*” we used a common upward adjustment of 10% on quasi-prices costs to take into account all of these factors. Given our assumptions the new quasi-prices can only be regarded as rough approximations and are used for illustrative purposes only. Nevertheless, Figure 3 shows a relatively different outcome: South Africa is no longer an outlier and broad statements that private hospital prices in South Africa are “high” are difficult to justify using the authors’ methodology.

<sup>23</sup> Our profitability report. PriceMetrics (Pty) Ltd. *Assessment of the Economic Profitability of Mediclinic’s South African Hospitals 2010 to 2014 Financial Years*.

<sup>24</sup>The data was sourced primarily from Fernandez, P., Aguirreamalloa, J., and Linares, P. (2013) *Market Risk Premiums and Risk-Free Rate used for 51 Countries in 2013: a Survey with 6 327 Answers*. IESE Business School. Data sources and calculations are available on request.



**Figure 3: Country Comparison of Hospital Price Levels with GDP per Employee and Adjusted Quasi-Prices 2013**



Source: Working paper, OECD database and own calculations

57. Our conclusion is that depending on the definitions of hospital prices and macroeconomic indicator a wide variety of outcomes is possible using the Working Paper's methodology. Using GDP per employee rather than GDP per capita and adjustments to the quasi-prices to make them more comparable to the South African data we find the Working Paper's conclusion that private hospital prices in South Africa are "high" is difficult to justify even using the authors' methodology.