

Market Power and Price Discrimination in the Market for the Trading of Piped Gas in South Africa*

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Abstract

The Gas Act No. 48 of 2001 makes provision for the differentiation of prices between customers based on quantities purchased. The Competition Act, on the other hand, aims to prevent anti-competitive conduct which includes, among others, price discrimination – especially if such discrimination is likely to be impede the effective participation of SMEs and/ or firms owned by HDPs. To this end, this study examined the extent to which Sasol Gas' price discrimination conduct is likely to fall foul of section 9(1)(a)(ii) of the amended Competition Act no. 89 of 1998 during the period 2014 to 2018. To conduct this examination, this study followed the price discrimination assessment guidelines proposed by the Competition Commission of South Africa (CCSA). The results show that Sasol Gas had market power in the market for the trading of piped gas to traders, during the period 2014 to 2018. Further, the study found that Sasol Gas practiced second-degree price discrimination, and this may have impeded the effective participation of SMEs and/ or firms owned by HDPs – operating at the retail level of the piped gas supply chain. As such, although Sasol Gas' conduct may well be within the parameters of the Gas Act, it is likely to contravene the amended Competition Act. Based on these findings, this study recommends that the Department of Energy, in conjunction with NERSA, must consider amending the Gas Act in line with the amendments made to the Competition Act to ensure policy coherence.

* This paper presents the views of the author and not of the Competition Commission of South Africa.

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1. Introduction

The energy industries, such as that for piped gas in South Africa, are largely characterised by the presence of natural monopolies, particularly in infrastructure markets (i.e., transmission and distribution pipelines). Such energy industries are prone to market failure, where the prices charged are unlikely to reflect prices in competitive markets. This is largely because firms with monopoly power generally abuse such power by charging excessive prices (i.e., prices that are higher than competitive prices). Against this backdrop, the National Energy Regulator of South Africa (NERSA) regulates or controls the pricing of the energy products and/ or services exchanged by the economic agents active in such markets.

However, there are other energy markets within the piped gas industry, which are not characterised by natural monopolies, but where there is not yet adequate competition that would justify the deregulation of these markets (e.g., in the downstream trading of piped gas markets). In these instances, NERSA's approach to regulation is slightly different to its approach in regulating markets that are characterised by natural monopolies.¹ In particular, whilst still regulating to ensure that the players in these markets do not abuse their dominant positions, NERSA also regulates these markets in a manner that would facilitate entry and promote competition within these markets on an ex-ante basis. In this regard, NERSA regulates the piped gas markets by setting out 'the rules of the game' under which market participants are to operate.

In particular, the functions of NERSA include, *inter alia*, the regulation of gas prices in terms of section 21(1)(p) of the Gas Act in the prescribed manner (Gas Act 48 of 2001). In this regard, the Energy Regulator has a duty in terms of section 21(1)(p) of the Gas Act to "*approve the maximum prices for distributors, reticulators and all classes of consumers where there is inadequate competition as contemplated in chapters 2 and 3 of the Competition Act, 1998 (Act No. 89 of 1998)*" (p. 12). Therefore, approving maximum prices² for gas is contingent on NERSA determining that there is inadequate competition as contemplated in the Competition Act. The Gas Act does not only regulate maximum gas prices but also seeks to prevent any abuse of market power by traders or licensees, operating in the markets for the trading of piped gas in South Africa (Gas Act 48 of 2001).

Notwithstanding the foregoing, the downstream trading of piped gas in South Africa is characterized by price discrimination and this is provided for by the Gas Act. More specifically, in terms of section 21(1) of the Gas Act, traders may charge customers different prices based on differences in the quantities of gas purchased. To this end, Sasol Gas charges its gas customers (i.e., these include third party traders at retail level and industrial end-user customers) different gas prices based on the amount of gas volumes they purchase – this is sometimes referred to as 'second-degree price discrimination'. Although Sasol Gas' price discrimination practice is well within the parameters of the Gas Act, it is likely to fall foul of the amended Competition Act. This is largely because section 9 of the amended Competition Act prohibits any act of price discrimination (including price discrimination based on differences in quantities purchased) if it has the effect of impeding the ability of small and medium business or firms controlled or owned by historically disadvantaged individuals, to participate effectively. As such, it has not yet been established

¹ In markets characterized by natural monopolies, NERSA does not promote competition within and entry into these markets. Rather, NERSA views its role in this regard to include the promotion of competitive outcomes in these markets by ensuring that the natural monopolies that operate within these markets do not abuse the market power that their natural monopoly positions conferred onto them.

² NERSA sets the maximum gas price with a view to mimic prices that would prevail in competitive gas markets.

whether Sasol Gas’ second-degree price discrimination conduct is unlikely to fall foul of the amended Competition Act such that it may continue with its practice of charging customers different price based on the quantities purchased and this study intends to fill this gap. To do this, this article answers two questions: (i) whether Sasol Gas has market power in the market for the trading of piped gas to third-party traders; (ii) whether Sasol Gas’ price discrimination practice is likely to be in contravention of the amended Competition Act. Based on the findings, this article outlines the implications of the misalignment between the gas regulation and competition policy in South Africa.

The remainder of this article is structured as follows. Section 2 provides an overview of the piped gas industry. Section 3 reviews the relevant literature on market power and price discrimination. Section 4 outlines the methodology employed. Section 4 provides a discussion of the results. Lastly, section 5 concludes and discusses policy implications.

2. An overview of the South African Piped-gas Industry

In South Africa, the supply chain of the piped-gas industry remains broadly categorized into three levels, namely upstream, midstream and downstream (NERSA, 2021). The upstream level of the piped-gas industry includes gas exploration and production activities. The midstream level comprises transmission and distribution of gas, while the downstream level consists of gas reticulation and trading activities (NERSA, 2021). Figure 1 below sets out the most recent publicly available structure and licensees active at the various levels of the South African piped-gas supply chain.

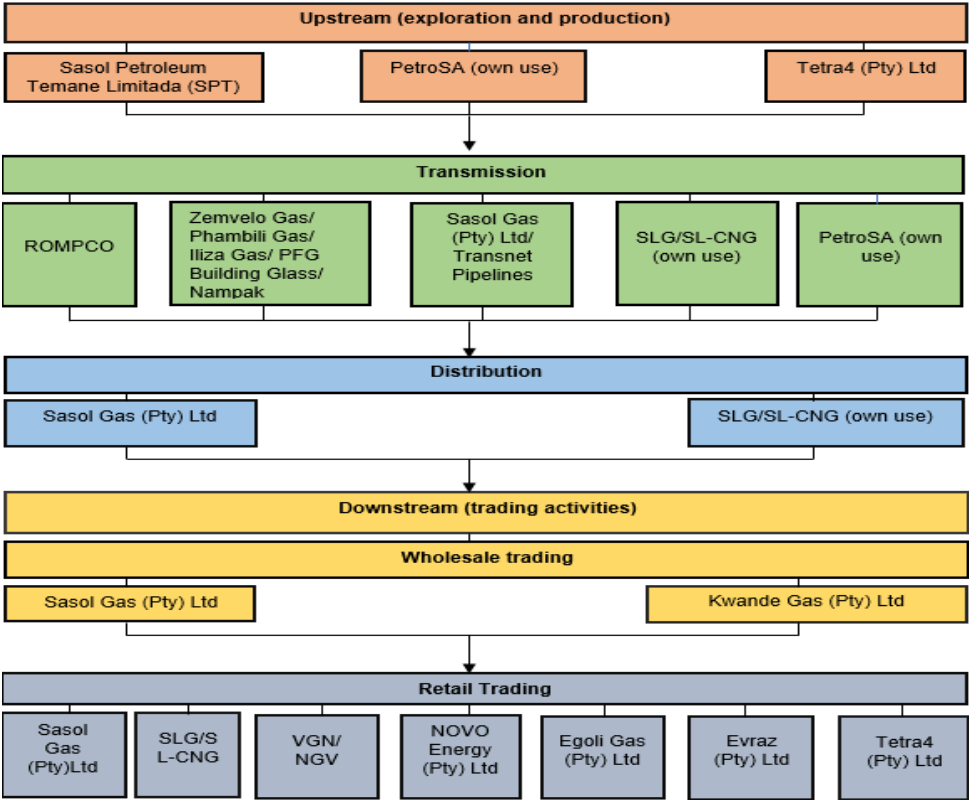


Figure 1: Piped-gas supply chain in South Africa, 2020
 Source: NERSA. 2021 (amended)

As can be observed from Figure 1 above, the South African piped gas industry is characterized by a high degree of vertical integration, and Sasol Gas is operational at every level of the supply chain. More specifically, Sasol Gas is involved in the exploration and production of piped gas. Further, Sasol Gas supplies gas transmission and distribution services. Lastly, Sasol Gas is involved in the wholesale and retail trading of piped gas – Sasol Gas supplies piped-gas to third-party traders and further competes with these traders in the retail supply of piped gas to industrial end-user customers.

In terms of developments in South Africa's gas supply, it is well known, at least by gas industry stakeholders, that Sasol Gas' Mozambique gas fields are likely to get depleted in the foreseeable future. In particular, gas production, in Sasol Gas' Pande and Temane gas fields, is likely to decrease by approximately 98 million gigajoules (GJ) per annum from 2025 onwards (CMEN, 2019). As such, South Africa has started making plans to fast-track the importation of liquefied natural gas (LNG) – a possible best alternative source to piped-gas. To this end, NERSA has recently licenced the operations of Volco (Pty) Ltd and Volco Alfa (Pty) Ltd, who will facilitate the trading of small-scale LNG (SSLNG) in South Africa within the Western Cape province. Important to note is that Volco Alfa is involved in the storage and regasification of LNG (NERSA, 2021).

The SSLNG will then be transported to customers' sites via truck using 40' ISO containers, where it will be stored, regasified and supplied to the customers in gaseous form (NERSA, 2021). It is important to note that regasification of the SSLNG will occur at the customer's sites and will be ready for end-use by the customer. As such, after the SSLNG is regasified it will not be mixed with piped gas through existing transmission pipelines but will rather be made available for end-use at customer's site. Based on international case precedent, the SSLNG supply chain in South Africa (or certain elements thereof) may be regarded distinct from that of piped gas. However, it remains unclear whether or not SSLNG will be defined as a distinct market from piped gas in South Africa from a regulation perspective (NERSA, 2021).

3. Review of Literature

This section reviews literature on market power and price discrimination. The conduct of price discrimination is largely presumed to be practiced by firms with market power or firms that can at least be characterized as dominant. For instance, the South African Competition Act prohibits price discrimination by dominant firms (i.e., firms with market power). The first part of this section reviews literature related to the assessment of market power and the second part deals with the effects of price discrimination.

3.1. Measuring Market power

Prior to reviewing studies that have measured market power, it is important to understand the meaning of market power, at least in the context of business practice. Literature on market power sometimes distinguishes between horizontal and vertical market power. Horizontal market power is exercised when a firm increases prices through a single activity while vertical market power is exercised when a firm, in two or more interrelated activities, such as gas production and transmission, utilizes its market power or dominance in one area to increase prices and ultimately increase profits for the whole company (Pham, 2019).

There are various definitions of the term 'market power' available in economics literature (Mas-Colell et al. (1995); Janssen and Wobben (2009); Biggar (2011); Baumol and Blinder (2015) and Raj et al. (2021). Mas-Colell et al. (1995) define market power as the ability to profitably alter prices away from competitive levels. Janssen and Wobben (2009) define market power as the ability to profitably shift prices above competitive levels, by demanding a higher price than marginal cost. Bigger (2011) argues that a firm has market power if it can, by changing its output levels, affect prices (i.e., selling price). Baumol and Blinder (2015) define market power as the ability of a business to earn high profits by raising the prices of its products above competitive levels and to keep those prices high for a substantial time. Raj et al. (2021), define market power as the ability of a firm to manipulate the price of an item. Although there are a range of definitions of market power, there appears to be a broad consensus that a firm has market power if it can influence price.

Theoretically, there are quite a number of measures used to identify and/ or estimate market power. These are largely divided between structural indices and market simulation or behavioural indices. Structural indices, measure market power by observing and studying the structural features of the market, and these include, among others, the Herfindahl-Hirschman Index (HHI), Residual Supplier Index (RSI), Must Run Ratio (MRR), and entropy. On the other hand, market simulation and behavioural indices, measure market power from a price perspective, and these include, among others, the Lerner Index, weighted Lerner index, generation gap, price cost margin index, success degree of income, withholding capacity ratio, high bid price ratio, the relative ratio of bid price (Beni and Sheikh-El-Eslami, 2021).

While both structural and behavioural measures of market power are well documented in literature, the competition authorities, including the South African competition authority, largely rely on the structural measures of market power. In South Africa, the heavy reliance on structural measures can best be explained by the fact that the Competition Act, which is the legislation used to enforce competition law, only makes reference to structural measures, as tools to be used when identifying and/ or assessing competition or market power. For instance, section 12A(2) of the Competition Act identifies factors relevant to competition to include, among others, (i) the ease of entry into the market; (ii) the level and trends of concentration; and (iii) the degree of countervailing power in the market. These factors are also considered in competition assessments by global competition authorities including, among others, the European Commission, and the US Department of Justice (DoJ).

Empirically, there are relatively limited studies that measure market power in gas markets. A large number of studies on market power have been carried out in Germany's electricity markets. For instance, Müsgens (2006); Lang and Schwarz (2006); Weigt and Von Hirschhausen (2008) and Janssen and Wobben (2009), among others. Müsgens (2006) estimated the degree of market power in German wholesale electricity market for the period of June 2000 - June 2003. Using a linear optimization model, he simulated the competitive benchmark of market prices to reveal the level of market power. Müsgens (2006) concluded that until August 2001, the observed market prices were based on competitive marginal costs. From September 2001 onward; however, a divergence as large as 50% to 77% between the observed and modeled market prices was found. Müsgens (2006) regarded this as strong evidence of market power and that strategic company behavior and learning effects were the main drivers. Using the similar approach, Lang and Schwarz (2006) conducted an investigation of market power in German wholesale electricity market during the period from June 2000 to December 2005. Lang and Schwarz (2006) took into account the CO₂ prices in estimating marginal costs and found the similar results as Müsgens (2006) that no market power was exercised in 2000 and 2001 since observed prices were rather close to the

modeled ones. From 2002 onward, there was a substantial deviation of market prices to the competitive benchmark, varying from 30% in 2003 and 15% in 2004 and 2005 particularly in peak hours.

Weigt and Von Hirschhausen (2008) followed Lang and Schwarz (2006) and extended the analysis to 2006. They found that market prices were above competitive levels for a significant period of time in 2006. Facing a significant rise of electricity prices in Europe, the European Commission launched an in-depth analysis Competition (2007) using various approaches (concentration indexes such as CR, HHI, PSI, RSI and linear optimization model). The final report confirmed that the German wholesale electricity market had undergone markups of 50% from 2003 to 2005. Janssen and Wobben (2009) took a different approach. Instead of relying on an estimate of the entire generation cost, they investigate producers' behaviors in the context of electricity pricing with respect to several time dependent marginal costs (TMCs). Janssen and Wobben (2009) derive the work-on rates, which provide information about the impact of TMC variations on electricity prices in different market structures: perfect competition, quasi-monopoly and monopoly. Comparing these model-based work-on rates with actual work-on rates, which are estimated by an adjusted first-differences regression model of German power prices on fuel costs and emission allowances, Janssen and Wobben (2009) found evidence showing the exercise of market power in the period 2006 to 2008.

Based on the studies reviewed above, a competitive benchmark price appears to be the starting point in terms of determining the existence of market power. As such, any deviation from this is considered to be an indication of the exercise market power and this is consistent with the definition of market power, discussed above.

3.2. Effects of Price discrimination

Price discrimination exists when two similar products, which have the same marginal cost to produce, are sold by a firm at different prices (Armstrong, 2006). There are three principal necessary conditions for price discrimination. First, the firm must have market power. Second, the firm must have a way to identify or sort its customers according to some criteria to charge them different prices. Lastly, the firm must be able to prevent resale or arbitrage (Varian, 1989). For instance, it is unlikely to be profitable for a firm charging customers different prices when the very same customers can on-sell among themselves.

Theoretically, there are traditionally three forms of price discrimination, namely, first-degree, second-degree and third-degree price discrimination. First-degree price discrimination occurs when a seller charges its customers a price that is exactly equal to their willingness to pay (Varian, 1989). First-degree price discrimination is largely common in informal markets where sellers practice flexible pricing and conclude sales through bilateral bargaining (Srivastava, 2020). Another example of first-degree price discrimination is the market value pricing mechanism that was employed by Sasol Gas in South Africa during the pre-regulation period is also an example of this type of price discrimination.¹ Second-degree price discrimination or non-linear pricing occurs when prices differ depending on the quantity of units purchased but not across customers or consumers (Varian, 1989). This is the conduct that I am evaluating in this study as it describes the type of price discrimination by Sasol Gas in South Africa under the regulatory regime. As outlined in section 1 above, Sasol Gas established an approach which sought to

¹ Under the market value pricing, a price is generally set just below their individual and particular cost of switching to an alternative fuel. In other words, the product is offered at prices that each buyer is willing to purchase.

categorize customers in terms of gas volumes (i.e., classes) wherein each class of customers is charged a different price based on the volumes they purchase. Third-degree price discrimination occurs when different buyers are charged different prices, but each buyer pays a constant amount for each unit of the product purchased (Varian, 1989). In this regard, Shmanske (2004) assessed pricing at golf courses and found that golfers are charged different prices based on their age, the day of the week, time of day (twilight rates), whether the golfer is a resident of the local community (or resides outside of the area).

As noted above, second-degree price discrimination is the relevant type of price discrimination that this study is evaluating. To this end, this study focuses more on the literature related to second-degree price discrimination. From a theoretical review perspective, Mussa and Rosen (1978) and Maskin and Riley (1984) are one of the first modern papers to discuss second-degree price discrimination. Both of these papers consider a monopolist's design of a price and sizing menu when consumer's preferences towards the product are unknown to the firm. The equilibrium that is found by both papers is that the highest demand consumer is offered a product that is efficiently sized, and all other consumers self-select into a smaller option that is tailored to their preferences though inefficiently sized. Utilizing these results, Reiss and White (2006) also attempted to explain why firms may use second-degree pricing. In this regard, Reiss and White (2006) developed a method for welfare analysis that estimates consumer surplus in the face of menu pricing and found that the distribution of demand determines the welfare implications of second-degree pricing.

Empirically, various researchers utilize structural models to estimate the effect of second-degree price discrimination on welfare, and these include Leslie (2004); (Cohen (2008); Grennan (2013); Beckert, Smirth and Takahashi (2015) and Hagemann (2018). Leslie (2004) assessed the effect of second- and third-degree price discrimination on consumer welfare regarding ticket prices for the Broadway theatre (i.e., the *Seven Guitars* play) in New York City. Using estimates derived from a random-utility discrete choice model, Leslie (2004) estimated the welfare effects under uniform pricing and compared this against price discrimination and observed that price discrimination may improve the firm's profit by approximately 5%, relative to uniform pricing, while the difference for aggregate consumer welfare is negligible. On the contrary, while using the same estimation approach by Leslie (2004), Cohen (2008) found that consumers are better off with second-degree price discrimination in the paper towel market as there is more price competition amongst firms in the multi-roll package size segment of the market.¹ Similarly, Grennan (2013), while also following the same estimation approach as Leslie (2004) and Cohen (2008), examined second-degree price discrimination and bargaining in the United States (US) medical device market and found that uniform pricing works against hospitals by softening competition.² Beckert, Smirth and Takahashi (2015), utilizing the intermediary goods in the United Kingdom's (UK) brick industry as a case study, supported the findings of Leslie (2004); Cohen (2008) and Grennan (2013). More specifically, Beckert et al. (2015) compared observed discriminatory prices with a simulated uniform price and found that prohibiting brick sellers from price discriminating would increase average prices by nearly 12% and reduce total welfare by nearly 24%. Also, Hagemann (2018) found that banning quantity discounts in New York's liquor market reduces total welfare by approximately 13% on average.

¹ There was no justification to support this finding. Ordinarily, competition is likely to increase consumer welfare due competitive prices – thus leading to increased consumption by consumers.

² This suggests that there are risks in prohibiting price discrimination or forcing transparency over prices that are agreed through bilateral negotiation.

Empirical literature seems to have focused on the effect of second-degree price discrimination on consumer welfare and have neglected producer welfare, particularly the effective participation of SMEs and/or HDP firms. As can be observed from the studies reviewed above, it appears that second-degree price discrimination largely benefits consumer welfare. However, from a competition law perspective, at least to the extent that price discrimination affects SMEs and/or HDP firms it remains unclear whether second-degree price discrimination may have a similar effect as it has on consumer welfare.

The effect of price discrimination has been given particular importance in South Africa. Following the amendments to the Competition Act, the Competition Commission issued guidelines which detailed the factors to be considered in the assessment and the required evidence thereof. These factors include the following: (i) the establishment of dominance or market – the firm against which a price discrimination complaint is made must be a dominant seller; (ii) the determination of whether a purchaser or buyer is a SME or HDP – the buyer must fall within the category of either SME or HDP firm; (iii) the determination of the discrimination treatment – identify and characterise the investigated price discrimination conduct; (iv) the establishment of like goods or services in equivalent transactions – in respect of equivalent transactions for goods or services of like grade and quality; (v) the determination of whether the price discrimination conduct impedes effective participation – the differential in price, relative to other purchasers, impedes the effective participation of a firm or firms in the designated class of purchasers; (vi) the determination of the existence or absence of justification for discrimination – the discrimination does not make reasonable allowance for differences in the cost of supply.

The practical application of these guidelines is still yet to be observed as there have been no cases, referred to the Competition Tribunal, which have utilized them. As such, there remains a gap to explore the price discrimination guidelines in practice – which this article intends to fill.

4. Research Methodology and Discussion of Results

4.1. Data Description

The study utilized maximum pricing data for the period starting from July 2014 to June 2018 and this data was obtained from NERSA. The rationale for limiting the study's analysis to the above-mentioned period is because of three reasons. First, the study focuses on the period within which Sasol Gas' price is regulated by NERSA and such regulation started on the 25th of March 2014. Second, the prices of gas applied for by traders of gas to NERSA became effective in July 2014. Lastly, although Sasol Gas' publicly available pricing data ends in December 2018, the publicly available data for the firms, to which Sasol Gas may have practiced price discrimination (i.e., SLG and Egoli) ends in June 2018. In terms of the data for third party traders, I use SLG (Pty) Ltd and Egoli Gas (Pty) Ltd as the two firms against which I assess the effect of Sasol Gas' second-degree price discrimination. These are the only firms with complete information, required for the analysis, that is available in the public domain.

4.2. Assessment Technique

To assess whether Sasol Gas' second-degree price discrimination is likely to fall foul of the amended Competition Act, the studies employed the price discrimination guidelines proposed by the Competition Commission. In this regard, as outlined in section 3 above, the price discrimination guidelines prescribe that one must pay regard to the following factors: (i) the establishment of dominance or market power; (ii) the determination of whether a purchaser or buyer is a SME or HDP; (iii) the determination of the

discrimination treatment; (iv) the establishment of like goods or services in equivalent transactions; (v) the determination of whether the price discrimination conduct impedes effective; (vi) the determination of the existence or absence of justification for discrimination.

4.3. Discussion of Results

4.3.1. The establishment of Sasol Gas' dominance or market power

Market definition

The first step in determining whether a firm has market power is to define the relevant market in which that particular firm operates. This is largely because the determination of market power is, according to section 7 of the Competition Act based on the level of market shares and partly on other factors that illustrate the ability to act independently of competitors, suppliers and customers. In turn, market shares are normally calculated for a defined relevant market with a clear identification of competitors. In this regard, the study relied on the relevant market defined by NERSA (2019) in its assessment of competition adequacy in the South African piped gas industry.

NERSA's market definition exercise is an outcome of the application of economic principles used by global competition authorities (i.e., European Commission and the Federal Trade Commission) as well as the South African competition authority. These economic principles, as found in merger guidelines such as the 'Horizontal Merger Guidelines of the United States Department of Justice and the Federal Trade Commission', include defining the product market based on demand-side substitutability – in this regard, NERSA used what is normally referred to as the SSNIP test (small but significant non-transitory increase in price) to define the relevant product market for the supply of piped-gas, where piped-gas was found to be a distinct product market from thermal coal, liquefied petroleum gas, diesel, electricity, and heavy fuel oil.

In addition, NERSA, delineated the supply of piped gas in terms of the type of customers, on account of significant differences in prices that could allow a wholesale supplier of piped gas to profitably increase prices on each of the different types of customers. More specifically, NERSA defined separate relevant markets for the trading of piped-gas to traders and trading of piped-gas to end-user customers. It also includes defining the geographic market based on demand-side substitutability. In this regard, NERSA also used the SSNIP test to define the relevant geographic market for the supply of piped gas to traders. In particular, NERSA found that Sasol Gas is unlikely to profitably increase prices across different regions in South Africa. This was largely based on the fact that the price differences between Sasol Gas' supplied zones ranged from 1.6% to 5.4%. In other words, the lower price difference suggests that Sasol Gas is unlikely to have been able to effect significant increases in one region profitably. Had this been the case, there would be larger differences in charges thus showing Sasol Gas' ability to profitably increase prices in one region. As a result of these, NERSA found it appropriate to define a national market for the trading of piped gas to traders.

NERSA's definition of the relevant market for the national trading of piped gas to traders is also consistent with available international case precedent. For instance, these include EC. 2013. EPH/Stredoslovenska Energetika. M6984, para. 27; EC. 2010. ENI.39.315, para. 28; EC. 2011. ENI/Acegasaps/JV. M.6068, para. 29-30. Against this backdrop, I assess Sasol Gas' market power in the relevant market for the national trading of gas to traders. To do this, I evaluate the structural measures of market power, as identified in

section 3, in the market for the trading of gas in South Africa. These factors include the following: (i) levels of concentration; (ii) ease of entry in the gas market; and (iii) dynamic characteristics of the South African gas market. The state of each of these structural features is discussed and analysed in the subsections below.

Levels and Trends of Concentration

To estimate the levels of concentration this article used the HHI. Sasol Gas has, over the period 2014 to 2018, had a market share of 100%. To this end, this market is regarded as highly concentrated since its HHI is 2500, on account of Sasol Gas being the only operational trader of piped gas to traders during the period under analysis. As such, Sasol Gas has in effect been a monopolist and qualified to be regarded as a dominant firm, at least in terms of section 7 of the Competition Act, during the period 2014 to 2018.

Ease of Entry in the Piped Gas Market

The monopoly position of Sasol Gas in the relevant market for the national trading of piped gas to traders is reinforced by high barriers to entry. This is evidenced by the lack of sufficient entry of new independent sources of supply to traders in this market since Sasol Gas first started supplying gas in South Africa. The main barriers to entry in the market for the trading of piped gas to traders in South Africa include, among others, (i) the lack of new gas supplies and the infrastructure development required to enable such gas supplies and (ii) access to existing infrastructure and Sasol Gas' vertically integrated position. To this end, Sasol Gas is likely to remain irrefutably dominant in the market for the national trading of gas to traders without being sufficiently challenged by any new entrance.

Countervailing Power

The factors that give customers the countervailing power required to constrain the market power of a supplier (i.e., Sasol Gas in this case) include, *inter alia*, the existence of viable alternatives that they can switch, or threaten to switch to. The market for the supply of piped-gas to traders is characterised by a monopoly – where third-party traders are entirely reliant on Sasol Gas for their gas supplies. For this reason alone, it can be concluded that third-party traders are unlikely to have countervailing power to negotiate better prices and trading conditions with Sasol Gas due to the lack of viable alternatives. As such, from a countervailing power perspective, Sasol Gas is likely to be able to exercise its market power profitably, to the extent that NERSA's regulation allows.

From the above discussion, Sasol Gas is likely to have possessed market power, during the period 2014 to 2018, in the market for the trading of piped gas to traders in South Africa. Having identified the likelihood that Sasol Gas had market power, during the period under analysis, the next step is to assess Sasol Gas' price discrimination conduct.

4.3.2. The Determination of Whether a Purchaser or Buyer is a SME or HDP Firm

Given the unavailability of data to prove whether a trader is an SME or not, the study has only focused on identifying whether the traders as firms owned by HDPs. To do this, the study made use of publicly available information disclosed on the trader's website. In particular, the traders disclosed their Broad-Based Black Economic Empowerment (BBBEE) status on their websites. To this end, both SLG and Egoli Gas, which the study's focus is centred around, are all owned by historically disadvantaged persons. Sasol

Gas' price discrimination conduct is not necessarily likely to only occur between HDPs and firms that fall outside the designated class of supplier but may also occur between SMEs and/ or HDPs. As such, Sasol Gas' price discrimination practice is capable of being in contravention of section 9(1)(a)(ii) since it applies to HDP firms.

4.3.3. The Determination of Sasol Gas' Price Discrimination Treatment

Evidence of Price Discrimination

As indicated in section 1, Sasol Gas established an approach which sought to categorize customers in terms of classes based on the gas volumes, they purchase wherein each class of customers is charged a different price for gas. As such, to provide evidence of Sasol Gas price discrimination conduct, I first show Sasol Gas' customer classification and thereafter provides a graphical illustration of monthly prices charged by Sasol Gas to its customers from class 1 to class 6, as well as the extent of this price discrimination. However, given that there is no publicly available information which indicates the classification of these traders, this study has reviewed Sasol Gas' entire customer classification from class 1 to class – which SLG and Egoli Gas are likely to fall into. Details of Sasol Gas' customer classification is shown in the Table 1 below.

Table 1: Sasol Gas' customer classification based on gas volumes purchased

Customer Class	Gas volumes (GJ/a) ¹	Gas volumes (GJ/m) ²	Volume difference (%) ³
Class 1	0 – 400	0 - 33	-
Class 2	401 - 4000	34 - 333	900
Class 3	4001 – 40 000	334 – 3 333	900
Class 4	40 001 – 400 000	3 334 – 33 333	900
Class 5	400 001 – 4 000 000	33 334 – 3 333 33	900
Class 6	> 4 000 000	> 3 333 33	900

Source: Author's Compilation using DMRE's data

It is clear from Table 1 above that Sasol Gas practices second-degree price discrimination. Table 1 shows that Sasol Gas' gas prices differ depending on the quantity of units purchased but not across customers or consumers. Further, according to Table 1, the percentage difference between each class is 900%. This means that for a particular customer to fall into the next class (i.e., from class 1 to class 6), it has to increase its gas purchases by 900%. What is not clear is whether Sasol Gas' cost of supplying the next class of customers decreases after supplying an additional 900% from the previous class' quantities such that its customer classification could at least be founded on the existence of economies of scale. Although Sasol Gas' pricing is not explicitly discriminating between its customers in their own right, it favours larger customers since they are charged lower prices than smaller customers.

¹ Gigajoules per annum

² Gigajoules per month

³ This refers to the difference between the maximum volumes for each customer class

Below is a graphical illustration of the prices charged by Sasol Gas to its gas customers, as per its gas customer classification (i.e., class 1, class 2, class 3, class 4, class 5 and class 6).

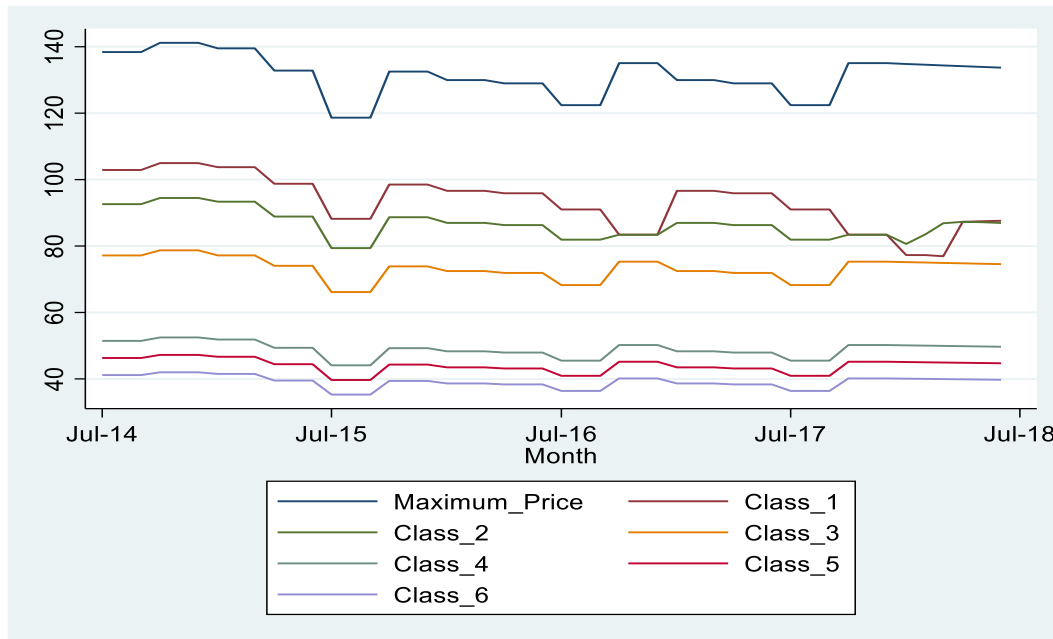


Figure 1: The existence of Sasol Gas’ price discrimination practice, 2014 - 2018

Source: DMRE (2018)

It is clear from Figure 1 above that Sasol Gas charged different prices for gas to its customers based on the volumes of gas they purchased of the period from July 2014 to June 2018. Put differently, the reviewed evidence shows that Sasol Gas has provided different discounts (i.e., maximum price minus actual price charged) to its customers based on the volumes of gas they purchased over the analysed period.

Having provided and discussed evidence showing that Sasol Gas charges different prices based on quantities purchased from July 2014 to June 2018, the following subsection provides evidence of the extent of such price discrimination.

The Extent of Sasol Gas’ Price Discrimination

To provide a clear illustration of the extent to which Sasol Gas charged different prices to its customers, over the period under consideration, I calculate the discounts provided to each class of customers as a percentage of the maximum price that Sasol Gas was allowed to charge by the Energy Regulator (that is, the prices shown in the top line in Figure 1 above). This shows by how much each of the customers falling in the lower-class customers is discriminated in terms of price discounts (i.e., value of this difference). The results are shown in Figure 2 below.

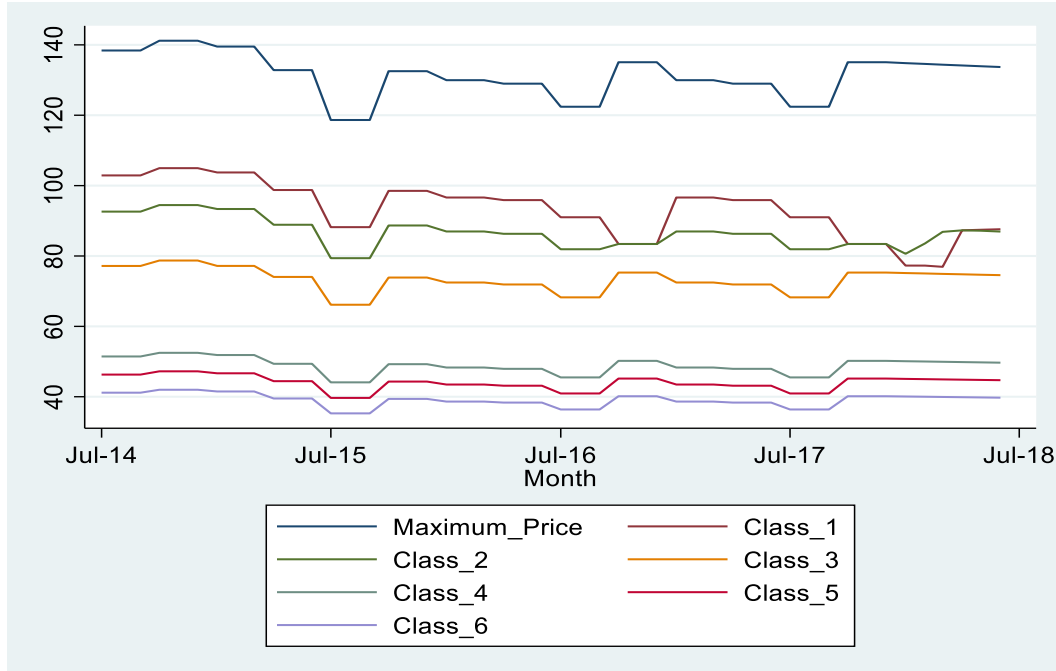


Figure 2: Extent of Sasol Gas’ Price Discrimination, 2014 - 2018

Source: DMRE (2018) and Sasol Gas

It is clear from Figure 2 above that Sasol Gas’ gas price discount has, in general during the period July 2014 to June 2018, been larger for class 1, class 2 and class 3 compared to the price discount differences provided to class 4, class 5 and class 6. Using available public data, I evaluate whether such price differences meet the minimum percentage difference threshold provided by the Competition Commission in its price discrimination guidelines. The study found that the discount difference provided by Sasol Gas to all of its customers (including Egoli Gas and SLG is almost always larger than 5%. In particular, the difference in the discount provided to class 2 and class 1 ranges from 0.02%¹ to 22.48%. While the difference in the discount provided to customers within the range from class 6 to class 2 ranges from 5.29% to 32.72%. In other words, the 5% minimum significance threshold, provided by the guidelines, is almost always met, especially for customers falling within class 6 and class 2.

The Establishment of Like Goods or Services in Equivalent Transactions

To examine this, I take guidance from established local and/ or international case precedent with respect to the assessment of like grade or quality, and equivalent transactions pertaining to the gas sold by Sasol Gas to third-party traders. In the *Nationwide Poles CC v Sasol Oil (Pty) Ltd* case², the Competition Tribunal (2005) interpreted the concept of ‘equivalent transaction’ as referring to transactions that have the same or similar effect. To explain its rationale for this interpretation, the Competition Tribunal (2005) indicated that “transactions may be functionally equal – one business class seat or one telephone call between Cape Town and Johannesburg may be functionally equal to another business class seat or telephone call, but

¹ This difference is only applicable during the following periods: (i) October 2016 to December 2016 and (ii) October 2017 to June 2018). Otherwise, the difference for the entire remaining periods is at least 22.44%.

² CRP057Dec03

they may not be equivalent (a call or a flight made in a peak time as opposed to one made during a nonpeak period) in the sense that their economic effect is different and hence the legislature, recognising this, chose not to bring 'non-equivalent' transactions under the rubric of prohibited price discrimination despite the fact that in other respects they may be regarded as equal" (p. 31).

In *British Airways v Commission of the European Communities (proper refs)*, the Court of Justice of the European Union (CJEU) (2007) has generally looked at the nature of the product or service sold by the dominant firm to its customers and assessed whether the different supply costs faced by the dominant firm made the transactions "equivalent". For instance, in the case between British Airways and Commission of the European Communities, the CJEU concluded that the sale of airline tickets by British Airways to different travel agents in UK represented equivalent transactions. In particular, the tickets concerned different destinations, however, the CJEU considered equivalent the type of service provided by British Airways to different travel agents.

Having regard to the above, piped gas is a homogeneous product that is not subject to any potential quality improvement. Further, the price of gas charged to customers or traders excludes transportation (i.e., transmission and/ or distribution tariffs) costs and only reflects the value of the gas molecule. As such, based on the above reviewed case precedent, Sasol Gas' sales to traders are likely to be regarded as 'equivalent transactions'. This is largely because of the following two reasons. First, the type of gas sold by Sasol Gas to its customers (including SLG and Egoli Gas) is homogeneous and thus has the same quality. Second, the gas price charged by Sasol Gas to its customers (including SLG and Egoli Gas) excludes any transportation costs (i.e., transmission and/ or distribution), and only reflects the value of the gas molecule.

4.3.4. The Determination of Whether Sasol Gas' Price Discrimination is Likely to Impede the Effective Participation of SLG or Egoli Gas

To assess whether Sasol Gas' price discrimination conduct is likely to have impeded the effective participation of SLG or Egoli Gas, the study estimated the price-cost margin using the following formula for both SLG and Egoli Gas:

$$Margin = \left[\left(\frac{Trader's Price - Sasol Gas' Price}{Trader's Price} \right) * 100 \right]$$

Where Sasol Gas' price refers to the price charged (based on customer class) by Sasol Gas to a SLG or Egoli Gas; Trader's price refers to the maximum price charged by the Egoli Gas or SLG to its industrial consumers.

The purpose for this estimation was to determine the extent to which the third-party trader (i.e., SLG or Egoli Gas) that was charged a lower price enjoyed higher margins compared to the third-party trader that was charged a higher price for gas. In other words, the results of these estimations show whether or not a particular trader was impeded from participating effectively (i.e., achieving higher margins) in the market due to its lower-class categorization by Sasol Gas. However, given that there is no publicly available information which indicates the classification of SLG and Egoli Gas, this study has examined Sasol Gas' price discrimination practice based on the entire customer classification from class 1 to class 6 –

which SLG and Egoli Gas are likely to fall into. To do this, the study examined Sasol Gas' price discrimination conduct based on three possible scenarios, namely (i) scenario 1 – where both SLG and Egoli Gas are of the same class; (ii) scenario 2 – where SLG qualifies for a higher class than Egoli Gas (i.e., SLG – class 2, class 3, class 4, class 5, class 6 and Egoli Gas falling into class 1); (iii) scenario 3 – where Egoli Gas qualifies for a higher class than SLG (i.e., Egoli Gas – class 2, class 3, class 4, class 5, class 6 and SLG falling into class 1). The results of each of the above-mentioned scenarios are discussed in the subsections below.

Scenario 1: where both SLG and Egoli Gas are of the same class

In the event that both SLG and Egoli Gas purchase gas volumes that qualify them to be categorized in the same class of Sasol Gas' customers, the price charged to each of them is exactly the same. As such, there is unlikely to be price discrimination in this instance and Sasol Gas' pricing is unlikely to fall foul of section 9(1)(a)(ii) of the Competition Act, at least based on this case. However, for completeness the study estimated the price-cost margins for SLG and Egoli Gas when both of them fall in the same class of Sasol Gas' customer categorization. The results show that the differences in margins between SLG and Egoli Gas (ranges is almost always less than 5%. As such, when charged similar prices, both Egoli Gas and SLG (appear to have been equitably effective in participating in the market for the supply of piped gas to industrial end-user customers. For detailed results see Annexure A.

Scenario 2: where SLG qualifies for a higher class than Egoli Gas

Under this scenario SLG is likely to have achieved higher price-cost margins than Egoli Gas when assumed to qualify for a higher class than Egoli Gas. This is as a result of larger discounts that highly classed customers, such as SLG in this case, qualify for in comparison to their competitors that qualify for lower discounts (i.e., Egoli Gas in this case).

The minimum threshold difference of 5% that is prescribed by the price discrimination enforcement guidelines is met in almost all possibilities except for only two possibilities namely (i) when SLG is assumed to be in class 5 and Egoli Gas is assumed to be in class 4 (only during the period from FY 2015/16 to FY 2016/17) and (ii) when SLG is assumed to be in class 6 and Egoli Gas is assumed to be in class 5 (only during the period from FY 2015/16 to FY 2016/17). As such, based on the possibilities shown in Table 4 above, it can be concluded that in a scenario where SLG qualifies for a higher class than Egoli Gas (Sasol Gas' price discrimination practice is likely to impede the effective participation of Egoli Gas. This is largely because, as a result of Sasol Gas' price discrimination conduct, Egoli Gas is most likely to achieve lower margins than its highly classed competitor, SLG. This possibility is shown by the positive difference between SLG and Egoli Gas' margin in Table 5 above. For detailed results see Annexure A.

Scenario 3: where Egoli Gas qualifies for a higher class than SLG

Under this scenario Egoli Gas is likely to have achieved higher price-cost margins than SLG when assumed to qualify for a higher class than SLG. This is largely as a result of larger discounts that highly classed

customers, such as Egoli Gas in this case, qualify for in comparison to their competitors that qualify for lower discounts (i.e., SLG in this case).

The minimum threshold difference of 5% that is prescribed by the price discrimination enforcement guidelines is met in almost all possibilities except for four possibilities namely (i) when Egoli Gas is assumed to be in class 5 and SLG is assumed to be class in 4; (ii) when Egoli Gas is assumed to be in class 6 and SLG is assumed to be in class 5; (iii) when Egoli Gas is assumed to be in class 3 and SLG is assumed to be in class 1 (only during the FY 2017/18); and (iv) when Egoli Gas is assumed to be in class 3 and SLG is assumed to be in class 2 (only during the FY 2017/18). As such, based on the possibilities shown in Table 4 above, it can be concluded that in a scenario where Egoli Gas qualifies for a higher class than SLG, Sasol Gas' price discrimination practice is likely to impede the effective participation of SLG. This is largely because, as a result of Sasol Gas' price discrimination conduct, SLG is most likely to achieve lower margins than its highly classed competitor, SLG. For detailed results see Annexure A.

The determination of the existence or absence of justification for discrimination

The study employed a three-step approach in testing whether Sasol Gas' discriminative pricing is likely to be justifiable in terms of the provisions of section 9(2) of the Competition Act. The three steps can be briefly summarized as follows:

- a) step 1 – determination of whether the nature of Sasol Gas' price discrimination examined in this study qualifies to be considered for a justification in terms of section 9(2). Where a determination is made that Sasol Gas' price discrimination conduct examined in this study does not qualify for a justification examination in terms of section 9(2) of the Competition Act, the test will stop here and no further analysis will be made or required thereafter;
- b) step 2 – where Sasol Gas' price discrimination conduct qualifies to be considered for an examination of justification, determine the precise aspect of Section 9(2) upon which Sasol Gas' price discrimination is likely to be justifiable; and
- c) step 3 – consider whether the identified aspect of section 9(2) warrants for the extent of Sasol Gas' price discrimination conduct.

The differentiated price charged by Sasol Gas to its customers or traders excludes transportation (i.e., transmission and/ or distribution tariffs) costs and only reflects the value of the gas molecule. Further, and as indicated in section 1, Sasol Gas' pricing is merely an application of second-degree price discrimination or non-linear pricing. In particular, Sasol Gas' gas prices differ depending on the quantity of units purchased but not across customers or consumers. However, section 9(1)(a)(ii) of the Competition Act prohibits a price discrimination conduct by a dominant firm if such conduct has a likelihood of impeding the effective participation of SMEs or firms owned by HDPs.

Against this backdrop, I find that Sasol Gas' price discrimination examined herein does not qualify to be considered for an examination of justification provisions provided for by section 9(2) of the Competition Act. This is largely because the price discrimination examined herein relates to how Sasol Gas' price discrimination is likely to fall foul of section 9(1)(a)(ii) of which section 9(2) only allows for justification defence for section 1(b) and (c) and not section 9(1)(a)(ii).

Conclusion and Policy Implications

The study found that Sasol Gas has been dominant and is likely to have had market power in the market for the national trading of gas to traders during 2014 to 2018. Further, the study found although Sasol Gas' conduct may well be within the parameters of the Gas Act, it is likely to contravene the section 9(1)(a)(ii) of the amended Competition Act should it continue with its second-degree price discrimination practice. This finding is regardless of whether Egoli Gas qualifies for a higher discount than SLG or vice versa. However, it is important to note that there is not sufficient evidence to provide a firm view of this possibility. More specifically, for this study to have a firm view of whether Sasol Gas' price discrimination is likely to fall foul of section 9(1)(a)(ii), the following information would, at least, be required:

- a) the actual classes that SLG and Egoli Gas fall into on Sasol Gas' customer base;
- b) the actual prices charged by Sasol Gas to both Egoli Gas and SLG;
- c) the actual prices charged by both Egoli Gas and SLG to their respective end-user customers;
- d) the actual volumes of gas purchased by both Egoli Gas and SLG at their respective actual prices;
- e) the profitability and performance of both SLG and Egoli Gas at their respective purchase prices;
and
- f) the likelihood of demand changes absent the price differential.

Based on these findings, this study recommends that the Department of Energy, in conjunction with NERSA, must consider amending the Gas Act in line with the amendments made to the Competition Act to ensure policy coherence.

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6. Annexure A: Tables for the Scenarios

Scenario 1: where both SLG and Egoli Gas are of the same class

Table 1: Difference in price-cost margins between Egoli Gas and SLG, 2015 - 2018

Period	Customer Class					
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
FY 2015/16	-0.07%	-0.06%	-0.05%	-0.04%	-0.03%	-0.03%
FY 2016/17	1.07%	0.99%	0.84%	0.56%	0.50%	0.45%
FY 2017/18	-4.34%	-4.30%	-3.75%	-2.50%	-2.25%	-2.00%

Source: Authors Compilation

Scenario 2: where SLG qualifies for a higher class than Egoli Gas

Table 2: Difference in price-cost margins between SLG and Egoli Gas, 2015 – 2018

SLG charged a lower price than Egoli Gas	Price-cost margin difference		
	FY 2015/16	FY 2016/17	FY 2017/18
SLG class 2 - Egoli Gas class 1	7.30%	6.77%	12.52%
SLG class 3 - Egoli Gas class 1	18.15%	16.59%	20.16%
SLG class 4 - Egoli Gas class 1	36.23%	35.19%	37.57%
SLG class 5 - Egoli Gas class 1	39.85%	38.91%	41.06%
SLG class 6 - Egoli Gas class 1	43.47%	42.64%	44.55%
SLG class 3 - Egoli Gas class 2	10.92%	8.84%	11.94%
SLG class 4 - Egoli Gas class 2	29.00%	27.44%	29.35%
SLG class 5 - Egoli Gas class 2	32.62%	31.16%	32.84%
SLG class 6 - Egoli Gas class 2	36.24%	34.88%	36.33%
SLG class 4 - Egoli Gas class 3	18.13%	17.76%	21.17%
SLG class 5 - Egoli Gas class 3	21.75%	21.49%	24.66%
SLG class 6 - Egoli Gas class 3	25.37%	25.21%	28.14%
SLG class 5 - Egoli Gas class 4	3.66%	3.17%	5.99%
SLG class 6 - Egoli Gas class 4	7.27%	6.89%	9.47%
SLG class 6 - Egoli Gas class 5	3.65%	3.22%	5.73%

Source: Authors Compilation

Scenario 3: where Egoli Gas qualifies for a higher class than SLG

Table 3: Difference in price-cost margins between Egoli Gas and SLG, 2015 - 2018

Egoli Gas charged a lower price than SLG	Price-cost margin difference		
	FY 2015/16	FY 2016/17	FY 2017/18
Egoli Gas class 2 - SLG class 1	7.16%	6.48%	-3.79%
Egoli Gas class 3 - SLG class 1	18.03%	16.15%	4.40%
Egoli Gas class 4 - SLG class 1	36.12%	34.48%	23.07%
Egoli Gas class 5 - SLG class 1	39.75%	38.14%	26.80%
Egoli Gas class 6 - SLG class 1	43.37%	41.81%	30.54%
Egoli Gas class 3 - SLG class 2	10.80%	10.66%	3.89%
Egoli Gas class 4 - SLG class 2	28.90%	28.98%	22.55%
Egoli Gas class 5 - SLG class 2	32.53%	32.65%	26.29%
Egoli Gas class 6 - SLG class 2	36.14%	36.32%	30.02%
Egoli Gas class 4 - SLG class 3	18.04%	19.16%	14.91%
Egoli Gas class 5 - SLG class 3	21.67%	22.83%	18.65%
Egoli Gas class 6 - SLG class 3	25.29%	26.50%	22.38%
Egoli Gas class 5 - SLG class 4	3.59%	4.23%	1.24%
Egoli Gas class 6 - SLG class 4	7.21%	7.89%	4.97%
Egoli Gas class 6 - SLG class 5	3.59%	4.17%	1.48%

Source: Authors Compilation