Assessing the Impact of Deregulation of the South African Petroleum Industry

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

This research assessed potential impacts of South African petroleum industry deregulation. Industry participants have called for changed regulation of the South African petroleum industry. The National Energy Forum task force was established to formulate recommendations concerning future petroleum industry regulation. Government subsequently released a white paper indicating a major shift towards deregulation. Deregulation and a twenty-five percent black economic empowerment (BEE) objective became the future envisaged policy.

Government, oil majors, retail associations and retailer representatives were interviewed. Developments in three deregulated countries were analysed and evaluated, to determine the effects should full deregulation occur. A refined analytical framework was used.

The results show that much must be achieved before implementation of full deregulation in South Africa. Government is particularly concerned about supply security, infrastructure requirements, transformation to twenty-five percent BEE and protection against massive unemployment resulting from rationalisation, caused by competitive price-cutting, of approximately 30% of the retail service stations.

DECLARATION

I, Farouk Goolam Moosa, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Farouk Goolam Moosa

Signed at ……

On the …….. day of …… 2008

DEDICATION

In memory of my parents

Goolam and Sukayna

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I would like to thank Ketty for her unconditional support through many trying times and for the mental strength to see this study through. To my children, Nadia, Jameel, Imaan and Aneeqah, you all have been my constant inspiration. Thank-you for constantly reminding me what life's true treasures are all about.

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GLOSSARY

CEF	Central Energy Fund
CTL	Coal to Liquids
DMEA	Department of Mineral and Energy Affairs
FRA	Fuel Retailers Association
GTL	Gas to Liquids
SAPIA	South African Petroleum Industry Association
BEE	Black Economic Empowerment
NEF	National Energy Forum
RATPLAN	Service Station Rationalisation Plan
SFF	Strategic Fuel Fund
IBLC	In-bound Landed Costs
RPM	Retail Price Maintenance
OPEC	The Organisation of Petroleum Exporting Countries
BFP	Basic Fuel price
MPAR	The Marketing of Petroleum Activities Return

CHAPTER 1: INTRODUCTION

0.1Purpose of the study

The purpose of this study was to assess the potential impact of deregulation of the South African petroleum industry.

0.2History and background to the study

The history of the South African petroleum industry started in 1884, with the establishment of a company to manage the importation and sale of all petroleum products in South Africa. The petroleum industry grew in unison with the motor industry. The growth was also influenced and accelerated by industrial use of petroleum products (Mbendi, 1996). By the 1930s, the petroleum industry had grown sufficiently and was regarded as strategic enough to be the focus of government regulations aimed at providing a balance between the oil companies, the service station retailers and the consumers (Mbendi, 1996).

Before 1954 all fuel consumed in South Africa was imported in refined form and distributed by the four oil companies then operating as wholesale marketers in South Africa: BP, Shell, Mobil and Caltex (Mbendi, 1996).

During the first decade after World War II, the demand for fuel products in South Africa increased to such an extent that the establishment of a viable refining industry became possible. Genref was the first refinery, established by Mobil (now Engen) in 1954, followed by Sapref (Shell and BP) in 1964, both in Durban. Calref (Caltex) followed in 1966, in Cape Town, and Natref (Sasol and Total) in 1971 and 1972, in Sasolburg (Mbendi, 1996).

The oil industry continued to be tightly regulated as concern over security of supply led the government to introduce legislation imposing a total blanket of secrecy over the industry. This legislation was lifted only in the early 1990s, as part of the move to democracy and open government in South Africa. For the

first time the general public was able to learn about issues such as the source of South African crude supplies and the scale of the strategic stores of crude both at Saldanha Bay and in disused mines in the interior.

The impending change of government in 1994 also led to calls for changes in the way in which the oil industry was regulated. A joint liquid fuels industry task force represented by labour, business and government was then set up under the auspices of the National Energy Forum (NEF), to deliberate on, and recommend to government, the possible future form for regulation of the petroleum industry.

In December 1998 the government released a White Paper on Energy Policy, which indicated a major shift towards deregulation of the petroleum industry. The document included deregulation and attainment of a twenty-five percent Black Economic Empowerment (BEE) objective as a milestone in the future envisaged policy. However, it did not indicate in detail the extent of the deregulation.

The South African Petroleum Industry Association (SAPIA), which represents all the major oil companies in South Africa, has supported the policy of deregulation (SAPIA annual report, 2005). In addition, some political parties have called for the deregulation of the petroleum industry for some time now. These views are, however, mixed owing to the possible negative impacts of such a decision: for example; the likelihood of massive job losses (Financial Mail, 1990 and 1994).

0.3Research problem

The South African Energy Policy White Paper is the focal starting point to this study. This research assessed the potential impact of the recommended deregulation of the South African Petroleum Industry.

The South African Energy Policy White Paper has three phases. Its intended outcome is summarised below to provide context to the research problem.

The first phase of the process will allow for interim adjustments to fuel price mechanisms and settling of over- or under-recovery accounts with the oil industry. It will also create opportunities for the negotiation of intra-industry agreements, such as the preferential promotion or sourcing of all locally produced refined products over imported refined products and market access agreements for synthetic fuels. Over and above this, the Blue Pump Agreement stated that all service stations would have to have a Sasol dispensing pump on their forecourts and retail the Sasol product through it. This was because all the other oil brands had both refining and retailing activities, Sasol being the only refiner initially excluded from retailing. This agreement terminated at the end of 2005, when Sasol entered the retail market directly with its branded service stations. In addition, mechanisms would be put into place to ameliorate any negative impact on employment opportunities resulting from the restructuring process. This phase would also allow the state to pursue the restructuring of its assets within the liquid fuels sector.

The key milestones to be achieved in the first phase are listed below.

- Mutually acceptable arrangements between synfuels producers and the marketers of crude oil based fuels, related to the promotion and marketing of synfuels on the basis of intra-industry agreement, would be established. This would mean that an oil major with a local refinery would supply other oil depots in its local area with fuel. The receiving oil major would then enhance the fuel to its own specifications and rebrand it for retailing at its respective sites. As this arrangement happens throughout the country, the implication is that transport cost is considerably reduced amongst the oil companies, resulting in cost saving for the end consumer. (Sasol entered the retail sector in 2006, with its branded service stations, and the other oil majors are therefore no longer obligated to provide Sasol pumps on their respective forecourts.)

- Sufficient institutional capacity and measures would need to be implemented to monitor and enforce the introduction of site and retail licences applications by oil companies and retail service stations respectively and, if necessary, the regulation of oil and petroleum pipelines and storage facilities.

- The necessary legislation would need to be in place to give effect to government policies. This would have to cover issues such as the protection of "full service" at service stations, arrangements to address any labour related issues resulting from deregulation and the equitable participation of small businesses in the industry.

- Historically disadvantaged South Africans would have sustainable presence, ownership or control of approximately a quarter of all facets of business conducted in the petroleum industry.

- Suitable transitional arrangements of the Service Station Rationalisation Plan (RATPLAN) would be introduced. The RATPLAN determines the number of service stations in the country and further stipulates that self-service is prohibited. Deregulation would result in the closure of sites that could not compete on price because of competition in overtraded areas.

- Any institutional and regulatory capacity required to enable the government to monitor possible post deregulation distortions adequately and act against any such necessary distortions would be introduced.

The second phase will be characterised by allowing market forces to set retail fuel prices freely. Thus retail price regulation, import control and government support for the RATPLAN will be simultaneously removed.

The third phase will be the post-deregulation transition phase. This will be characterised by government vigilance and monitoring for possible problems arising from the introduction of deregulation and by corrective action to address these. In the event that uneven competition results from price distortions; for example, between the rural and urban areas, then fiscal measures or price capping may be employed to counterbalance such distortions (Mbendi, 2004).

In summary: the key intention of the White Paper is to address the transfer of control or ownership to historically disadvantaged South Africans, to minimise the job-loss impact and to allow fuel prices to be freely dictated by the market.

0.4Problem statement

The purpose of this study was to assess the potential impact of deregulation on the South African petroleum industry, should government deregulate the industry as proposed by the White Paper on the Energy Policy of the Republic of South Africa (1998).

0.5Significance of the study

The petroleum industry, in particular, is seen as strategically and economically important to most countries, as it contributes to and sustains modern transport systems with no economically viable alternatives in the near future. It adds value to our natural resources by providing employment and foreign exchange savings. In South Africa, the petroleum industry provides employment to more than 100 000 people and contributes some 109 billion rand to the gross domestic product (SAPIA, 2005). Thus, any decision to deregulate the petroleum industry will have a significant impact on a number of stakeholders within the business environment and also have social implications which the government needs to consider.

The significance of the study is that it will provide guidance to the most pertinent issues facing South Africa: unemployment, the advancement of small business, the lowering of energy costs for the consumer and access to the petroleum industry as it relates to the BEE Charter.

This research has covered international experience in three countries that have deregulated their petroleum industries. Lessons drawn from these experiences could contribute to understanding of the potential implications of the deregulation of the South African petroleum industry, which government could take into account when deliberating on the decision to deregulate it.

0.6Delimitations and limitations

0.6.1 *Delimitations*

The delimitations applicable to this research are listed below.

- The research concentrated only on the downstream activities of the petroleum industry. Only related businesses associated with wholesaling and retailing fuel have been covered. Thus the potential impact of deregulation on the refining process, the exploration process and the handling of unrefined petroleum products were beyond the scope of this study.

- The research covered deregulation only from the perspective of key personnel working for the oil majors in South Africa, as well as government and individuals associated with organisations interacting with the oil majors. Even though in other countries supermarket chains entered the retail space as soon as deregulation occurred, the views of these stakeholders have been excluded.

0.6.2 *Limitations*

As the research was exploratory in nature, no standardised methods were used, apart from an interview schedule. Data were collected through unstructured interviews allowing interviewees to speak freely on the research problem. Therefore subjectivity due to potential but unintentional bias may have occurred.

Moreover, only limited generalisations could be made because deregulation in the petroleum industry is environmentally specific, so a number of the findings may be limited to the South African context.

0.7Definition of terms

The terms used in this document are defined below within the context of this research.

- Regulation is defined as “a process established by law which restricts or controls some specified decisions made by the affected firms” (Baumol and Blinder, 1991:657). Deregulation involves the removal of these laws, thus allowing free market forces to dictate the state of play.

- Upstream activities include the refining process, the exploration process and the handling of unrefined petroleum products.

- Downstream activities include business transactions related to refined petroleum products. These would include businesses associated with wholesaling and retailing of fuel.

- The South African Petroleum Industry Association (SAPIA) includes members of the oil companies and their representatives. These comprise about eighteen companies and affiliates (SAPIA, 2005). SAPIA members essentially refine crude oil into liquid fuels and distribute these to the retail and wholesale sectors.

- Major oil companies are the multinational oil companies operating in South Africa, and include Sasol, Shell BP, Engen, Chevron and Total.

- A retailer service station is a small business typically owned by an operator who largely depends on dispensing huge volumes of fuel and simultaneously operating alternative profit centres related to the sale of petrol. Countrywide, there are approximately 4,900 service stations in South Africa, employing an approximate total of 45,000 forecourt attendants (SAPIA, 2005). The consumer is the end-user of the petroleum products sold at retail and wholesale outlets.

- The Central Energy Fund (CEF) is involved in administering strategic oil reserves, state oil assets and product prices (SAPIA, 2005).

- The Fuel Retailer Association (FRA) is an independent organisation representing the service station owner or retailer at all levels. It interacts with Government and the CEF, dealing with issues such as regulation, retailer margins, wage negotiations for forecourt attendants and a number of legal issues. It is funded by fuel retailer membership. Fuel retailers join on a voluntary basis.

- The South African Petroleum Retailers Association (SAPRA) is an independent organisation representing the service station owner or retailer at all levels. It is a rival association to the FRA.

- The Service Station Rationalisation Plan (RATPLAN) determines the number of service stations in the country and further stipulates that self-service is prohibited. (SAPIA, 2005).

- Marketing of Petroleum-Activity-Returns (MPAR) regulates the profit margins of oil companies at marketing and retailing sub-sectors, excluding refining activities. This formula dictates the profit of the oil company within the benchmark industry average of a 15% rate of return (a 10% – 20% range with a one year lag) on the depreciated book value of assets. (SAPIA, 2005).

0.8Assumptions

One assumption was that the research would be based on the statistical realities that South Africa faced from 1994 to 2008. The recommendations made are time-specific and considerations were based on the challenges experienced by South Africa during this period.

A further assumption was that when information was gathered for the purpose of this report, all interviewees would impart information openly and honestly.

CHAPTER 2: LITERATURE REVIEW

2.1.Introduction

In this attempt to assess the potential impact on the South African petroleum industry, of deregulation in accordance with the South African Energy Policy White Paper (1998), a review of the available literature was undertaken.

This literature review provides a background related to the strategic importance of the oil refineries in South Africa, an overview of the regulation in the South African petroleum industry at the time of research and the theory of regulation. Literature regarding experiences of deregulation of the petroleum industry in France, Australia, and New Zealand is covered in this chapter.

2.2.The strategic importance of South African refineries

There are close to two trillion barrels of proven oil equivalent reserves world wide, according to BP's Statistical Review of World Energy, of which 1.2 trillion barrels are crude oil reserves and 0.8 trillion are natural gas deposits. Geologists argue that oil discovery has been declining for decades and has dropped by 0.6% annually since 1998 (Kerr, 1998).

Another argument related to oil discovery predicts that a peak in oil production this would manifest itself in rapidly escalating prices and a worldwide oil shortage. This shortage would differ from those of the past because the fundamental cause would be geological; not political. While past shortages stemmed from a temporary insufficiency of supply, crossing Hubbert's Peak means that in future the production of oil would decline (Hubert, 2005). Thus demand for oil must be reduced to meet supply. The effects of such a shortage would depend on the rate of decline and the development and adoption of alternatives. If alternatives are not forthcoming, the many products and services reliant upon oil may become scarce, leading to lower living standards throughout the world. Scenarios could range from Doomsday to relatively minor

disruption, depending upon the advancement of new technologies related to finding alternatives sources of energy (Hubert, 2005).

Most liquid fuels are manufactured from crude oil, except in South Africa and Germany, where liquid fuels are derived from coal and natural gas (IEA, 1997). Almost all countries, producers and importers, depend upon crude oil as a source of energy. Because crude oil is found in certain countries only, most countries have to import it for their domestic refineries or import the refined product. The price of liquid fuels is directly proportional to the spot price of crude oil. The world had 1.2 trillion barrels of proven reserves at the end of 2005 (BP, 2005).

In South Africa, the strategic importance of liquid fuels was realised by the government during the apartheid era when sanctions were imposed on the country. The government of the day shrouded the industry in secrecy and started a sequence of events designed to allow South Africa to become self-sufficient and was thus immune to an oil embargo. The culmination of this policy resulted in a synthetic fuel programme and Sasol I was established in 1954 to convert coal into synthetic fuel. The ongoing uncertainties of the international crude oil supply situation and the oil embargo applied against South Africa led to the establishment, in 1964, of the Strategic Fuel Fund Association (SFF) for acquisition of crude on behalf of the country and administration of the strategic crude oil stockpile. The synthetic fuel industry was expanded, with the commissioning of Sasol II in 1982, Sasol III in 1983 and finally, Mossgas in 1987, which converts natural gas to synthetic fuels. Tariff protection was afforded to the producers of synthetic fuels (SAPIA, 2005).

The 2005 total crude oil refinery capacity was 708,000 barrels per day in South Africa. Table 1 below shows this refining capacity by refine type: conventional (which uses crude oil as it's base input) and synfuel (which uses coal or gas as it's base input). The crude oil refineries are located at the coast, as the storage and offloading of crude occurs at the deep water ports. A large percentage of the refined product from the coastal refineries is transported by pipeline to the inland regions. The Sasol refineries are the only refineries located inland, where

60% of refined products are consumed. About one-third of the fuels produced in South Africa are synthetic (SAPIA, 2005).

Table 1: South African refineries: capacity per day (SAPIA, 2005)

Refineries	1992	1997	2005	Refine Type
Sapref	120,000	165,000	180,000	Conventional
Enref	70,000	105,000	125,000	Conventional
Calref	50,000	100,000	100,000	Conventional
Natref	78,000	86,000	108,000	Conventional
Sasol I, II, III	150,000	150,000	150,000	SynFuel
PetroSA	45,000	45,000	45,000	SynFuel
Total	513,000	651,000	708,000	

The fact that South Africa has a number of refineries lowers the costs to South Africa, with regard to foreign exchange. The significant savings in foreign exchange, benefiting the South African government and other governments, have led countries to regard liquid fuels as strategic commodities requiring price and distribution regulation. The need to operate refineries leads to value-added production. Value is also added to local natural resources in the production of liquid fuels. In South Africa, coal and natural gas contribute to at least 28% of our liquid fuel requirements (BP, 2005).

During 2004, South Africa imported approximately 20.5 million tons of crude oil and 30.6 million litres of refined product were consumed. Crude oil is South Africa's single largest import item. Approximately 15% of the country's primary energy consumption needs are currently met by imported crude oil. Taking synthetic fuel production into consideration, liquid fuels meet approximately 28% of South Africa's final energy needs.

The wholesale turnover of the petroleum industry was about R109 billion in 2004, providing employment to more than 100,000 people. There are

approximately 4,900 service stations, which provide employment to an estimated 45,000 pump attendants (SAPIA, 2005). Thus the liquid fuels industry in this economy contributes significantly to employment in both upstream and downstream sectors

The global view is that oil production is reaching its peak and will start to decline within the next decade (Hubert, 2005). South Africa, with its leading-edge technology in gas-to- liquids (GTL) processing, is in a good position to become more self-reliant regarding its liquid fuel requirements. Global economic growth relies on cheap energy and oil contributes significantly to the worldwide energy pool, particularly in relation to transportation.

2.3.Regulation in the South African petroleum industry

The South African petroleum industry is currently characterised by state intervention and rigorous regulations. These regulatory measures cover import-control of refined products; procurement of crude oil; refining, marketing and distribution processes; restriction of entry into retailing and price control of petroleum products.

2.3.1Importing and exporting of refined product

A special permit is needed to import refined products into South Africa. This is mainly to ensure that the full output of the refineries in the country is utilised to the maximum capacity. It also incentivises the oil companies to remain in South Africa. Another motivation is protection of the synthetic fuels industry in the country; ensuring that its products are consumed in the local market. This was achieved through the Blue Pump Agreement, which stated that all service stations must have a Sasol dispensing pump on their forecourts. This agreement was terminated at the end of 2005, when Sasol entered the retailing market directly.

The strict control of the importation of refined products was implemented to prevent non-industry participants from entering the downstream market. This helps to restrict the ‘dumping’ of cheaper products, thus protecting local industry

participants. A lack of this control could lead to shutdowns, resulting in job losses, if the locally refined product were not used (DMEA, 1993). By ensuring that all locally refined products are used by the local market, the government ensures that value-added processes at the refineries add to the local economy while reducing the need for foreign exchange. The refineries contribute significantly to the South Africa's GDP, estimated at R4.55 billion, on an annual turnover of R109 billion (SAPIA, 2005). The SAPIA members contribute approximately 2% of GDP and contribute 14% towards taxes on services and goods (SAPIA, 2005).

Exporting of products is allowed, provided that South Africa and the South African Customs Union member's needs are met (Trollip, 1996).

2.3.2The procurement of crude oil

Procurement of imported crude oil is mostly left up to the major oil companies in South Africa. Over and above this, the strategic fuel fund (SFF) was established in 1964 by government, for the sole purpose of acquiring and maintaining strategic crude oil stockpiles for resale to refineries in case of emergencies or supply disruptions due to factors beyond the normal supply arrangements of local refineries. During 1994 the government issued a directive ordering that a strategic level of four months' worth of petroleum products must be maintained (Trollip, 1996).

The government forced the oil companies to build up reserves firstly, by requiring them to contribute to the SFF on a compulsory basis and secondly, by offering incentives enabling them to afford the franchises and to build or expand their refineries. These measures, coupled with the threat to nationalise refineries, ensured the continued supply of crude to the country (Hengeveld and Rodenburg, 1995).

2.3.3Service station retailing

In order to improve the viability of retail service stations, the Department of Mineral and Energy Affairs (DMEA) administers the Service Station

Rationalisation Plan (RATPLAN), promulgated under The Petroleum Products Act (Act no. 120 of 1977). The RATPLAN determines the number of service stations in the country and further stipulates that self-service is prohibited. This ensures job protection for forecourt attendants. It further prohibits wholesalers from operating service stations directly, except for training purposes. The purpose of this legislation was to advance small business development and curb further vertical integration by the oil majors (Kotze, 1995).

Rationalisation of the number of service stations has enabled service station retailers to reap the benefits of increased throughputs and the unit cost advantages flowing from this imposed limitation. This has reduced the level of retail margins required by the retailers to operate profitably.

The RATPLAN also prohibits non SAPIA members from selling fuel at prices other than the controlled prices determined by the DMEA. Non SAPIA members are independent retailers owning and operating their own service stations. Approximately 60% of service station properties are owned by the oil companies. The rest are owned by private individuals or companies and operate under the brand of an oil company supplying the fuel to the site (Kotze, 1995). These supply agreements usually run for long periods and are difficult to exit.

2.3.4Petroleum price determination and control

According to SAPIA (2005), the price of refined products produced by South African refineries is based on the in-bond landed cost (IBLC), which is calculated as 80% of the posted product prices by three major export refineries in Singapore (Esso, Mobil and the Singapore Petroleum Company) and one in Bahrain (Caltex), and 20% of the average spot prices quoted by the Singapore refineries. These prices are determined by the dynamics of international oil markets and are posted daily. The reason behind the choice of these refineries is that the distance to the Middle East and Singapore from South Africa, from where the crude oil is obtained, is similar. The broad principle of the current South African pricing formula, which has remained unchanged in format for over half a century, is that prices are based on, and thus influenced by, supply and

demand for petroleum products in areas east of the Suez markets; such as the Arabian/Persian Gulf, Pacific Rim Countries and Australasia. These prices, which cannot be locally manipulated, are therefore the purchase prices that South Africa would pay, should the country be required to import significant volumes of such products at the most economical freight rates (SAPIA, 2005).

The South African petrol price comprises international and domestic elements. The international element is the average of the free-on-board (FOB) petrol price listed by the four refineries in Singapore and Bahrain (combined with the spot price, as explained above), plus freight, insurance and ocean leakage costs, and is known as the CIF (cost, insurance and freight) of petrol landed in South Africa. Freight cost is determined on a monthly basis, using a standard international tariff for product transport voyages from Singapore and Bahrain to South African ports. Insurance tariffs are determined by Lloyds of London according to prevailing risks for different product types. The ocean leakage element pertains to normal leakage, clingage and evaporation losses incurred during shipping (about 0.3%). Landing and wharfage charges (1.78% of FOB value) are added to the CIF cost to arrive at the so-called in-bond landed cost (IBLC). The IBLC (in US cents per gallon) is converted to SA cost per litre by applying the average Rand/US dollar exchange rate for the month in question. This represents the transfer price from the refineries to the marketing divisions of the South African oil companies (SAPIA, 2005).

The IBLC principle is regarded as an arms-length method of determining the basic prices of refined products, which ensures that local refineries operate cost-effectively and as efficiently as their international counterparts (SAPIA, 2005).

Various costs are then added to the IBLC to make up the final pump price in a given price zone (magisterial districts are used as price zones). These costs include the following:

- Inland transport cost, determined by the cost of transporting the product from the coast (Durban, Port Elizabeth, East London, Mossel Bay and Cape Town) to the inland depots serving the zone (SAPIA, 2005);

- Service differential cost, which compensates marketers for the cost of operating the depots and distributing the product to the service stations and is calculated on actual historic costs for the previous year for the whole oil industry, averaged country-wide (SAPIA, 2005);

- The wholesale margin is monitored and controlled by the state using a formula known as MPAR (marketing of petroleum activities return), and set at a benchmark of 15% (10-20% range) nominal return on the depreciated book value of assets (with allowance for additional depreciation and before interest and tax) as determined for the whole oil industry by an independent firm of accountants (The previous year's results are used to calculate profitability and determine whether adjustments to the margin are required. Although the benchmark is 15%, the margin is adjusted only if the return on assets is below 10% or above 20%) (SAPIA, 2005);

- The retail margin, also controlled by government and determined by the DMEA on the basis of the actual costs incurred by approximately 80 representative service stations with an average monthly petrol sales volume equal to the country's average (153,000 litres on average per month in 2005) (SAPIA, 2005);

- Fuel tax, customs duty and excise duty (The state collects tax on fuel, currently equal to approximately 40% of the retail price of petrol and 30% in the case of diesel. No tax is levied on illuminating paraffin used as a household fuel);

- Multilateral motor vehicle accident fund levy (Compulsory third party insurance is financed *via* a levy on petrol and diesel. The exact amount is determined by the budget of the Fund, which is approved by the Minister of Transport and with the Minister of Finance);

- The equalisation fund levy. For more than a decade, until the early 1990s, South Africa was forced to pay premiums for imported crude oil as a result of the oil embargo. These were financed by a levy on retail sales of petroleum products, known as the equalisation levy, which has been imposed since January 1979. The oil companies collect and pay the levy into the

equalisation fund, managed by the Central Energy Fund (CEF) (Pty) Ltd and controlled by the Ministers of Mineral and Energy Affairs and of Finance in accordance with the Central Energy Fund Act, No. 38 of 1977. The levy is currently applicable to petrol, diesel and illuminating paraffin. Although the need to finance premiums on imported oil has fallen away, the equalisation fund is utilised by ministerial directives to fund temporary financing of margin increases and payments to Sasol and Mossgas and to fund the fire-fighting and security projects at key fuel installations (SAPIA, 2005). The need to retain an equalisation levy will depend on whether the above payments can be justified in terms of future energy policy.

The retail or pump price of petrol is the sum of all of the above. It is calculated by CEF and pump price adjustments are made on the first Wednesday of each month. Strict retail price maintenance (RPM) on petrol is enforced by the DMEA in accordance with the Petroleum Products Act (Act no. 120 of 1977). RPM is applicable only to petrol (leaded and unleaded petrol) sold at retail level. The retail price of diesel is not controlled. In the case of illuminating paraffin, a maximum gross retail mark-up of only 33% is permitted. The prices of both diesel and paraffin can be discounted (Mbendi, 2005). All prices at wholesale level are maximum prices only and may be discounted.

2.4.The theory of regulation

A regulation is a legal restriction promulgated by government administrative agencies through rulemaking and is supported by threat of sanction or a fine. This administrative law or regulatory law is in contrast to statutory or case law (Pass *et al*, 2002).

One of the key challenges for a positive theory of regulation has been to develop explanations regarding the origins of regulation and deregulation. The economic theory of regulation explains the process as one of interest group competition in which compact, well-organised groups are able to use the coercive power of the state to capture rents for those groups at the expense of

more dispersed groups (Stigler, 1964). This is also known as private interest theory.

The other approach relates public interest to regulation in which government intervention corrects market failures and maximises social welfare (Joskow and Noll, 1981). Many of the rationales for regulating can be attributed to failure or resulting behaviour that would not serve the public interest.

Regulation theory emphasising the importance of beliefs and ideology was formulated by Poole and Rosenthal (1997). The approach to institutional arrangements of the decision-making process was established by North in 1990 and, again, by Dixit in 1996. It was also expanded on later by (North, 1990), (Dixit, 1996) and (Irwin and Krozner, 1998).

Regulation mandated by the government or state attempts to produce outcomes which might not otherwise occur, produce or prevent outcomes in unexpected areas, or produce or prevent outcomes in different timescales than would otherwise occur. Regulations rarely produce complete outcomes or prevent outcomes completely but they generally do modify what would otherwise take place. Common examples of regulation include attempts to control market entries, prices, wages, pollution effects, employment for certain people in certain industries and standards of production for certain goods and services.

Deregulation is the process by which governments remove restrictions on business in order to (in theory) encourage the efficient operation of markets. The stated rationale for deregulation is often that fewer regulations will lead to a raised level of competitiveness and therefore, higher productivity, more efficiency and lower overall prices.

Economists who have studied the effects of regulation have found that regulation has tended to have little, if any, effect on the profitability of industries which may have otherwise been monopolies and has tended to increase profitability in industries which otherwise would have been workably competitive. The argument revolves around disclosing the real costs incurred where the firm inflates the costs to justify the rate increases. One way of improving profits is to reduce costs, which often results in poorer services. A

way of circumventing regulations, especially on pricing, is to request a fair rate of return on the investment. This would lead to greater capital increase on productivity, justifying a higher increase on the utility. The last way of manipulating regulation is to influence the people making the decisions on regulation issues. This happens when the lobby group of the specified industry becomes too powerful and influences the regulators for their own benefit (McKenzie and Tullock, 1978).

The literature indicates that the public interest argument, especially as it relates to improving market efficiency, is a valid basis for industrial regulation. However, it can be easily exploited. Although pretending to pursue public interest, promoters of regulation can manipulate it for their own interest, instead of what they claim to be in the interest of the public. A logical conclusion can be drawn that the public, as consumers, may want deregulation, whereas the oil majors and retailers would be comfortable with regulation.

However, regulation exists in many industries and, in their search for an explanation for its pervasive existence, many people, economists included, have accepted the argument that regulation serves the public interest. Generally, this means that regulation is intended to increase the efficiency of the market. As the argument is most frequently developed, two sources of inefficiency are seen in a free market: externalities and monopoly power. Therefore, the existence of externalities and monopoly power are the two prime arguments for regulation (McKenzie and Tullock, 1978). According to Baumol and Blinder (1991), there are four basic reasons for regulation.

2.4.1Prevention of monopolies

In standard economic theory, a monopoly will sell a lower quantity of goods at a higher price than firms would in a purely competitive market. In this way the monopoly will secure monopoly profits by appropriating some or all of the consumer surplus. Assuming that costs stay the same, this does not lead to an outcome which is inefficient in the sense of Pareto efficiency; no-one could be made better off by shifting resources without making someone else worse off. However, this situation, compared with perfect competition, results in a decline

in total social welfare, because some consumers must choose second-best products (Baumol and Blinder, 1991).

It is also often argued that monopolies tend to become less efficient and innovative 'complacent giants' over time. Sometimes this very loss of efficiency can raise the potential value sufficiently for a competitor to overcome market entry barriers, or provide incentive for research and investment into new alternatives. The theory of contestable markets argues that in some circumstances (private) monopolies are forced to behave as if there were competition, because of the risk of losing that monopoly to new entrants. This is likely to happen where barriers to entry into a particular market are low. It might also occur because of the availability in the longer-term of substitutes in other markets. Some argue that it can be good to allow a firm to attempt to monopolize a market, since practices such as dumping can benefit consumers in the short term and once the firm grows too big, it can then be dealt with through regulation.

When monopolies are not broken by the open market, government can step in to regulate the monopoly into a publicly-owned monopoly, or forcibly break it up. Public utilities, often being natural monopolies and less susceptible to efficient break-up, are often strongly regulated or publicly-owned. Monopoly is deemed faulty by some, as it can manipulate supply to the industry, creating conditions for an increase in demand and thus manipulating prices without any competition to counteract supply and demand related to the product or service (Baumol and Blinder, 1991).

A monopoly tends to command market power over a product or service totally, resulting in inefficiencies in almost all cases, accompanied by concerns of distribution of the income from the monopoly. In this scenario, if the product or service entails a large enough or strategically important sector of the economy, governments could then own the monopoly or regulate it to further the best interest of the citizens.

The current situation of the fuel industry in South Africa indicates a highly concentrated structure of only a few firms, protected by high entry barriers and

producing a large proportion of the industry's output. This is a typical oligopolistic structure and the opportunity for collusion and cooperative behaviour is sufficiently strong to raise suspicion. Owing to the long history of the current situation in South Africa, the behaviour of these firms towards the competition reaction of their rivals appears coordinated and there appears to be little differentiation apart from their respective branding. Profit maximisation under oligopolistic structures often implies an un-aggressive competitive stance, whereas the other extreme is cutthroat competition. Clearly, with the current regulations in place in South Africa, the un-aggressive competitive stance remains the *status quo*.

Collusion involves the joint determination of output, prices, or other terms of trade by ostensibly independent firms, to elevate their profits. The colluding firms agree on trade terms in light of the costs and returns from tailoring such terms to the diversity of transactions, elasticity of demand and conditions of entry. Collusion may take numerous forms, including price fixing, bid rigging, geographic or product market allocation and consumer allocation (Gal, 2003). This form of collusion can be categorised as a typical cartel. The Organisation of Petroleum Exporting Countries (OPEC) cartel, by manipulating its production output, can influence the price of crude oil. Greene (1997) identifies OPEC as an imperfect monopolistic cartel of the von Stackelberg type. OPEC very closely resembles a producer cartel and meets the five conditions for a successful cartel: high barriers to entry, few significant external producers, non-substitutability and high vertical integration; conditions now normal for all the major international oil companies. They control all the stages of the supply chain and have positioned themselves to exercise market power (Greene, 1997).

The disadvantages associated with almost total control and the paucity of players in the market warrants government involvement aimed at regulating and safeguarding the economy from monopolistic market power. Vertical integration can be described as vertical monopoly in the South African scenario.

2.4.2The desire for universal service

Universal service would ensure that the availability of goods and services at reasonable prices in all urban and rural areas. Small communities and remote villages would be uneconomical to service without universal service. Universal service is achieved by rate-averaging or cross-subsidisation (Baumol and Blinder, 1991).

Universal service is achieved by protecting firms from price competition and free entry into all market sectors. Without universal service new entrants would seek to enter the most profitable markets, resulting in no service or products for remote areas or perhaps providing these at excessively high prices.

The current Regulatory Price Margins (RPM) prevent disparity in the price of products between rural, remote areas and lucrative and highly profitable city markets. The RATPLAN and RPM regulatory measures currently in place ensure that no community or area is prejudiced regarding the supply and pricing of petroleum products.

2.4.3The prevention of self-destructive price competition

The prices of crude oil and derivative products are not set by the market. The final prices of the products comprise various components, some of which include taxes, margins, grants and subsidies. In South Africa, taxes account for a very large portion of the final price at the pumps. Most governments use taxes as incentives and as instruments for discouraging users from moving from one product to another. An example is pricing leaded petrol is more highly than unleaded, thus encouraging consumers to use unleaded products. Diesel might also be taxed at a lower rate; encouraging users to move towards using diesel, which is more environmentally friendly than petrol. Taxes, in the main, are designed to earn government revenue.

Subsidies are used to equalise prices in rural and remote areas with those in metropolitan or city areas.

The current Basic Fuels Price (BFP) pricing mechanism remains a fair benchmark for regulating prices and helps prevent “self-destructive price competition”. The underlying principles determining the BFP are representation of the real market-related costs of importing liquid fuels from overseas sources while ensuring that refining centres meet South Africa’s needs with regard to quality and quantity on a reliable and sustained supply basis. The petrol price in South Africa is directly influenced by the price of crude quoted in US Dollars and converted using the Rand/US Dollar exchange rate. The import parity (BFP) principle can be construed to be an ‘arms length’ method of basic fuels price determination, ensuring that local refineries compete with their international counterparts and ensuring cost efficiencies and efficient crude acquisition.

The liquid fuels industry has large capital costs and low marginal costs. When deregulation does take place the government will need to set a price floor and a ceiling price to protect the businesses from cutthroat competition. The best suggestion put forward relates to hypermarkets discounting petroleum to boost purchases in their businesses. This would result in massive insolvencies for marginal wholesale and retail sites.

2.4.4Protection against misinformation

A final reason for regulation is protection of consumers against the possibility of being misinformed or provided with inadequate information about products and conditions in the marketplace. Effective markets require dissemination of sufficient information to allow proper evaluation between competing products and services. Lack of adequate information hampers the ability of potential competitive suppliers and new entrants to assess the market conditions with regard to opportunities and market dynamics. The information needed for new entrants or competitors to access the market with the potential to compete would not normally be openly available and, when provided by the private sector, would therefore result in unclear cost implications.

Information can be used to facilitate coordination, by reducing the uncertainty about a rival firm’s actions and intentions. Some techniques used include inter-

seller verification of price quotations and advance notice of price changes, whereby detection lags are shortened or eliminated (Gal, 2003). This potential behaviour amongst the few competitors in the market further strengthens the case for government regulation of the industry and control over prices of the products.

Government intervention in the liquid fuels industry, by way of regulation, is aimed at providing fuel throughout the country at an affordable and uniform price. The absence of such regulation would result in fuel being charged at varying prices, especially in remote areas far from production and supply centres. The disparities in price would primarily indicate distribution and transport costs. However, owing to the social responsibility of government, these areas are currently subsidised by the high-profit areas close to distribution centres.

The purpose of government intervention is to protect the domestic market against having product ‘dumped’ into the domestic market by foreign companies and new entrants. In the past the refining supply capabilities of the domestic market exceeded the local demand for liquid fuels but economic growth has seen this scenario change in the last two years. South Africa now has to import refined product to meet local demand.

2.5.International experience

Case studies relating to France, New Zealand and Australia, where deregulation of the petroleum industry has been implemented, were chosen for review. These countries were specifically chosen because they reflect the most likely outcomes that might occur in South Africa if deregulation were to take place. This assumption is based on the perception that Australia and New Zealand closely resemble South Africa with regard to economic and population profile and historical economic background. France reflects the impact of derugulation, specifically on the downstream side, as supermarket chains gained significant influence in the petroleum retail industry. The continued call from Pick and Pay for deregulation of the petroleum industry indicates that this

chain intends to become a major player in the industry. Another factor for consideration is the rationalisation of the industry and the closure of sites: France suffered retail site closures of at least 45% after deregulation.

The consequences of deregulation, drawn from these international case studies, could assist in explaining the possible similarities or differences on assessing the impact of deregulating the petroleum industry in South Africa.

2.5.1France

The oil industry in France has been deregulated since 1992 and there are no entry barriers for companies wishing to enter the market. Price control on fuel retailing was, however, removed in 1985 in line with competition requirements of the European Constitution.

2.5.1.1.The refining industry

The refining sector is currently dominated by five major international companies and their subsidiaries. These include Total (28.8 million tons capacity), Elf France (20.2 million tons capacity), Shell (13.6 m million tons capacity), Esso (13.2 million tons capacity), BP (10.6 million tons capacity), Mobil (3.2 million tons capacity) and Compagnie Rhenage de Raffinage (4 million tons capacity) (Energy Information Administration, 2005). There are twenty-four refineries in France and the country had a total refinery capacity of 93 million tons at the end of 1997. France is a significant net exporter of heavy fuel oil and importer of diesel fuel and heating oil. Domestic demand was 91.9 billion cubic metres in 1997 (Mbendi, 2007).

According to Eurostat, France imported 1.57 million barrels per day of crude oil in 2006. The largest source of these imports was Norway (256,000 barrels per day), followed by Russia (186,000 barrels per day) and Saudi Arabia (166,000 barrels per day). France also imported 760,000 barrels per day of refined petroleum products in 2006 (mostly from Russia), while exporting 519,000 barrels per day (mostly to the Netherlands).

2.5.1.2.The retail industry

The refining and retail petrol sectors are largely in private hands. The Government reduced its share in Total, the former state-owned oil and gas company, to under 6% in 1992. Total owns three refineries in France through its subsidiary Total Raffinage et Distribution. It only controls 20% of the retail market in France.

Elf Acquitaine, the largest industrial group in France, as well as one of the world's leading oil, gas and chemical companies, has also been privatised. State participation decreased from 54% in 1991 to 13% in 1994. The company, which is involved in upstream and downstream operations, has three refineries and extensive petrol retail operations in France.

Like most of the European refining industry, Elf Acquitaine faces problems of overcapacity. The trend is towards rationalisation. Negotiations concerning possible refinery closures are still ongoing. Capacity has actually risen slightly, owing to improvements in refining processes. There is an imbalance in France between production of and demand for gasoline and diesel. Demand for diesel is particularly high in France, as a consequence of an advantageous tax regime applied to diesel vehicles and diesel products. Furthermore, the existing refineries do not have the desulphurisation capacity to produce large quantities of the low sulphur diesel required by European Constitution legislation. The industry is currently pressing for a removal of the market distortions of the tax regime (Masseron, 1990).

Petroleum is subject to a special fiscal regime. In addition to value-added tax and special royalties on oil products, there are excise duties at European level, a tax on oil products and an exceptional levy on pre-tax profits. Tax rates favour diesel over gasoline and natural gas over heating oil and residual fuel. Under The 1999 Finance Bill stipulated that the preferential tax regime for diesel would be abolished progressively over seven years. Fiscal incentives have been introduced for petroleum exploration activities only (World Energy Council, 2007).

2.5.1.3.Competition in the petroleum industry

The entire French downstream industry is characterised by poor profitability due to a combination of high refinery costs and low margins in a very competitive retail market. The retail sector in France is controlled by the private sector. A significant rise has occurred in market share ownership by supermarket chains, which control 49.5% of the market. Oil companies control 46.1% of the market and 4.4% is controlled by independent retailers. The total number of retail petrol outlets in France was 17,974 in 1996. Supermarkets have been criticised by the oil companies for their low prices and self-service forecourts and increased competition has led to the closure of many outlets by oil companies. In 1996, 650 outlets were closed by the oil companies and 250 new outlets were opened by supermarkets. The supermarkets have been criticised for the practice of keeping prices low and taking advantage of competition law. Oil companies have been lobbying for the modification of competition law and for a ban on what they consider to be "abusive low prices" (Masseron, 1990).

2.5.1.4.Conclusion

In summary: France has seen a significant reduction of retail sites since deregulation in 1992. The reduction of 45% of retail sites in the retail industry clearly indicates the overtraded capacity in a regulated market, where margins are guaranteed. The entrance of the supermarket chains into the forecourt retail space has seen a dramatic decrease in participation by the oil majors and independent retailers.

This phenomenon has made the oil majors focus more on the upstream sector of the industry in France. Their extra refining capacity has led to the export of refined products into other European countries. South Africa also has an overtraded retail industry and should deregulation occur, a pattern similar to that in France is likely to emerge in the retail industry. South Africa, though, does not have extra refining capacity and the limited infrastructure poses challenges for the industry regulators. Government is more concerned about supply

constraints and refining capacity, so the immediate focus would on addressing these issues. The supermarket chains would definitely enter the retail space in South Africa, should full deregulation occur, resulting in consolidation of the industry. South Africa also has a socio-economic problem of unemployment and the government has indicated in the White Paper that self-service will not be an option. This suggests that re-regulation would be an option before complete deregulation occurs. Clearly, deregulation is the ultimate goal, but certain milestones must first set by government, these being the establishment of sufficient infrastructure and refining capacity and achievement of the 25% BEE target throughout the entire value chain of the industry.

2.5.2New Zealand

In 1988 the New Zealand government enacted the Petroleum Reform Act of 1988, which brought about the deregulation of the sector. The main purpose of the legislation was to increase competition and efficiency and thus achieve the result of lower prices and improved efficiencies. The ability of new entrants to enter this market appears to have resulted in improved service and stimulated price competition (Patterson, 1991).

2.5.2.1.The refining industry

New Zealand currently has six wholesale suppliers of petroleum products: Mobil (1896), Shell (1912), Caltex (1920), Europa (1931), BP (1946), Challenge (1998) and Gull (1998). Europa was completely acquired by BP in 1977 and all Europa sites were re-branded as BP. All refined products were imported until 1964, when the first refinery was built at Marsden Point in a joint venture by the first five suppliers (ACIL, 1997).

The National Government in 1957 announced that New Zealand should have its own refinery to save on foreign exchange, encourage local industrial development and obtain strategic security for its petroleum resource. The five petroleum producers were allocated a 68.57% share in the refinery and the rest was allocated to public tender. Marsden Point, the entrance to Whangarei

Harbour, was chosen, as it was a safe deep harbour with large flat tracts of land free from Natural Fault lines (ACIL, 1997).

The capacity of the refinery in 1967 was 2.5 million tones of feedstock per year, sufficient to meet the requirements for that year. The country's energy needs soon surpassed the refineries capacity and after much legal, financial and business decision-making, the refinery was expanded and completed on 30 May 1986 at a cost of $1,848 million dollars. By 1990 New Zealand was 60% self-sufficient with regard to petroleum products (ACIL, 1997).

2.5.2.2.The retail industry

In the mid-1980s, the petroleum industry questioned the relevance and efficiency of the government regulations. The admission that regulation was inefficient led to a call for a more market-based approach to the industry. This covered supply, distribution licensing and separation, price control and margins.

The government controlled the licensing of wholesalers and retailers. All products had to be sourced from Marsden Point but initially the local refinery could not meet demand. Marsden Point was later expanded to meet the local product needs.

Retailer licences were site-specific and could be held into perpetuity. This hampered retailers, as they could not make adjustments when market conditions changed. The only way in which new demand could be met was by issuing new licenses, which caused a proliferation of small sites, resulting in a substantial drop in the petrol throughput *per* site (Clough *et al,* 1989).

The Motor Spirits Distribution Act of 1953 restricted wholesalers from entering the retail market. The main purpose of the legislation was to prevent the shift of retail sites from multiple brand sites to single brand ones. In addition, this would limit the capacity of wholesalers to tie retailers into supplying their respective brands and thus enable the wholesalers to establish and protect their market share. This restricted potential entrants from entering the foreclosed market areas, forcing the oil companies to acquire retail sites to gain market share.

Because of complaints by existing retailers the legislation was modified to curb the acquisition of retail sites by oil companies. Regulation did not prevent individuals from owning more than one site or retail licence, enabling them to respond to the power of wholesalers by forming groups and buyer co-operatives (Wheeler and Pickford, 2001).

The intended consequence of deregulating the industry was exposure of the market to competition resulting in improved efficiency, lower fuel prices, entrepreneurship and better service levels. Questions were posed as to whether the new refinery would survive deregulation and be competitive enough to supply the local market at a better rate than that of imported refined products. The closure of the refinery would have resulted in drastic unemployment in the Northland. The government therefore undertook the liability for the cost of the expansion of the refinery and received an undertaking from the oil majors to contribute a lump sum payment towards the liability of the refinery. The industry was deregulated on 9 May 1988.

Thereafter, the refinery operated as an independent entity, not receiving any concessions or commission from the government or motorists. The oil companies were released from their obligation to purchase from the refinery and new contracts had to be negotiated. The refinery introduced a pricing formula based on import-parity in relation to the Singapore spot prices. The spot price of crude in Singapore was quoted in US dollars and the exchange rate influenced the revenue of the refinery significantly.

The price controls of all petroleum-related products and restrictions preventing wholesalers from vertically integrating downstream into retailing were removed. Importation of refined products was unrestricted and, as licenses were no longer required, barriers to new entrants no longer existed.

By 1989, with deregulation in full swing, a few trends emerged including:

- Intensified competition and sporadic price wars in the major urban areas;
- Regional wholesale price differentials reflecting variations in transport costs;
- Volume concentration of retail sales through larger outlets;

- Diversified use of outlets with expanded accessory and grocery stores;
- Relocation of outlets from restricted inner city sites to sites with lower land values;
- Wholesale acquisition and franchising of strategic sites to secure market shares;
- Continued niche markets from smaller suburban and rural outlets; and
- A lack of significant price competition (Miller, 1989).

Shares in the refinery at Marsden Point, which was jointly owned by BP, Caltex, Mobil and Shell, were sold in October 2000. The refinery is totally independent and currently has a capacity to refine 95,000 barrels of crude oil per day. In March 1998 Challenge entered the wholesale market, and began retailing in April 1998. Gull was another independent oil major that established itself in the New Zealand market. The rest of the retail marketers comprise independent service stations. Road transport and the pipeline from the refinery to the Wiri bulk storage facility were used for the distribution of petroleum products. It was previously essential that the oil majors had storage facilities at the 12 ports throughout New Zealand. After deregulation a rationalisation process was also undertaken to reduce excess capacity and utilise economies of scale at depots. Storage was leased from other oil majors where companies had no depots and others had excess capacity. Coastal tankers operated in the same way, delivering product to all the oil majors. The result of this arrangement brought about a lend-and-borrow arrangement at the wholesale level, enabling the oil companies to minimise the transportation costs of petroleum product. This arrangement resulted in cross-subsidising transport costs, irrespective of location.

In 1989, a review of pricing in the oil industry indicated several structural conditions that pointed to typical oligopolistic interdependence between wholesalers (Miller, 1989) characterised by:

- Fewer sellers;
- A homogeneous and non-complex product;

- Transactions between sellers and buyers being very frequent;
- Inelastic demand;
- A history of cooperation between the companies;
- A similar cost structure;
- The oil majors being subsidiaries of international companies which meet frequently across the world.

Miller (1989) indicated that market conditions in the industry suggest that an understanding of a collusive sort, one not involving direct communication and agreement but displaying the same results as one stable price, higher return on investment, stable market shares, is a rather likely scenario.

There are three types of retail service station operations in New Zealand, the first being dealer-owned and -operated: 60% of all retail sites are of this type. The second type is the dealer franchise or lessee type, which comprises 20% of the market. The third includes the company- or agent-operated station, where the site is operated by the oil company or an agent of the oil company. All the retail sites dispense a single brand of fuel and most deliver full service. There are a few self-service sites which offer fuel at a discount of about 1.5 cents, presumably offset by staff cost savings. Table 2 shows the total numbers of retail service stations in New Zealand in selected years:

Table 2: Number of service stations in New Zealand (selected years)

Years	**1976**	**1985**	**1986**	**1990**	**1996**	**1998**
Number of service stations	4,131	3,042	2,814	2,500	1,890	1,800
Index	100	74	68	61	46	44

Note: index base 1976 = 100. The figures for 1990, 1996 and 1998 are estimates only. Sources: Clough *et al* (1989) and ACIL (1997).

The forward integration of the oil majors appears to have been done to retain their respective market share, as indicated by the 20% of the top retail sites owned by the oil majors. The other 80% of the retail sites was tied down by long-term supply agreements ensuring that sites would remain exclusive to oil majors. Another reason why the oil majors integrated forward was their intention to gain control of their retail marketing channel. They invested in retail layout, facilities and uniform branding differentiating themselves from competitors, given the homogeneous nature of the product. Vertical integration also creates a barrier to entry, as an entrant may be forced to enter both the upstream and downstream levels, thus raising the size of the investment, which would increase their overall risk.

Clough *et al* (1989) indicated that a number of obstacles to entry into the petroleum industry still existed, these being access to the refinery and to wholesale infrastructures like the pipeline, wharves and storage facilities. The acquisition of good retail sites as well as the restriction of existing retailers from switching brands as they were already tied into supply contracts with current suppliers and the high cost of storage facilities for refined products acted as a major barrier to entry.

A study undertaken in 1996 by the New Zealand Institute of Economic Research indicated that the importer price margin and the New Zealand retail prices net of taxes had been increasing since the early 1990s. The oil majors disputed the findings of the government study and declared that there were no artificially high entry barriers for a new entrant into the market. However, it would be impractical for a new entrant to build its own refinery as the market size would limit a good return on such an enormous investment. The obvious strategy would be to enter the market lower down the supply chain and import refined product. That no new entrants had infiltrated the market by 1997 suggests that there was no collusion by the oil majors or that the current profit margins were so thin that they held very little incentive for potential new entrants. The first new entry, by Challenge, occurred only ten years after deregulation, in 1998. Gull followed. Apparently by then the industry margins had increased to a point where entry to the industry almost ensured a positive

return on investment. However, the new entrants had limited access to existing retailers, as these were tied into lease arrangements with the existing four oil majors. The vertical arrangements with retailers were restrictive because their supply and termination contracts were lengthy, with the supplier having the first right to purchase the site on termination.

2.5.2.3.Competition in the petroleum industry

With the arrival of two new entrants a fierce price war erupted, where prices dropped by almost ten cents or 10% (Espiner, 2000) at the launch of the new Challenge service stations. The rationale behind this was not so much a price war (Espiner, 2000), as a desire from the new entrant to increase market share and increase throughput through its new supply depot. A particular absence from the market in New Zealand was the influence of the large supermarkets, which did not enter the market as they did after deregulation in France, the United Kingdom and Australia.

With deregulation in full force, the retail industry realised that fuel sales profit was on the decline and it started diversifying by offering other services. The oil majors focused on marketing their brand and offering services such as providing convenience stores and automated car washes. This proved to be successful, since it contributed to fifty percent of the profits of the service stations. Each oil major created a unique brand for its convenient stores and some even entered into partnerships with major retail groups such as Woolworths. With the fall in margins by about fifty percent prior to deregulation (Clough *et al,* 1989; NZIER, 1996; ACIL, 1997), the oil majors cut costs further by introducing self-service retail sites. Almost all retail sites are now self-service operations, enabling the margin after deregulation to average between four to five cents a litre, compared to between ten and twelve cents a litre prior to deregulation.

One of the major features of the New Zealand retail petroleum industry is that the supermarket groups have not entered the market as they have in the UK, France and Australia.

As the aim of deregulating the New Zealand petroleum industry was to increase competition and thereby improve the efficiency of the industry, the refinery also became more efficient because of competition from refined imported products. Because there were only four oil majors operating in the New Zealand environment, the industry displayed typical oligopolistic behaviour, with prices changes closely followed by competitors. It took ten years for the first new entrant into the market to suggest that the barrier to entry was much higher than anticipated at first. Almost immediately there was a price reduction of about five cents a litre in areas where the new entrant operated. With the arrival of the second new entrant, prices fell even further.

With deregulation, a number of service stations closed as a consequence of the increase in competition. Numbers fell from 2,814 service stations in 1986 to approximately 1,900 in 1997 (Xabendlini, 2000).

There are still some regulation policies in the industry. These are the Commerce Act 1986, The Resources Management Act, The Petroleum Product Specifications Act and the Dangerous Goods Act.

2.5.2.4.Conclusion

In summary; New Zealand has experienced consolidation of retail sites since deregulation in 1988. The South African fuel industry resembles the New Zealand in many respects: the few industry participants, the supply arrangements between the oil majors and ownership of the best retail sites by the oil majors. Consequently outcomes similar to those in New Zealand would result should deregulation occur in South Africa. Consolidation of retailing activity would also follow suit in South Africa. The difference is that the South African Government would not allow self service. In South Africa, a few major players dominate the petroleum industry and, as typified in New Zealand, an oligopolistic environment could result after deregulation. The probability of this happening in South Africa may be very high. The barriers to entry in South Africa are very high. Some of them include lack of access to the refineries, pipelines, wharfages and storage facilities.

2.5.3Australia

The Australian Commonwealth Government, in 1964, made it mandatory for local refineries to take up all the indigenous Australian crude, starting with the Moonie field. This intake was priced at world crude oil prices at the time. New fields came online; the Bass Strait fields off Southern Australia and the Carnarvon Basin off the Western Australian coast. The pricing changed in 1975 with the concept of import parity pricing. In 1983 the Australian government allowed the export of crude, as the Bass Strait production had increased. With the advent of this new development, talks started on the deregulation of the industry, which was fully deregulated in 1988, allowing the end of the mandatory intake of indigenous crude to the refineries. Australia is almost self sufficient in oil production and imports only about 8% of it in meeting its total domestic demand (Petroleum Topics, 1994).

During World War Two, the Commonwealth the petroleum industry, setting a maximum price. This arrangement ended in 1948. By 1954 all states had stopped controls; except South Australia, where price controls were based on maximum cost-based wholesale prices and country freight differentials. This system became standard in the industry throughout Australia. Government started a pool arrangement in the retail and wholesale sectors of

However, in 1973 the Prices Justification Tribunal (PJT) was established to allow the government to control fuel prices. The formula was: maximum wholesale prices set on a cost basis, with the country's freight differentials added to the price. This system was retained until 1981 and the Government replaced the PJT with the Petroleum Products Pricing Authority (PPPA), whose function almost exactly matched that of the PJT. At the same time some states were introducing their own controls over retail pricing of petrol and diesel. This duplication led the establishment in 1983 of the Prices Surveillance Authority (PSA) and the abolishment of the PPPA until 1996, when the Australian Competition and Consumer Commission (ACCC) took responsibility of the PSA. In 1998 the ACCC was retained solely as a monitoring role from its previous price surveillance body (ACIL, 1997).

In 2001 Western Australia established a new comprehensive regulatory framework for pricing of petrol and diesel. This included:

- A terminal gate pricing system for spot sales;
- A maximum wholesale price;
- A 24 hour rule limiting intra-day price movements;
- Pricing information systems for public awareness;
- A 50/50 rule which allows retailers to source half their supplies from sources other than their primary suppliers.

So far none of the other states have implemented the Western Australian model.

2.5.3.1.The refining industry

Australia has nine refineries, with a total refining capacity of 804,000 barrels per day. The four oil majors, Ampol, Mobil, Shell and BP, own eight of these refineries (ACIL, 1997). All nine are situated near port facilities, where the most densely populated centres are located and the demand for petroleum products is highest. Each refinery operates according to exchange agreements between the oil majors. In this way one will provide supplies to areas where another does not have refineries. This reduces the cost of transportation to dispersed markets.

The oil majors operate 87% of the bulk storage and distribution networks around the country. The rest are owned and operated by independent distributors and marketers. Crude and refined products are transported by rail and road tankers to the refineries and retailers. Vertical integration by the oil majors is one of the most prominent features of the industry.

Seven of the nine refineries in operation, produced 42,970 million litres per annum in 1996 (as shown in Table 3), whereas the local demand was 47,150

million litres per annum. The shortfall of refined product was sourced mainly from Singapore.

Table 3: Australian refineries - capacity per annum

Refineries	Capacity*
BP Refinery (Kwinana) PTY LTD	8,030
Caltex (Kurnell – Sydney)	7,210
Shell Refinery (Geelong)	6,900
Caltex (Lytton – Brisbane)	6,110
BP Refinery (Bulwer island) PTY LTD	5,100
Shell Refinery (Clyde - Sydney)	4,980
Mobil Refinery (Altona - Melbourne)	4,640
Total in million of litres per annum	42,970

* million litres per annum. Source: Australia Institute of Petroleum (1996)

2.5.3.2.The retail industry

In the 1950s service stations retailed multiple brands at their sites but as demand grew this practise became unsustainable. It became apparent that supplying one brand to customers, improved economies in distribution. The service stations installed larger storage tanks, resulting in less frequent deliveries to retail sites. This form of trading became known as “solus trading”(ACIL, 1997).

The advent of solus trading led to a large growth of retail sites, as Shell and Mobil controlled most sites with lease agreements in place. Other oil companies and independents found it more beneficial to build new sites than to try to take existing sites over from other oil companies (Industry Commission, 1994).

Table 4: Ownership profile for retail sites

Controlling entity	Number of sites
Independent sites – Major oil brands	3,900
Supermarkets	1,040
Franchisees – Major oil brands	800
Other brands	600
Major oil companies	238
Total	6,600

Source: AIP annual report (2005)

2.5.3.3. Competition in the petroleum industry

The current trend in the fuel retail sector in Australia is for participants to compete more on price than on service and trading hours. With deregulation, a rationalisation of sites was established and almost half of the retail sites were closed due to under-performing profits and low sales volumes (ACIL, 1997).

2.5.3.4. Conclusion

In Summary: Australia has experienced a massive consolidation of the retail fuel industry, with about 50% of sites closing due to deregulation. The entry of supermarket chains into the industry resulted in 20% of retail sites being operated by these. The Australian petroleum industry is characterised by competition on price of the product rather than on brand, service and trading hours. A similar pattern could occur in South Africa, where the motorist is attracted by price, rather than other offerings. There would be no self-service in South Africa, in contrast to Australia, where self-service was seen as allowing improved economies of scale in price competition. The anticipated entry of the supermarket chains will occur, as it did in Australia. The number correlation and the percentage of market share will be determined by demand. The consolidation and closure of sites will definitely occur, as the industry is overtraded and service station sites with small throughput will be targets for closure.

2.6.Analysis of the South African petroleum industry

An industry analysis of the South African petroleum industry was done, using Porter's five forces (1980). The aim was to understand the current intensity of rivalry, the threat of new entrants, the use of substitutes, the threat of buyers and the threat of suppliers and, more importantly, to assess the potential impact of deregulation of the South African petroleum industry on each of these five factors.

2.6.1The intensity of rivalry

The intensity of rivalry is very high amongst retailer service stations. A moderate level of differentiation exists through branding and services offered. A result of fuel retailing is that service stations now offer a variety of services and products on a 24 hour basis. These include co-branding with the likes of Woolworths, Wimpy, Spur, Church's Chicken and many more fast-food outlets. Service station retailers have basically replaced the traditional corner café shops and are competing with small food retail outlets and coffee shops. They are providing intangibles such as a secure environment and multiple offerings ranging from internet and postal services, restaurant facilities and car dealerships. It is almost standard that service stations have automated teller machine facilities. All these services are being offered on a 24 hour basis.

The most significant implication of full deregulation would include the lifting of controls over petrol product prices for the end consumer. If this were to happen, cut-throat competition would follow as would the increasing importance for the service station retailer of alternative service offerings. Thus, further diversification of even wider offerings or services at fuel stations may occur. These alternative profit generators would be used to address the problem of the declining margin of the profit currently made on the sale of fuel.

The full impact of deregulation is broader than simply the effect on small service stations or the margins achieved by way of price competition. Overseas experience indicates that deregulation has led to large closures of service stations. In the changing world market business environment, it is important that

the South African economy become more competitive in world terms. The petroleum industry must be structured to create healthy competition and maintain a reliable supply of fuel to the economy.

Deregulation would cause intensified competition forcing retailers to cut costs. Job retention in the current regulatory environment is guaranteed, as self-service at retail sites is prohibited. Deregulation would impact severely on job losses, as salaries are amongst the major cost components incurred by service stations. All other costs related to the operations of a service station would also have to be reviewed and measures to reduce costs in order to stay in business would have to be considered. A further consideration is that opportunities for small businesses in the sector are likely to be reduced.

The FRA contends that oil companies themselves own over 40% of all outlets and pump over 70% of all fuel sold. Thus changes in regulation of the fuel industry would affect oil majors significantly more than individual operators.

2.6.2The threat of new entrants

New entrance to an established market results in new capacity with the intention of gaining market share. There are basically two alternative ways of gaining market share; either through additional acquisitions or through being a completely new entrant. The most likely new entrants to the South African petroleum industry would be the major hypermarket retail chains. These entrants are predominant in France and have successfully operated in a fully deregulated environment. Deregulation would significantly lower the barriers to entry for the hypermarkets in South Africa.

Liberalisation as a result of deregulation of the market place and allowing new competitors to participate where they were prohibited from doing so in the past would be a significant consequence.

The legislation regarding the importing of refined products still limits the ability of new entrants to the market to procure product from local refineries. It acts as a safety shield protecting local firms against foreign ones as they would be

forced to procure product locally. The vertical monopoly situation that exists where the current oil majors own refineries, and have established their own distribution networks and access to the current pipeline network lifts the barrier to entry significantly higher than simply just operating a service station. The current brands in the industry have a strong loyalty base and each new entrant would have to prove itself and build a loyal customer base. New entrants would have to spend huge sunken cost capital to establish depots and distribution networks. The risks involved in establishing a brand in competition with the local oil majors when price is unregulated, thus creating a non guaranteed margin return, would to be too great for small investors; specifically in the retail market. Profitable entry can be expected only if the size and probability of expected profits, in the event of success, will outweigh the unrecoverable entry costs that will be lost if the firm fails. Loss could result from, *inter alia*, the retaliatory strategies of the existing oil majors in the domestic market, which have already committed sunk costs (Gal, 2003).

For new entrants to succeed, particularly in the downstream sector, some form of protection for a defined period would be needed, preventing established oil majors from using restraining actions to drive out the new entrants.

2.6.3The use of substitute products

There is presently no economically viable substitution for crude oil. The major motor manufacturing companies have not developed new economically viable technology to totally replace the internal combustion engine. However, Toyota Motor Corporation and a few other major car manufactures are producing hybrid vehicles that require significantly lower fuel consumption. This development has not totally eliminated the combustion engine but has reduced the petrol consumption of an average motor vehicle by at least fifty percent. Crude oil will continue to be the major form of energy for the next few decades. The only viable alternative is the current gas-to-liquids process that South Africa and Germany use on a large scale. This technology is being transferred and plants are being built around the globe to utilise the synthetic fuel technology. This

does not help by removing dependence on the internal combustion engine but by merely converting other fossil fuels into petrol.

Another major development involves biofuels, particularly biodiesel. Africa and the developing world have a major opportunity in this regard, as current crops can be converted to produce bio fuels. Africa has rich, fertile, abundant land available for producing biofuels. The end result could be the creation of a value chain that could enable many countries to be less reliant on crude oil as their main feedstock in their refineries.

2.6.4 The bargaining power of buyers

The buyers of petroleum products are divided into two categories, the retailers and the wholesalers. Buyers would not be able to backward integrate into the refinery process because a massive capital investment is needed to start a refinery and establish a distribution network and pipeline agreements. Consequently, the current role players would continue to dominate the market. While the market determines the price of crude oil and the size of the oil companies acquiring crude oil has little impact on the price, the oil companies can, however, utilise financial tools to reduce their risk on price spikes in crude oil. The government regulator will have to remove the restrictions on importing refined products, thereby creating a more level playing field for new entrants. The bargaining power of new entrants, whether they are significant or not, will amount to very little if restrictions on imported refined products are maintained by government. The independent retailer attempting to acquire refined products on a regular and consistent contract would be at a major disadvantage, as the oil majors would prioritise supplying refined product to their respective branded retailers over supplying independents.

Full deregulation would result in switching by the consumer from one brand to another or from service station to another depending on the price of the product supplied. The end consumer in this market would be important, as service stations would be jockeying for customers on the basis of cut-throat price competition.

2.6.5The bargaining power of suppliers

There are approximately six major fuel suppliers in South Africa. Almost all the service stations are branded with their products and retailers are contractually obliged to purchase their respective brands. The current franchise agreement restricts the retailer to sourcing refined products from the branded supplier. This arrangement overwhelmingly favours the suppliers. The retailers would have to lobby government to help ease or remove the one-sided franchise agreements, enabling service station owners to buy from the most competitively priced suppliers.

The oil majors will retain a monopoly situation as long as the importation of refined products is not allowed without government approval.

As no substitute products are available, suppliers exert considerable power over their buyers. Because the main product line of service stations is petrol, the oil majors exert power over the service station retailers. The future regarding government regulation will greatly determine the direction of the power relationship between suppliers and buyers.

2.7.Conclusion of literature review

The purpose of this research was to address the research problem described in Section 1.4 and outlined briefly below.

The purpose of this study was to assess the potential impact of deregulation on the South African petroleum industry should government deregulate the industry as proposed by the South African Energy Policy White Paper (1998).

According to the available literature, government regulation serves to prevent the abuse of power, the promotion of competition and the management of the market. The intended consequence of a policy change from regulation to deregulation would involve minimum government intervention. The general consequences of deregulation would potentially affect employment, development of small businesses, pump price competition and barriers to entry.

A review of deregulation in three countries found the results of deregulation of the petroleum industry to have been experienced as shown below.

Table 5: Summary of international reviews

Country	France	New Zealand	Australia
Date of deregulation	1992	1988	1988
Form of deregulation	Government intervention minimal	Government intervention minimal	Government intervention minimal
Impact of deregulation			
Labour	Self service	Self service	Self service
New entrants to the market	Supermarket chains	Supermarket chains and private companies	Supermarket chains and private companies
Competition	Severe	Very high	Very high

Country	France	New Zealand	Australia
Percentage of retail service station closures	45%	50%	30%
Ownership profile of service station retailers			
Supermarkets	49.5%	15%	2%
Oil majors	46.1%	10%	80%
Independents	4.4%	75%	18%

CHAPTER 3: RESEARCH METHODOLOGY

The following chapter describes the research methodology that was used to address the research question in mentioned Section 1.4 and explains why it was used. The research design, the survey population, sample selection, data collection and data analysis employed in this study are also described.

3.1 Research methodology

The research question required assessment of the potential impact of deregulation in the petroleum industry. As deregulation has not yet occurred, this research was exploratory in nature. All multiple perspectives held by different industry experts had equal validity (Creswell, 1998). Thus, revealing the nature of these multiple perspectives was one of the aims of this study: hence the research was qualitative and was conducted in the interpretative paradigm. Use of the qualitative rather than quantitative research methodology was also appropriate because of the lack of local empirical data. Qualitative research allows understanding of issues that are difficult to quantify; such as beliefs and opinions. It also enables acquisition of new insights; development of theoretical perspectives and discovery of the problems that exist within a phenomenon (Leedy and Ormond, 2005). The interpretive paradigm was chosen because it allowed the development of an indepth descriptive understanding of the assessment of the potential deregulation of the South African petroleum industry from the perspective of industry experts.

3.2 Research Design

Yin (1994:18) defines research design as the “logic that links the data to be collected to the initial questions of a study”. The main purpose of the research design is to avoid the situation where the evidence obtained does not address the initial research process (Yin, 1994).

The focus of the study was initiated with a literature review on the regulation status of the South African petroleum industry, followed by three international experiences of deregulation and a potential analysis of deregulation in the South African petroleum industry. A consistency matrix in Appendix B was used as a powerful tool to ensure that the research question, sources of theory, subsequent data collection and analysis were all aligned and that the research question was meticulously addressed.

A questionnaire was constructed and developed before the interviews were held. It is attached in Appendix A. Only one open-ended question was used, to initiate the discussion with participants, since the interviews needed to remain flexible and allow any information to emerge naturally. This enabled the respondents to answer and elaborate on the research question in their own words and discuss their personal views and perspectives. It also allowed for flexibility in terms of probing additional questions as topics and issues were raised and for immediate clarification of misunderstandings. Researcher bias related to responses was thus avoided. No other standardised instruments for data collection were used.

The open-ended unstructured interview assisted in exploring the research question in-depth and produced a wealth of data, analysis of which needed a great deal of time. The interviewees covered issues that they considered most salient to them on issues regarding deregulation. In the recorded interviews certain topics were mentioned repeatedly and great emphasis was placed on these. Silverman (2001) holds that despite these disadvantages, unstructured interviews are always powerful data collection tools that often yield very useful detailed information. Discussions not only revolved around the interviewees' perceptions but also included their beliefs and motives related to the potential impact of deregulation in the petroleum industry, stemming from their experience and expert knowledge in the industry.

3.3 Population and sample

3.3.1 Population

The research sought to collect a cross-section of opinion regarding the potential impact of deregulation on the South African petroleum industry. For this reason, the research population comprised relevant representatives working for the oil majors, energy policy experts, independent consultants associated with policy analysis on the petroleum industry and trade representatives from the petroleum industry and service station retailers.

3.3.2 Sample and sampling method

The general rule regarding research is that the larger the sample size, the better the results (Leedy and Ormond, 2005). Babbie (1989) indicates that sample size may be suggested based on experience and knowledge of the subject matter.

As the topic of deregulation of the petroleum industry requires knowledgeable experts on the subject matter to provide input, purposive sampling was used. The respondents, deemed experts in the petroleum industry, were selected on the basis of their willingness to participate in the study by being interviewed.

Table 6: List of respondents

Respondents	**Sector representation**
DMEA representative	Government representative
CEF representative	Government representative
FRA representative	Fuel Retailers Association
SAPRA representative	South African Retailers Association
Oil company representative from Chevron and Shell	Oil majors
Respondents	**Sector representation**

Gauteng retailer representative from Chevron, BP, Shell and Sasol	Service station retailers

3.4 Data collection

The primary data were collected through unstructured in-depth interviews, to explore potentially new aspects not revealed by the literature review. The in-depth interview is a technique that is used in exploratory research, where respondents are probed on topics in a relaxed environment to maximise the richness of the discussion and data collection (Creswell, 1998). Interviews were therefore conducted at the interviewees' respective offices, where they felt most comfortable.

The advantage of the in-depth interview is that the researcher can shift focus as new data comes to light. However, different information may be offered by different people and as a result it may not be possible to compare the responses from different interviewees (Leedy & Ormond, 2005). In this study, however, it was found that in most cases uniform responses were received from respondents in the same stakeholder group.

Each interview took between one and two hours. Some written notes were taken during the interviews and with the permission of the interviewees, all interviews were recorded and then transcribed.

At the start of the interview, it was explained that the objective of the research was to explore the potential impact of deregulation on the South African petroleum industry. The interview then proceeded to open discussion by the interviewee on the research topic.

3.5 Data analysis and interpretation

The data analysis method for qualitative research, called the data analysis spiral and based on Creswell (1998), was described by Leedy and Ormonde (2005) as an iterative process containing the following four steps:

a. gathering and organisation of the data from in-depth interviews;

b. Examination of the data by perusing the entire data set several times to get a sense of what it contains as a whole;

c. Identification and definition of patterns, general categories or themes, enabling the interpretation of the data;

d. Integration and summarising of the data as findings.

Upon completion of each recorded interview, it was transcribed and merged with the written notes. An initially developed data analysis framework was used in analysing issues explored during the first interview and was developed further on an ongoing basis to cover issues that emerged from subsequent interviews. Common issues were grouped according to themes and summaries were sent to all respondents. Where anomalies and contradictions occurred, these were analysed and presented as additional information.

Leedy & Ormrod (2005: 286) state that “to display the data is certainly important, but … the interpretation of the data is the essence of research”, and interpretation formed a crucial part of this research process. Since the interpretative paradigm was chosen in this qualitative research employing an in-depth interview method, some interpretation occurred during the data collection phase, while a significant amount occurred during the data analysis phase. During interpretation, patterns in the data emerged into themes. Some of these correlated with the three international reviews of France, New Zealand and Australia covered in the literature review, while other aspects of deregulation of the petroleum industry, pertaining specifically to the South African environment, were revealed.

3.6 Validity and reliability

Validity is concerned with whether the instrument “measures what it is supposed to measure” (Leedy and Ormrod, 2005:28) and whether valid conclusions are drawn. Since qualitative research in the interpretative paradigm was used, there were some drawbacks.

3.6.1 External validity

External validity is the extent to which results of a study could be generalised and applied to situations beyond that particular study (Leedy and Ormrod, 2005). Because the key results of the potential impact of deregulation in the petroleum industry were environmentally specific, a number of findings of the study were potentially limited to the South African context. However it was believed that certain broad principles resulting from deregulation were likely to be transferable to contexts outside South Africa, thereby rendering limited results valid beyond the South African context.

3.6.2 Internal validity

Internal validity refers to the extent to which the researcher is able to draw "accurate conclusions" from the study (Leedy and Ormrod, 2005: 97).

To ensure internal validity, interviews were conducted only with respondents who were deemed experts and/or worked extensively in the industry. To limit the natural bias possible in qualitative research, interviews covered various perspectives from multiple sources.

3.6.3 Reliability

Reliability is defined as the extent to which similar research conducted in future would result in similar outcomes (Leedy and Ormrod, 2005). Given that qualitative methodology using the interpretive paradigm was used and the perspectives of the participants were time-specific because developments were changing in the petroleum industry, the results would probably differ if a subsequent analysis were to be done by another researcher.

CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

The purpose of this study was to assess the potential impact of deregulation on the South African downstream petroleum industry should government deregulate the industry as proposed by the South African Energy Policy White Paper (1998). The main purpose that underpins this policy is characterised by minimum government intervention and regulation in the petroleum industry such that domestic and international competition is promoted without threatening supply.

Once the research was underway, it became clear that this was a strategic yet complicated issue for the stakeholders involved. Each stakeholder had their own opinion on what were the most critical issues to be considered. The results collected from the stakeholders are presented in this chapter.

4.2 Demographic profile of respondents

The respondents interviewed were from the petroleum sector and are considered experts in their field.

This demographic profile of interviewees represents a summary of opinions regarding deregulation of the different stakeholders, enabling a clear vision of the different views of each stakeholder group regarding deregulation.

The views of the interviewees representing the different stakeholders in the petroleum sector are summarised on the basis of their assessment and experience related to the petroleum industry. Their in-depth knowledge of the industry and specifically in relation to the costs, profits and environment of the industry, from a local and international perspective, made possible a thorough analysis of each aspect influencing the petroleum industry in South Africa. The interviews covered aspects of the industry ranging from the sourcing of crude oil through to the dispensing of fuel to the consumer at the final stage of the refined

product. The scope of the research, however was limited to the potential impact of deregulation of the downstream sector of the fuel industry.

The initial respondent list included economists. However, these were excluded in order to place the focus on experts on the industry and analyse their views. The most important stakeholders were interviewed and they assessed the current situation and the different concerns and probable outcomes should the current legislation change.

Table 7: List and number of respondents

Sector	Number of respondents
Central Energy Fund (CEF)	1
Department of Mineral and Energy Affairs (DMEA)	1
South African petroleum retailer association (SAPRA)	1
Fuel Retail Association (FRA)	1
Oil majors	2
Gauteng Service station retailers (Retailers)	4

4.3 Results pertaining to the problem statement

Data was analysed using a data analysis framework. The data analysis framework, which was initially developed, started with the analysis of issues first identified from the first interview, and increased consistently as an ongoing basis of issues emerged from subsequent interviews. Common issues were grouped according to themes and then summarised from the collective data gathered from all the respondents.

The South African Energy Policy White Paper has resulted in a number of varying perspectives regarding the issue of deregulating the petroleum industry. These have been summarised and are presented below. A total of eleven themes emerged across all the interviews.

Table 8: Summary of themes

Theme	CEF	DMEA	SAPRA	FRA	Oil Majors	Retailers
Self service	1	1	1	1	2	4
Price	1	1	1	1	2	4
SMME	1	1	1	1	2	4
Consolidation	1	1	1	1	2	4
New entrants	1	1	1	1	2	4
High value sites	1	1	1	1	2	4
Environment	1	1	1	1	2	-
Quality standards	1	1	1	1	2	1
Economic rent	1	1	-	1	2	-
Infrastructure	1	1	1	1	2	1
MPAR	1	1	1	1	2	1

The above table indicates whether respondents mentioned the theme or not.

4.3.1 Self service

All respondents agreed that self service was considered a non negotiable issue because of South Africa's socio-economic situation and high unemployment rate.

4.3.2 Price

Should deregulation occur, consequent healthy competition and efficiency would lead to a decrease in the price of fuel. The oil majors mentioned that deregulation would be positive for the economy as market forces would then determine the price set for fuel. This view was held by most of the respondents.

However, an initial price decrease would result in price competition causing smaller unsustainable sites to close and, in a short space of time, market

consolidation would occur. Amongst the CEF, the DME, the FRA and the SAPRA respondents, the consensus was that approximately 30% of sites would close.

The retailers mentioned that they would be at the mercy of the oil majors owing to the one-sided supply agreements that they are forced to enter into. They agreed that because self-service would not be negotiable, this issue related to employment will be challenging, as high staff costs will still be incurred despite the decrease in sales margins. With this in mind the retail associations and the retailers themselves argued that because government would not allow self-service, a margin must be included, for the retailers to cover the forecourt attendant's wage cost. This would result in a floor price for fuel. The same argument was made for a price ceiling preventing retailers in remote areas, or areas lacking competition, from charging whatever they wish to charge.

4.3.3 Small to medium enterprises

Tied to stiff competition in the industry due to decreased fuel prices resulting from deregulation, a number of smaller sites would close. Thus, the development of industry-related small to medium enterprises would be affected.

4.3.4 Consolidation

The respondents all commented that there would definitely be a reduction in the number of retail sites, with up to 30% of existing sites closing.

Their consensus indicates that retail sites currently pumping less than 200,000 litres a month would probably be the first to close should deregulation occur. The closure of sites would increase the throughput for other sites, making the industry more sustainable should price competition occur.

4.3.5 High value site

The CEF, FRA and SAPRA respondents in particular indicated that 60% of the retail sites are owned by the oil majors. Some of the best sites in the country

with respect to location, volumes pumped, and the latest and best-outfitted sites with the latest point-of-sale and retailing technology are included in this 60%. Their service offering has the latest brands associated with retailing and includes a wide spectrum of products and services, so these sites are primed for a deregulation scenario, should deregulation occur. The sites owned by private individuals and private companies would have to spend a substantial amount of capital to upgrade and effectively compete against the oil majors. The respondents also stated that because the oil majors are the only recipients of the MPAR arrangements, they do get a return on their capital expenditure, whereas the private and private-company-owned sites do not get an MPAR return on their assets.

4.3.6 New entrants

The respondents acknowledged that new entrants such as large food retailers would enter the market should deregulation occur. The respondents from the oil majors are also fearful of the entrance into retailing by the state-owned oil company PETROSA. The DME and CEF gave no indication of the future strategy of PETROSA, except for their role in refining and securing crude supplies for the strategic oil reserves as specified by government.

4.3.7 *Environment standards*

According to the respondents, substantial investments have been made in the manufacturing process of the refineries, to produce cleaner fuels. As there is no advantage to the manufacturer in producing clean fuels and it results in a financial burden for the refineries, regulations governing the maintenance of environment standards will still exist. Their social impact is regarded as substantial in ensuring improved air quality, especially in city areas.

The other consideration that all the respondents favoured was the introduction of legislation to regulate emission controls in the form of catalytic converters to motor vehicles, to reduce even further pollution to the environment.

4.3.8 *Quality standards*

Respondents agreed that the quality and standards of the petroleum industry in South Africa should be regulated by the government, to ensure that no dumping of poor quality products would take place. With the introduction of sophisticated new motor vehicles and the setting of high standards with regard to pollution and the use of heavy metals in fuel, a minimum internationally accepted standard for fuel quality must be adhered to by manufacturers and by importers of refined product. South Africa follows the European standard specifications for fuel manufacturing, which relate to heavy metals in fuel and low sulphur content in diesel.

4.3.9 *Economic rents*

The government and retailer association respondents discussed the theory of economic rents. These normally occur in sectors that offer essential services or goods that cannot be substituted or have no alternatives. This could result in higher monopoly profits because of the low price elasticity of demand. Regulation involves a form of tax on the economic rent of fuels sold to the consumer. The question always points to regulatory failure resulting in the exploitation of market power and the accrual of economic rent. The possibility of an oligopolistic situation developing in South Africa where the small number of participants in the industry could influence market power could enable the firms to charge prices above the full cost of production. However, the MPAR instrument to determine the returns received by the oil companies for their marketing activity is a fair mechanism for determining that the economics of rent are not exploited by the oil majors. The interviewees questioned the accuracy of the Basic Fuel Price (BFP) mechanism against a true import parity price (IPP). They seemed to think that the BFP was higher than IPP. The regulations stipulating the use of BFP rather than IPP were not intended to benefit the oil majors, but to add more transparency and efficiency to the pricing mechanism. The respondents agreed that the synfuel manufacturers do accrue economic rents from the BFP formula, especially when crude prices are high, but consequently also suffer economic rent losses when crude oil prices are low.

4.3.10 Infrastructure

The biggest issue regarding the petroleum industry is ensuring capacity and the guarantee of supplies to the consumer. This would involve refining and storage capacity, as well as new pipelines for distribution. The major fuel consumption markets are situated inland and the traditional refineries are situated along the coast. The transportation of refined products to the major markets occurs through a series of pipelines from the coast to inland outlets. Because of growth and increased demand for fuel, it is also transported through the road networks from the coastal refineries to the inland markets, as the capacity of the pipelines cannot meet the inland demand. The government respondent stated that the security of supply across geographical areas needs to be ensured before any change in legislation can be considered and indicated that the country's refining capacity does not meet the demand, so refined fuel is imported to make up the shortfall. This respondent also confirmed that another refinery was needed.

4.3.11 MPAR

All the respondents mentioned that the MPAR had to be reviewed, to ensure an equitable price margin between oil major-owned sites and independent retailers. Government has considered changing the current mechanism to a capital pricing model. No details were forthcoming as to how this would be achieved.

4.5 Summary of the results

The results from the interviews clearly indicate that respondents from government, oil majors, retail associations and retailers have good insight regarding the implications of deregulation of the petroleum industry and how it specifically relates to the South African economy.

For government and its associated partners, the guarantee of supply and infrastructure is the most pressing issue at the moment. BEE and retention of jobs in the industry are also a concern for this group. The new BEE entrants to the market must be given sufficient time to establish their businesses and be in a strong position to fend off severe price competition should deregulation occur.

The retail associations favour re-regulation of the industry, believing that new entrants are in a very weak position to defend themselves against competition in a deregulated market. The retailers argue that their biggest cost-saving strategy would be to provide self-service, which is contrary to government policy of continuation of full service.

Table 9 summarises the main implications of deregulation, by theme.

Table 9: Summary of implication by theme

Theme	Main implication
Self service	Self-service will still be policy in a deregulated environment as government protects the effect on unemployment.
Price	Price will decrease due to severe competition, resulting in site closures.
SMME	Owing to stiff competition in the industry, a number of smaller sites would close: SMMEs would thus be threatened.

Theme	Main implication
Consolidation	All respondents said that there would definitely be a reduction in the number of retail sites, with up to 30% of existing sites closing, which would lead to consolidation of the retail sector.
New entrants	The respondents acknowledged that new entrants such as large food retailers would enter the market if deregulation occurred.
High value sites	These are mostly owned by the oil majors, thus ensuring that they would have the largest market share.
Environment	This will be aligned to international standards.

Quality standards	This will also be aligned to European standards.
Economic rent	With deregulation, the market would run more efficiently as true competition would bring about lower prices, resulting in lower economic rents.
Infrastructure	Improving infrastructure is one of the key objectives of government prior to deregulation.
MPAR	Respondents argue that this return should be inclusive to the industry and not just benefit the oil majors. Governments want to replace this mechanism with a capital pricing model.

CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction

In this chapter the respondents views on deregulation are analysed, discussed and related to international experience, specifically in Australia, New Zealand and France, as described in the literature review. The chapter ends with conclusions related to the key findings.

5.2 Analysis and interpretation of results

Three main groups were identified as having an influence upon the downstream petroleum industry. The first is government and its associated agencies. The second comprises the associations connected to the retail industry and the third is the retail sector itself. All three have differing concerns pertaining to deregulation of the market and the timing thereof. The oil majors, because they are international companies, have extensive experience related to deregulation and have sketched out the scenarios that would occur under deregulation. They have constantly updated their strategies to be ready should deregulation occur and are in constant contact with the government, giving their input and eliciting information about the direction that the legislation take.

The results of the eleven themes relating to the potential impact of deregulation, identified in Chapter 4, are analysed and discussed below.

5.2.2 Self service

As there are about 56,000 forecourt attendants employed at about 4,900 retail sites (SAPIA, 2005) throughout the country, self-service is highly unlikely as long as high unemployment is prevalent in South Africa.

The government representatives and their associates argued that full service will be mandatory at all service stations throughout the country and this would

be a non-negotiable. This indicates that reregulation will occur, as a floor price and a ceiling price would need to be set to cover the cost of retaining the forecourt attendants and to ensure that retail sites will cap their prices in rural areas, where there is sometimes only one supplier of product.

Moreover, the unions in South Africa have a major influence on policy decisions in Government and they would be vehemently opposed to self-service. In most instances one forecourt attendant supports a family of sometimes up to six people. Putting forecourt attendants out of work would result in approximately 300 000 people being affected by their unemployment.

Some retailers argued that a way around the issue of no full service provision would be to have a section of the retail sites offering self-service at a discount and full service at a different price; thus giving the customer a choice regarding price and service.

In contrast to the situation in France, New Zealand and Australia, self-service is the industry norm in South Africa and almost all sites offer it. The cost of wages for forecourt attendants has been found to be one of the biggest expenses. Before deregulation in France, New Zealand and Australia, the forecourt attendants were part-time students or people in transition between jobs and working as forecourt attendants in a part-time capacity. These were skilled people who would eventually find work in their chosen field on a permanant basis. In South Africa these jobs are more of a permanent nature, with some attendants having worked at sites for up to 20 years. Their skills levels are extremely low and they would probably not find work in other fields.

5.2.1 Price

It can be argued that with vertical integration and market dominance by a few oil majors, an oligopolistic situation might occur. As the examples have shown, during the early phases of deregulation prices do come down and competition is driven out of the market. This type of consolidation in South Africa would result in closure of 30% of existing sites. In the latter stages of deregulation, competition is almost eliminated as competitors are driven out of business. This

elimination carries on relentlessly and sometimes even the strong competitors leave the business. An initial price decrease would result in the closure of small sites, which would suffer severe economic injury. In markets that have long been deregulated, a monopoly or oligopoly emerges. Thereafter, prices are raised, services dropped, quality reduced and corruption and anti-competitive practices become commonplace.

The result of setting floor and ceiling prices would be that some of the surrounding monopolies or oligopolistic practices would be curtailed and the product would become affordable to all at a reasonable level.

In France the retail industry, under the control of the oil majors, argues that the large food retailers have discounted to such an extent, that France has one of the lowest fuel retailing returns in the world. The oil majors there have petitioned the government to step in and curtail the dominance and anti-competitive behaviour of the food retailer in the fuel industry.

In New Zealand, the first new entry into the market occurred almost ten years after deregulation. This reflects the low profit margin and low attractiveness of the industry. The New Zealand petroleum industry is probably the most deregulated in the world.

The Australian market is characterised by vertical integration and the oil majors still control a large market share in the industry. Access to refineries, storage facilities and distribution networks has resulted in a very high barrier to entry into this market.

5.2.3 Small and medium enterprises

The South African industry is overtraded by about thirty percent and the marginal sites would be the first to close. Retailers who are new to the industry, especially those that are heavily geared, would be vulnerable to excessive competition and would ultimately fail. This would not help the development and establishment of SMME organisations. The current ownership of retail sites is outlined below.

Table 10: Ownership of retail sites

Brand	Percentage of market	No of sites
BP	15.36	790
Shell	17.32	800
Caltex	16.04	950
Total	14.43	530
Engen/Zenex	26.48	1,230
Sasol	10.04	222
Other	0.33	15
Totals	100	4,537

Source: SAPIA annual report (2005)

Table 10 reflects the composition of the market and the market share according to brand in South Africa. Approximately 60% of sites are owned by the oil companies. The rest are owned by private individuals or companies and operate under the branding of the oil company supplying the fuel to the site (Kotze, 1995). The sites owned by the oil companies hold most of the best locations and the highest volume throughput. Should deregulation take place, the most vulnerable of the estimated 30% that would close are operated and owned by private individuals under the oil company brands. Deregulation would thus not contribute to large-scale SMME development but would lead to a reduction in the development of SMME companies.

In contrast to the situations in France, New Zealand and Australia, private ownership and SMME enterprises in the industry are few and very small. SMMEs would most probably not survive the small margins and high competition characterising a deregulated market. This phenomenon would replicate itself in South Africa resulting in constraints similar to those experienced in the countries analysed.

5.2.5 Consolidation

As respondents mentioned that consolidation of retail sites would occur, the oil majors would probably consider selling off assets which are not their top performing sites if the government changes the current MPAR agreement.

The other implication regarding consolidation is that it would have an impact on Black Economic Empowerment (BEE). It would pose a threat to existing BEE retailers who had just entered the industry. New entrants are normally highly geared. It has been estimated that it may take at least three to five years to repay loans against the purchase of retail sites. This leaves the retailer in a vulnerable financial position, as he relies on the margins set under regulation. The loan granted for purchase of a retail site is based on the fixed margin income as it currently stands. With no fixed margin and severe price competition, the financial viability of the business would be uncertain.

The target of achieving 25% BEE ownership of the petroleum industry is a pre-condition for deregulation.

The practice of BEE is unique to South Africa and, unlike in France, New Zealand and Australia, the BEE policy in South Africa would affect the form of deregulation to be implemented. The process of implementation in South Africa has not been explored, but full deregulation should not have any conditions attached to it, barring fair trade and competition. The stipulation of 25% BEE participation prior to deregulation would be the only constraint.

5.2.8 High value sites

That 60% of all sites are owned by the oil majors and almost all retail sites are branded according to the oil major supplying the refined product, gives the oil companies the leverage to vertically integrate and operate the most lucrative sites in the entire country. The oil majors may drive out rivals by constraining supply agreements and price manipulation. This was clearly demonstrated in Australia, New Zealand and France, where initially the oil majors had the ability to depress the price of fuel and drive out their competitors and, after a short

period, dominate the market and raise prices. The retailers fear that they are in a weak position to negotiate with the oil majors. Their franchise agreements stipulate that the oil companies have first refusal rights with regard to their supply contracts with retailers. This implies that the oil majors control the wholesaling and retailing sectors of the industry. The situation was largely the same in Australia and New Zealand, where the oil majors instituted the first right of refusal to supply product to retailers. This resulted in vertical integration taking place after deregulation and it is still a phenomenon of the industry. In France there were many independent retailers. When deregulation did occur, many closed down because of the severe price competition from both the oil majors and large food retailers. The result is that in France only about 4% of the market share is owned by independents.

5.2.9 New entrants

The experience in the other countries, especially Australia, reflects what would happen in South Africa should the government deregulate fully. The entry of the major food retailing chains into the retail fuel market would increase competition even further should the industry be deregulated. How competitive and efficient the South African petroleum industry is will determine the rate of new entries into the industry. In New Zealand the first new entrants appeared only after ten years of deregulation. This clearly indicates that the profitability of the industry was very low and did not provide enough incentive for new entrants. The sunk cost is very high for new entrants, depending on how involved they want to be in the industry. The participation of a new entrant could entail both the upstream and the downstream sectors, resulting in procuring unrefined product for refining through the value chain up to the marketing of refined product in the retail sector.

The biggest issue regarding entry into the downstream petroleum industry is procurement of start-up capital. Should the industry be deregulated, competing with existing established oil majors may initially be very difficult. Currently, the cost of buying or building a new service station requires upfront unencumbered capital exceeding millions of rand. Should a retail site be independently

branded, an onerous agreement would be entered into by the retailer and the oil company supplying exclusively the fuel to the site, with branding by the supplier being one of the requirements.

One of the major constraints for new entrants is the locations of retail sites. Most of the strategic locations for retail sites have already been secured and developed by the major oil companies, leaving very little prospect of finding a good location for a new site.

5.2.10 Environmental standards

As a developing country, South Africa lags behind the developed countries with regard to the management of air pollution. Vehicle exhaust emissions have been a major contributor to air pollution in urban areas. This probably stems from the fact that South Africa has not passed legislation controlling vehicle exhaust emissions which would at least force all new vehicles to be fitted with catalytic converters, thereby reducing exhaust emissions. The coal-to-liquids refinery owned and operated by Sasol contributes to the poor air quality in the areas surrounding the refinery. This will have to be addressed and carbon capture is one way to do this but the technology has not been developed to accomplish this task.

The government has thus far introduced the National Environmental Management Air Quality Bill of 2003. It empowers municipalities to identify, in terms of a byelaw, substances or mixtures of substances in ambient air which, in any way, present a threat to health or the environment in the municipality. Legislation to phase out leaded petrol and lower the sulphur content of diesel to 500 particles per million from the previous 3,000 particles has also been passed. This is in line with international trends, where the sulphur content in diesel is constantly being lowered and the lead and heavy metals used in petrol are being eliminated. The South African legislation came into effect in 2006. One of the reasons why South Africa lags behind in implementation of new cleaner fuels is that a large proportion of the current vehicles in South Africa are still old and the consumers are sceptical about the new fuels. Furthermore, it

cost the oil refineries millions of rands to upgrade their manufacturing in order to meet the new fuel specifications set by government.

5.2.11 Quality standards

The quality and standards of the petroleum industry in South Africa should be regulated by the government, to ensure that no dumping of poor quality products takes place. With the introduction of sophisticated new motor vehicles and the setting of high standards with regard pollution and use of heavy metals in fuel, a minimum internationally accepted standard for fuel quality must be adhered to by manufacturers, importers and local producers of refined product. South Africa generally follows the European Emission Standards for passenger cars and although the timelines for implementation differ from those set by the European Union, the content is the same. South Africa currently adheres to the European III standards and will undertake to move to the European IV standards by the end of 2009. This understanding has been agreed to by all the Sapia members operating in South Africa. The European IV fuel specifications would apply to locally produced as well as imported refined products. Whereas the emission controls relating to motor vehicles have not been finalised, consensus suggests that this will happen in the near future.

5.2.12 Economic rent

Economic rent in France, New Zealand and Australia is determined by the markets, as these countries have fully deregulated their petroleum industry. The economic rents in the retailing, downstream sector are set by economic market forces and would not be considered excessively high or low. Economic rent basically indicates the profitability of the industry and with deregulation the profits are determined by market forces and competition. As mentioned before, the margins in the retail sector in France are very low. The emergence of new entrants only ten years after deregulation is a clear indication of the low profits obtainable after deregulation in New Zealand. In Australia the oil majors control a large percentage of the retail market and have created alliances with the food

retailing industry, to attract a bigger market share with voucher discount schemes.

In South Africa, the import price parity benchmark used as a base to determine fuel prices is deemed fair in a regulated environment. The economic rent gained from set prices at the retail level has been scientifically calculated to ensure sustained existence for a retail site dispensing at least 153,000 litres.

5.2.13 Infrastructure imperative

Government is particularly concerned about the security of supply and the infrastructure of the pipelines and storage facilities of the fuel industry. The current refining capacity of the country does not meet its demand for refined product and the balance has to be imported. The result is deterioration in the balance of payments, widening of the current account deficit and imported inflation. With a sustained current account deficit, the currency will continue to weaken.

The current storage and distribution network infrastructure for liquid fuels is inadequate and needs to be improved. The government has identified this issue as the most crucial one to be addressed before any change in legislation can be considered. The expansion and increase of liquid fuels refining, storage and distribution capacity will be a precondition for deregulation of the industry.

5.2.14 MPAR

The current MPAR agreement that the oil majors rely on for a return on their retail outlets guarantees them a return in perpetuity of about 15% on an asset, irrespective of the volumes pumped. The MPAR involves petroleum-related activities outside the refinery gate and covers factors such as storage, transportation, distribution, marketing and administration. This has contributed to a proliferation of retail sites, with the industry now overtraded. The issue concerning most participants outside the oil majors in the industry is that verifying the calculation of the book value of the assets involved is difficult. With the industry overtraded, this adds no value to the economy as the throughput

per site is lower than in a highly competitive market. With higher throughput *per* site the retail margin could be lowered, resulting in a saving for the consumer. The current regulation in the industry influences the behaviour of the oil majors and retailers, so careful consideration must be given to changes in the regulation in order to affect the behaviour of all parties concerned. The current return on fuel sales for the retailers is about 6%. Independent retailers do not get a MPAR return on their assets. This issue must be addressed by government, to ensure a fair playing-field for all parties involved in the industry. This regulation on profit is more beneficial for a company with a huge asset base than for a new entrant or an independent retailer just entering the market. It must also be noted that a number of the assets of the oil majors are old but they nevertheless still receive their MPAR returns, irrespective of the condition or age of their assets.

5.3 Conclusion

The results from the interviewees indicate that a lot has to be achieved before full deregulation takes place. The views of the government agencies are that refining capacity, storage facilities and distribution networks must be enhanced and increased to meet demand and ensure the guarantee of supply before all other issues are considered. This will be achieved through massive capital investments from the parastatels and the oil majors. There must be a guarantee of supply to the South African economy, as energy is one of the main drivers of economical growth. The government stance is pragmatic and not very concerned with dogma related to deregulation. Adequate supply beforehand will be the primary concern for government, overriding implementation of any major changes to the current regulatory environment.

Another major concern involves transformation of the industry to 25% ownership by historically disadvantaged South Africans. There has been movement in this regard but the new entrants to the industry would find that full deregulation could leave them in a weak position. They will have to be given sufficient time to achieve sustainability in the face of severe price competition in a deregulated environment. A very competitive price-cutting environment would

see 30% of the retail industry rationalised within a short timeframe. This situation is comparable to the Australian one, where initial deregulation caused a large proportion of their retailers to close down.

The agreement of all the interviewees that there will be no self-service because of the high unemployment rate in South Africa, would force government to introduce a floor and ceiling price, to safeguard employment of the forecourt attendants and protect the motorist from excessive pricing in areas where there is a monopoly or only one fuel supplier. This price-capping practice ensuring retention of commercial principles would afford rural areas with reasonable fuel prices and a higher price would reflect only the higher cost of distribution. The retailers would prefer a slow approach to deregulation and many may fear the consolidation of the industry, as they themselves could fall prey to competition. They fear the competition from large retail chains, the lower margins that they would derive from competition and the tough negotiations with the large oil majors. The oil majors are starting to prepare for deregulation and are targeting their most strategic and lucrative sites; enabling them to integrate vertically. They have the experience gained from operating in deregulated environments and this would give them competitive advantage should deregulation occur.

According to the interviewees, current rapid worldwide increases in crude oil prices and the dependence of modern economies on liquid fuel energy mean that liquid fuel has become a strategic commodity and a significant input to economic growth. The main concern of the government revolves around the guarantee of product supply, production capacity upgrading, increasing of storage facilities and increasing of distribution capacity with more pipelines. The secondary concern relates to preventing market forces from creating imbalances in the industry through oligopolies, because of the few players in the industry and the consequent imbalances in the market place. Through regulation, the interest of the consumer is taken care of by the government.

As well as the infrastructure of the fuel industry, a particular concern for the government is security of supply. The country's refining capacity does not meet

demand and refined product has to be imported. The petroleum infrastructure must be increased as these are running at full capacity and any maintenance or disruption would impact the consumer with a shortage of product at retail level. Storage capacity as well distribution capacity must also be increased.

Of concern to government is that the lack of carbon capture at refineries, results in heavy pollution. Technologies have to be developed to address this issue.

The respondents acknowledged that deregulation will work, as it has been done in other countries. Experience in other countries, especially Australia, would reflect what will happen in South Africa should government deregulate fully. The entry of the major food retailing chains into the retail fuel market would increase competition even more, should the industry be deregulated.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The final chapter of this research analyses the current situation in South Africa with regard to regulation in the petroleum industry and draws conclusions from the concerns of the respondents and their views on the way forward. The last section summarises recommendations and areas for future research.

6.2 Conclusions of the study

South Africa is a country well endowed with mineral resources; except for crude oil. Much has been written about the importance of guaranteed supplies of energy in relation to the wealth of nations. This wealth is determined by at least one form of energy: crude oil. The source of crude oil can be through ownership where the country has it's natural supply of crude or acquires crude through trade. Access to crude oil is closely correlated to the economic growth of a country and this phenomenon is relevant in South Africa. The strategic energy source has resulted in the adoption by countries of strategies and policies to ensure a guaranteed supply of energy to their local markets. In light of this the rationale for ensuring the supply of energy to the South African market has resulted in retention of the current legislation and regulations surrounding the liquid fuels policy. In the world of petroleum policy, strategy, operations, finances and economics, the drivers are pragmatic; profit and production are increasingly influenced by politics, policy and regulatory regimes. Increasingly, the oil majors prefer an 'arms length' approach to government but have, in recent times, admittedly correlated their strategies closely with their commercial goals and the good of the public at large. This has become more evident as the independent oil companies have lost the rights to oil reserves to national oil companies appointed by countries well-endowed with natural oil resources. This

trend has clearly developed in Russia, Venezuela, Iran and some South American countries.

The key findings from Government clearly indicate their concern about ensuring a guaranteed energy supply, increasing refining capacity, building pipeline distribution capacity and adding more storage capacity to the network. Ironically, the national oil companies in countries where the crude production has been nationalised have agendas similar to those of the South African government. This indicates that the actions of the government have been both strategically and commercially aimed at ensuring a sustainable economic growth environment in the medium- and, especially, the long term. The ultimate objective of the government is to deregulate the industry fully while avoiding the consequences that wrong timing would cause. Through reregulation, setting infrastructure targets and continuing to guarantee a return on investment through the MPAR mechanism, the government could influence the oil majors to invest further into the infrastructure needed to meet the energy demands of South Africa. The oil majors should be incentivised to participate in the petroleum industry, as they would contribute more technological resources and efficiently manage and operate their assets by providing processes and systems that add value.

The associated bodies that were interviewed considered the interests of the various stakeholders, including the public at large. They voiced their concern about the downstream side of the business, particularly about the retailers and their ability to stay in business and provide a service to the public at reasonable prices. Anticipated consolidation and entry by the large food retailers was a major cause of concern. The FRA and SAPRA shared their concern and urge retailers to improve their business acumen and ready themselves for deregulation.

The final conclusion was that deregulation will occur in the future, as it has proved successful in the countries examined. There are efficiencies to be gained out of deregulation and the market will find a balance. The government is concerned about the guarantee of energy supplies but this is being

addressed. That there will be 25% BEE participation and no self-service is non-negotiable.

6.3 Recommendations

The stance that Government have taken is pragmatic and they are fully aware of the importance of this sector of the economy. Energy supply is their top priority, as it is closely linked to economic growth. Security of the supply of energy is their main concern. Thus a major drive to expand refining capacity and increase distribution by increasing the pipeline infrastructure and storage facilities is their first priority. Concern about self-service, evident in insistence that self-service should not be allowed because of the high unemployment rate, is understandable. The 25% BEE participation in the industry must take place. The early and long- term outcomes of their priorities are evident.

South African retailers, however, fear deregulation. At present they are guaranteed a fixed margin and this has resulted in an overtrading situation. This overtrading is not the sole responsibility of the retailer but also results from the MPAR return that the fuel companies receive on their assets. The industry is undergoing transformation and the new players would be vulnerable to competition should deregulation occur. The cost of entry into the industry is high and most new entrants borrow substantial amounts of money to purchase retail sites. For those retailers geared to the maximum, tough competition would result in business closures if the retail margins were not guaranteed. Thus retailers need to increase their formal business skills in order to gain a better chance of competing successfully in a free market with no price control.

The final analysis involves the timing of deregulation based on achievement of set milestones, as set out in the White Paper of 1998. The transformation of the industry has started but the new entrants to the market need time to settle in and become competitive within the industry.

6.4 Suggestions for further research

Much has been said about structures and trends in the industry. The composition of the industry is common knowledge and the challenges concerning the security of supply of energy are critical to both the government and the public at large.

The one area that needs careful study would involve examination of the calculations related to the Basic Fuel Price. These calculations and the model take an arms-length approach to determining the basic fuel price. Careful consideration given to where crude is sourced, how it is transported and on what size vessels, can help to reduce some of the costs associated with the basic fuel price calculation as it stands.

The second area for potential research is ownership in the retail sectors. Analysis of this would provide more accurate information about the potential market share of retail sites and volumes pumped. It could also provide useful information about the attractiveness of potential new entrants into the market and help the government in formulating its stance on the future of the RATPLAN.

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APPENDIX A

Interview schedule

The interview schedule contained only one open-ended question, since the interview needed to be flexible and allow for any relevant information to emerge. The following open-ended question was asked to all respondents:

What is the potential impact of deregulation on the South African petroleum industry should government deregulate the industry (as proposed by the White Paper on the Energy Policy of the Republic of South Africa).

If the interviewee only gave limited feedback to the question above, the following open-ended prompting questions was used towards the end of the interview to ensure that the research question was answered in-depth.

1. How would the entry to barriers change with deregulation?
2. How would the competitive pressures change?
3. How would the small business owner be affected?
4. How would deregulation affect the government's target of 25% black ownership?
5. What would be the most important regulatory objectives be for a healthy, efficient and competitive industry?
6. What would be the best way to curb jobs losses with deregulation?
7. How should the rural areas price's be cross subsidised?
8. How should government control or prevent monopolise being created?
9. How should dominant suppliers be contained to prevent predatory pricing?

10. How should product standards be administered?

11. Should local refineries be regulated?

12. How should the gas to liquid plants be handled?

13. How do you see the petroleum deregulation policy being formulated?

14. What would be the main tenants in policy with regard the industry?

15. What are the most important considerations that would best suit South Africa's industry?

APPENDIX B

Consistency matrix

Assess the potential impact of deregulation on the South African petroleum industry					
Research Themes	**Literature Review**	**Research result**	**Source of data**	**Type of data**	**Analysis**
The issue of job security after deregulation will be analysed.	(Masseron, 1990). (Clough *et al*, 1989; NZIER, 1996; ACIL, 1997)	The literature review suggests that: With deregulation and cost cutting, self service forecourts results in huge cost savings.	Interview protocol	Primary data.	Thematic analysis, pattern matching.
How will deregulation affects the price of fuel.	(Masseron, 1990). (Clough *et al*, 1989; NZIER, 1996; ACIL, 1997)	The literature indicates that cost cutting results in competition which lowers the fuel price, attracting more sales.	Interview protocol	Primary data.	Thematic analysis, pattern matching, frequency analysis.

Assess the potential impact of deregulation on the South African petroleum industry					
Research Themes	**Literature Review**	**Research result**	**Source of data**	**Type of data**	**Analysis**
Investigations into barriers to entry and the participation of entrants into the industry.	(Gal, 2003)	Complete deregulation would entice new entrants to the market provided that the return is sufficient to offset the capital costs undertaken during the initial entry phase.	Interview protocol and obtain documentation demonstrating the outcome from the countries (France, New Zealand and Australia) that have undergone deregulation.	Primary data and secondary data.	Thematic analysis, pattern matching, frequency analysis
The impact of deregulation on the viability of small business participation.	(Masseron, 1990). (Clough *et al*, 1989; NZIER, 1996; ACIL, 1997)	All the case studies (France, New Zealand and Australia) provide evidence suggesting that almost fifty percent of small and marginal service stations close soon after full deregulation has taken place.	Interview protocol and obtain documentation demonstrating the outcome from the countries (France, New Zealand and Australia) that have undergone deregulation.	Primary data and secondary data.	Thematic analysis, pattern matching, frequency analysis.