



The Merger of Halliburton and Baker Hughes: A Risk Analysis

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Abstract: The aim of the present study is to explore the risks and benefits of mergers compared to those of strategic alliances and test the classic agency theory in relation to firm's and shareholders interest. Using the case study methodology, the study examines the recent announced merger of Halliburton and Baker Hughes exploring the possible risks the merger itself may open up for the two firms, reviewing a possible alternative strategic alliance and the effects it may have. The paper applies a qualitative analysis based on empirical data of similar case studies projecting past experiences on future events. The study concludes that the merger was in the best interest of both companies, a merger though filled with the risk of specialisation within a shrinking market still poses the best rate of survival for firms in the gas and oil industry. The paper includes implications for strategic decision making and risk management policy in the oil & gas industry.

Keywords: Merger, Market, Strategic Alliance, Risk, Oil

1. Introduction

The recent downwards turn of crude oil prices has sent shocks down the value chain of the oil industry. As the industry braces itself through a period of smaller returns and cost cutting techniques, mergers and acquisitions seem to become ever more important. However, is a merger the best strategic choice for oil and gas companies compared to alternative strategic alliances? Which are the risks be involved for the merged firms and for their industry? This research attempts to answer the above questions analysing the recently announced Halliburton-Baker Hughes merger identifying some underlining risks that the merger may face and reviewing its effect on the larger industry. The study sheds light to strategic dilemma and assists strategic decision making of companies in the above industry.

Andrade et al (2001) state that mergers occur in waves and within said waves, mergers strongly agglomerate. They go further by suggesting that mergers may occur as a reaction to shocks within the industrial structure. The recent plummeting of oil prices and the current trend of low oil prices could represent a significant shock since it has put the upstream industry in a precarious position and forced former competitors to re-evaluate their survival strategy. Private

firms have been known to try different corporate tactics such as asset rationalisation, staff sizing, reinvention and outsourcing to ensure their survival (Christensen, 1999). The future of oil and gas firms lies exclusively with the super oil majors and specialists, high performing companies focused on specific products within the oil and gas value chain (Ernst and Steinhubl, 1999). Baker Hughes and Halliburton fall under the later, specialist high performing category. The volatility of oil prices significantly affects Baker Hughes' ability to remain profitable since oil exploratory companies operate and increase funds only in high price periods or expectation of high price trends (Baker Hughes, 2014). The downward trend in oil prices has signalled a shrinking in the totality of the market (Farrell, 1985). The shrinking market has put much strain on both large pedigree firms: Baker Hughes and Halliburton. This pressure and the firms resulting reaction may represent the future of oil and gas firms, with super mergers creating huge multinational enterprises.

This current period of volatile prices and merging firms mirrors the 1980s where large mergers occurred within the oil and gas industry (Ravenshaft, 1987). This mirroring provides another potential explanation for why mergers occur in such an amalgamated form in particular industries at a particular time. It may simply be as Bikchandani et al (1992)

calls "information cascades" (p.998). He describes "information cascades" as a set idea piece about corporate strategic moves (merger vs. other strategy) that informs agents in comparable situations about the results of this action and thus provides a rational for imitating the actions. This gives credentials to the merger of Baker Hughes and Halliburton setting of a change reaction within the industry. The upstream service industry specialises in aspects of the value chain within the oil and gas industry. Their major clients are field operators and National oil companies NOC's. The upstream service industry is filled with intense competition (Ralston et. al. 2001). Combined with the shrinking of the oil and gas market and the similarity of both firms' operational strategy, it seems that a strategic alliance or merger was the inevitable outcome for both firms in order to maintain their competitiveness and not be ruined by competing against industry giant Schlumberger. The reasoning behind this is borrowed extensively from Ralston, Wright and Garden (2001), who argued that mergers between smaller firms in shocked markets are one of the few means to ensure survival. It should be noted Ralston, Wright and Garden (2001) statements were concentrated between credit unions and larger financial institutions, though it does have traction in most capital-intensive industries. This idea was echoed by Sudarasanam (2003) who made the link within the oil and gas industry. Also as is the case with other mergers, there will be an inevitable redistribution of resources to help create a more efficient institution to better weather the triggering shocks (Qiu and Zhou, 2007). The redistribution of resources causes its own problems and forces one to evaluate whether a merger is the best mean to ensure survival.

1.1. Statement of the Problem & Research Questions

Halliburton and Baker Hughes are two of the largest service providers in the oil and gas industry and have publically announced their intentions to merge and solidify their joint position as the second largest service provider in the world (BBC News, 2014). The analysis in this research is an attempt to identify the different risks involved with mergers, acquisitions and strategic alliances using the case study of Halliburton and Baker Hughes. The paper concentrates on three main research questions:

- i Was the merger of Halliburton and Baker Hughes an effective means of ensuring their survival during the current market shock?
- ii Would a strategic alliance be a better means of ensuring the survival of the firms?
- iii Was the merger a product of Agency- principal Theory?

1.2. Research Methodology and Data Analysis

The study will be based primarily on reviewing current academic literature. It attempts to analyse the Halliburton and Baker Hughes merger from different academic orientations and makes use of current relevant theoretical approaches in the analyses of the risks involved with such a merger, particularly within the global oil and gas industry. Since the

merger is relatively new and not much literature is readily available, this paper concentrates significantly on historically similar case studies within comparable corporations and projects. The paper highlights possible outcomes using theory to analyse and justify predictions.

This study assumes a qualitative approach, as it bases much of its research on empirically verified data and attempts to draw conclusion from existing theory. The work projects past experiences on future events, thus allowing for areas of bias to emerge. The qualitative nature of the study implies that the data generated from the secondary materials is subjected to subjective interpretation since information is selected from a large base with some models contradicting others, thus a grey area of subjectivity is introduced.

2. Halliburton and Baker Hughes Merger: Is the Best Option

2.1. Some Basic Issues

As stated above, mergers occur in waves and mergers strongly cluster by industry (Andrade and Mitchell, 2001). This feature suggests that mergers occur as a reaction to unexpected exogenous shocks. "A Shock-driven decline in demand can pressure firms to merge" *ibid.* Zhou (Qiu and Zhou, 2007) goes further to explain that these types of shocks that trigger mergers negatively affect the relative demand for a product. Thus, shocks must for a relatively long period of time indicate a downward turn in the given market. In addition to this, the survival of at least one of the firms must be in jeopardy. These factors justify firms' reaction to measures. This action may ricochet through the industrial structure, since other actors within the industry may react to a merger especially if the merger involves larger players.

Zhou (2007) goes further by stating that a key requirement for a merger is a difference in marginal cost between the firms involved. It allows both firms to utilise the lower marginal cost to increase their possibility of survival. This indicates a shift in factors (tangible and intangible) that allow one firm to maintain its relative low marginal cost to the other firm. The combined resources of the two firms allow for economies of scale and thus, further lower the marginal cost without an explicit transfer of skill. Salant, Switzer and Reynolds (1983) explain this point by drawing attention to the fact that mergers in their truest sense cause internal competition, creating a better firm through the competitive process. The authors go further in saying merging firms that are heterogeneous but operating within the same industry have the potential for greater profitability that can turn a negative price shock into a potential for profit. By shrinking market size and increasing efficiency through the adoption of new technology, gaining access to intellectual property, or the merger of previous areas of competitive advantage, if complimentary, may decrease cost, increase efficiency and push out possible competition. By increasing efficiency in a shrinking market, firms may be able to protect their market share or increase their market share through the eventual

failure of less competitive firms. Barros (1990) states that this sort of advantage is possible when the market meets the requirement of being endogenous as well as operating in a market with a relatively small number of firms. The markets of Halliburton and Baker Hughes meet both requirements.

This point of view agrees with conventional economic theory on mergers, which states that industries tend to restructure and consolidate in specific periods, and that restructuring tends to be triggered and occur spontaneously and are hard to predict. Industry shocks through deregulation took on great importance during the 1980s to the 1990s and became a dominant factor in mergers and acquisitions. It is often referred to as the "decades of deregulation" (Fauli-Oller, 2000). This period was characterised by the merger of firms as both endogenous shocks and also exogenous shocks rocked different markets. Deregulation was, in part, an effort to react to severe shocks and maintain profitability. The wave-like restructuring of industries, which were often decades old and characterised by slow change, were challenged. The shocks that ricochet through market leaders allowed an almost X-ray like view on the nature of industry and what made a successful firm. Kaplan (2000) remarked that most mergers that occurred during the 1990's were the result of regulatory or technological shocks. This point revealed one crucial glimpse into the corporate community: firms will evolve or die (merge, change or go bankrupt) and the key factor in deciding which path a company takes is its ability to create and maintain efficiency. Efficiency here should be taken in its broadest sense and equated to creating and sustaining competitive advantage in an ever-shifting market place (Martin, 2006).

2.2. Types of Mergers

This paper classifies mergers in two main forms: hostile and friendly mergers. Andrade and Mitchell (2001) define a bid as hostile if the target company publicly rejects it, or if the acquired firm describes it as unfriendly usually indicative of a punitive nature. Friendly mergers are where merging parties, often in closely related industries, negotiate a friendly stock swap (Andrade and Stafford, 1999). Morck et al. (1988) differentiates the very nature of mergers by stating that friendly mergers are usually determined through synergy, and if the total performance of the two companies merged is greater than the two companies working separately the merger is more likely to be friendly. Hostile takeovers (takeovers resisted by targeted firm's management) are mainly caused by disciplinary proceedings or underperformance within the targeted firm.

This perspective is not to ignore the five typical classifications of mergers (conglomerate, horizontal, market extension, product extension and vertical extension), which tend to be based on the economical functioning of the merger rather than the means of the merger (Gregoriou and Renneboog, 2007). The Halliburton and Baker Hughes merger would be classified under a horizontal merger. Since it is generally considered as a consolidation between two competing firms operating within the same general space.

This is an ideal position since such mergers enjoy high synergy and an increase in market share. The merger of Halliburton and Baker Hughes is generally considered to be a friendly merger since Baker Hughes has not publicly rejected the merger request and both firms management are working together to ensure the merger.

2.3. Reasons for Mergers

Sudarsanam and Mahate (2006) present an interesting point for why firms merge, stating that mergers usually cause an increase in firm's monetary value through a boost in asset and market share. Mergers are complex processes and studies show that target firms generally receive an increase in shareholder value through the acquisition process, while the corporation that did the bidding shows a dip in shareholder value in the first two to five years of the process (Lutbakin, 1983). The short-term lower acquirer value may be a reflection of the cost of the acquisition. The ability of the wider markets to use hostile take overs as a disciplinary and corrective measure is widely frustrated in the US since regulation gives undue power to corporate managers that enables them to block hostile takeovers curbing market control (Sudarsanam and Mahate, 2006).. This governance structure prevents take overs that are only punitive in nature, but promotes mergers in which the management of both firms work together. This point is supported by empirical evidence from Rau and Vermaelen (1998) who calculated a three-year abnormal return of -17.3% for acquirers who pushed for a hostile take over and 7.6% for mergers conceived as relatively friendly. Mergers are the market's response to price shocks. Stonham (2000) argues that private international oil companies act as price takers and not price setters, and hence have very little control over the price of crude. The only means of control they have is price-cutting and becoming more efficient in the production process. Mergers affect the internal areas of the firm especially exploration and development, operating expenses and corporate general and administrative costs. These tend to be reduced in size and profitability enhanced through positive mergers. In addition to this, mergers serve to create super class companies, such as Exxon-Mobil, that enjoy the benefits of economies of scales and efficiency. Therefore, during a price shock where profitability falls and firms may have to survive on razor thin profit lines, mergers serves as a viable means of survival. Stonham (2000) also raises the point that mergers of this size provide the opportunity to raise financial capital, increase cash flows and remain profitable. Stonham's (2000) argument acknowledges the possible benefits through increased efficiency a merger represents, but believes it is not its greatest asset. The size of a large corporation on the stock market serves as a means of utilising its market position to channel liquid capital. Through the floating of market shares, it can cheaply raise its debt profile and provided needed cash flow. This is essential in the oil and gas industry, which is capital intensive, and also has a delayed pay-off period. This period forces investments to accrue a high rate of interest on borrowed capital. Stonham

(2000) argues that though national oil companies (NOC), such as Saudi Amoco, represents a super class of Oil Company, their strength lies almost exclusively with their ownership of the resource, not in their financial or technical ability. Thus, mergers of private (International oil companies) IOC's represent a unique source of competitive advantage that is missing in NOC's. Mergers may remove barriers, which may have kept industrial resources artificially dispersed. The removal of these artificial barriers may help to increase the overall efficiency, providing a more robust firm (Sudarsanam and Mahate, 2006).). These artificial barriers create undue industry cost. Mergers represent the breaking down of these barriers, allowing for a freer flow of resources, especially in horizontal mergers, which tend to possess the potential for exponential gains.

In a capital market with easy access to public information on corporations, stock prices tend to quickly change after the announcement of a merger. The announcement indicates any expected monetary change in the value of the firm. The issue of sudden change in the value of a stock is recognition of the possible effect of changes on the corporation's fortune by the market (Sidarsanam, 2003). The uncertainty of knowledge but general positive connotation may allow for an overestimation of firm value. This overestimation results in the firm's value artificially increasing. The stock price increase in value may become the firm's true paper value, which may be significantly different from the firms asset value.

2.4. Case Study: British Petroleum and Amoco

The US\$ 53 billion merger of British Petroleum Co. plc and Amoco Corp. that occurred in 1998 made London-based BP Amoco one of the top three oil companies in the world. It occurred during a period in which the oil and gas industry was facing a crisis, as oil prices plummeted during the late 1990s. It provided them a "super major" position that would have been near impossible for them to garner independently. The issues of antitrust laws that fragmented the legendary behemoth Standard Oil seems to have lost sway, a good indication that global competition has weakened the position and the ability to create predatory monopolies (TNT, 2000).

The merger of Amoco and BP was mainly reasoned out due to the dropping of crude oil prices within the market causing very low profit margins. This forced firms to prioritize economies of scale as a means to reduce marginal costs (O'Rourke, 2003). The merger allowed for the pulling of resources and a reduction of US\$ 2 billion in fixed overhead costs savings, mainly stemmed from deletion of duplicate processes and personnel. Also, Amoco's strong downstream retail section and BP's limited presence within the US allowed for the newly merged firm to avoid issues of overlap since their strengths were in different areas. On the other hand, the amalgamation of their exploration and production abilities allowed them a global reach and competitiveness hitherto impossible to gain. The merger caused 16,000 employees to lose their jobs. It also caused an American firm which took its roots from Standard oil (America's first

fully integrated oil company) to give up its control to a foreign-owned company. The companies had different cultures, which clashed on occasion causing an intangible costs and disharmony (TNT, 2000). It's interesting to note that the BP Amoco merger was not the first merger within the period. Lower tier firms had started merging process though on a relative minute scale. Strategic allegiances such as Royal Dutch Shell and Texaco were also some of the techniques firms used to survive the shock. The BP Amoco merger though garnered great attention since it represented the first significant shift in market power. The reaction of the Federal Trade Commission and its British counterpart was analysed, found enabling and it triggered further mergers such as the Exxon Mobil merger through its general approval and setting precedent (Economist, November 22, 2001).

The merger of BP and Amoco was expediently quick and opened a floodgate of other firms reacting to increase their competitiveness and ensure their survival. Exxon-Mobil began their record setting \$88 billion shortly after BP-Amoco's successful merger, the largest corporate American merger in history. Total SA and Belgium's Petrofina SA merged shortly after continuing the merging trend within the industry. Early 1999, BP Amoco stated it planned to consolidate further through a merger with Atlantic Richfield a deal that was rumoured to be worth \$25 billion. Analysing Conoco and Philips Petroleum in 2001, it was stated "it is surely no coincidence that the previous wave of mergers swelled just as oil prices collapsed to around \$10 a barrel" Thus linking the shock to the wave of mergers that followed (The Economist, November 22, 2001, p.60). A significant point of interest is that most analysts believed that BP (market capital of \$62 billion) and Amoco (market capital of 42 billion) was a merger of equals. The two firms complimented each other. They had good synergy and the merger is generally considered successful (Stonham, 2000). The market acted positively to their merger rewarding the new company with a rise in share price.

2.5. Review of the Halliburton – Baker Hughes Merger

The oil and gas industry is currently contracting due extensively on the free falling crude oil price. The drop in the pricing of the product is directly correlated to investments within exploratory, development and production cycle of the oil and gas industry. This drop in prices has forced specialised oil companies whose major clientele operate within these broad sectors of business to significantly cut investments back (Baker Hughes, 2014). Thus the shrinking of market size has placed significant pressure on the need for greater efficiency on both Baker Hughes and Halliburton. Halliburton and Baker Hughes leadership both stress the potential efficiency that will result from the synergy of firms (Consultants RBS, 2015). The will be a knock on effect of consolidation with an emphasis on economies of scale and this merger may force oil field operators to use a single company rather than a basket of companies since this will be the cheaper alternative. Thus the merged company may be in a better position than at high oil and gas prices. Though it

should be noted that the merger may present an interesting dynamic throughout the industry since oil field operator typically use a three bid approach. This may allow for smaller companies to bid on contracts since Baker Hughes will no longer be in the running. Both firms have a research and development base and have regularly produced industry-defining products that are uniquely tailored to their clientele. The unification of their research units may serve to increase the value creation ability while shaving off significant cost in the production period. Since both firms act as focused players within the service provision industry and their clientele base are almost exclusively independent operators a merger would firstly allow greater knowledge transfer in similar commodity technology provision (Hagedoorn, 2002). The merger of Halliburton and Baker-Hughes will also represent a shrinking of an exclusive club of top tier service providers that operate throughout the product chain of the oil and industry. The Merger of the second and third largest companies within the industry is an active means of placing barriers within the industry to prevent new entrants. Due to the relatively few players there is a naturally occurring oligopoly and with the decrease in market share there is a good possibility of first forcing smaller weaker firms out of the industry by reducing profit margins even lower than current levels and aggressively maintaining the newly emerged companies profits by cutting marginal cost and increasing market share Sidarsanam (2003). The draw back may be an increase in anti-trust legislation since the firms may grow too large and need to be kept in check through regulation.

Baker Hughes currently operates in 90 countries specialising in drilling formation consultation, completion, production and reservoir consulting. Halliburton operates in 80 countries across the globe it specializes in the provision of technology for other energy firms; it also consults in geographical formation evaluation, digital solutions, production volume optimization, and fluid systems. These areas of interest overlap with each other and would most likely have a healthy synergy. Assets that are determined to be a duplication of resources will be taken off line thus providing both greater efficiency and also stretching their respective markets (Arsov, 2015). Though initial cost of layoff packages and asset shedding may cause a manifest lost in product long term savings will justify initial capital loss.

3. Strategic Alliances and Risk Handling

3.1. Strategic Alliances

Strategic alliances are voluntary, enduring relationships that involve resource-sharing and joint decision-making (Wohlsletter, 2005). They typically offer partner organizations access to valuable resources which they may otherwise not have had access to. For example, core technical expertise, human and financial capital (Austin, 2000). Waddock, (1989) makes an interesting point that there is no single one factor, which creates an alliance, but various factors, such as a strong champion, complementary needs and

assets, compatible goals and trust. Thus, a combination of all these factors may help enable the creation of a strategic alliance. The 'resource-based' perspective of a firm's formation of strategic alliances describes the business enterprise as a collection of sticky and difficult-to-imitate resources (Barney and Hansen, 1994). Alliances possessing unique attributes that a firm cannot copy without considerable cost is very important. He describes the ability of firms to generate a profit from this relation as directly related to their ability to capture economic rent through the generation of competitive advantage, which should be the cornerstone of any strategic alliance. Teece, et al (1997) took on a slightly different argument stating that a firm's integration of tacit knowledge serves as the basis of competitive advantage. He maintained that an alliance, which lacked exclusivity of knowledge, or at least difficult to acquire knowledge, would inevitably fail. The alliance partners would acquire the asset from an external source when the opportunity arose and break the alliance. Tacit knowledge as a competitive advantage of firms may be used to produce and maintain synergy since a firm's knowledge base is tied in with one another.

Weiss (1987) points out that strategic alliances are important not because partners have the same needs but rather due to the need for complimentary needs and assets. Weiss presumes that heterogeneity in needs and in assets must be a key feature of any alliance. Oliver (1990) points out that goals may come from different orientation, whether financial (i.e the need to make a certain rate of return), political (the need to confer legitimacy on a project), or organizational. Spillet (1999) points to the fact that strategic alliances may not necessarily all want the same goal either but the goals of the different partners must be compatible. The formation of the alliance must ensure the achievement of their desired goal in a more efficient manner than individual partners effort. Strategic alliances in the 1990s were a well-used instrument, which companies used to increase market power, enter into new markets and enhance existing capabilities. In particular non-equity based alliances garnered worldwide interest, since in the 1980s and 1990s, 80 per cent of all strategic technology alliances were of a non-equity nature (Hagedoorn, 1996).

3.2. Types of Strategic Alliances

There is a wide array of types of strategic alliances, each tailored to meet the demands of the participating firms, as well as the industry in which they function in. Horizontal strategic alliances deal with firms operating within the same market segment. Vertical alliances deal with different sections of the value chain and these types of alliances are an attempt to increase over all profits without significantly altering the firms involved. Intersectional alliances deal with firms that are not linked together (vertically) or operate within the market segment. The firms do not usually interact and their effect is usually unknown but they do present a unique opportunity to incorporate external knowledge to the firm and provide often-unsolicited unique advantages

(Anderson, 2015).

Joint ventures are strategic alliances in which two or more partners come together to form a new company (Harrigan, 1986). Equity alliances, are formed through the acquisition of shares within another company and a reciprocal acquisition of shares. It is important to note that as long as the company does not acquire a controlling percentage of the share it is considered a strategic alliance rather than a merger. The acquired shareholdings makes them mutual stakeholders. This acquisition of shares creates a complex network, especially if the alliance involves more than one firm. Firms that are connected this way share profits and common goals; this lessens competition between the firms if they operate within the same market sphere. In addition, this makes take-overs by other companies more difficult and aligns goals and ensures mutual protection from each other since their share values are intricately locked (Das et. al., 2000).

3.3. *Strengths of Strategic Alliances*

Strategic alliances provide firms access to previously impossible actions. By definition, they are formed to create opportunities that were previously barred from them and thus allow unique ways of exploiting markets (Wohlesletter, 2005). These opportunities are usually multi-tiered and complex and need an interplay of different actors with different competency areas. Mowery, Oxley and Silverman, (1998), indicate that another key advantage of a strategic alliance is its ability to spread out capital investments, innovation costs and the risks that are associated with them. Capital investments in the area of research and technology development have been a core reason for the formation of alliances, especially when risk factors are high and innovation may lead to incremental improvements that patenting may be difficult. Alliances among technological firms tend to boost industry progress faster than a competitive race, which tends to waste resources (Chemmanur et. al, 2014).

Another advantage of a strategic alliance is its ability to convey tacit knowledge through their organizational structure. Gupta and Govindarajan (2004) state that a firm's (or an alliance of firms) main purpose is its ability to transfer knowledge and learn in a more efficient manner than before. This often leads to an overlap of technology with aligned firms sharing similar technology, effectively improving product without bearing a high innovation cost (Mowery, Oxley, and Silverman, 1997).

Strategic alliances give access to resources in a more efficient means contributing to cost reduction. This is a significant factor in resource-based theory of strategic alliances, where it would be more efficient to derive resources from within the firm. Such resource includes intangible resources such as knowledge of particular regional markets. Efficiency here includes any cost, such as liability of foreignness that is cost of doing business abroad arising from the unfamiliarity of the environment, from cultural, political and economic differences, and from the need for coordination across geographic distances (Zaheer, 1995).

Strategic alliances in which partners have a relatively similar resource base allows for the opportunity of the use of economy of scales. Economy of scales can significantly reduce the marginal cost of a venture thus increase efficiency (Grant, 2004).

3.4. *Weaknesses of Strategic Alliances*

Strategic alliances present both opportunities and weaknesses. These weaknesses carry the ability to significantly decrease the profitability of partnering firms. Strategic alliances at the core are deeply concerned with issues of sharing, especially knowledge sharing (Grant, 2004). Martin (2006) explains that in knowledge-intensive firms, a source of competitive advantage is tacit knowledge that is not easily reproduced. Through the use of strategic alliances, this knowledge could be transferred to third parties and thus, firms may lose their competitive advantage through this sharing process. In a strategic alliance the partners must share resources and profits and often skills and know-how. This can be critical if business secrets are included in this knowledge. Agreements can protect these secrets but the partner might not be willing to stick to such an agreement especially if benefit significantly outweighs profit.

Through the diffusion of competitive advantages, firms may enhance the profile of possible competitive firms since they inevitably share profit margins and a resource base. This is especially true with smaller firms that lack the financial base to compete against a larger firm's resource base (Zang et al, 2013). If strategic alliances are too successful they could enable partner firms to exit the alliance and compete directly with former partners.

Uneven alliances may force weaker partners to take on tasks and strategies that may not be the most efficient route or in the firm's best interest. Zollo et al (2002) explains that alliances - such as joint ventures - that have significantly dominant firms are more stable than shared leadership but come at the cost of the dominant firms' interests being put in the forefront.

3.5. *Case Study: BP Andrew Field*

The BP Andrew field demonstrates the ability of different firms to work together on a single project through a strategic alliance. It was a technologically based alliance, developed using a relatively new business solution that obligated the creation of a Well Engineering Alliance with shared goals, a radically new networking approach and jointly developed targets.

Andrew is a Paleocene oil field and is located 50 km North East of the Forties Field. It is relatively small in size, located 140 miles away from Aberdeen and serves as the hub for Cyrus and Farragon subsea development. Initially, it was considered unviable to be developed due to the economics of the fields. The partnership allowed a boost from 45 000 to 58 000 barrels of oil per day (BOPD). Specific improvements such as jacket and topsides construction, increased heavy lift capability allowed for a cut back in offshore store. Most

significantly, an innovative Alliance approach had been applied to all aspects of the project to create substantial cost reductions and value enhancements.

The aim of the strategic alliance was to maximize the fields' profitability. The key business objectives of the alliances was maximizing well productivity, increasing initial production and the maximization of the cretaceous reservoir while keeping an aggressively low cost. The initial agreement also identified the key resources of each actor. The members of the alliance were BP serving as the operator, Schlumberger served as well completion management and also served in data acquisition, Baker Hughes performed integrated drilling services, Transocean acquired the mobile rig, Santa Fe was in charge of platform rig access.

Interestingly, the alliance forced firms to behave in a profit orientation rather than revenue based manner and the reduction of cost was set as the chief priority. The alliance, through its diffusion of risk, allowed for a sharing of profits. This helped align the objectives of the group. There was also a minimum performance standard, which, if met properly, allowed access to their shared capital savings. Also, the individual profit multiplier payment was related to them meeting basic requirements. The minimum performance agreement which had to be met by the alliance wells were: correct target location, effective gas cap zonal isolation, acceptable data acquisition and at least 75% of the perforated horizontal interval contributing to flow, averaged over three predrilled wells.

3.6. Strategic Alliance: Halliburton and Baker Hughes

The Halliburton and Baker Hughes strategic alliance would be, by definition, a horizontal strategic alliance since they operate within the same sector. Their main aim of a strategic alliance would be the lowering of marginal cost through price-cutting and increasing efficiency. An equity alliance would most likely ensure that their goals are properly aligned, and if both firms acquired enough shares and they would become significant stakeholders of each other, this would align their goals. The Andrew field demonstrated that service provision firms could work together and reduce cost through a focus on profit instead of on revenue. The capital risk was distributed and the firms were not taken on as service providers with a fee as their only compensation, but rather as strategic partners with a stake in the profitability of the field. This outlook if extended and applied to the breath of the firm may serve to increase the synergy of both firms. An equity strategic alliance, at its core may align intended goals of the firm but due to corporate governance structures, such as an effective accounting regiment, it lacks the ability to shed staff that a merger would allow.

The non-competitiveness aspect of an equity alliance may allow greater synergy between the two firms but since the oil and gas industry is characterised by intensive capital investments at the beginning of the project and considerable smaller costs throughout the project life. An equity alliance may only have positive returns on future ventures rather than

current ventures.

Research and development will benefit most from the equity alliance since both firms are research and knowledge heavy and each specialise in creating technology that is specialised to both their client company and the specific project. Thus, a joint front will allow access to patent and tacit knowledge, whilst cutting down the cost of future endeavours through sharing research and developmental staff. A Halliburton-Baker Hughes alliance would allow for a greater scale of economics if they pulled their manufacturing wings together and mutual access to their regional development site, but since it is only an alliance, it may be wise for both firms to keep their manufacturing units if only on a skeleton crew. This will ensure survival if the alliance fails they should be able to continue surviving.

4. Was the Merger a Result of the Agency Problem

4.1. Agency –Principal Theory

This section concentrates on the research question “was the merger of Halliburton and Baker Hughes a result of principal agency problem?” It hopes to firstly answer the research question through a review of the relevant literature in the area of agency principal theory, reviewing a similar case where agency theory was clearly visible and concludes, through the examination of available data, whether the research assumption is correct. The principal agency problem in its truest sense is a form of employer-employee relationship (Bhud and Bhave, 2006). Employees have diverse interests (Ciulla 2000; Kelly 1998). These interests may not necessarily align with the interest of the firm. This is especially true if one takes on a pluralist perspective to employment relations, which often stress their intractable and often, conflicting, goals (Abbot, 2006). The Marxist school of thought believed a core tenant of all employers' behaviour is survival. In modern times, services are exchanged to ensure the provision of needs and wants. In more recent times, the bedrock of conventional neoclassical economics is the assumption that individuals are seeking to maximize their personal utility functions (Varian, 1984). Utility is generally seen as dependent on consumption, which means that work is an activity tolerated by individuals to earn income to buy goods, services, and leisure (Killingsworth, 1983). Maslow (1943) theory introduces an interesting dimension through its hierarchy of needs. Hall and Nougaim (1968) cited in Abbot, (2006), through empirical research, studied the careers of managers and noted the shifting and changing nature of the needs as they progressed along their chosen career path. Their research showed how needs and wants do not just shift when one climbs the career ladder but also becomes ever more complex. This adds new depth to the discussion of principal-agency since agents tend to represent the highest tier of employees within their companies and their interests therefore will be the most complex. Employer's interest is generally considered to be the same as organization's

interests, which will also be assumed to be consistent with the interests of the shareholders, executives, and managers. The extent that executives and managers are agents that follow their self-interest, rather than the organization's interest, is the basis of the principal agent problem. The disharmony of interest creates its own peculiar problems (Abott, 2006).

There are three (3) main views on the interest of employers according to Abott (2006). The first is profit maximization. This view implies that firms are vehicles to maximise the profit of their shareholders (business owners). Charreaux and Desbrieres (2001), cited in Abott, (2006), make an interesting point that a firm is, in reality, a nexus of contracts between different stakeholders. A marriage of the two concepts would imply that a firm is a set of contracts with the implicit aim of creating value for shareholders. The second idea takes a fairer approach, acknowledging the interest of other stakeholders such as employees; customers and suppliers need to create value for themselves. The third view takes on a Machiavellian perspective, stressing the pursuit of power and control over employees that goes beyond that necessary to maximize (Abott, 2006).

The agency theory, has become a major area of study in the field of corporate governance, management and a plethora of other sciences, and its influence has stretched beyond mere literature into practice and policy (Daily, Dalton, & Cannella, 2003, Coffee, 1999; Hansmann & Kraakman, 2001; McCarthy & Puffer, 2008). While the agency problem is manifesting in many corporate structures, an increasing body of empirical research on the means to limit the agency problem has been ineffective (Daily et al., 2003).

The assumptions of agency theory have come under question in recent times (Mizruchi, 1988). Its ability in explaining the more collaborative behaviours of agents within corporate government are deemed inadequate, and also, its skewedness to market-oriented economies fails to transfer to more control grounded economies, and represents a short fall in the theory. The behavioural and cognitive assumptions held by most organization scholars sharply contradict classical agency theory (Lubatkin, 2005). Accordingly, scholars have called for more effective methodologies and new perspectives for examining foundational issues in corporate governance (Daily et al., 2003).

Lan and Heracleous (2010) suggest some correction to the basic understanding of agency theory, which may align classic agency theory to empirical evidence: a marriage of theory and practice. They question the conventional agency theory assumption that principal interest should be equivalent to the interest of the shareholders. Lan and Heracleous (2010) suggested this view of a firm as a nexus of contracts to create value for the shareholder should be adjusted. A shareholder relationship with the firm should in fact create value for the corporation itself. Lan and Heracleous (2010) take inspiration from a legal perspective view of a corporation representing an independent entity with interests different from its owners.

Thus an engaging thought stream is opened up to analysts since the interests of the firm and the interests of shareholders may be irreconcilably divergent. A good example of this is the Supreme Court ruling in Michigan in Dodge v. Ford Motor Co. During the case, the Ford Company attempted to withhold payment of \$10 million in dividends to shareholders. The Ford Company argued that it was in the interest of the company to "employ still more men, to spread the benefits of this industrial system to the greatest possible number, to help them build up their lives and their homes" (1919: 671). This clearly establishes a distinction between shareholder interest and the corporation interest. This is especially true in high-risk, high profit industries, such as the energy and extractive industries (Cameron, 2010). High-risk ventures and increases in share pricing have foreshadowed massive problems within BP in 2007 after the Macondo disaster and Enron in 2001.

The second point that departs from conventional agency theory is the independence of the board. The board is equated to an autonomous fiduciary and the board's actions should be considered unrelated and uninfluenced by any other component of the organization. Their function should be to serve the interest of the corporation (Blair & Stout, 2001).

The third aspect in conventional agency theory is that the central function of the board is to monitor managers to ensure that their interests are in line with the principles of the company (Mizruchi, 1988). Lan and Heracleous (2010) attack this notion believing that the interests are often competing and the core role of the board is to serve as a mediator and to determine the hierarchy in which these interests will operate in the greater corporation. In essence, they represent the balance between all stakeholders and the corporation.

4.2. Case Study: Enron and Agency Theory

Enron's choice as a case study is based on two major reasons. Enron, in the period between 2000 and 2001, was considered one of the most successful energy firms in the world. It had been named the most innovative company for seven consecutive years (Cruver, 2003). This points to the markets high expectation from the firm and the leadership position it held within the industry. This mirrors the general market trust of both Halliburton and Baker Hughes.

Another reason why Enron was selected as a case study is its choice to form a strategic alliance with six financial institutions that had knowledge of its deeds and willingly aided the firm especially in the creation and structuring of Enron's infamous Special Purpose Entities (SPE's) (Duckham & Kulik, 2005). What was of particular note was how these SPE's helped increase share value of the firm (shareholder interest) yet was extremely detrimental to the overall survival of the corporation. Enron was arguably the global leading energy, commodities, and services company. It sold electricity and natural gas. It traded in energy and other physical commodities. In 2000, it declared revenue of over \$100billion, it was the fifth largest firm listed in fortune 500. The firm started in the year 1985. In 16 years, it grew from a

niche market firm trading mainly in the transportation of natural gas through pipelines, to a diversified firm dealing in a wide range of business sectors such as energy production, distribution, trading and broadband trading. The firm's brilliant growth spurt was marked especially with its phenomenal 2000 financial year. Enron represents the quintessential agency firm. It employed agency reasoning to align individual interests with corporate interests at a cost (agency cost). The creation of SPEs demonstrate the use of strategic alliances through the adoption of agency reasoning in increasing share value pricing (shareholder interest) while damaging the corporations interests. The corporation disclosed very little details on its use of these corporate vehicles. The SPEs were created by a leading limited partner (Enron), they were financed through independent equity investors and used extensively to hide the company's debts. By 2001, Enron had used hundreds of special purpose entities to hide its debts (Niskanen, 2007).

Enron disclosed to its shareholders that it had hedged downside risk in its own liquid investments using special purpose entities. However, investors were oblivious to the fact that the special purpose entities were actually using the company's own stock and financial guarantees to finance these hedges. This prevented Enron from being protected from the downside risk. Enron continuously stressed shareholder value, forcing high-risk ventures such as the Dabhol Power Plant in India, which was recognized as a high-risk venture from most analysis stand points. The agency problem, as suggested by Lans and Heracelous (2010) with the firm value being independent of both shareholder and management interest, comes to play since the share value of this high-risk innovative firm increased through high value, high-risk ventures but significantly hindered the survival of the firm. Employees received significantly better pay than competing firms. Enron pushed an employer of choice profile with a twist on psychological contracts, where twenty per cent of the lowest performing members lost their employment. The firm formed a strategic alliance with its creditors, accounting firm and Venture capitalist, creating a bubble of wealth creation through market speculation.

It is also important to stress on the underlining moral abandonment of ethics in the chase of profits and propelling the firm forward through an aggressive share value system, which stressed inorganic growth through shell companies and deceptive accounting to create the image of growth. The system was concocted to increase the monetary value of the firm at the risk of future market failure. Issues with its use of SPE's and strategic alliances to hide debt came to the surface significantly before the collapse of the company. The aggressive support of both shareholder value and management's interests, though seemingly aligned caused the collapse of the firm. It should be noted at the moment of collapse share value collapsed leaving the final shareholders to suffer great lost.

4.3. Halliburton and Baker Hughes Agency Problem

The merger of Halliburton and Baker Hughes is one of the

largest mergers in recent times. With the forefront organization forcing a merger that is expected to shed over ten thousand jobs including the very top echelon of business (Arsov, 2015). The Halliburton and Baker Hughes merger is generally perceived as a merger of equals rather than a hostile take over. This allows for the two management teams to negotiate their terms and allow their interest to translate into the merger agreement. Management may choose to retain individuals who are key to the merger process, increasing compensation for a demotion in their job. This issue is worsened when the acquiring firm offers a 'golden parachute' (a sentence within the contract of top executives that specifies a large compensation if their employment is terminated).

This counter balances the target firm's power to draw value from the acquiring firm but allows managers to share value without necessarily paying premiums to the shareholders of the targeted firm. A merger of equals can maintain the incentives and reimbursement of management who stay on. The synergy of the firms, due to their areas of overlap and ability to shed staff, will have a positive effect on the firms survival and benefits from the potential economies of scale. Halliburton may have a bias to overinvest, even as share value may suffer a downward turn (Myers and Meckling, 1976 cited in Myers, 2000).

Myers (2000) speculates that managers will act to increase their current value of rent within the firm if it is in the interest of management to ensure survival of the firm so as to ensure their claim on rent even at the expense of shareholder value. Thus, agency principal theory may ensure the survival of the firm. This may explain takeover firms stress on continued cash flow in potentially profitable areas at the expense of dividend pay out. Also, non-pecuniary profit as reputation of current management may exceed share value and thus push for firm survival (Jensen and Meckling 1976). During mergers, the share value of the targeted firm increases, whilst the acquiring firm's price effect is negligible (Andrade et al, 2001). This prompts the question: why would the acquiring firm, Halliburton, bid for the targeted firm if gains are minimal? It may be to ensure survival of the new firm during exogenous shocks rather than short term planning. Mergers can be used as a defensive mechanism by managers, who receive both pecuniary benefit and non-pecuniary benefit to stave off bankruptcy or punitive takeovers. Another reason given was an expected change in exogenous factors, such as technology, which may encourage a present unprofitable merger for future profits.

5. Conclusion

The merger of the two firms was an effective way to deal with an exogenous shock. The merger's ability to firstly increase efficiency of both firms through the shedding of employees, an increase of economies of scale, and a lowering of marginal cost to force out smaller firms seemed to be an effective means to ensure the firms survival. The merged firm within the consolidated industry provides an ideal

opportunity for future profits when the price of crude oil once again increases. With their increased synergy due to their general homogeneity certain assets can be sold off to help cover the cost of the acquisition without a loss in production or efficiency. Also the merger of the two firms allowed access to cheaper credit and an increase in their debt profile. These factors help increase their ability to survive.

The homogeneity of the firm exposes them to certain risks since their operating market is contracting significantly thus a failure of the market may spell doom and expose to shareholders to an increase risk that a diversified profile would have protected them from. The merging firm increases the firms chance of survival by shedding assets that are not core to the functioning of the firm and streamlining processes but exposes shareholders to greater risk.

A strategic alliance by Halliburton and Baker Hughes through an equity exchange would allow them to firstly align their goals and resources. The Andrews field proved that strategic alliances could significantly reduce cost through a profit orientation rather than revenue. Issues of trust and protection of intellectual property may prevent synergy. Also strategic alliances always run the risk of breaches since it may be in the partnering firms favour to take tacit knowledge or other source of competitive advantage and work independently. Issues of mergers circumvent these concerns and allow for complete synergy. Strategic alliances tend to bare intangible risks and costs, which are avoided by mergers but have the advantage of retraction and review of the profitability of the alliance. During a shock a merger of the two firms will ensure their survival. Mergers are often associated with agency principal theory since the acquiring firm share value tends to increase negligibly or decrease, while the acquired firms value increases significantly. If shareholder interest is presumed to be supreme then mergers could be associated with managers trying to increase their claim on rent while not passing value to shareholder. Mergers though serve to protect the long term interest of both firms through increased efficiency and market placement. A future increase in price will significantly increase firm value and retention of capital allows for options in periods of shock. The merger of Halliburton and Baker Hughes may be the beginning of the next round of the oil and gas industry wave. The potential for the consolidate and shift resources may create a new wave of super merged firms but the over all gains seems to suggest that this may increase efficiency and profits though the possibility of an oligopoly industry seems very likely.

Recommendations for Further Research

As the present study explores primarily the risks, as well as, the benefits of a merger of two companies of a large size in the oil and gas industry, further research could examine a bigger sample of companies including firms of different size and different culture. Additionally, instead of a qualitative methodological approach based on past experience of merged companies, a quantitative

analysis could also take place examining in depth factors that contribute to development of high and low risks of merged companies in this industry. Finally, the present findings could be tested for merged companies which belong in other industries.

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