# The effectiveness of merger control in South Africa: Selected case studies[1]

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WORKING PAPER – NOT FOR CITATION

**Abstract**

It is well established in economic literature that mergers and acquisitions have real potential benefits for firms due to economies of scale, efficiencies, growth and expansion, etc. Mergers consolidate the ownership and control of business assets, including physical assets (e.g. plant) and intangibles (e.g. brand reputation). Mergers can therefore enhance corporate as well as wider economic performance by improving the efficiency with which business assets are used. Further, South African competition law also makes provision for merger policy to be used in achieving wider public interest goals. In short, merger policy aims to avert structural changes that would damage incentives to compete while competition law prohibitions seek to combat particular kinds of anti-competitive agreement and conduct.

In this paper we examine the effectiveness of merger control decisions in South Africa in achieving the economic goals of merger control by using event study techniques to assess the impact of mergers and acquisitions on listed firms' stock market value in South Africa. We look at selected case studies in the food an agro-processing sector where listed firms on the JSE were involved in merger transactions that were reviewed and either prohibited, conditionally approved or approved by the Competition Commission or at the Competition Tribunal. Our results indicate that overall, across the different competition authorities' decisions for our selected case studies that it generally takes time for the market to react to key events identified in our analysis. More specifically, we found that after the SENS announcement; the cumulative abnormal returns were positive across our sample, save for Aspen. In cases where the Commission decided to conditionally approve or prohibit transactions, the firms in question experienced statistically significant negative abnormal returns on their share prices.

**Keywords:** Mergers and Acquisitions; Merger Control; Event Study

[1] This paper is written in the authors' personal capacity and does not necessarily reflect the views of the Competition Commission of South Africa.

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# 1. Introduction

In competitive markets with different providers of goods and services, consumers have wider choices. When customers can choose between different providers, they benefit and so does the economy as a whole. Besides wider choice, customers also benefit from improved quality and better prices of goods and services. The ability of customers to choose forces firms to compete with one another. Choice for customers is a good thing in itself, but competition between firms also leads to increased productivity and economic growth.

Furthermore, the effects of stronger competition can be felt in sectors other than those in which the competition occurs. In particular, vigorous competition in upstream sectors can 'cascade' to improve productivity and employment in downstream sectors and so through the economy more widely. According to the OECD (2014), the main reason seems to be that competition leads to an improvement in allocative efficiency by allowing more efficient firms to enter and gain market share, at the expense of less efficient firms (the so called between-firms effect). Regulations, or anti-competitive behaviour preventing entry and expansion, may therefore be particularly damaging for economic growth. Competition also improves the productive efficiency of firms (the so called within-firms effects), as firms facing competition seem to be better managed. This can even apply in sectors with important social as well as economic outcomes: for example, there is increasing evidence that competition in the provision of healthcare can improve quality outcomes.

Without competitive rivalry, firms would have no (or limited) incentive to incur the costs associated with new product innovation, improved customer service and would not incur capital expenditure to improve the efficiency of their operations. It would, in fact, be counterintuitive for firms to incur any costs to improve their product or service offering when consumers have no recourse to alternatives and thus have little choice but to purchase the goods or services available.

Section 12 of the South African Competition Act ("the Act") makes provision for the competition authorities to use merger control as one of the instruments in the competition toolkit to assist government in achieving the goals as set out by the preamble of the Act. The Act is framed by an acknowledgement that historical factors such as apartheid and other discriminatory laws resulted in excessive concentration of ownership and control in the South African economy that erected unjust barriers to economic participation by all South Africans. In addition to the pursuit of efficiency, the Act therefore also seeks to promote competition in the interest of transforming ownership of the economy, advancing the social and economic welfare of all South Africans, and ensuring that small businesses have an equitable opportunity to participate in the economy. South African competition policy therefore seeks to promote and achieve both economic welfare and non-economic welfare objectives as articulated in the Act. These objectives do not necessarily flow directly from more competitive markets. They do, however, indicate that South African competition policy must be implemented in a way that remains cognisant of the country's historical context and its broader socio-economic goals.

The balancing act between strict and broad interpretations of competition law led to the inclusion of 'public interest' considerations in the Act. This atypical aspect of South Africa's competition policy legislation compels the competition authorities to consider the impact of merger activity on public interest matters such as employment, the ability of firms owned by historically disadvantaged persons to compete, and the international competitiveness of South African firms. The competition authorities can impose conditions on merging firms to mitigate any negative impact on these matters of public interest.

It is well established in literature that mergers and acquisitions have real potential benefits for firms due to economies of scale, efficiencies, growth and expansion, etc. Mergers

consolidate the ownership and control of business assets, including physical assets (e.g. plant) and intangibles (e.g. brand reputation). Mergers can therefore enhance corporate as well as wider economic performance by improving the efficiency with which business assets are used. Merger policy aims to avert structural changes that would damage incentives to compete while competition law prohibitions seek to combat particular kinds of anti-competitive agreement and conduct.

Competition authorities globally are increasingly being asked to show the effects and impact of its decisions. Duso *et al.* (2007) states that the evaluation of the economic effects of bureaucratic or legal institutions' decisions is both one of the most important but also one of the most difficult tasks in economics. When analysing merger control decisions, for example, there is uncertainty about the merger effects *per se*, the impact of the competition authority's decision, and the perennial problem of the proper counterfactual. In other words, what would have happened had the two firms not merged, what would have happened had the authority (not) blocked the merger or (not) ordered a particular remedy?

In this paper we outline the event study techniques and methodology to be used in estimating the impact of merger control decisions by the competition authorities on firms' stock market value in South Africa, as well as the underlying assumptions we make in order to perform this analysis and come to meaningful conclusions regarding the case studies we have chosen. Event study analysis attempts to measure the effects of economic events on the value of firms by examining stock market data. For this analysis to work, it is important that share prices reflect the underlying economic values of assets, such that changes in equity values will properly capture expected changes in the economic profitability of the firm. A fundamental condition for any event study is the presence of at least one listed financial instrument that tracks the value of the firm under examination. A further condition is for a suitably deep market for the instrument in question. If the instrument is seldom traded its posted price may not reflect changes in value on a sufficiently timely basis for our purposes. In the present case, the methodology attempts to assess the extent to which events, such as the decisions by the competition authorities to prohibit, conditionally approve or approve mergers where at least one of the merging parties are listed on the Johannesburg Stock Exchange ("JSE"), affect the value of a company as reflected by its stock price.

Section 2 provides a brief discussion of literature relating to the use of event study methodologies with particular focus on their application in testing the effectiveness of competition law instruments. Section 3 then provides a brief discussion of the event study methodology and the data used in this paper before proceeding to discuss the results of the study in section 4. We conclude in section 5 of the paper.

## 2. Literature review

In this section we provide a brief review of available literature regarding the use of event study methodology to measure the economic effects of events, specifically focusing on the application of event study methodology to measure the effects of competition enforcement decisions on the value of companies as measured by its share price.

Event studies are used to measure the economic effects of events, such as merger control decisions by competition authorities, on the value of companies as reflected by their share prices. This is based on the assumption that share prices reflect the underlying economic values of assets such that changes in equity values will capture expected changes in the company's economic profitability.

In broad terms there are two different types of event studies. The first type of event study is a market efficiency study in which it is assessed how quickly and correctly the market reacts to a particular type of new information (see for example Fama *et al.*,1969). The second type

of event study can be classified as an information usefulness study as what is used in Ball & Brown (1968) which sought to assess the degree to which a company's share price returns react to the release of particular information. Cross *et al.* (1988) also use information usefulness event studies to assess the effect of director and officer lawsuits on company values. In this paper we will be conducting an information usefulness study by testing the impact of merger control decisions on the share prices of listed firms in South Africa.

In applying information usefulness studies, one accepts the hypothesis that stock markets are efficient and that stock prices reflect all publicly available information relevant to the company's prospects. Consequently, the effect of an event is assumed to reflect almost immediately in the company's share price, therefore making it easier to link the event in question to the profitability of the company.

A number of studies relating to competition enforcement decisions have used event study methodology, largely following Ball and Brown's (1968) information usefulness/content type of study. These have largely involved mergers with some application in enforcement cases. Below we provide a brief summary of the findings of some of these studies, distinguishing between the application of event study methodology to test the impact of competition enforcement decisions such as fines and penalties on the share price returns of listed firms on the one hand, and the application of similar methodologies to test the impact of merger control decisions on the share price of listed firms on the other.

***Competition enforcement decisions***

One of the first studies that used event study methodology to analyse the impact of antitrust enforcement actions on firm share prices was conducted by Bosch and Eckard (1991). In analysing the share price movements of US companies facing price fixing charges, the authors found that the companies sampled lost a cumulative 1.08% of their share value in the days immediately after the announcement of the negative finding. In this analysis, Bosch and Eckard (1991) estimate that fines and damages account for only 13% of the total loss of stock market value resulting from the negative finding. They conclude that a company may suffer a loss in value greater than what the fine would entail because following the finding the company may be required to adhere to remedies which lower its profits even further than just the reduction in profitability arising from ceasing anti-competitive conduct.

Feinberg and Round (2005) found little evidence of share price response to price-fixing investigations in Australia. This was largely due to the fact that investigations usually involve a small part of a company's operations and antitrust penalties imposed by the Australian competition authorities have tended to be relatively small in comparison with other jurisdictions However, some weak support was found in this study for a greater response by investors when penalties were expected to be more significant.

In contrast to the findings of Feinberg and Round (2005), Langus and Motta (2007) found that market values of companies negatively react to dawn raids, infringement decisions and court judgements upholding the EC's decision, respectively.[2] Interestingly, the study revealed that the substantial drop in the share prices does not necessarily emanate from the fine itself but rather from the announcement of investigations and judgements, thereby suggesting that the market expects the company's profits to drop after discontinuing with the infringement. This offers indirect evidence that antitrust action against cartels should decrease prices. Dawn raids were found to lead to a 2% decline in shareholder value while a negative decision by the EC resulted in a 3.3% decrease in shareholder value.

[2] Motta and Langus found that dawn raids had a strong statistically significant effect on a company's stock price.

Lübbers (2009) investigates the effect of one of the presumably most powerful cartels ever, the Rhenish-Westphalian Coal Syndicate in Germany, on the profitability of its members. This was a coal cartel that operated in Imperial Germany in the late 19th and early 20th century. The study assessed the reaction of the member's stock prices to the foundation of the cartel and two major revisions of its original contract. The results suggest that the investigated cartel had no significant effect on the profitability of its members. However, there was some evidence that the cartel was able to stabilise coal prices and powerful enough to ensure that on average, prices were set high enough to avert negative repercussions on company performance. This could possibly explain the findings that the cartel had no effect on the profitability of members.

A more recent study conducted by Günster and Van Dijk (2012) evaluate the impact of European antitrust policy by analysing the stock market response to investigation announcements, infringement decisions, and appeals. The authors examine a sample of 253 companies involved in 118 European antitrust cases over the period 1974-2004 and uncover significantly negative stock price responses of almost -5% around the dawn raid and -2% around the final decision, and a significantly positive response of up to 4% around a successful appeal.

Two recent studies have been conducted on the impact of antitrust fines on the profitability of listed firms in South Africa. Darji *et al.* (2012) used event study techniques and methodology to assess whether antitrust fines have an impact on the value of company values and if so to estimate the extent of that impact on the firms' stock market value in South Africa. Using a sample of three case studies where administrative penalties were levied on listed firms by the competition authorities, the results indicate that the share prices reacted negatively and in a statistically significant manner (at the level of 1%) to the news of the fines imposed by the competition authorities. However, it is also observed that where some events are linked to other sanctions already imposed or where there is a possibility of investor expectation that the company is likely to be fined at a future date, the response to a fine is ambiguous. Further, the study also showed that the magnitude of the fine itself may possibly have an influence on the extent to which the share prices lose value.

Govinda (2015) assesses whether the Commission's construction fast track settlement process had any significant effect on the share prices of three listed firms that were fined by the competition authorities as part of the fast track settlement process. The results from the event study analysis indicated that the share prices of the three firms reacted negatively in a statistically significant manner to the announcement of the contravention and the fast track settlement program. The construction firms suffered losses in abnormal returns ranging from 14% to 35% on the announcement of the fast track settlement program.

### *Merger control decisions*

A relatively large number of past studies have considered the impact of merger control decisions on the share prices of firms in different jurisdictions using event study methodology. The results from these studies have largely been mixed. Below we provide a brief overview of some of these studies and their findings.

Event studies concerning mergers tend to focus on the effect of the merger announcement on shareholder value both in the target firm and in the bidder. Sudarsanam (2003) provides a summary of the numerous studies in this area. These studies consistently show substantial gains of between 20 and 40% to shareholders in target firms; and typically show abnormal losses to acquiring company shareholders. Less attention has been given to the effects on shareholder wealth of merger activity and competition policy, notable exceptions being Eckbo (1983); Wier (1983); Franks and Harris (1993); Forbes (1994); Oxera (2006) and

Arnold and Parker (2007). Below we discuss some of these studies and their findings in greater detail.

Eckbo (1983) examined 259 US mergers of which 79 were challenged by the antitrust authorities. For the mergers that were challenged, Eckbo looked at movements in the share prices of competitor firms to see whether they supported a hypothesis of collusive behaviour and found that they did not. He inferred that these mergers had been based on cost saving efficiencies rather than gaining market power. In contrast to the findings of Eckbo (1983) a similar study by Duso *et al* (2007) based on European cases found the opposite to be true.

Arnold and Parker (2007) examine data on 50 mergers in the UK between 1989 and 2002 using event study methodology to analyse the impact of merger control decisions in the UK on the share prices of listed firms. The study confirms the finding from earlier studies of greater gains to shareholders in target than bidding companies, but does not find evidence supporting overall loss of shareholder value to target company shareholders when a merger is prohibited. It further finds evidence that when the regulatory regime is stable and well understood the capital market behaves efficiently in response to new information. However, for a subgroup of the mergers involving companies with a new regulatory regime, where the industry and the stock market had little or no experience with respect to mergers, the capital market operated less efficiently.

Beverley (2007) considers the effect on stock prices of announcements relevant to UK Competition Commission references, including both merger decisions as well as antitrust enforcement decisions, using established event study methodology and a sample of 9 case studies. For some of the case studies she finds significant abnormal returns in line with what should be expected from market reactions to merger control decisions. However, for some of the case studies the results are inconclusive.

Another UK study by Delaney and Wamuziri (2004) investigate the financial performance of UK construction companies, which have been involved in construction related mergers and acquisitions and examines the impact of merger announcements on acquiring firms' and target firms' stock performance in the UK construction industry. It also examines abnormal share returns throughout a period surrounding the announcement of both successful and unsuccessful acquisition and merger bids. The overall results indicate that related construction mergers create wealth for shareholders of the target firms.

Diepold *et al.* (2006) studied a sample of about 50 mergers and acquisitions involving Australian companies from 1996-2003, examining the impact on share prices of the announcement of these mergers both on the firms involved and on rival firms. In addition, for those mergers that were challenged by the Australian antitrust authorities, they consider the impact of the announcement of such a challenge. Their results suggest significant target company abnormal returns to announcements of Australian mergers and limited impact of ACCC involvement. The investors' reactions to domestic mergers were consistent with the findings of previous studies that examine merger samples in other jurisdictions as well as those that would be expected for a younger enforcement environment. While no impacts on target firm investors were found, the actions, or expected actions, of the ACCC seemed to have some impact on acquiring firms' investors' responses to domestic mergers, as the study found significantly lower abnormal returns to acquirers in mergers that were eventually challenged by the ACCC. They found some evidence indicating that cross-border impacts on share-price returns appear to be less favourable than domestic mergers. Furthermore, there was little evidence that the ACCC has much influence on investors' reactions to these mergers.

Some studies have considered the impact on shareholder value of EU competition regulation. One study of particular interest is Duso *et al.* (2007). This study followed the

method of Eckbo (1983) and was predicated on the view that an anti-competitive merger would result in increased share prices for competitors. This somewhat counter-intuitive result follows from the hypothesis that an anti-competitive merger would reduce competitive forces in the industry and thus reduces downwards pressure on prices and profits, and would hence be viewed positively by investors in the industry. Unlike the Eckbo study, studies, Duso *et al.* (2007) round evidence to support their hypothesis that the mergers were indeed anti-competitive.

Duso *et al.* (2011) applies an intuitive approach based on stock market data to a unique dataset of large concentrations during the period 1990–2002 to assess the effectiveness of European merger control. The basic idea of the paper is to relate announcement and decision abnormal returns. Under a set of four maintained assumptions, merger control might be interpreted to be effective if rents accruing due to the increased market power observed around the merger announcement are reversed by the antitrust decision, i.e. if there is a negative relation between the announcement and decision abnormal returns. To clearly identify the events' competitive effects, the authors explicitly control for the market expectation about the outcome of the merger control procedure and run several robustness checks to assess the role of our maintained assumptions. They find that only outright prohibitions completely reverse the rents measured around a merger's announcement. On average, remedies seem to be only partially capable of reverting announcement abnormal returns, yet they seem to be more effective when applied during the first rather than the second investigation phase and in subsamples where our assumptions are more likely to hold. Moreover, the results from this study seem to suggest that the European Commission appears to learn over time.

Finally, Flugt (2009) looks at the value generated to target and bidder shareholders by the announcement of mergers and acquisitions (M&A) in the European Union over the period 2000-2008 in a sample of 288 deals. Cumulative abnormal shareholder returns, the difference between the expected return on a stock and the actual return that comes from the M&A announcement, reflect the expected value resulting from synergies. Target firms receive on average a statistically significant cumulative abnormal return of 14.92% in a five-day window around the announcement day. Bidders' cumulative abnormal returns are on average zero. The results are consistent with similar studies that have been performed on EU data, in particular Goergen and Renneboog (2002) and Gugler *et al.* (2003).

## 3. Data and event study methodology

### 3.1. Data

The case study selection criteria used in this paper is based on selecting mergers between firms that are active in the food and agro-processing sector and where at least one of the merging firms are listed on the JSE. The food and agro-processing sector has been prioritised by the Competition Commission ("Commission") since 2008 given its importance to the majority of South Africans. In addition, we focused on choosing mergers that resulted in different key outcomes. A merger can technically have one of four outcomes. The first result is that the merger can be approved outright, in other words there are no merger-specific competition concerns and no public interest concerns that arise from the merger. If on the other hand there are merger-specific competition and/or public interest concerns, then the competition authority can implement a conditional approval. Therefore the second and third outcome can involve the merging parties facing either a structural remedy, or a behavioural remedy, and at times a combination of both. Finally, if a merger is deemed problematic in terms of competition and/or public interest concerns, and there are no possible remedies that can alleviate such concerns, the competition authority can prohibit the merger.

In light of the above, we have chosen five mergers from the food and agro-processing industry with different types of merger decisions for our analysis. In particular, we will focus on the Astral/Natchix, Aspen/Pfizer, Wal-Mart/Massmart, Pick 'n Pay/Fruit & Veg, and Oceana/Foodcorp mergers. The selection of mergers used in this event study is presented in Table 1 below.

**Table 1: Selection of merger case studies**

| Merger | Outcome | | |
|---|---|---|---|
| | **Commission** | **Tribunal** | **CAC** |
| **Astral/Natchix** | Prohibition | Conditional approval (Behavioural) (Structural) | - |
| **Aspen/Pfizer** | Approval Recommendation | Approval | - |
| **Wal-Mart/Massmart** | Approval Recommendation | Conditional approval (Behavioural) | Conditional approval (Behavioural) |
| **Pick 'n Pay/Fruit & Veg** | Prohibition Recommendation | *Merger abandoned* | |
| **Oceana/Foodcorp** | Conditional approval (Structural) | Conditional approval (Structural) | Conditional approval (Structural) |

*Source: Competition Commission, Competition Tribunal and Competition Appeal Court decisions*

After selecting the mergers for the assessment, we collected the relevant share price data. It is essential that at least one of the merging firms is listed on the JSE so that the share specific price can be evaluated over time. Therefore share price data was collected for a specific firm that was party to the concerned merger. For the stock market index we used the JSE All Share index to represent the value of the market portfolio.

In terms of gathering evidence around the three key events of this study, we rely on various sources. For example, we use the corresponding SENS announcement for a particular firm with regards to when shareholders were advised of a particular merger. Therefore all announcement dates are based on the first time that shareholders were alerted of the transaction. The second event relies on the Commission's recommendation to the Competition Tribunal ("Tribunal"), in the case of large mergers. However in the case of contested intermediate mergers, such as Astral/Natchix and Oceana/Foodcorp, we use the date that the Commission made its decision as the second event. Subsequently, the third event is based on the Tribunal's decision. Where the merger was appealed to the Competition Appeal Court ("CAC"), this will form the fourth event.

### 3.2. Methodology

This paper uses event study methodology to estimate the returns or profits that are derived from stock market prices, given an event, in relation to mergers and acquisitions. Beverley (2007) assesses the effect on share prices of announcements relative to various competition matters in the UK, including mergers and market inquiries. We follow a similar approach to Beverley (2007) whereby we employ event study methodology to assess the abnormal returns from four key events: the merger announcement, the Commission's recommendation to the Tribunal, the Tribunal's decision and the CAC's decision (where applicable).

Due to the limited availability of South African merger cases involving listed firms on the JSE, we have selected specific mergers in the food and agro-processing sector where at least one of the merging firms was listed on the JSE (see above). This paper focuses on assessing the effectiveness of events, in particular the merger announcement, the Commission's recommendation and the Tribunal's decision, on one of the listed merging parties. Below follows a detailed discussion on the methodology and assumptions adopted in order to assess the effectiveness of merger control in South Africa.

Following Beverley (2007), the first step is to identify and define the event. Typically, when using event study methodology to assess the effect of a merger on share prices for example, the event parameter is taken as the first announcement date of the merger. The announcement date is typically taken as the first rumour about the merger rather than the official filing date of the merger.[3] A key assumption in using event study methodology is the market efficiency hypothesis which assumes that all stock market prices fully account for all available public information. For example, in a perfect market, the effect of the merger announcement would immediately be recognised in the value of the share prices of the concerned firms. However the market may react slowly to the announcement or the information about the merger may have already been leaked prior to the announcement date. Therefore it is important to establish an event period in order to take into account these leading and lagging effects (Beverley, 2007).

For the announcement event, day 0 therefore illustrates the first trading day where the information of the event, i.e. the announcement of the merger, reached the market on a specific day, allowing enough time for the market to react (Dilshad, 2013 and Kritzman, 1996). The accuracy of obtaining such information is important in order to detect how the stock market reacts to unanticipated information. For purposes of this paper, we use SENS announcement dates of the listed firms as the first time the market is made aware of the merger.

Another important aspect of the merger procedure, particularly in large mergers, is the Commission's recommendation to the Tribunal. We anticipate that the market may react to the Commission's recommendation of a particular merger and therefore we use the date that the Commission referred its recommendation to the Tribunal as the appropriate event date. In addition, in contested intermediate mergers, we treat the Commission's decision of the merger as the corresponding event that might have influenced the reactions of the market. Similarly, the effect of the Tribunal decision's in the particular merger (whether large or contested) is likely to have an effect on the returns to share-specific *i*. Therefore, our last event that we control is for is based on the date that the Tribunal ordered its decision in relation to the concerned merger.

It is important that a few days around the different event dates are included in the estimation window. The estimation period or window allows us to capture the parameters of the market model so that the expected returns, based on stock market prices, can be calculated when the event did not take place. In the estimation window, the event day is typically excluded so that one can estimate the normal returns, such that the returns of share-specific *i*, should not be influenced by the event. There is no standard period given for an estimation window in literature. Beverley (2007) for example, uses an estimation window of 200 days, ending 10 trading days prior to the event, day 0.

The Commission however is bound by the provisions of the Act which states that the Commission's investigation of a merger is limited to 60 days, within which it must make a decision in a small or intermediate merger, and in the case of a large merger the Commission must within 60 days make a written recommendation with reasons to the

[3] One of the reasons for not using the official filing date is because it may have been filed after rumours in the market were leaked regarding the merger and therefore we are unlikely to capture changes in the share prices.

Tribunal, stipulating as to whether the concerned merger should be approved, approved with conditions, or prohibited.[4] Therefore, given the time constraints we were limited to using a certain estimation window period, and opted to use the maximum amount of days that the selected mergers allowed for. For purposes of this paper we use an estimation window of 55 days, ending ten trading days prior to the event.

Our model also includes an event window in order to account for the likely abnormal returns that occur following an event. According to the efficient market hypothesis, it states that if there are any changes in the stock market prices caused by the event, for example the announcement of the merger, it will be realised immediately due to the rational behaviour of firms. There is no standard event window in literature, therefore specifying an event window period is done on a case-by-case basis, however choosing too short or too long of an event window may affect the results of changes in share prices.

Following a similar approach to Beverley (2007), we use a three day event window – one day before the event, the event, and one day after the event. This allows us to control for any lead and lag effects as mentioned earlier. We will also employ sensitivity checks, where we increase the event window to five days – one day before the event, the event, and three days after the event. By increasing the event window even further we run the risk of including confounding events, which ultimately could affect the results.

We use the same estimation window and event windows for all the merger case studies. After excluding all non-trading days from the data, and having identified the events of concern and appropriate estimation and event windows, the next step involves estimating the normal returns and the abnormal returns. Essentially there are two periods that need to be accounted for when estimating the normal and abnormal returns. The estimation of the normal return model relies on using only a subset of the data, given that normal returns are calculated based on the absence of the event. Hence the parameters of the normal market return are calculated using the estimation window. The other period is the event window which takes into account the trading days before the event and the trading days after the event. Therefore the abnormal returns are estimated using the event window.

Estimating the normal return involves assessing the return that would have accrued had the event not occurred, i.e. absent the merger announcement, what would firm *i's* return on its share price have been. Given the assumption that share-specific returns are independently and identically distributed, we use the market model to estimate the normal returns. The market model assumes that there is a linear relationship between the stock market return, i.e. the market portfolio, and the return on the share-specific price. The market model also allows us to separate the impact of specific events. Given rational expectations and efficient markets, we use the market model to predict that firm *i's* share price return at time *t*, is proportional to the market return at time *t*.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (1)$$

The variables $R_{it}$ and $R_{mt}$ in equation 1 represent the returns of share-specific firm *i* at time *t*, and the market returns $m$ at time $t$, respectively. The coefficient $\alpha_i$ represents the slope and $\beta_i$ is the corresponding coefficient for market returns and $\varepsilon_{it}$ is the error term with zero mean distribution. The market portfolio or market returns, *m*, in equation 1 above is represented by the JSE All Share Index.

To compute the returns for share-specific *i*, we calculate equation 2:

[4] However, the Act further makes a provision that should the Commission require an extension beyond the 60 business days; it may upon an application, request the Tribunal to grant an extension of no more than 15 business days at a time.

$$R_{it} = \ln(P_{it}) - \ln(P_{it-1}) \qquad (2)$$

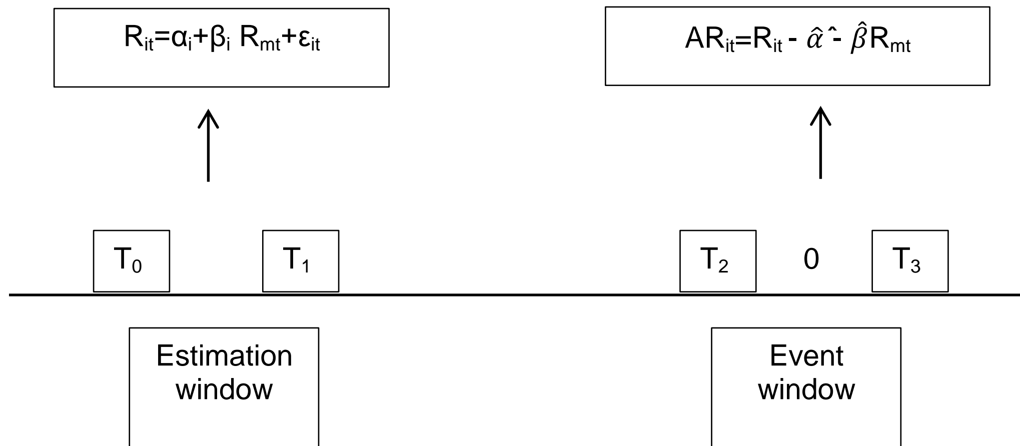
Where $P_{it}$ refers to the closing price of share-specific *i*, at trading day *t*, and $P_{it-1}$ refers to the closing price of share-specific *i*, on the previous trading day, i.e. *t-1*. Similarly, using the basics of equation 2 we calculate the returns for the stock market, $R_{mt}$.

The subsequent step involves calculating the abnormal returns, which accounts for the effect on firm *i's* share price following the event, i.e. the merger announcement.

$$AR_{it} = R_{it} - \hat{\alpha} - \hat{\beta} R_{mt} \qquad (2)$$

As per equation 2, $AR_{it}$ is the abnormal return for share-specific *i* at time *t*, and $\hat{\alpha}$ and $\hat{\beta}$ are the estimated coefficients of the market model. $R_{mt}$ is the total return of the market in period *t*, and $R_{it}$ signifies the actual return for each firm. The abnormal returns are reflective of the return that is not predicted by the stock market index (Dilshad, 2013). Therefore the predicted returns represent the expected return if there was no event, such as a merger announcement. Figure 1 below, illustrates the approach we take in order to calculate the normal and abnormal returns of share-specific *i*.

**Figure 1: Event and estimation windows in event study methodology**




Next we calculate the cumulative abnormal return over the event window, using equation 3:

$$CAR_i = \sum AR_{it} \qquad (3)$$

The null hypothesis is that the event has no impact on the variance of returns; therefore abnormal returns are equal to zero. Following the hypothesis that the abnormal return for the event window is equivalent to zero, we apply the t-statistic test to show that the abnormal return in fact differs significantly from zero.

$$t = \frac{CAR_i}{(\sigma_i/\sqrt{n})} \qquad (4)$$

Where $\sigma_i$ is the standard deviation of the distribution and *n* is the number of days in the event window.

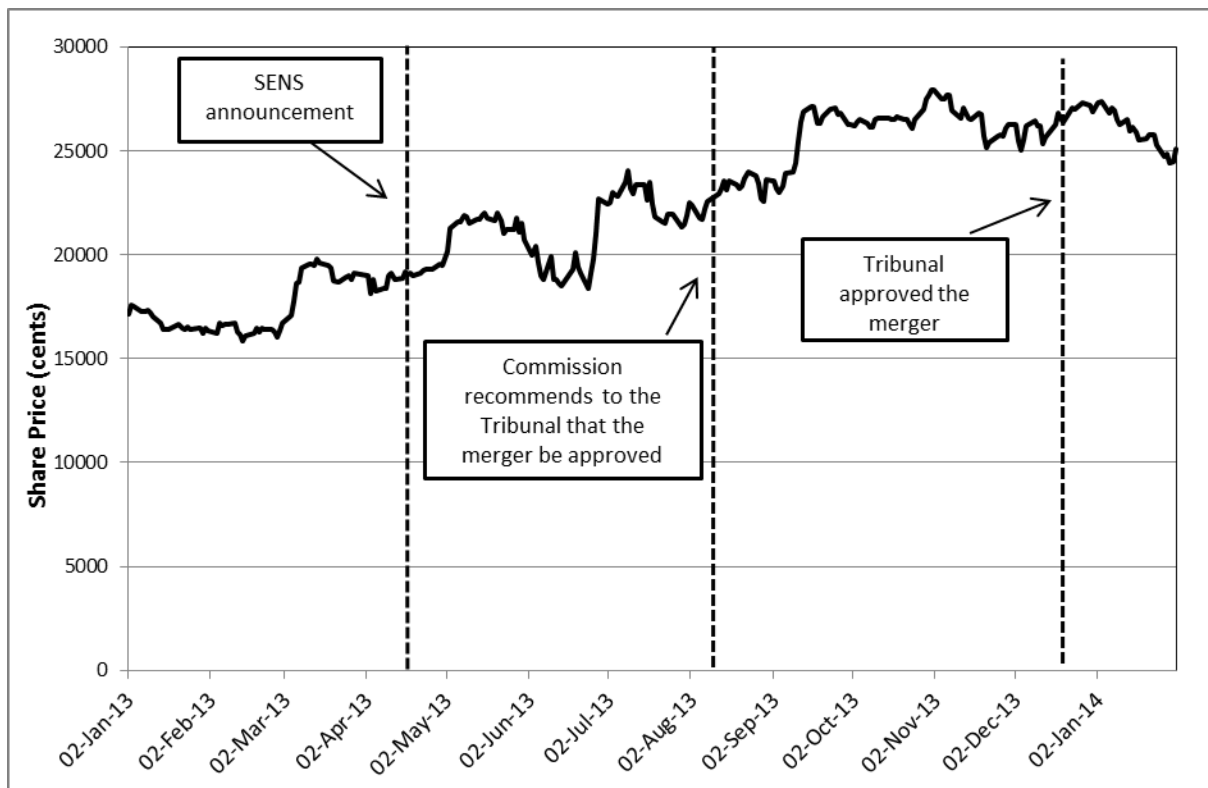
## 4. Results

In this section we present the results of our analysis for the five case studies selected for this paper (see Table 1) using the methodology as described in section 3 above. We acknowledge that there are difficulties in performing event studies in competition cases as events unrelated to the event in question often affect the share price and therefore further increase noise in the data. Lead and lag effects may also introduce uncertainty in the analysis as to the appropriate period over which returns should be assessed. However, in light of the potential statistical challenges with using event study methodology to assess the significance of competition decisions, we have sought to carefully choose our case studies to ensure that there are no other significant events specific to the firm that has happened over the same periods of assessment that may create ambiguous results and interpretation.

### 4.1. Aspen/Pfizer merger

Using three key events, i.e. the SENS merger announcement, the Commission's recommendation to the Tribunal, and the Tribunal's final decision, we analysed the effects of these events on the abnormal returns to Aspen Nutritionals ("Aspen") using share price market data (see Figure 2). Table 2 below shows the estimation results from the three chosen events, and provides a description of the event, the event windows as well as the corresponding t-statistic and CAR value for the various event windows.

**Figure 2: Aspen Share Price: January 2013 to January 2014**



***Event analysis***

On 18 April 2013, Aspen notified its shareholders of its intention to acquire the South African Infant Nutrition Business of Pfizer Nutrition ("Pfizer")[5], following from the conditions imposed by the Tribunal in the Nestlé/Pfizer[6] merger. In this merger the Tribunal required Nestlé to divest the South African infant nutrition business of Pfizer to a third party, through a transitional re-branding remedy.

Our results indicate that on the day of the SENS merger announcement, as well as one day after the event, there were no statistically significant changes in Aspen's share. However, three days following the SENS announcement, Aspen experienced negative abnormal returns of around 2%. This result was significant at the 5% level. These significant negative results possibly suggest that Aspen shareholders may have been sceptical regarding the outcome of the proposed merger given the proceedings that followed in the Nestlé/Pfizer transaction, particularly the Tribunal process and the ultimate conditions imposed by the Tribunal in the Nestlé/Pfizer merger.

Although the Commission found that there was a horizontal overlap in the broader infant formula milk market between the merging parties, the firms were noted to have competed in different segments of the market. For example, Aspen's infant formula brands were mainly targeted towards the "mainstream" segment of the market, whilst Pfizer's infant formula brands were more targeted towards the "higher-end" segment of the market. [7] The Commission also found that the transaction was unlikely to lead to coordinated effects. Therefore on the 8th of August 2013 the Commission recommended to the Tribunal that the Aspen/Pfizer transaction be approved without conditions.

Given the Commission's recommendation, there were no significant changes to Aspen's share on the day of the event. However, the significance of the Commission's recommendation to the Tribunal was realised one day after the event and three days after the event where Aspen's share price rose abnormally by approximately 4%, and this was statistically significant at the 10% and 5% level, respectively. The positive abnormal returns were anticipated given that the Commission had approved the merger outright. Hence the market was confident with the transaction.

**Table 2: Summary of results for Aspen using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 18 Apr 2013: SENS Announcement of intention to acquire Pfizer brands | Day of event | 0.72 | 0.01 |
| 18 Apr 2013: SENS Announcement of intention to acquire Pfizer brands | 1 day after event | -0.48 | -0.005 |
| 18 Apr 2013: SENS Announcement of intention to acquire Pfizer brands | 3 days after event | -2.32** | -0.02 |
| | | | |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | Day of event | 1.76 | 0.04 |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | 1 day after event | 2.16* | 0.04 |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | 3 days after event | 3.28** | 0.04 |
| | | | |
| 18 Dec 2013: Tribunal approves merger | Day of event | 4.27* | 0.04 |

[5] Competition Tribunal case number: 107186.
[6] Competition Tribunal case number: 65/LM/Jun12 (015248).
[7] The main difference between mainstream and premium infant formula brands is linked to the price differential between the two.

| | | | |
|---|---|---|---|
| with no conditions | | | |
| 18 Dec 2013: Tribunal approves merger with no conditions | 1 day after event | 2.03* | 0.01 |
| 18 Dec 2013: Tribunal approves merger with no conditions | 3 days after event | 7.58*** | 0.04 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

Following the Commission's recommendation, the Tribunal asked the Commission to conduct further investigation, and in particular to assess the effect of the merger on future potential competition. The Commission's further investigation found that the merger was unlikely to result to unilateral effects and coordinated effects. This recommendation was ultimately agreed and accepted by the Tribunal, and the Tribunal approved the merger unconditionally on the 18 December 2013. Following the date that the Tribunal ordered and decided to approve the transaction without conditions, Aspen's share price increased abnormally by 4%, which was significant at the 10% level. Similarly, at the 10% level, one day after the event shows abnormal returns of 1%. Using a five day event window, Aspen's share price experienced significant abnormal returns of 4%, which was statistically significant at the 1% level. Such results simulate the market's confidence in the transaction, which is likely to have led to positive abnormal returns for Aspen.

The results for Aspen show on a whole show that following the Commission's recommendation, or the Tribunal's decision, the market reacted fairly quickly to these events. The signs on the cumulative abnormal returns were expected across all three events, as discussed above.

***Competitor reactions to the proposed transaction***

We also analysed the share price responses of Aspen's listed competitors to the three events as analysed and described above. It should be noted that because none of Aspen's direct competitors in the relevant market for infant milk formula products are listed in South Africa on the JSE, we had to resort to testing the reactions of Aspen's closest competitors in other products that it produces to the news of Aspen's expansion and potential growth in future profitability overall as a result of its acquisition of the Pfizer infant milk formula brands.

Firstly, we assessed the response of Adcock Ingram ("Adcock") to the proposed transaction (see Appendix A). Adcock is one of Aspen's main competitors in the pharmaceutical market that is also listed on the JSE. Following Aspen's announcement of its intention to acquire the Pfizer brands, Adcock's share increased abnormally by 2%. This was significant at the 5% level and is expected given the competition concerns that arose in the infant formula market during the Nestlé/Pfizer transaction, and the market's negative response to the announcement of the Aspen/Pfizer merger. Adcock's share price did not show any significant abnormal returns following the Commission's recommendation to the Tribunal to approve the Aspen/Pfizer transaction. The market only reacted to the Tribunal's decision when it approved the merger unconditionally. This positive return was not anticipated given that there were no anti-competitive effects and/or public interest concerns with the transaction and one would expect rivals share prices would abnormally decline. However, as explained above Adcock does not compete directly with Aspen in the market for infant milk formula and its shareholders may therefore have viewed the approval of the transaction as competitively neutral, or as positive given that there may have been an expectation that the merger would shift Aspen's focus away from competing strongly with Adcock in the product categories where they are direct competitors.

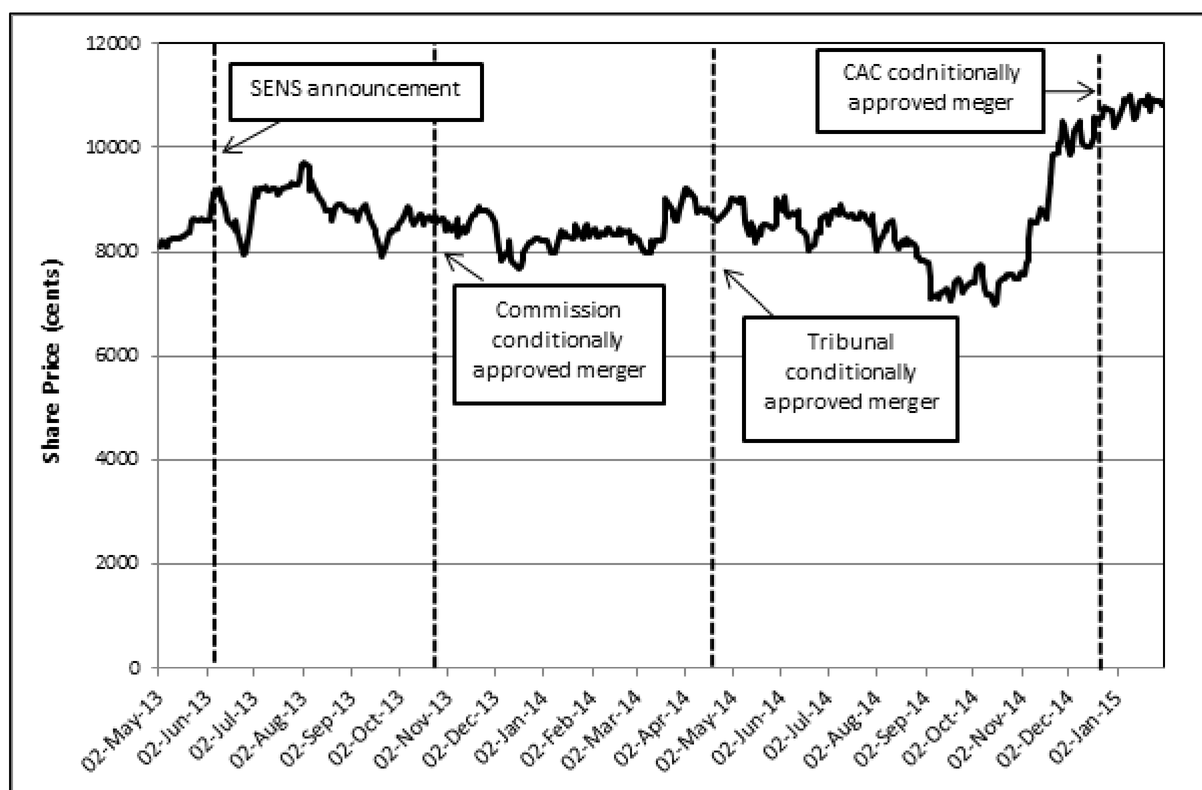
Secondly, we also analysed the response of Tiger Brands to the transaction as it competes with Aspen in the broader infant food market. Following Aspen's announcement of its intention to acquire the Pfizer brands, Tiger Brands share price decreased abnormally by 4% one day after the event and by 3% three days after the event. These results were significant

at the 5% and 1% level respectively. Similarly, when given the Commission's recommendation to unconditionally approve the merger, Tiger Brands share experienced negative abnormal returns of 6% one day after the event and three days after the event, which were significant at the 5% and 1% level, respectively. Such negative abnormal returns were anticipated given that the merger was perceived to be beneficial to Aspen (unconditional approval) and hence disadvantageous to its competitors. However, similarly to the results for Adcock, the positive abnormal returns associated with the Tribunal's unconditional approval of the merger are unexpected.

### 4.2. Oceana/Foodcorp merger

In order to analyse the effects of certain events on the abnormal returns to Oceana Group Limited ("Oceana") using share price market data, we use four key events: the SENS merger announcement, the Commission's decision to conditionally approve the transaction, the Tribunal's decision to conditionally approve the transaction, and the CAC decision to approve the merger with revised conditions (see Figure 3). Table 3 below shows the estimation results from the four chosen events, and provides a description of the event, the event windows as well as the corresponding t-statistic and CAR value for the various event windows.

**Figure 3: Oceana Share Price: May 2013 to January 2015**




***Event analysis***

On 4 June 2013, Oceana notified its shareholders of its intention to acquire the fishing division of Foodcorp Pty Ltd ("Foodcorp").[8] Our results indicate that on the day of the SENS merger announcement, the market reacted positively to the news as Oceana's share price increased abnormally by 3%. This was statistically significant at the 10% level. Moreover,

[8] Competition Tribunal case number: 018101.

one day after the event and three days after the event, the results show that Oceana had experienced positive abnormal returns of 5%, which was significant at the 1% level.

Although the Commission identified various horizontal overlaps in various fish categories, there were no competition concerns that arose. The main competition concern from the Commission's point of view was that the merger would have resulted in a substantial prevention or lessening or competition in the vertically integrated market for canned pilchards. On 29 October 2013, the Commission approved the Oceana/Foodcorp transaction subject to structural conditions. Given the Commission's decision, there was a lack of reaction to the event as our results demonstrate that there were no significant abnormal returns to Oceana on the day of the announcement, and one day following the event. The lack of response by the market is unexpected, in light of the markets positive response to the announcement of the merger. However, three days after the Commission's recommendation, Oceana's share had abnormal negative returns of around 1%. This was significant at the 10% level. The negative abnormal return was anticipated given the structural conditions imposed by the Commission, whereby the merged entity was to divest Foodcorp's competitive pilchard brand Glenryk, as well as divest the Total Allowable Catch ("TAC") quota allocated to Foodcorp for small pelagic fish.

The merging parties did not agree with the Commission's proposed conditions, and hence filed an application for reconsideration with the Tribunal. Following a formal hearing, the Tribunal agreed with the Commission's assessment and on the 15 April 2014, approved the transaction subject to similar conditions imposed by the Commission. Our results show that on the day of the event, and one day after the event, Oceana's share price did not show any significant abnormal returns. However, our analysis shows that three days after the event, the shares of Oceana declined abnormally by 3%, and this was significant at the 1% level. The negative results indicate that the market believed the merger was not competitively neutral given that the Tribunal agreed with the Commission's decision.

**Table 3: Summary of results for Oceana using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 4 Jun 2013: SENS Announcement of intention to acquire the fishing division of Foodcorp | Day of event | 3.02* | 0.03 |
| 4 Jun 2013: SENS Announcement of intention to acquire the fishing division of Foodcorp | 1 day after event | 6.13*** | 0.05 |
| 4 Jun 2013: SENS Announcement of intention to acquire the fishing division of Foodcorp | 3 days after event | 7.73*** | 0.05 |
| | | | |
| 29 Oct 2013: Commission conditionally approves transaction | Day of event | 0.97 | 0.01 |
| 29 Oct 2013: Commission conditionally approves transaction | 1 day after event | -1.80 | -0.02 |
| 29 Oct 2013: Commission conditionally approves transaction | 3 days after event | -1.99* | -0.01 |
| | | | |
| 15 Apr 2014: Tribunal conditionally approves transaction | Day of event | -0.27 | -0.003 |
| 15 Apr 2014: Tribunal conditionally approves transaction | 1 day after event | -1.75 | -0.02 |
| 15 Apr 2014: Tribunal conditionally approves transaction | 3 days after event | -4.93*** | -0.03 |
| | | | |

| 19 Dec 2014: CAC conditionally approves transaction | Day of event | -0.78 | -0.01 |
|---|---|---|---|
| 19 Dec 2014: CAC conditionally approves transaction | 1 day after event | -2.13* | -0.03 |
| 19 Dec 2014: CAC conditionally approves transaction | 3 days after event | -4.07*** | -0.04 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

Following the Tribunal's decision, the merging parties proceeded to take the matter on appeal before the CAC. The CAC upheld the merging parties appeal and approved the merger subject to revised conditions on the 19 December 2014. However, one day after the CAC's decision, the shares of Oceana declined abnormally by 3%. This was statistically significant at the 10% level. Similarly, three days after the event Oceana experienced abnormal negative returns of around 4%, which was significant at the 1% level. The conditional approval shows that the market continued to believe that the merger was not competitively neutral, hence the negative abnormal returns.

The overall results for Oceana illustrate that following the competition authorities decision, the market needs time to react to the respective decisions. This is evident throughout all three competition authority decisions, where the market needs at least three days following the decision to react.

***Competitor reaction to the proposed transaction***

We also analysed the share price responses of Brimstone Investment Corporation ("Brimstone") to the proposed transaction. Brimstone has a significant interest in the fishing industry as it is a shareholder of both Sea Harvest and Oceana. However, it should be taken into consideration that there is a potential conflict of interest in the share price response of Brimstone to the merger between Oceana and Foodcorp given its shareholding both in a competitor to Oceana in the form of Sea Harvest and also in the acquiring firm itself, Oceana.

Our results (see Appendix A) show that following the SENS announcement of Oceana's intention to acquire the fishing division of Foodcorp, Brimstone's share price increased abnormally by around 5%, three days after the event. This was statistically significant at the 1% level. There were no significant abnormal returns for Brimstone after the Commission's decision to conditionally approve the intermediate merger. However, after the Tribunal's and CAC decisions to conditionally approve the transaction, Brimstone's share rose abnormally, and was statistically significant at the 1% level, three days after the events. Due to the structural nature of the imposed conditions, the market would have viewed the transaction as problematic in terms of the anti-competitive effects that arose from the merger. Therefore the positive results for its rival were anticipated due to the negative reaction of the market following the conditional approval by the respective competition authorities. Further, as explained above, the structure of Brimstone's shareholding in both Oceana and one of its main competitors may have led to a conflicting share price response to the merger.

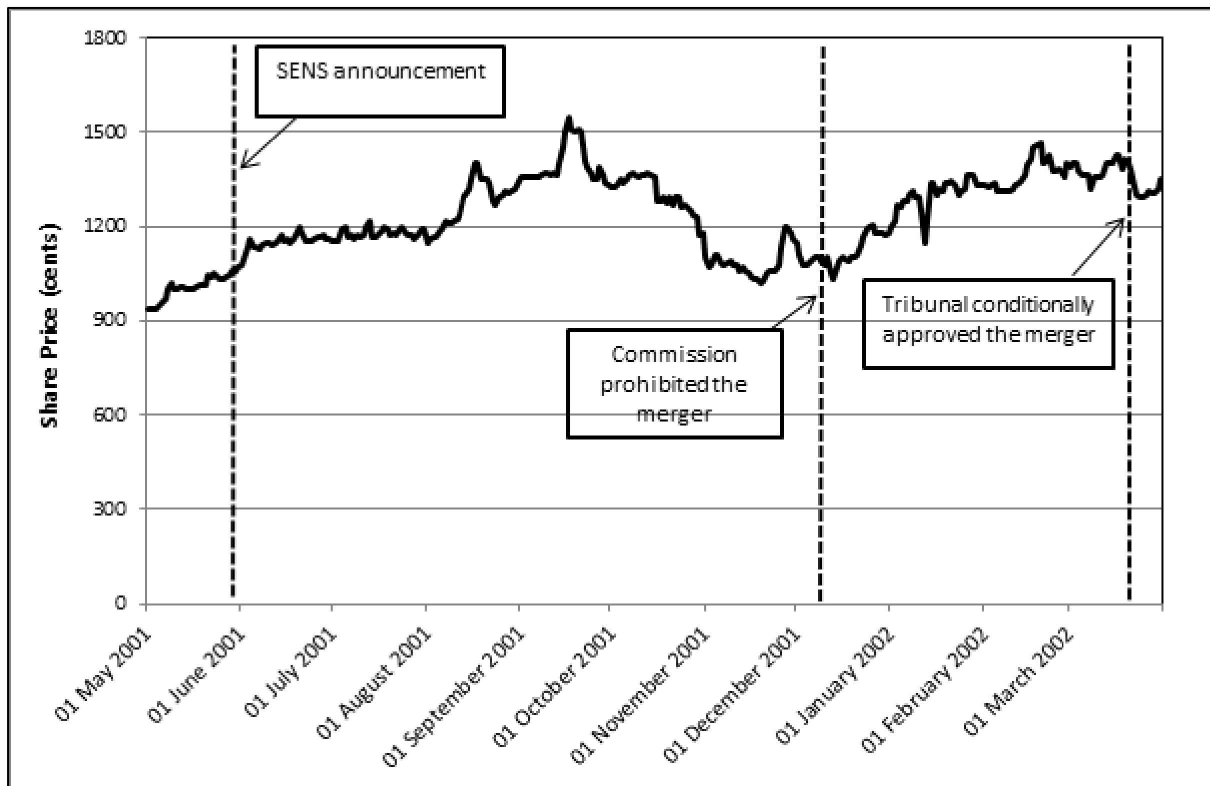
### 4.3. Astral/Natchix merger

In assessing the effects of particular events on the abnormal returns to Astral Foods Limited ("Astral") using share price market data, we use three key events: the SENS merger announcement; the Commission's decision to prohibit the intermediate merger; and the Tribunal's decision to conditionally approve the transaction with both structural and behavioural conditions (Figure 4).[9] Table 4 below shows the estimation results from the

[9] Note that we were unable to include the first SENS announcement for the proposed acquisition of Natchix by Astral in our analysis due to a lack of a sufficient number of days for an estimation window from the day of the

three chosen events, and provides a description of the event, the event windows as well as the corresponding t-statistic and CAR value for the various event windows.

**Figure 4: Astral Share Price: May 2001 to March 2002**




***Event analysis***

It was announced in a SENS release on 8 August 2001 that Astral intended to make an offer to acquire all of the minority shares in National Chicks (Pty) Ltd ("Natchix")[10] at a price of 200 cents per share. Our results indicate that on the day of the SENS merger announcement, the market reacted negatively to the news as Astral's share price shows a negative abnormal return by 2%, although it should be noted that this result is not statistically significant. One day after the event and three days after the event, the results show that Astral had experienced positive abnormal returns of 3% (which were significant at the 5% level and 1% level respectively).

The Commission prohibited the merger on 6 December 2001 mainly because it was of the view that the proposed merger would substantially lessen competition in the markets for the breeding and supply of day-old chicks. The transaction was both a horizontal and a vertical merger, because of the horizontal overlap between the parties' activities in the animal feed market and vertical through the acquisition of Natchix, the independent producer of day-old chicks. Before the merger, Astral owned 34.9% of the issued share capital of Natchix, who in turn owned 55% of the shareholding in Nutrex, a supplier of animal feed. The proposed transaction would also have resulted in Nutrex being acquired by Astral, effectively removing

first SENS announcement (31 May 2001) until the day when Astral was first listed on the JSE (9 April 2001). We have therefore chosen to use the date of the second SENS announcement and press release about the proposed transaction in our analysis.

[10] Competition Tribunal case number: 69/AM/Dec01.

one of Astral's competitors in the animal feed market as they were already involved in the upstream market because of the company's vertical integration with Meadow Feeds.

The Commission was of the opinion that the structure of the industry pre-merger would allow for a competitor to easily enter the market as opposed to a post-merger situation where a sizeable chunk of the supply of parent stock will be foreclosed. Astral could possibly use its dominant position in the market as the sole supplier of Ross parent breeding stock to foreclose markets downstream to those independent entities that breed parent broiler chickens to produce broiler-hatching eggs and day-old chicks. The largest independent buyer pre-merger was Natchix, which has its own breeding facility but also purchases hatching eggs from independent breeders.

Another competition concern that was raised by the Commission in its assessment of the proposed transaction was that the vertical structure that would emerge post-merger would provide Astral with the ability to price discriminate in favour of its own downstream operations in the market for the supply of day-old chicks. The extent to which this would result in a lessening of competition would depend on the extent to which Cobb (Rainbow) could take up excess demand in the market, which the Commission found to be very limited. Barriers to entry were also found to be very high in both the upstream and downstream market and new entry would not be timely enough to prevent anti-competitive effects, as it would take Cobb at least five years to position itself as a competitor of Ross in the upstream market. It would take downstream broilers at least 18 months to get to the stage where they could sell day-old chicks.

Our results show that in response to the Commission's decision to prohibit the proposed transaction there were highly significant negative abnormal returns to Astral on the day of the Commission's decision, as well as during the days following the announcement. This is an expected result as shareholders would not be expected to react positively to the news of the Commission's decision to prohibit the proposed merger.

**Table 4: Summary of results for Astral using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | Day of event | -1.94 | -0.02 |
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | 1 day after event | 3.99** | 0.03 |
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | 3 days after event | 5.48*** | 0.03 |
| | | | |
| 6 Dec 2001: Commission prohibits transaction | Day of event | -8.48** | -0.1 |
| 6 Dec 2001: Commission prohibits transaction | 1 day after event | -14.55*** | -0.1 |
| 6 Dec 2001: Commission prohibits transaction | 3 days after event | -14.54*** | -0.1 |
| | | | |
| 20 Mar 2002: Tribunal conditionally approves transaction | Day of event | -2.92 | -0.04 |
| 20 Mar 2002: Tribunal | 1 day after event | -5.42** | -0.05 |

| | | | |
|---|---|---|---|
| conditionally approves transaction | | | |
| 20 Mar 2002: Tribunal conditionally approves transaction | 3 days after event | -5.21*** | -0.04 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

On 20 March 2002 the Tribunal approved the merger conditionally, imposing a series of conditions on Astral in order to address the concerns that were raised by the Commission and the interveners in the case. Separate conditions were imposed on Astral with regards to the broiler industry and the animal feed industry. With regards to the broiler industry, the Tribunal imposed a series of behavioural conditions that was mainly aimed at ensuring that Astral would not foreclose any independent customer of day-old chicks and/or be in a position to discriminate in its conditions of supply in relation to price, discounts or rebates offered between entities in its own group and its independent customers. Structural conditions were imposed in the animal feed industry by compelling Astral to divest itself of its entire shareholding in Nutrex to an independent purchaser so as to ensure that competition in the horizontal overlap would remain intact and that an effective competitor in KZN would not be removed.

Our results indicate that in the days following the Tribunal's decision to conditionally approve the proposed transaction that there was a highly significant negative abnormal return for Astral's share price. The negative abnormal returns may have been a result of the market's anticipation that the Tribunal may have approved the merger unconditionally or alternatively that the conditions that were imposed by the Tribunal would have a negative impact on the anticipated long-term profitability of Astral.

In conclusion, the results for Astral show highly significant results across all three events that were included in our analysis. The signs on the cumulative abnormal returns were also expected across all three events. It is also evident that the market reacted fairly quickly in responding to these events.

***Competitor reactions to the proposed transaction***

We also analysed the share price responses of Astral's listed competitors in the poultry market to the three events as analysed and described above. Firstly, we assessed the response of Astral's main competitor in the poultry market, Rainbow Chickens, to the acquisition of Natchix by Astral. It is expected that shareholders of Rainbow Chickens may have reacted negatively to the SENS announcement and conditional approval by the Tribunal of the proposed transaction as it would have enabled Astral to become a stronger competitor to Rainbow Chickens and potentially erode its profitability in future. On the other hand, it is expected that the shareholders of Rainbow Chickens would have reacted positively to the news of the Commission's decision to prohibit the merger.

Our results (see Appendix A) show that surprisingly, there are no significant abnormal returns of Rainbow's share price following the SENS announcement by Astral of its intention to acquire Natchix. A similar result is also obtained for the Tribunal's decision to approve the proposed transaction with behavioural and structural conditions. However, our results show that three days after the Commission's decision to prohibit the merger, the share price of Rainbow Chickens showed a significant positive abnormal return (6%) as expected.

We performed a similar analysis for Sovereign Foods, a listed competitor of Astral at the time of the transaction. It is important to note at the outset though that Sovereign Foods is not a vertically integrated poultry firm as Rainbow Chickens and Astral and that it also has a significantly smaller market share than those two firms. It may therefore be expected that the

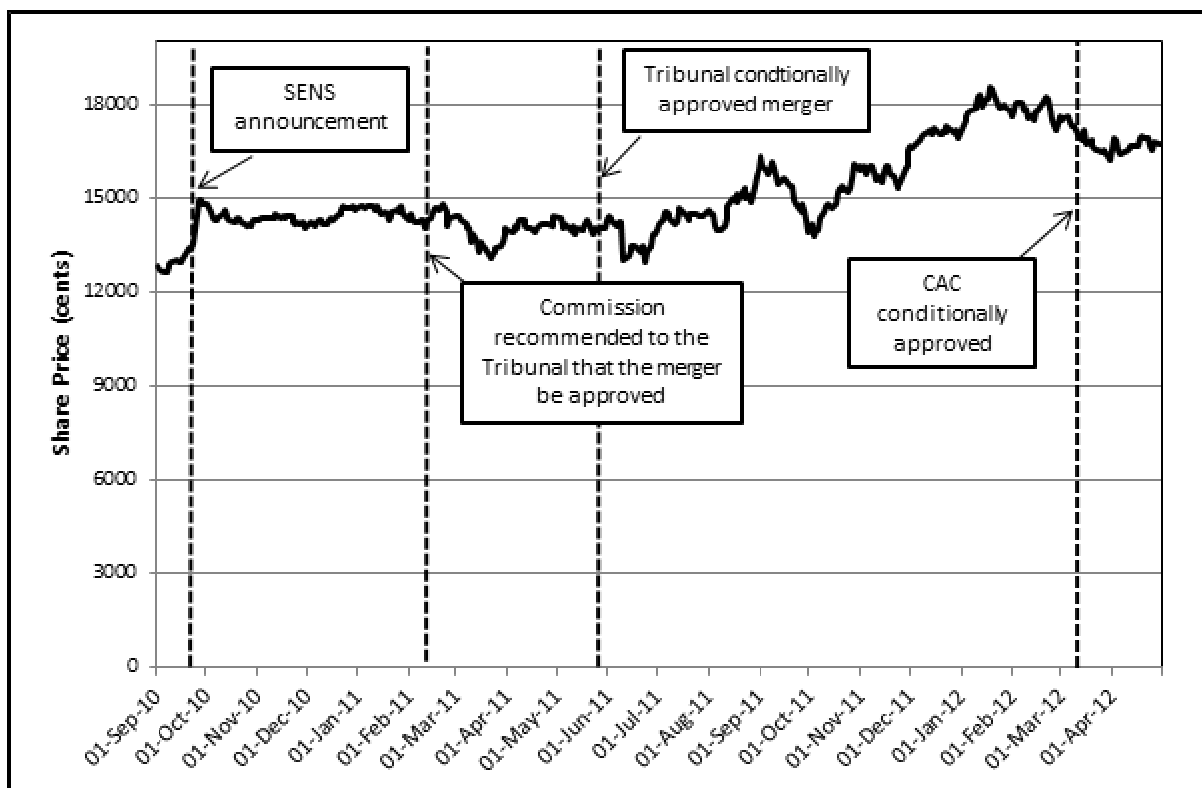
share price movements of Sovereign in response to the merger between Astral and Natchix may not be very significant, as it is not a close competitor to Astral.

Our results show that there are no significant abnormal returns on the Sovereign share price following the SENS announcement and the Commission's decision to prohibit the merger in December 2001. However, it is interesting to note that one day after the Tribunal's decision to conditionally approve the merger there was a significant positive abnormal return for the Sovereign share price, as well as a highly significant positive abnormal return three days after the Tribunal's decision. Given that the signs are not as expected, it may be evidence that the shareholders of Sovereign viewed the conditions imposed by the Tribunal (both structural and behavioural) as potentially beneficial to the smaller competitor in the market.

### 4.4. Wal-Mart/Massmart merger

In assessing the effects of particular events on the abnormal returns to Massmart Holdings Ltd ("Massmart") using share price market data (see Figure 5), we use four key events: the SENS announcement of the proposed acquisition of Massmart by Wal-Mart Stores Inc. ("Wal-Mart"); the Commission's decision to recommend an unconditional approval to the Tribunal; the Tribunal's decision to approve the large merger with behavioural conditions relating to public interest concerns; and the CAC's decision to conditionally approve the transaction with revised behavioural conditions. Table 5 below shows the estimation results from the four chosen events, and provides a description of the event, the event windows as well as the corresponding t-statistic and CAR value for the various event windows.

**Figure 5: Massmart Share Price: September 2010 to April 2012**



***Event Analysis***

On 29 November 2010 it was announced in a SENS release by Massmart that Wal-Mart intended to make an offer to acquire 51% of Massmart's listed stock capital in order to become the majority shareholder of Massmart.[11] Our results indicate that the market immediately responded positively to the news. Wal-Mart is the largest retailer in the world in terms of scale and size of its operations as it has over 11 000 retail outlets in 27 countries. Massmart is a wholesaler and retailer of general merchandise, liquor, home improvement equipment and basic food in South Africa. On the day of the SENS merger announcement, there was a positive and statistically significant abnormal return for the Massmart shares. In the days following the announcement it is interesting to note that there were also highly significant positive abnormal returns for the Massmart shares. The results suggest that the market reacted very positively to the news of Wal-Mart's entry into the South African retail and wholesale market and that Massmart's shareholders anticipated a positive return on their shareholding and the firm's future profitability as a result of the proposed transaction.

In February 2011 the Commission finalised its investigation of the proposed merger and recommended to the Tribunal that the merger be approved without conditions. The Commission found that the merger was not likely to lead to a substantial lessening or prevention of competition in the South African retail market. The Commission considered the public interest issues arising from the merger, specifically the effect on employment; the effect on a particular industrial sector or region; and the effect of the merger on small business suppliers. Based on evidence gathered during its investigation, the Commission found that the merger was unlikely to result in any significant impact on the public interest concerns and therefore recommended to the Tribunal on 14 February 2011 that the proposed transaction be approved without conditions. Our results for this decision indicate that in the days following the event there was a highly significant positive abnormal return on Massmart's shares as the market reacted positively to the news of the Commission's recommendation to the Tribunal.

**Table 5: Summary of results for Massmart using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | Day of event | 9.96** | 0.10 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | 1 day after event | 10.99*** | 0.09 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart (29 Nov 2010) | 3 days after event | 13.35*** | 0.09 |
| | | | |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | Day of event | 2.74 | 0.01 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 1 day after event | 9.08*** | 0.04 |
| 14 Feb 2011: Commission recommends unconditional | 3 days after event | 11.77*** | 0.04 |

[11] Competition Tribunal case number: 73/LM/Nov10.

| approval to Tribunal | | | |
|---|---|---|---|
| | | | |
| 31 May 2011: Tribunal conditionally approves transaction | Day of event | 1.40 | 0.01 |
| 31 May 2011: Tribunal conditionally approves transaction | 1 day after event | 5.03** | 0.04 |
| 31 May 2011: Tribunal conditionally approves transaction | 3 days after event | 4.76** | 0.03 |
| | | | |
| 9 Mar 2012: CAC conditionally approves transaction | Day of event | -0.71 | -0.01 |
| 9 Mar 2012: CAC conditionally approves transaction | 1 day after event | -5.29** | -0.03 |
| 9 Mar 2012: CAC conditionally approves transaction | 3 days after event | -4.37*** | -0.02 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

On 31 May 2011 the Tribunal conditionally approved the merger. The Tribunal agreed with the Commission's findings that the merger did not raise any competition concerns as Wal-Mart did not compete with Massmart in South Africa. The Tribunal did however acknowledge that the merger raised several public interest concerns relating to employment and the potential displacement of small businesses in markets underserved by large retailers. It should also be noted that during the merger investigation and in the run-up to the Tribunal hearing that government departments commissioned a study to evaluate the public interest implications of the merger. These departments became interveners at the Tribunal hearing as they were apprehensive that the merged entity would switch some of its procurement away from domestic suppliers to imports post-merger and that the knock-on effect would be an adverse impact on domestic employment.

During the hearing the merging parties offered various undertakings which they agreed could be imposed as conditions for the approval of the merger that would alleviate the public interest concerns identified by the Tribunal. The Tribunal considered the undertakings and converted them into behavioural conditions. The merger was approved conditionally on 31 May 2011. Our results indicate that in the days following the Tribunal's decision that Massmart's shares experienced a significant positive abnormal return. This may be an indication that the market had anticipated that the Tribunal may not approve the deal, given the concerns that were raised by various government departments on public interest concerns with the proposed transaction.

However, the Tribunal's decision was met with resistance from organised labour and government departments as it was of the view that the imposed conditions did not sufficiently address the public interest concerns with the proposed transaction. This led to the matter being brought to the CAC for adjudication on the grounds that the effect of the merger on employment and local procurement had not been adequately addressed through the proposed remedies. After the CAC had considered the studies that were submitted by the merging parties and the interveners, it ordered that the Massmart Supplier Development Fund should be established as the most appropriate mechanism through which to empower local suppliers to participate in the Massmart supply chain. The CAC ordered that a maximum amount of R200 million be allocated by Massmart over a 5 year period.

Our results indicate that the market reacted negatively to the news of the CAC's imposition of revised conditions on 9 March 2012. On the day of the decision there was a negative abnormal return on Massmart's shares, albeit not statistically significant. However, in the days following the decision it is evident that there was a highly significant negative abnormal

return on Massmart's shares as shareholders digested the news of the increase of the funds that the merged firm had to make available for the development of local suppliers.

The results for Massmart show highly significant results across all four events that were included in our analysis. The signs on the cumulative abnormal returns were also generally expected, apart from the positive abnormal returns experienced after the Tribunal's decision to approve the merger with behavioural conditions following the Commission's earlier decision to recommend an unconditional approval of the transaction. However, as discussed above, it is likely that the market reacted positively to the Tribunal outcome as it may have anticipated a negative ruling given the intervention by organised labour and government departments in the merger proceedings. It is also evident again that the market reacted fairly quickly in responding to these events.

***Competitor reactions to the proposed transaction***

We analysed the share price responses of Massmart's listed competitors in the wholesale and retail markets for food and consumable goods to the four events as analysed and described above. We assessed the share price responses of Massmart's main listed competitors in the form of Pick 'n Pay, Shoprite and Spar to the acquisition of Massmart by Wal-Mart. It is expected that shareholders of these firms may have reacted negatively to the SENS announcement and Commission decision to recommend an approval of the proposed transaction as it would have enabled Massmart to become a stronger competitor to them in the retail market for food where it previously had a very small market share. The transaction may therefore have potentially eroded the future profitability of these competitors.

On the other hand, it is expected that the shareholders of these competitors would have reacted neutrally or positively to the news of the conditional approval by the Tribunal and the CAC as the imposed behavioural conditions may have impeded Massmart's ability to become an effective competitor to them in the retail food market in the short-term. It should also be noted that given the time lapse between the Commission's recommendation, the Tribunal's decision and the final CAC decision that the negative effect of the approval would already have been factored in by the market by the time the CAC made his final decision in March 2002.

Our results for Pick 'n Pay (see Appendix A) show that there was no significant abnormal return for its shares in reaction to the SENS announcement of Wal-Mart's intention to acquire the majority shareholding in Massmart. However, in reaction to the Commission's recommendation to the Tribunal to approve the merger without conditions, there is a highly significant positive abnormal return (4%) on Pick 'n Pay's shares one day after the event as well as three days after the event (7%). This result is somewhat surprising as one would have expected Pick 'n Pay's shareholders to react negatively to the news of Wal-Mart's plans to expand Massmart's retail food offering. On the other hand, it may be plausible that shareholders viewed the approval of the entry of a large foreign retailer into South Africa as positive news for future investment and growth in the sector. Similarly, Pick 'n Pay's shares also show a significant positive abnormal return in reaction to both the Tribunal's decision and the CAC decision.

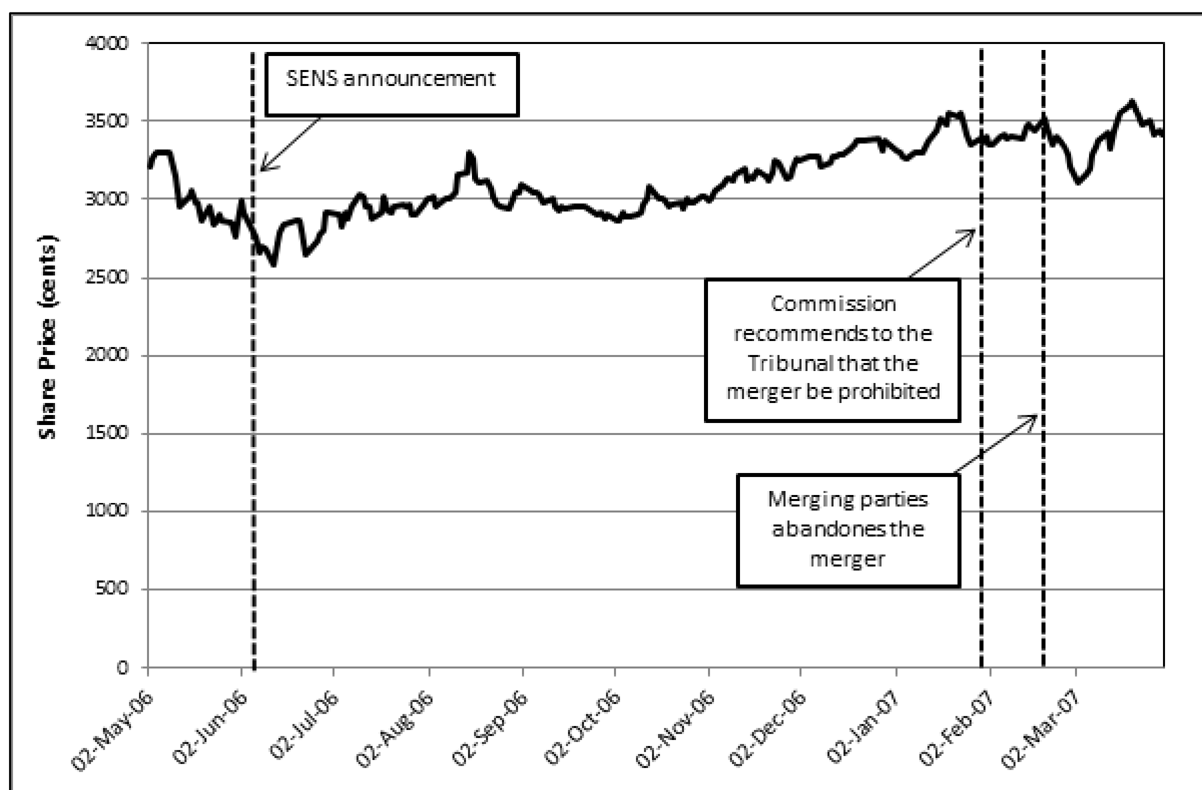
With regards to our results for Shoprite (Appendix A), it is interesting to note that the only event for which there are significant abnormal returns is the Commission's recommendation to the Tribunal. One day after the recommendation Shoprite's shares show a significant abnormal positive return of 3%, whilst three days after the event there was a highly significant positive abnormal return of 5%. Again, although this result is somewhat surprising, it may be an indication that overall investor sentiment in the retail food sector was positive after the Commission's decision.

Finally, we also analysed the effect of the Wal-Mart/Massmart transaction on the Spar Group. Out of the three listed competitors that we analyse in this section, Spar is the only firm which shows a significant abnormal return in response to the SENS announcement of the merger, albeit that the signs are positive and not what would be expected. The share price of Spar also shows significant positive abnormal returns in response to the Commission's decision to recommend an approval three days after the event (4%) and one day after the Tribunal's decision (2%). However, there is a significant negative abnormal return on Spar's shares three days after the Tribunal's decision (1%) and no significant abnormal returns in response to the CAC's decision.

### 4.5. Pick 'n Pay/Fruit & Veg City

In order to analyse the effects of particular events on the abnormal returns to Pick 'n Pay Holdings Ltd ("Pick 'n Pay") using share price market data (see Figure 6), we use two key events: the SENS announcement of the proposed acquisition of the entire shareholding of Fruit & Veg City by Pick 'n Pay and the Commission's decision to recommend to the Tribunal that the proposed transaction should be prohibited.[12] Table 6 below shows the estimation results from the two chosen events, and provides a description of the event, the event windows as well as the corresponding t-statistic and CAR value for the various event windows.

**Figure 6: Pick 'n Pay Share Price: May 2006 to March 2007**




[12] Note that we were unable to include Pick 'n Pay's SENS announcement on 20 February 2007 of its decision to abandon the proposed transaction after the Commission's decision to recommend a prohibition to the Tribunal on 31 January 2007 due to a lack of a sufficient number of days for an estimation window to avoid an overlap between these two events.

***Event analysis***

On 29 May 2006 Pick ‘n Pay announced its intention to acquire the entire issued share capital of Fruit & Veg City, a retailer specialising in the selling of fresh fruits and vegetables in stores nationwide.[13] Somewhat surprisingly our results show that on the day of the announcement there was a negative abnormal return on Pick ‘n Pay’s shares, albeit not statistically significant. Hoverer, in the days following the announcement Pick ‘n Pay’s shares show a highly significant positive abnormal return as the market reacted positively to the news of the proposed acquisition by Pick ‘n Pay of Fruit & Veg City, one of its competitors in the retail sales of fresh fruit and vegetable products.

**Table 6: Summary of results for Pick ‘n Pay using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 29 May 2006: SENS announcement of PnP’s intention to acquire the entire issued share capital in Fruit & Veg City | Day of event | -2,36 | -0,04 |
| 29 May 2006: SENS announcement of PnP’s intention to acquire the entire issued share capital in Fruit & Veg City | 1 day after event | 2,92** | 0.04 |
| 29 May 2006: SENS announcement of PnP’s intention to acquire the entire issued share capital in Fruit & Veg City | 3 days after event | 8,51*** | 0.08 |
| | | | |
| 31 Jan 2007: Commission recommends prohibition of transaction | Day of event | -0.21 | 0.00 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 1 day after event | -3.25** | 0.02 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 3 days after event | -2.24** | -0.01 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

Following a lengthy investigation by the Commission, it decided on 31 January 2007 to recommend to the Tribunal that the proposed large merger should be prohibited. This prompted the merging parties to withdraw their merger application on 20 February 2007 before the Tribunal hearing into the matter commenced for final decision.

The Commission’s decision to prohibit the proposed merger was based on evidence that the merger would result in the removal of an effective competitor in the retail sector for fresh foods and weaken future competition in this market. The factual evidence revealed that at a national level the combined market share of the merged parties in the retail fruit and vegetable market would be close to 60% Evidence also revealed that the merged parties would have significant market share, exceeding 75%, in various local markets.

Fruit & Veg City grew from its first store opened in Cape Town in 1993 to approximately 80 stores country-wide by 2007. It started embarking on diversifying its product ranges by including other fresh food departments such as a butchery, a dairy and a bakery section. Fruit & Veg City was therefore viewed by the Commission as an increasingly effective competitor to Pick ‘n Pay and the other major retailers and its growing product offering would

[13] Competition Commission case number: 2006Aug2454.

result in it being even more effective on a wider product range in future. The Commission concluded that the acquisition of Fruit & Veg City by Pick ‘n Pay will therefore not just limit current competition in the retail market, but will likely substantially prevent or lessen competition in the relevant market.

Our results show that the market immediately reacted negatively to the news of the Commission’s recommendation to the Tribunal that the proposed acquisition should be prohibited. On the day of the decision our analysis shows that Pick ‘n Pay experienced a negative abnormal return on its shares. In the days immediately following the recommendation by the Commission, there is a significant negative abnormal return on Pick ‘n Pay’s shares as its shareholders came to terms with the fact that the proposed merger may not go through, which would result in potentially significant losses regarding the future profitability of Pick ‘n Pay.

The results for Pick ‘n Pay indicates significant results across both events that were included in our analysis. The signs on the cumulative abnormal returns were also expected across both events. It is also evident from this case study that the market reacted fairly quickly in responding to these events.

***Competitor reactions to the proposed transaction***

We analysed the share price responses of Pick ‘n Pay’s listed competitors in the retail market for food and consumable goods to the two events as analysed and described above. In particular, we assessed the share price responses of Massmart, Spar and Shoprite to the proposed acquisition of Fruit & Veg City by Pick ‘n Pay. It is expected that shareholders of these firms may have reacted negatively to the SENS announcement as it would have enabled Pick ‘n Pay to become a stronger competitor to them in the retail market for food, specifically with regards to fruit and vegetables. The transaction may therefore have potentially eroded the future profitability of these competitors.

On the other hand, it is expected that the shareholders of these competitors would have reacted positively to the news of the Commission’s decision to prohibit the proposed merger as it would have implied that Pick ‘n Pay would not have been able to increase its market share and profitability in comparison with its competitors in the short- to medium term.

Our results are shown in Appendix A. For Spar, our analysis shows that one day after the SENS announcement there was a significant negative abnormal return on its shares which is as expected. However, it’s interesting to note that three days after the Commission’s decision to recommend to the Tribunal that the merger should be prohibited that there was a significant negative abnormal return on Spar’s shares, which is not expected.

The results for Shoprite on the other hand is as expected, with significant negative abnormal returns one day after the SENS announcement (10%) and three days after the event (1%). In response to the Commission’s decision, the results for Shoprite is also as expected with a significant positive abnormal return both one day and three days after the event.

Finally, we also analysed the response of Massmart’s share price to the proposed merger between Pick ‘n Pay and Fruit & Veg City. Somewhat surprisingly, our results indicate that there was a significant positive abnormal return for Massmart’s share in response to the SENS announcement which is not as expected. Further, there was a significant negative abnormal return on Massmart’s share three days after the Commission’s decision which is also not as expected. This may imply that the shareholders of Massmart viewed the transaction as competitively neutral, given that at the time of the merger Massmart had a

very small market share in the retail of food products market in comparison with the likes of Shoprite, Spar and Pick ‘n Pay.

## 5. Conclusion

Section 12 of the Competition Act provides the South African competition authorities with the authority to use merger control as one of the means of achieving the goals as set out by the preamble of the Act. In addition to assessing whether a merger results in a substantial prevention or lessening of competition, the Competition Act makes provision for public interest considerations. This allows competition authorities to assess public interest matters such as employment, the ability of firms owned by historically disadvantaged persons to compete, and the international competitiveness of South African firms.

Using selected mergers from the food and agro-processing industry, we undertook an event study to assess the impact of various events, such as the SENS announcement of the merger and more importantly the merger control decisions by South African competition authorities, on firms’ stock market values. Overall, across the different competition authorities’ decisions, our results indicated that it generally takes time for the market to react to key events identified in our analysis. For example, in most cases we saw that the results for the event day (decision) were not statistically significant. However, our results for one day after the event and three days after the event showed statistically significant results across decisions for all the mergers. We acknowledge that the sample used in this paper was limited and therefore we cannot strongly conclude on the results. On first glance our results indicate that merger control in the food and agro-processing sector for the most part is effective. The results overall for the study were as expected in terms of whether we anticipated positive or negative abnormal returns following an event for a firm.

More specifically, we found that after the SENS announcement; the cumulative abnormal returns were positive across our sample, save for Aspen. The negative abnormal return for Aspen was likely due to the markets perception about the proposed transaction given the Tribunal’s conditional approval decision in the Nestlé/Pfizer transaction. However, following the Commission’s recommendation to approve the Aspen/Pfizer merger and Wal-Mart/Massmart merger, cumulative abnormal returns were positive. This indicates that the market reacted enthusiastically which is likely given that the mergers were not associated with anti-competitive effects and/or public interest concerns according to the Commission. Similarly when the Tribunal approved the Aspen/Pfizer transaction, Aspen’s abnormal returns were positive.

On the other hand, where the Commission decided to conditionally approve the Oceana/Foodcorp transaction, and prohibit the Astral/Natchix transaction, both Oceana and Astral experienced negative abnormal returns. The structural remedy sought by the Commission in the Oceana/Foodcorp merger and the prohibition of the Astral/Natchix transactions, meant that there were significant competition concerns in those respective markets. Therefore the market was likely to react negatively. Similarly, where the Commission recommended the prohibition of the Pick ‘n Pay/Fruit n Veg merger, Pick ‘n Pay’s abnormal returns were also negative.

When assessing the impact of the Tribunal’s decisions, we found that the Tribunal’s conditional approval of the Oceana/Foodcorp and Astral/Natchix saw the respective firms abnormal returns decrease. However, the Tribunal’s conditional approval of the Wal-Mart/Massmart merger led to Massmart’s share price increasing abnormally. The negative abnormal returns are likely to due to the fact that Oceana’s conditions were purely structural, whilst Astral’s conditions were both structural and behavioural based. On the other hand Massmart’s conditional approval was based on purely public interest remedies which involved the subsidy of a Supplier Development Fund.

Finally, following the CAC's conditional approval of the Oceana/Foodcorp and Wal-Mart/Massmart transaction led to negative abnormal returns for the respective firms. This result was expected for the Oceana/Foodcorp transaction given that the market reacted negatively to the structural remedies imposed by the Commission and the Tribunal. However the negative abnormal returns for Massmart are complicated to interpret given that the conditions ultimately imposed by the CAC were similar to the conditions imposed by the Tribunal. However, the CAC increased the subsidy value to be paid by the merging parties into the Supplier Development Fund and hence this could be a possible reason why the share price of Massmart decreased abnormally following the CAC decision.

Future work in this area will expand the sample of case studies by also including a variety of mergers from different priority sectors within the Commission. By increasing our sample it will allow us to develop the methodology further by incorporating cumulative average abnormal returns ("CAAR") across events for various merger decisions and it will allow for firmer conclusions and recommendations to be made on the effectiveness of merger control in South Africa.

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## APPENDIX A: RESULTS OF COMPETITOR ANALYSIS

### 1. Aspen/Pfizer merger

**Table 1: Summary of results for Adcock Ingram using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 18 Apr 2013: SENS Announcement of Aspen's intention to acquire Pfizer brands | Day of event | -1.87 | -0.02 |
| 18 Apr 2013: SENS Announcement of Aspen's intention to acquire Pfizer brands | 1 day after event | 1.55 | 0.02 |
| 18 Apr 2013: SENS Announcement of Aspen's intention to acquire Pfizer brands | 3 days after event | 2.68** | 0.02 |
| | | | |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | Day of event | -1.80 | -0.02 |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | 1 day after event | 0.10 | 0.001 |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | 3 days after event | 0.29 | 0.002 |
| | | | |
| 18 Dec 2013: Tribunal approves merger with no conditions | Day of event | 0.09 | 0 |
| 18 Dec 2013: Tribunal approves merger with no conditions | 1 day after event | 3.47** | 0.02 |
| 18 Dec 2013: Tribunal approves merger with no conditions | 3 days after event | 5.22*** | 0.03 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

**Table 2: Summary of results for Tiger Brands using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 18 Apr 2013: SENS Announcement of Aspen's intention to acquire Pfizer brands | Day of event | -0.98 | -0.01 |
| 18 Apr 2013: SENS Announcement of Aspen's intention to acquire Pfizer brands | 1 day after event | -3.46** | -0.04 |
| 18 Apr 2013: SENS Announcement of Aspen's intention to acquire Pfizer brands | 3 days after event | -3.93*** | -0.03 |
| | | | |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | Day of event | 0.09 | 0 |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | 1 day after event | -4.72** | -0.06 |
| 8 Aug 2013: Commission recommendation to the Tribunal to approve unconditionally | 3 days after event | -6.17*** | -0.06 |
| | | | |
| 18 Dec 2013: Tribunal approves merger with no conditions | Day of event | -0.52 | 0 |
| 18 Dec 2013: Tribunal approves merger with no conditions | 1 day after event | 5.32** | 0.04 |
| 18 Dec 2013: Tribunal approves merger with no conditions | 3 days after event | 4.64*** | 0.03 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

## 2. Oceana/Foodcorp merger

**Table 3: Summary of results for Brimstone Investment Corporation using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 4 Jun 2013: SENS Announcement of Oceana's intention to acquire the fishing division of Foodcorp | Day of event | -0.33 | -0.01 |
| 4 Jun 2013: SENS Announcement of Oceana's intention to acquire the fishing division of Foodcorp | 1 day after event | 3.24** | 0.06 |
| 4 Jun 2013: SENS Announcement of Oceana's intention to acquire the fishing division of Foodcorp | 3 days after event | 3.88*** | 0.05 |
| | | | |
| 29 Oct 2013: Commission conditionally approves transaction | Day of event | 0.06 | 0.0010 |
| 29 Oct 2013: Commission conditionally approves transaction | 1 day after event | 0.03 | 0.0004 |
| 29 Oct 2013: Commission conditionally approves transaction | 3 days after event | 0.02 | 0.0003 |
| | | | |
| 15 Apr 2014: Tribunal conditionally approves transaction | Day of event | 4.87* | 0.07 |
| 15 Apr 2014: Tribunal conditionally approves transaction | 1 day after event | 5.49** | 0.07 |
| 15 Apr 2014: Tribunal conditionally approves transaction | 3 days after event | 7.81*** | 0.08 |
| | | | |
| 19 Dec 2014: CAC conditionally approves transaction | Day of event | -0.39 | -0.003 |
| 19 Dec 2014: CAC conditionally approves transaction | 1 day after event | -0.27 | -0.001 |
| 19 Dec 2014: CAC conditionally approves transaction | 3 days after event | 10.47*** | 0.045 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

## 3. Astral/Natchix merger

**Table 4: Summary of results for Rainbow Chickens using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | Day of event | 1.44 | 0.03 |
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | 1 day after event | 1.18 | 0.02 |
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | 3 days after event | 0.37 | 0.00 |
| | | | |

| | | | |
|---|---|---|---|
| 6 Dec 2001: Commission prohibits transaction | Day of event | -2.14 | -0.04 |
| 6 Dec 2001: Commission prohibits transaction | 1 day after event | -0.98 | -0.02 |
| 6 Dec 2001: Commission prohibits transaction | 3 days after event | 5.04*** | 0.06 |
| | | | |
| 20 Mar 2002: Tribunal conditionally approves transaction | Day of event | -0.35 | -0.01 |
| 20 Mar 2002: Tribunal conditionally approves transaction | 1 day after event | -0.85 | -0.02 |
| 20 Mar 2002: Tribunal conditionally approves transaction | 3 days after event | -0.46 | -0.01 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

**Table 5: Summary of results for Sovereign Foods using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | Day of event | -0.30 | 0.00 |
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | 1 day after event | -0.26 | 0.00 |
| 8 Aug 2001: SENS Announcement of Astral's intention to acquire all of the minority shares in Natchix | 3 days after event | -0.14 | 0.00 |
| | | | |
| 6 Dec 2001: Commission prohibits transaction | Day of event | -0.30 | -0.01 |
| 6 Dec 2001: Commission prohibits transaction | 1 day after event | -0.45 | -0.01 |
| 6 Dec 2001: Commission prohibits transaction | 3 days after event | -0.38 | -0.01 |
| | | | |
| 20 Mar 2002: Tribunal conditionally approves transaction | Day of event | 0.97 | 0.02 |
| 20 Mar 2002: Tribunal conditionally approves transaction | 1 day after event | 2.10* | 0.03 |
| 20 Mar 2002: Tribunal conditionally approves transaction | 3 days after event | 3.75*** | 0.04 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

## 4. Wal-Mart/Massmart merger

### Table 6: Summary of results for Pick 'n Pay using the market model

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | Day of event | 0.02 | 0.00 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | 1 day after event | -1.05 | -0.01 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart (29 Nov 2010) | 3 days after event | 1.45 | 0.01 |
| | | | |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | Day of event | 1.61 | 0.01 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 1 day after event | 6.32*** | 0.04 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 3 days after event | 15.77*** | 0.07 |
| | | | |
| 31 May 2011: Tribunal conditionally approves transaction | Day of event | 1.40 | 0.01 |
| 31 May 2011: Tribunal conditionally approves transaction | 1 day after event | 5.03** | 0.04 |
| 31 May 2011: Tribunal conditionally approves transaction | 3 days after event | 4.76*** | 0.03 |
| | | | |
| 9 Mar 2012: CAC conditionally approves transaction | Day of event | 1.03 | 0.01 |
| 9 Mar 2012: CAC conditionally approves transaction | 1 day after event | 4.71** | 0.03 |
| 9 Mar 2012: CAC conditionally approves transaction | 3 days after event | 7.27*** | 0.03 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

### Table 7: Summary of results for Shoprite using the market model

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | Day of event | -1.21 | -0.01 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | 1 day after event | -0.29 | 0.00 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% | 3 days after event | -1.24 | -0.01 |

| | | | |
|---|---|---|---|
| shareholding in Massmart (29 Nov 2010) | | | |
| | | | |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | Day of event | 2.03 | 0.02 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 1 day after event | 4.22** | 0.03 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 3 days after event | 9.41*** | 0.05 |
| | | | |
| 31 May 2011: Tribunal conditionally approves transaction | Day of event | 0.27 | 0.00 |
| 31 May 2011: Tribunal conditionally approves transaction | 1 day after event | -0.09 | 0.00 |
| 31 May 2011: Tribunal conditionally approves transaction | 3 days after event | 0.56 | 0.00 |
| | | | |
| 9 Mar 2012: CAC conditionally approves transaction | Day of event | 2.30 | 0.02 |
| 9 Mar 2012: CAC conditionally approves transaction | 1 day after event | 0.77 | 0.00 |
| 9 Mar 2012: CAC conditionally approves transaction | 3 days after event | -0.31 | 0.00 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

**Table 8: Summary of results for Spar using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | Day of event | 0.62 | 0.00 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart | 1 day after event | 3.50** | 0.02 |
| 27 Sep 2010: SENS announcement of Wal-Mart's intention to acquire a 51% shareholding in Massmart (29 Nov 2010) | 3 days after event | 7.15*** | 0.03 |
| | | | |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | Day of event | -0.45 | 0.00 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 1 day after event | 1.71 | 0.01 |
| 14 Feb 2011: Commission recommends unconditional approval to Tribunal | 3 days after event | 6.82*** | 0.04 |
| | | | |
| 31 May 2011: Tribunal conditionally approves transaction | Day of event | 1.21 | 0.01 |
| 31 May 2011: Tribunal conditionally approves transaction | 1 day after event | 2.26* | 0.02 |

| | | | |
|---|---|---|---|
| 31 May 2011: Tribunal conditionally approves transaction | 3 days after event | -1.51 | -0.01 |
| | | | |
| 9 Mar 2012: CAC conditionally approves transaction | Day of event | 0.79 | 0.01 |
| 9 Mar 2012: CAC conditionally approves transaction | 1 day after event | 1.26 | 0.01 |
| 9 Mar 2012: CAC conditionally approves transaction | 3 days after event | -1.09 | -0.01 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

## 5. Pick 'n Pay/Fruit & Veg merger

### Table 9: Summary of results for Spar using the market model

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | Day of event | -1.62 | -0.02 |
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | 1 day after event | -2.82** | -0.04 |
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | 3 days after event | -1.42 | -0.01 |
| | | | |
| 31 Jan 2007: Commission recommends prohibition of transaction | Day of event | -0.01 | 0.00 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 1 day after event | 0.96 | 0.01 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 3 days after event | -3.28** | -0.03 |

**Significant at 10%, ** significant at 5%, *** significant at 1%*

### Table 10: Summary of results for Shoprite using the market model

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | Day of event | -2.62 | -0.04 |
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | 1 day after event | -8.50*** | -0.10 |
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | 3 days after event | -1.51* | -0.01 |
| | | | |
| 31 Jan 2007: Commission | Day of event | -0.59 | -0.01 |

| | | | |
|---|---|---|---|
| recommends prohibition of transaction | | | |
| 31 Jan 2007: Commission recommends prohibition of transaction | 1 day after event | 1.85* | 0.01 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 3 days after event | 1.94* | 0.01 |

*Significant at 10%, ** significant at 5%, *** significant at 1%*

**Table 11: Summary of results for Massmart using the market model**

| Event description | Event period | t-statistic | CAR |
|---|---|---|---|
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | Day of event | -0.01 | 0.00 |
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | 1 day after event | 2.55* | 0.03 |
| 29 May 2006: SENS announcement of PnP's intention to acquire the entire issued share capital in Fruit & Veg City | 3 days after event | 9.49*** | 0.07 |
| | | | |
| 31 Jan 2007: Commission recommends prohibition of transaction | Day of event | 0.61 | 0.01 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 1 day after event | -0.86 | -0.01 |
| 31 Jan 2007: Commission recommends prohibition of transaction | 3 days after event | -1.76* | -0.01 |

*Significant at 10%, ** significant at 5%, *** significant at 1%*