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# Intolerance, xenophobia and cross-border supermarket groups' operations in South Africa<sup>1</sup>

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## ABSTRACT

We examine whether there is a relationship between xenophobic attacks and the stock market value of supermarket groups in South Africa. We perform an event study analysis on significant incidents of violent attacks targeted at shops owned by foreigners in South Africa for the period 2006–2017. Using an event study approach with an augmented market model, we uncover evidence that the stock market perceives these events as bad news instead of good news for supermarkets having operations in South Africa and other parts of Africa, as they realise a decline in abnormal returns of about 2.57 percent. We interpret our findings as economic costs of xenophobic attacks emanating from the Johannesburg Stock Exchange. Our analysis attempts to shed light on the peace-building challenges and the potentially grim implications of xenophobia on economic activity in South Africa.

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Xenophobia; cross-border business; supermarket groups; South Africa

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## 1. Introduction

That incidences of violence affect economic outcomes is well known.<sup>2</sup> What is less known is how xenophobia affects operations of cross-border supermarket groups. The current literature supports the idea that acts of political instability, violence and terrorism affect economic operations both negatively and positively (Abadie and Gardeazabal 2003, 113; Guidolin and La Ferrara 2007, 1992 and Amodio and Di Maio 2018, 2559). We use data from the Xenowatch Database to examine the link between incidences of xenophobia and the performance of supermarket groups in South Africa.

Xenophobia have gained attention in literature owing to a surge in the frequency and intensity of xenophobic attacks in recent years most notably in South Africa. It is widely argued that political instability is counterproductive and creates more losers than winners due to the uncertainty generated by war.<sup>3</sup> To the extent that some proponents of protectionism propose benefits of limiting migrants into the country, food supply chains with cross-border operations experience economic losses from xenophobic attacks targeted at their shops. Notwithstanding the fact that this topic has attracted the attention of advocacy groups, there is scant work that attempts to quantify the economic costs of xenophobia.

We seek to test if incidents of violent conflict driven by intolerance and hostility may lead to substantial economic losses to firms with cross-border operations. We focus on the South African persistent xenophobic attacks and on one of the sectors mostly affected by these attacks, retail sector, to explore the stock market reaction to such events. The South African xenophobic attacks are a fascinating story for at least two reasons. First, it is a typical targeted violent attack, as both violence

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against foreign residents and foreign-owned businesses, respectively, (driven mostly by intolerance and hostility). Second, and most important for methodological design, the South African xenophobic attacks have been significant over the years and increasing in frequency and intensity. This enables us to design an event study model to examine the stock market reaction to multiple exogenous xenophobic attack-related events. Confining our analysis to the retail sector is important because, unlike the financial services sector, which is located mostly onshore, the activities of supermarket groups have cross-border operations located in areas very much at the heart of violent attacks. A priori, one would therefore expect the (negative) impact of xenophobic attacks to be maximal for these firms.

## 2. Background

### 2.1 Xenophobia and business activity in South Africa

Following its independence from Britain in 1961, South Africa has experienced a long and cruel history of xenophobic attacks. After majority rule in 1994, contrary to expectations, the incidence of xenophobia has been increasing. Xenophobic violence – acts of collective violence targeted at foreign nationals or outsiders due to their origins – is a perennial feature of post-apartheid South Africa. Since 1994, tens of thousands of people have been harassed, attacked, killed or displaced because of who they are and where they are from. This includes murders, assaults, looting, robberies, property damage, mass displacement and threats.<sup>4</sup> Throughout the years experiencing xenophobic attacks, violent attacks have been aimed at foreign nationals and foreign-owned and foreign-operated businesses.

### 2.2 The growth of supermarkets in South Africa

The number of supermarkets has been growing in South Africa beginning in the 1990s (D'Haese and Van Huylenbroeck 2005, 97; Bokolo 2018, 80). This growth has been driven largely through foreign direct investments (FDI) by major supermarket groups listed on Johannesburg Stock Exchange (JSE) (Shoprite, Pick n Pay, SPAR, Woolworths) and non-JSE listed Fruit and Veg City (Das Nair and Dube 2017, 4). The Botswana-owned supermarket chain, Choppies Enterprises, has established presence in South Africa with a listing on JSE (Nair 2019, 1). The takeover by Walmart of Massmart, approved in June 2011, has also announced the presence of multinational corporations (MNCs) in the grocery retail space in South Africa (Das Nair and Dube 2017, 4). Table 1 shows the market capitalisation of the six biggest supermarket groups in South Africa in 2016.

The structure of supermarkets in South Africa has evolved over time. Traditionally serving urban inhabitants, the supermarket groups are moving towards improving access to food through presence in small towns and rural areas (Faiguenbaum, Berdegué, and Reardon 2002, 459; Reardon et al. 2003, 1144; Weatherspoon and Reardon 2003, 336; Emongor and Kirsten 2009, 61; Abrahams 2010, 122; Volpe 2011, 495; Van der Heijden and Vink 2013, 69; Battersby and Peyton 2014, 155; Miller 2015, 2; Andersson et al. 2015, 1264; Nair 2019, 1).

Table 2 shows that the South African market exhibits an oligopolistic nature with three large supermarkets (Shoprite Holdings, Pick n Pay and SPAR). The bigger share is taken up by Game<sup>5</sup> and Food Lovers' Market.<sup>6</sup> The Botswana-controlled Choppies is a new entrant in the market and shows modest growth.<sup>7</sup>

Table 3 in Appendix A and Figure 1 in Appendix B summarise incidents of violence in South Africa for the period 1994–2021.<sup>8</sup>

Data shows counts of xenophobia in South Africa since 1994 with varying intensity. Hostility towards foreign residents and their businesses is widespread (as Table 3 indicates) leading to loss of lives, injuries, mass displacements and looting. The mean yearly violence incidents have been around 57 between the years 2008 and 2020 as shows in Figure 1.

Table 3 and Map 1 show that xenophobia is a common and persistent feature in all the nine provinces with Gauteng, Western Cape and KwaZulu Natal having the highest rates.

Despite the fact that xenophobia is a nationwide phenomenon, the major cities (particularly, Johannesburg, Cape Town, Durban and Ekurhuleni) are the worst affected.<sup>9</sup> Tables 4 and 5 and Map 2 in the Appendices depict the cities and locations with the majority of xenophobic incidents.

From the start of the xenophobic attacks, there has been a growing link between violence and the stock market in South Africa. Supermarkets in South Africa have traditionally maintained cross-border operations as well as operations in all cities and provinces in the country. These locations have been a subject of targeted and intense xenophobic attacks.<sup>10</sup>

### 3. Literature review

In this section, we contextualise theories from political philosophy, psychology and sociology to the present problem.

#### 3.1 Theoretical motivation

##### 3.1.1 Integrated threat theory (ITT)

This theory is an attempt to explain out-group hostility and intolerance. First proposed by Stephan and Stephan (1993, 112), Stephan and Stephan (1996, 409), Stephan and Stephan (2000, 25), Stephan, Diaz-Loving, and Duran (2000, 243), the theory explains feelings of threat by immigrants resulting in prejudice and negative attitudes. The locals perceive immigrants as posing a heavy economic burden to their society. As such this belief tends to lead to prejudices, discrimination and eventually may fuel fear, violent attacks and xenophobia targeted towards immigrants and foreign-owned businesses (Croucher 2017, 1).

##### 3.1.2 Social contract theory (SCT)

The model was propounded by Thomas Hobbes in 1651 and proposes states of nature in the transition of human existence. Specifically, the theory argues that human existence is governed by collective will and a set of codified laws. In this state of things, lawlessness is an alien phenomenon. Business transactions follow a consensual basis (either tacit or explicit) in which parties weigh expected benefit from entering the contract. In this view, people respect the constitution. Failure to respect constitutional rights of others leads to hatred, violence and destruction of property, businesses and even human lives.

#### 3.2 Empirical review

Our study is among the few papers that attempt to localise violent conflict and focus on a peculiar type which is less studied (xenophobia). The current paper is related to two strands of literature. The first body of work relates to political event studies (Roberts 1990, 31; Fisman 2001, 1101; Johnson and Mitton 2003, 351 and Guidolin and La Ferrara 2007, 1978) and examines events that are particular to specific political figures to analyse their impact on firm performance which have varying levels of political links to those figures. Our analysis is different from these studies in that we do not have prior information on which groups have links with xenophobic attack proponents. In the event study literature, our paper relates closely to studies by Abadie and Gardeazabal (2003, 124), Guidolin and La Ferrara (2007, 1979) and Amodio and Di Maio (2018, 2568). These papers focus on comparing economic growth in the Basque region with a control region with comparable features at the onset of a conflict and show that the Basque region performs significantly poor after the start of the conflict. Our paper differs from these studies in terms of the economic environment and the type of shock under consideration. Understanding xenophobic attacks in South Africa calls for

understanding of the political and international trade considerations to account for the negative effect of violent attacks on stock prices, as opposed to a positive one. The existing literature on the topic is based on developed markets. However, notable xenophobic events occur in emerging and developing countries.

Our paper also relates to literature on natural resource-induced conflict. Collier and Hoeffler (1998, 563) studies the probability of conflict onset given the abundance of natural resources. We focus on the economic costs of xenophobia and not its causes.

## 4. Empirical design and data

### 4.1 Methodology

We employ an event study method to test our hypotheses. We follow Campbell, Lo, and MacKinlay (2012, 149; 1997, 149) by adopting a baseline market model,

$$R_t = \beta_0 + \beta_1 R_t^M + \Omega S_t + \gamma_t$$

where  $R_t$  measures the expected daily stock return,  $R_t^M$  is the market portfolio return,  $S_t$  captures a set of dummy variables for supermarket group-specific events unrelated to South African xenophobic attacks, and  $\gamma_t$  is an abnormal return residual variable (well-behaved) as used in Guidolin and La Ferrara (2007, 5). We introduce the variable  $S_t$  to enable abnormal returns to filter simultaneous information by supermarket groups. Our key conjecture is to establish whether the estimated abnormal returns are affected by incidences of xenophobic attacks in South Africa. We adopt various event and estimation windows for each xenophobic event. We use event windows of  $-5$ – $5$  days around the date with an estimation window of 260 trading days (261,1). The long estimation window is attributable to the sparsity of significant xenophobic attacks targeted at foreign-owned businesses in South Africa during our sample period. Following residuals plotted above, we estimate cumulative abnormal returns ( $CAR_t$ ) using the following model,

$$CAR_t = \sum_{j=t_0}^t e_j$$

$t_0$  is start day for an event window.

We proceed by summing up cumulative returns for the selected supermarket groups listed on Johannesburg Stock Exchange. We examine whether a xenophobic attack has any increasing effect on stock prices of the selected supermarket groups in two ways. First, we use visual inspection and plot  $CAR_t$  for the event window. A downward (upward) sloping  $CAR_t$  depicts an event negatively (positively) affecting returns. Second, we formally test the null hypothesis that the event has no impact on  $CAR_t$  using non-parametric rank and sign tests.<sup>11</sup>

Finally, we perform an Ordinary Least Squares (OLS) regression using the full sample daily observations for the period September 14, 2006–September 14, 2017. Our goal is to establish whether xenophobia destroys firm value by affecting stock prices. We calculate the abnormal returns  $\gamma_t^j$  for each supermarket group and regress them on a set of dummies that take values zero in days when no violence occurs and one when a given type of xenophobic attack occurs. We use the pooled sample with company fixed effects, clustering the residuals at the group level.

### 4.2 Data

Our analysis is based on 1-year period of significant xenophobic attacks in South Africa for the sample period 2006–2017.<sup>12</sup> We collect data on xenophobic attacks from the Xenowatch Reports developed by the African Centre for Migration & Society (ACMS) at the University of Witwatersrand.<sup>13</sup> Xenowatch tracks and monitors incidents of threats and violence in South Africa. The system is an

open-source portal where xenophobia-related information is collected and shared across the country. Victims of xenophobia, political activists and observers report cases of threats and attacks through short message service (SMS), electronic mail (email), WhatsApp and call, mobile application as well as through the website.

The Xenowatch tool is designed to track and capture all forms of xenophobic threats and attacks towards people and property. It also documents response measures by government and civil organisations. For the present research focus, xenophobia is broadly defined as the fear or hatred of others based on ethnic, national, or racial grouping. It is a particular form of discrimination manifesting in acts of violence and nonviolence against people of all backgrounds. It is a form of crisis in which the people of South Africa, skilled and non-skilled immigrants as well as refugees are all potential victims. This behaviour may be one targeting immigrants and refugees but may also be aimed at South Africans belonging to other villages, cities, provinces and ethnic groupings. Financial data comes from the Johannesburg Stock Exchange and covers the periods 2006–2017. Table 7 shows descriptive statistics for our sample group. Our sample consists of a group of supermarkets which are chosen conditional on having a presence in the rest of Africa at the time of xenophobic attacks targeting migrants' retail enterprises (Das Nair and Dube 2017, 7).

Considering that many companies and shops affected are not publicly traded, our sample for regressions consists of six supermarket groups for which price data is available.<sup>14</sup> The supermarket groups in our sample also have a significant JSE market capitalisation in 2015/2016.<sup>15</sup> Our portfolio has an equally weighted average for these firms. We prefer equally weighted returns because our sample groups have significantly different market capitalisation values. As such, opting for a traditional value-weighted approach may limit the analysis to one or two groups at most.

## 5. Results

We start our event study analysis at the beginning of significant xenophobic attacks starting in 2006. While there exist several other episodes of violence (such as in the years 1997 and 2001), we do not have price data for these periods. Both the sign and the magnitude of the xenophobic attacks on the probability that the attacks are targeted at foreign-owned businesses are known with certainty.

Table 8 reports the main result. The Table shows the progression over time of measures of abnormal return (AR) and the cumulative abnormal return (CAR) for the supermarket groups listed on JSE during the 260 trading days around a xenophobic attack.

As hypothesised, for supermarket groups listed on JSE, on average, we observe a significant decrease in cumulative abnormal returns, and a substantial decline leading to negative values.

The evolution of the abnormal returns shows that xenophobic shocks significantly and negatively affect stock prices over the following five trading days. It is key to note that excess returns are consistently negative during the period under analysis. Consequently, five days after a xenophobic attack, the CAR for the supermarket groups decline by 2.57 percent exceeding the market benchmark. The overall effect on the CAR after five days is a decrease of over 4 percentage points. Overall, our main finding is that the *t*-computed value is large implying that there is enough statistical evidence to support our key hypothesis that xenophobic attacks indeed lead to stock price volatility. This shows that the deviation of expected returns from the actual are significant, indicating the impact of the xenophobic events on stock prices for shops with operations in South Africa. The CAR (−5, +5) for the whole sample is 2.57% and statistically significant at 5%. In other words, the Johannesburg Stock Exchange reacts negatively to xenophobic attacks targeted at food supply chain supermarket groups.

Table 9 shows results from the CAAR *t*-test. Following Chowdhury and Sarkar (2017, 543), we estimate the CAAR and BHAR for our sample supermarket groups with the corresponding Patell's Z-test for the window period (−5, 5). We first report evidence of market reaction. For our window period, both the CAAR and BHAR show significant and statistically strong results depicted by the Patell's Z-test. This shows a strong reaction of stock prices to xenophobic attacks.



We also perform non-parametric tests to examine the difference in mean returns between xenophobia in South Africa and stock market. Results show that returns are significant with  $p$ -values of 0.05<sup>16</sup> and less.

## 6. Conclusion

Our goal is to examine the relationship between surging xenophobic attacks and the value of supermarket groups in South Africa. We estimate stock returns for a sample of supermarket groups having a presence in the rest of Africa at the time of xenophobic attacks targeting migrants' retail enterprises. We find a causal effect of xenophobic attacks on stock returns as they decrease rather than increase the abnormal returns of the JSE listed supermarket groups. We argue that this result is statistically strong and cannot be attributed to unmeasured shocks to the supermarket groups occurring at the same time.

Our main result shows that the cumulative abnormal returns of JSE-listed supermarket groups' stocks significantly drop following a violent attack targeted at their business operations. In other words, the JSE perceives xenophobic attacks (targeted at both foreign-owned businesses and foreign residents' lives) as bad news for the food supply chain firms with cross-border business operations in South Africa. On the event date, the abnormal returns of the selected supermarkets decline by 2.57 percent. We argue that no matter how high the counterbalancing benefits of xenophobic attacks, the economic costs of such for the supermarket groups are substantial. Although our results are based on a small sample of six JSE listed supermarket groups that have cross-border business operations in South Africa, this is a (sad and) striking result which suggests that the inferences about the economic costs of xenophobia are real and causal.

We interpret these findings in the light of the economic costs that some supermarket groups may realise from a xenophobic-prone environment such as South Africa. The frequency of xenophobic attacks targeted at foreign residents in South Africa and the instability created may constitute a specific exposure of firms to cross-border business with countries whose citizens are the subjects of xenophobic attacks. We understand that our findings are based on a small sample of JSE-listed supermarket groups with operations in other parts of Africa and that they may be specific to the African context, though not solely to South Africa. In this sense, they should not be viewed as in opposition to previous studies that find conflict to positively affect firm value in developing and industrialised countries (Guidolin and La Ferrara 2007, 1983). Our results suggest, however, that in the debate on whether or how supermarkets revolution in Africa can bring widespread benefits to its population, one should acknowledge a simple fact: to the extent that some incumbent firms may benefit from xenophobic attacks, this may affect cross-border trade and significantly cost food supply chains. This paper does suggest that in discussing xenophobic attacks which have become a persistent feature in South Africa can bring great losses to migrants' lives, one should acknowledge a simple fact: to the extent that some proponents of violence propose benefits of limiting migrants into the country, cross-border firms loose from xenophobic attacks targeted at their shops. While our analysis is aimed mainly at South Africa, we believe that the results presented here can be tested to see whether they are generic, transcending various sectors and national boundaries and other types of violence. We leave this for further research.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Notes

1. We thank Professor Jerry Parwada for inspiring the idea presented in this paper, providing the stock price data as well as extensive guidance at the formative stages of the paper. All errors are ours alone.



2. See, for example (Lacerte 1981; Abadie and Gardeazabal 2003; Crush and Ramachandran 2010; Okem, Asuelime, and Adekoye 2015; Ngwakwe and Ilorah 2017; Koren 2018).
3. Other commentaries on xenophobia and business operations in South Africa include Crush and Ramachandran (2015), Piper and Charman (2016) and Ngwakwe and Ilorah (2017).
4. <https://www.xenowatch.ac.za/>. Given the relaxed political will to address xenophobia by South Africa and the SADC Council, these attacks are a serious threat to democracy in South Africa and other African countries as they may directly affect the rule of law and business.
5. Owned by Walmart.
6. Controlled and run by Veg City.
7. There exist many independent retailers supported by large buying groups which participate in the retail industry (not reflected in Table 2). Since these firms are not listed on JSE, we do not consider them for empirical analyses.
8. The figures presented are self-reported and verified through the Xenowatch platform. These numbers may suffer from measurement error (misreporting and underreporting) with the possibility that the numbers may be higher.
9. These are also cities with the greatest number of supermarket outlets.
10. See Table 6 in Appendix.
11. We could report statistics based on standard t-tests (as in Guidolin and La Ferrara 2007, 1983) and results would not change much, but non-parametric tests are much less influenced by departures from normality that characterize high-frequency data and have better small sample properties.
12. We intentionally leave the years 2019–2021 in order to isolate the effects of COVID-19 which is beyond the scope of this study.
13. The data and reports can be accessed at <https://www.xenowatch.ac.za/about-xenowatch/>
14. These are: Choppies Enterprises Limited (CHP-ZA), Massmart Holdings Limited (MSM-ZA), Pick N Pay Stores Limited (PIK-ZA), Shoprite Holdings Limited (SHP-ZA), Spar Group Limited (SPP-ZA) and Woolworths Holdings Limited (WHL-ZA).
15. On this basis, Woolworths and Shoprite are the largest supermarket chains in the retail industry in South Africa (see Table 12).
16. Additional results are included in Tables 10 (AAR results) and 11 (AR results).

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## Appendix A

**Table 1:** Market Capitalization of supermarket groups on JSE (as at March 3, 2016)

	Market capitalisation as reported in annual reports (ZAR billions)
Woolworths Holdings	74.2
Shoprite Holdings	109.9
SPAR Group	34.5
Pick n Pay Stores	34.4
Massmart Holdings	32.6
Choppies Limited	4.3
TOTAL	289.9

Source: INETBFA as quoted in Das Nair and Dube, (2017:8)

**Table 2:** Number of store outlets and market share in South Africa (main chain stores only)

Supermarket (number) – Ownership	Share (based on store numbers in percentage)
Shoprite (1284) – SA	31
Pick n Pay (1280) – SA	30
SPAR (890) – SA	21
Woolworths (382) – SA	9
Game/Walmart (203) – USA	5
Food Lovers' Market (+100) – SA	2
Choppies (64) – Botswana	2
TOTAL	100

Source: Information gathered from Annual Reports as cited in Das Nair and Dube, (2017:8)<sup>1</sup>

<sup>1</sup>This classification includes supermarkets only and does not account for other operations such as pharmacies, furniture and fast-food outlets.

**Table 3:** Xenophobic violence incidents in South Africa between 1994 and April 2021

Victimization Category	Total number
Total incidents	796
Persons killed	588
Persons displaced	121,945
Physical assaults	1,118
Shops looted	4,693
Property damaged	1,386

Source: Xenowatch (2021)

**Table 4:** Cities/towns worst affected incidents of xenophobia in South Africa for the period 1994 – April 2021

City	Count of incidents
Johannesburg (Gauteng)	174
Cape Town (Western Cape)	105
Durban (KwaZulu Natal)	84
Ekurhuleni (Gauteng)	84
Tshwane (Gauteng)	60
Gqeberha (Eastern Cape)	43
Polokwane (Limpopo)	14

Source: Xenowatch (2021)

**Table 5:** Locations worst affected by xenophobic violence in South Africa: 1994 – April 2021

Location	Counts of incidents
Johannesburg Inner City (Gauteng)	32
Cape Town Inner City (Western Cape)	27
Soweto (Gauteng)	24
Durban Inner City (KwaZulu Natal)	22
Pretoria Inner City (Gauteng)	17
Alexandra (Gauteng)	16
Khayelitsha (Western Cape)	15
Khayelitsha (Western Cape)	15
Diepsloot (Gauteng)	14
Polokwane (Limpopo)	14

Source: Xenowatch (2021)

**Table 6:** Incidents of xenophobic violence in South Africa by province: 1994 – April 2021

City	Count of incidents
Johannesburg (Gauteng)	174
Cape Town (Western Cape)	105
Durban (KwaZulu Natal)	84
Ekurhuleni (Gauteng)	84
Tshwane (Gauteng)	60
Gqeberha (Eastern Cape)	43
Polokwane (Limpopo)	14

Source: Xenowatch (2021)

**Table 7:** Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
FTSE JSE All-Share	4998	7189.99	61684.77	32475	17248
WHL-ZA	4998	2.42	106.88	35.07	29.18
SPP-ZA	3977	19.40	222.65	159.1	61.42
SHP-ZA	4998	5.00	275.5	93.46	74.15
PIK-ZA	4998	9.00	83.00	40.50	19.26
MSM-ZA	4998	7.80	205.04	88.15	52.95
CHP-ZA	1140	0.42	7.30	3.10	1.88
Valid N (listwise)	1140		6.16	2.96	0.88

**Table 8:** The Evolution of Cumulative Abnormal Returns over the 260-trading day period

Event ID (1)	Window (2)	CAR Value (3)	BHAR Value (4)	CAR t-test (5)
1	(-5, 5)	0.1311	0.1306	2.5668
2	(-5, 5)	0.0254	0.026	0.4973
3	(-5, 5)	-0.0168	-0.0186	-0.2165
5	(-5, 5)	0.1179	0.1237	2.1809
6	(-5, 5)	-0.0554	-0.0563	-1.3363
7	(-5, 5)	-0.05	-0.8766	0.0101
8	(-5, 5)	-0.0186	-0.0196	-0.328
9	(-5, 5)	-0.055	-0.0522	-0.9112
11	(-5, 5)	0.0818	0.0804	1.4948
12	(-5, 5)	-0.0232	-0.0242	-0.4318
13	(-5, 5)	-0.0676	-0.0701	-0.9752
14	(-5, 5)	0.1716	0.1764	2.8119
15	(-5, 5)	-0.0534	-0.0563	-0.5403
17	(-5, 5)	-0.0686	-0.0711	-0.7718
18	(-5, 5)	0.0271	0.0257	0.3648
19	(-5, 5)	0.0111	0.0103	0.2574
20	(-5, 5)	0.0486	0.0497	1.3824
21	(-5, 5)	-0.0574	-0.0586	-1.1936
22	(-5, 5)	0.072	0.0739	1.1366
23	(-5, 5)	-0.0075	-0.0078	-0.144
25	(-5, 5)	-0.017	-0.0169	-0.3328
26	(-5, 5)	-0.0347	-0.0352	-0.7693
27	(-5, 5)	-0.0241	-0.025	-0.4059
28	(-5, 5)	0.0591	0.0593	0.9428
29	(-5, 5)	0.0222	0.0213	0.3892
31	(-5, 5)	0.0001		0.0019
32	(-5, 5)	-0.0169	-0.0179	-0.3514
33	(-5, 5)	-0.0115	-0.0126	-0.1874
34	(-5, 5)	0.0704	0.0714	1.1291
35	(-5, 5)	0.0104	0.0093	0.1823
37	(-5, 5)	-0.0015	-0.0013	-0.0279
38	(-5, 5)	0.0018	0.0011	0.0369
39	(-5, 5)	-0.0015	-0.0013	-0.0279
40	(-5, 5)	0.0018	0.0011	0.0369
41	(-5, 5)	0.0717	0.0742	1.1623
42	(-5, 5)	0.0803	0.0807	1.3376
43	(-5, 5)	0.0103	0.0093	0.1765
45	(-5, 5)	-0.0705	-0.068	-1.3285
46	(-5, 5)	-0.0077	-0.0092	-0.1538
47	(-5, 5)	-0.028	-0.0305	-0.5863

(Continued)

**Table 8:** Continued.

Event ID (1)	Window (2)	CAR Value (3)	BHAR Value (4)	CAR t-test (5)
48	(-5, 5)	-0.0794	-0.0781	-1.3838
49	(-5, 5)	-0.0307	-0.033	-0.551
51	(-5, 5)	-0.0514	-0.0527	-1.0196
52	(-5, 5)	-0.0254	-0.0279	-0.4505
53	(-5, 5)	-0.0532	-0.0585	-1.0088
54	(-5, 5)	0.0778	0.0808	1.6404
55	(-5, 5)	0.045	0.0471	0.7798
57	(-5, 5)	0.0633	0.0673	1.6038
58	(-5, 5)	-0.005	-0.0063	-0.0936
59	(-5, 5)	0.0482	0.051	1.2316
60	(-5, 5)	-0.005	-0.0063	-0.0936
61	(-5, 5)	0.1059	0.1093	2.6608
62	(-5, 5)	0.0112	0.0104	0.268
63	(-5, 5)	-0.0152	-0.0152	-0.2575
65	(-5, 5)	-0.0203	-0.0209	-0.572
66	(-5, 5)	-0.0004	-0.0022	-0.0136
67	(-5, 5)	-0.0021	-0.0028	-0.0736
68	(-5, 5)	0.0137	0.0136	0.3106
69	(-5, 5)	0.0852	0.0866	1.7716
71	(-5, 5)	0.0197	0.0199	0.3882
72	(-5, 5)	-0.047	-0.0475	-1.3121
73	(-5, 5)	-0.0924	-0.0918	-2.4438
74	(-5, 5)	-0.0313	-0.0324	-0.5898
75	(-5, 5)	0.0147	0.0147	0.2296
77	(-5, 5)	0.0662	0.0658	1.2713
78	(-5, 5)	0.0134	0.013	0.2907
79	(-5, 5)	0.0685	0.069	1.2594
80	(-5, 5)	-0.0358	-0.0357	-0.7601
81	(-5, 5)	0.0133	0.0125	0.3015
82	(-5, 5)	-0.0412	-0.0405	-0.963
83	(-5, 5)	0.0487	0.045	1.2036
85	(-5, 5)	0.0339	0.0331	0.7802
86	(-5, 5)	-0.0487	-0.0489	-1.1209
87	(-5, 5)	0.0002	-0.0013	0.0055
88	(-5, 5)	0.0916	0.0943	1.4691
89	(-5, 5)	-0.0479	-0.0465	-0.7723
91	(-5, 5)	0.0395	0.04	0.5985
92	(-5, 5)	-0.0318	-0.0333	-0.761
93	(-5, 5)	0.0351	0.0334	0.7349
94	(-5, 5)	0.0227	0.0206	0.6518
95	(-5, 5)	-0.072	-0.0709	-1.6829
97	(-5, 5)	-0.1114	-0.1066	-2.3325
98	(-5, 5)	-0.0037	-0.0057	-0.0937
99	(-5, 5)	-0.0626	-0.0683	-1.3199
100	(-5, 5)	0.0511	0.0517	1.2132
101	(-5, 5)	0.1017	0.1011	1.7623
102	(-5, 5)	-0.0197	-0.0194	-0.4829
103	(-5, 5)	0.012	0.0115	0.3015
105	(-5, 5)	0.0153	0.0138	0.2957
106	(-5, 5)	-0.1072	-0.1031	-2.2446
107	(-5, 5)	-0.1281	-0.1269	-2.4445
108	(-5, 5)	-0.0001	-0.0008	-0.0032
109	(-5, 5)	-0.04	-0.0399	-1.0964
111	(-5, 5)	0.0576	0.0579	1.4972
112	(-5, 5)	-0.0147	-0.0162	-0.4766
113	(-5, 5)	-0.0906	-0.0919	-2.8755
114	(-5, 5)	-0.0421	-0.0424	-1.1233
115	(-5, 5)	-0.0228	-0.0231	-0.6806
117	(-5, 5)	-0.0014	-0.0034	-0.0426
118	(-5, 5)	0.023	0.023	0.6668
119	(-5, 5)	0.0274	0.0276	0.751
120	(-5, 5)	0.0227	0.0227	0.6397

(Continued)

**Table 8:** Continued.

Event ID (1)	Window (2)	CAR Value (3)	BHAR Value (4)	CAR t-test (5)
121	(-5, 5)	0.0394	0.0394	1.0067
122	(-5, 5)	0.0311	0.0311	0.893
123	(-5, 5)	0.0352	0.0355	0.9392
125	(-5, 5)	-0.0162	-0.0174	-0.4175
126	(-5, 5)	0.0307	0.0308	0.9165
127	(-5, 5)	0.0318	0.0312	0.7859
128	(-5, 5)	-0.0066	-0.0066	-0.2052
129	(-5, 5)	-0.0094	-0.0097	-0.2508
131	(-5, 5)	-0.0623	-0.0633	-1.6477
132	(-5, 5)	-0.0032	-0.0038	-0.0846
133	(-5, 5)	0.0098	0.0097	0.2308
134	(-5, 5)	-0.0302	-0.0302	-0.8354
135	(-5, 5)	0.0058	0.0056	0.1714
137	(-5, 5)	0.0017	0.0016	0.0518
138	(-5, 5)	0.0072	0.0072	0.1608
139	(-5, 5)	-0.0094	-0.0096	-0.2752
140	(-5, 5)	-0.0339	-0.0345	-0.7743
141	(-5, 5)	-0.0202	-0.0219	-0.4579
142	(-5, 5)	0.0024	0.0023	0.0536
143	(-5, 5)	0.0274	0.0266	0.6259
145	(-5, 5)	-0.0307	-0.0318	-0.6612
146	(-5, 5)	0.0341	0.0334	0.96091
147	(-5, 5)	-0.0018	-0.0024	-0.0596
148	(-5, 5)	-0.052	-0.0513	-1.7817
149	(-5, 5)	0.0369	0.0335	0.8303
151	(-5, 5)	-0.0217	-0.0228	-0.4544
152	(-5, 5)	-0.0115	-0.012	-0.3068
153	(-5, 5)	0.0166	0.0172	0.4315
154	(-5, 5)	-0.0329	-0.0338	-0.8551
155	(-5, 5)	-0.0584	-0.0585	-1.012
157	(-5, 5)	-0.0361	-0.036	-0.7208
158	(-5, 5)	0.0029	0.0027	0.076
159	(-5, 5)	-0.0361	-0.036	-0.7208
160	(-5, 5)	0.0029	0.0027	0.076
161	(-5, 5)	0.0148	0.0141	0.333
162	(-5, 5)	-0.0132	-0.0131	-0.3317
163	(-5, 5)	-0.0584	-0.0585	-1.012
165	(-5, 5)	-0.0361	-0.036	-0.7208
166	(-5, 5)	-0.012	-0.0131	-0.3092
167	(-5, 5)	0.0188	0.0171	0.44631
168	(-5, 5)	0.0061	0.0053	0.1735
169	(-5, 5)	-0.0047	-0.0066	-0.0932
171	(-5, 5)	0.0739	0.0766	1.9208
172	(-5, 5)	0.018	0.0176	0.4599
173	(-5, 5)	-0.0173	-0.0188	-0.4921
174	(-5, 5)	0.0129	0.0123	0.3536
175	(-5, 5)	-0.0395	-0.0397	-0.8102
177	(-5, 5)	0.1244	0.1271	3.2616
178	(-5, 5)	-0.0466	-0.0467	-1.1423
179	(-5, 5)	-0.0433	-0.0431	-0.8263
180	(-5, 5)	-0.0542	-0.0552	-1.0543
181	(-5, 5)	-0.0381	-0.0399	-0.649
182	(-5, 5)	-0.0369	-0.0388	-0.5349
183	(-5, 5)	-0.0948	-0.0941	-1.6427
185	(-5, 5)	0.076	0.0787	1.302
186	(-5, 5)	0.0391	0.0396	0.7277
187	(-5, 5)	0.0283	0.0276	0.4876
188	(-5, 5)	0.0081	0.0054	0.1147
189	(-5, 5)	-0.0571	-0.0583	-0.6751
191	(-5, 5)	-0.0487	-0.0488	-0.6144
192	(-5, 5)	0.0155	0.0119	0.2447
193	(-5, 5)	-0.0824	-0.0822	-1.2873

(Continued)

**Table 8:** Continued.

Event ID (1)	Window (2)	CAR Value (3)	BHAR Value (4)	CAR t-test (5)
194	(-5, 5)	-0.0884	-0.0917	-1.1489
195	(-5, 5)	-0.0458	-0.0487	-0.6453
197	(-5, 5)	-0.046	-0.0486	-0.5828
198	(-5, 5)	-0.1377	-0.1321	-2.4567
199	(-5, 5)	0.0031	0.0008	0.0465
200	(-5, 5)	-0.1124	-0.1095	-2.0053
201	(-5, 5)	-0.0883	-0.0871	-1.2047
202	(-5, 5)	-0.0332	-0.0324	-0.4931
203	(-5, 5)	-0.0444	-0.0444	-0.7009
205	(-5, 5)	0.0031	0.0008	0.0465
206	(-5, 5)	-0.107	-0.1051	-1.8977
207	(-5, 5)	-0.0781	-0.0781	-1.056
208	(-5, 5)	-0.0068	-0.0071	-0.1015
209	(-5, 5)	-0.031	-0.0318	-0.4894
211	(-5, 5)	-0.011	-0.0122	-0.1595
212	(-5, 5)	-0.0816	-0.0818	-1.4473
213	(-5, 5)	-0.0544	-0.057	-0.7258
214	(-5, 5)	0.0159	0.0158	0.2294
215	(-5, 5)	0.0118	0.0101	0.1892
217	(-5, 5)	0.0326	0.032	0.4593
218	(-5, 5)	-0.0725	-0.0724	-1.2783
219	(-5, 5)	0.0362	0.0355	0.51
220	(-5, 5)	-0.0154	-0.0172	-0.2715
221	(-5, 5)	-0.1229	-0.1243	-1.6182
222	(-5, 5)	0.0881	0.0867	1.2185
223	(-5, 5)	0.0446	0.0442	0.6592
225	(-5, 5)	0.0174	0.0156	0.1809
226	(-5, 5)	0.0538	0.0525	0.7209
227	(-5, 5)	-0.107	-0.1086	-1.5436
228	(-5, 5)	-0.1834	-0.1747	-3.6142
229	(-5, 5)	0.0138	0.0124	0.208
231	(-5, 5)	-0.0927	-0.0889	-2.0704
232	(-5, 5)	0.09	0.0934	2.0403
233	(-5, 5)	-0.0101	-0.0132	-0.2743
234	(-5, 5)	-0.0706	-0.0706	-1.8673
235	(-5, 5)	0.0028	0.0019	0.0319

**Table 9:** Cumulative Average Abnormal Returns (CAAR) Results

Grouping	Unnamed
CAAR results	
CAAR Type	(-5,5)
CAAR Value	(0.0073)
Precision Weighted CAAR Value	(0.006)
ABHAR	(0.0075)
pos:neg CAR	89:111
Number of CARs considered	200
Patell Z	(1.705)
Csect T	(1.914)
Generalized Sign Z	(1.266)
StdCSect Z	(1.6716)
Rank Z	(1.4826)
Generalized Rank T	(1.4841)
Adjusted Patell Z	(1.4195)
Adjusted StdCSect Z	(1.2763)
Skewness Corrected T	(1.9064)
ABHAR Skewness Corrected T	(1.9598)



**Table 10:** Average Abnormal Returns (AAR) Results

Grouping Variable	AAR (-5) (1)	AAR (-4) (2)	AAR (-3) (3)	AAR (-2) (4)	AAR (-1) (5)	AAR (0)	AAR (1)	AAR (2)	AAR (3)	AAR (4)	AAR (5)
<i>Unnamed</i>	0.0017	0.0007	3.471	(0.0015)	(0.0018)	0.0003	(0.0006)	0.0015	(0.0025)	(0.0028)	(0.0009)
<i>N(unnamed, AAR(i))</i>	200	200	200	200	200	200	200	200	200	200	200
<i>Pos:Neg(unn,AAR(i))</i>	101:99	101:99	89:111	87:113	87:113	99:101	91:109	108:92	80:120	97:103	89:111
<i>Patell Z</i>	1.0375	0.9333	(1.6091)	(0.6829)	(1.432)	0.4204	(0.7188)	1.643	(1.9524)	(2.1407)	(1.1532)
<i>Generalized Sign Z</i>	0.4314	0.4314	(1.266)	(1.5489)	(1.5489)	0.1485	(0.9831)	(1.4216)	(2.539)	(0.1344)	(1.266)
<i>Csect T</i>	1.5572	0.6882	(1.5146)	(1.0539)	(1.8019)	0.2803	(0.5879)	1.4776	(2.3047)	(2.7245)	(0.8214)
<i>StdCsect Z</i>	1.0693	1.0319	(1.7649)	(0.5333)	(1.6497)	0.4185	(0.7754)	1.761	(1.9922)	(2.2792)	(1.1628)
<i>Rank Z</i>	0.8464	0.741	(1.2767)	(1.5261)	(1.1285)	0.4916	(0.9347)	1.3551	(1.6615)	(0.9718)	(0.8521)
<i>Generalized Rank T</i>	0.7261	0.6263	(1.4819)	(1.2439)	(1.4602)	0.4577	(1.0353)	1.3797	(1.698)	(1.1385)	(0.9703)
<i>Adjusted Patell Z</i>	1.038	0.9338	(1.61)	(0.6832)	(1.4237)	0.4206	(0.7912)	1.6439	(1.9534)	(2.1419)	(1.1538)
<i>Adjusted StdCsect Z</i>	1.0699	1.0325	(1.7659)	(0.5336)	(0.6506)	0.4188	(0.7758)	1.7619	(1.9933)	(2.2804)	(1.1604)
<i>Generalized Rank Z</i>	0.8514	0.7349	(1.739)	(1.4169)	(1.7088)	0.5382	(1.2169)	1.6145	(2.0000)	(1.3414)	(1.1406)
<i>SkewnessCorrected T</i>	1.5488	0.7332	(1.5513)	(0.9952)	(1.7812)	0.271	(0.6003)	1.5105	(2.3459)	(2.8319)	(0.8074)

**Table 11:** Abnormal Returns (AR) Results

Event ID	AR(-1) (1)	AR(0) (2)	AR(1) (3)	t-value(-1) (4)	t-value(0) (5)	t-value(1) (6)
1	0.0356	-0.0027	0.0028	2.3117	-0.1753	0.1818
2	0.005	0.0075	-0.0003	0.3247	0.487	-0.0195
3	-0.0008	0.0124	-0.015	-0.0342	0.5299	-0.641
5	0.0039	0.0256	-0.0111	0.2393	1.5706	-0.681
6	-0.0177	-0.0196	-0.0063	-1.416	-1.568	-0.504
7	-0.0154	0.003	-0.017	-0.8902	0.1734	-0.9827
8	0.0022	0.0147	0.0073	0.1287	0.8596	0.4269
9	-0.0147	-0.0119	-0.0159	-0.8077	-0.6538	-0.8736
11	0.0115	0.0031	-0.018	0.697	0.1879	-1.0909
12	0.0011	0.0013	0.0116	0.0679	0.0802	0.716
13	-0.0087	-0.0044	-0.0088	-0.4163	-0.2105	-0.4211
14	0.0313	0.0492	0.0132	1.7011	2.6739	0.7174
15	-0.0383	-0.0379	0.0644	-1.2852	-1.2718	2.1611
17	0.005	0.0068	-0.0014	0.1866	0.2537	-0.0522
18	-0.021	0.0236	-0.0036	-0.9375	1.0536	-0.1607
19	-0.0171	0.0199	-0.007	-1.3154	1.5308	-0.5385
20	0.0099	-0.0004	0.0169	0.934	-0.0377	1.5943
21	-0.0085	0.0032	-0.0015	-0.5862	0.2207	-0.1034
22	-0.0127	0.0103	0.0101	-0.6649	0.5393	0.5288
23	-0.0167	0.0027	0.0007	-1.0637	0.172	0.0446
25	-0.0138	-0.0006	-0.0086	-0.8961	-0.039	-0.5584
26	-0.011	-0.0252	-0.0031	-0.8088	-1.8529	-0.2279
27	-0.0071	-0.0117	0.0236	-0.3966	-0.6536	1.3184
28	-0.0036	-0.002	-0.0114	-0.1905	-0.1058	-0.6032
29	0.0222	0.016	0.0132	1.2907	0.9302	0.7674
31	0.0048	0.0016	-0.0008	0.2963	0.0988	-0.0494
32	0.0114	0.0122	-0.0072	0.7862	0.8414	-0.4966
33	0.0157	0.0153	-0.0036	0.8486	0.827	-0.1946
34	0.0077	0.0144	-0.0186	0.4096	0.766	-0.9894
35	0.0039	0.0217	0.0156	0.2267	1.2616	0.907
37	0.0067	0.0038	0.0043	0.4136	0.2346	0.2654
38	0.0022	0.0082	0.012	0.1497	0.5578	0.8163
39	0.0067	0.0038	0.0043	0.4136	0.2346	0.2654
40	0.0022	0.0082	0.012	0.1497	0.5578	0.8163
41	-0.0119	0.0256	0.0084	-0.6398	1.3763	0.4516
42	-0.0268	-0.0024	0.0163	-1.4807	-0.1326	0.9006
43	0.007	0.0057	-0.005	0.3977	0.3239	-0.2841
45	-0.0067	-0.0022	0.0111	-0.4188	-0.1375	0.6938
46	-0.0079	-0.0306	0.0155	-0.5232	-2.0265	1.0265
47	0.002	-0.032	0.0141	0.1389	-2.2222	0.9792
48	-0.0085	-0.0207	-0.0383	-0.4913	-1.1965	-2.2139
49	-0.0242	-0.0011	0.019	-1.4405	-0.0655	1.131
51	-0.0075	-0.0018	-0.0148	-0.4934	-0.1184	-0.9737
52	0.0014	0.0126	-0.0108	0.0824	0.7412	-0.6353

(Continued)

**Table 11:** Continued.

Event ID	AR(-1) (1)	AR(0) (2)	AR(1) (3)	t-value(-1) (4)	t-value(0) (5)	t-value(1) (6)
53	-0.0042	0.0043	-0.024	-0.2642	0.2704	-1.5094
54	0.0313	0.0101	0.0131	2.1888	0.7063	0.9161
55	0.0061	0.0155	-0.0032	0.3506	0.8908	-0.1839
57	0.0112	0.0364	-0.0005	0.9412	3.0588	-0.042
58	0.0221	0.0011	-0.0007	1.3727	0.0683	-0.0435
59	-0.0131	0.011	0.0361	-1.1102	0.9322	3.0593
60	0.0221	0.0011	-0.0007	1.3727	0.0683	-0.0435
61	-0.0204	0.0182	0.0224	-1.7	1.5167	1.8667
62	0.003	-0.0105	0.0011	0.2381	-0.8333	0.0873
63	0.006	-0.0082	-0.0011	0.3371	-0.4607	-0.0618
65	0.0097	-0.0274	-0.002	0.9065	-2.5607	-0.1869
66	-0.0151	0.003	0.002	-1.6966	0.3371	0.2247
67	0.0156	-0.0027	-0.0143	1.814	-0.314	-1.6628
68	0.0046	-0.0162	-0.006	0.3459	-1.218	-0.4511
69	-0.0075	0.0002	-0.0153	-0.5172	0.0138	-1.0552
71	0.0153	0.0016	0.0057	1	0.1046	0.3725
72	-0.0059	-0.0016	-0.0012	-0.5463	-0.1481	-0.1111
73	-0.0128	-0.0198	-0.0056	-1.1228	-1.7368	-0.4912
74	-0.0045	-0.0103	0.0004	-0.2812	-0.6438	0.025
75	-0.0102	0.0092	0.0126	-0.5285	0.4767	0.6528
77	-0.0011	0.0041	0.0128	-0.0701	0.2611	0.8153
78	-0.0131	0.0079	-0.0077	-0.9424	0.5683	-0.554
79	0.0127	0.0173	0.0046	0.7744	1.0549	0.2805
80	-0.0051	-0.0094	-0.0044	-0.3592	-0.662	-0.3099
81		-0.0054	-0.0157		-0.406	-1.1805
82	0.0001	-0.0059	-0.013	0.0078	-0.4574	-1.0078
83	0.011	0.0497	-0.019	0.9016	4.0738	-1.5574
85	-0.0195	0.0206	-0.0008	-1.4885	1.5725	-0.0611
86	-0.0027	-0.0027	-0.0143	-0.2061	-0.2061	-1.0916
87	0.0097	-0.0018	-0.0172	0.8899	-0.1651	-1.578
88	0.0005	0.0045	-0.0226	0.0266	0.2394	-1.2021
89	0.0118	-0.011	-0.0124	0.631	-0.5882	-0.6631
91	0.0173	0.0316	0.0148	0.8693	1.5879	0.7437
92	-0.0077	-0.0097	-0.0041	-0.6111	-0.7698	-0.3254
93	-0.0097	-0.0102	0.018	-0.6736	-0.7083	1.25
94	0.0175	-0.0018	-0.0081	1.6667	-0.1714	-0.7714
95	0.0184	-0.0232	-0.0189	1.4264	-1.7984	-1.4651
97	-0.0042	-0.0291	-0.0064	-0.2917	-2.0208	-0.4444
98	-0.0079	-0.012	0.0031	-0.6639	-1.0084	0.2605
99	0.0117	0.0109	0.0227	0.8182	0.7622	1.5874
100	-0.0031	0.0023	0.0062	-0.2441	0.1811	0.4882
101	0.0214	0.0028	0.0035	1.2299	0.1609	0.2011
102	0.003	-0.0053	-0.0017	0.2439	-0.4309	-0.1382
103	-0.0159	0.005	0.0092	-1.325	0.4167	0.7667
105	-0.0154	0.001	-0.031	-0.9872	0.0641	-1.9872
106	-0.0028	-0.0292	-0.0198	-0.1944	-2.0278	-1.375
107	-0.0072	-0.0009	-0.0105	-0.4557	-0.057	-0.6646
108	-0.0053	0.0064	-0.0037	-0.5638	0.6809	-0.3936
109		0.0064	-0.0097		0.5818	-0.8818
111	0.0206	-0.0023	-0.0064	1.7759	-0.1983	-0.5517
112	-0.0088	0.0375	0.0007	-0.9462	4.0323	0.0753
113	-0.008	-0.0106	-0.0106	-0.8421	-1.1158	-1.1158
114	-0.0033	-0.0022	0.0027	-0.292	-0.1947	0.2389
115	-0.0119	-0.0053	-0.0064	-1.1782	-0.5248	-0.6337
117	0.007	-0.0018	-0.0159	0.7071	-0.1818	-1.6061
118	0.0071	0.001	0.0038	0.6827	0.0962	0.3654
119	-0.0249	-0.0054	0.0052	-2.2636	-0.4909	0.4727
120	0.0088	-0.0022	0.0069	0.8224	-0.2056	0.6449
121	-0.005	-0.0115	0.0128	-0.4237	-0.9746	1.0847
122	-0.0044	-0.0012	0.0098	-0.419	-0.1143	0.9333
123	-0.0164	-0.001	0.0063	-1.4513	-0.0885	0.5575
125	0.0095	-0.0052	0.0048	0.812	-0.4444	0.4103

(Continued)

**Table 11:** Continued.

Event ID	AR(-1) (1)	AR(0) (2)	AR(1) (3)	t-value(-1) (4)	t-value(0) (5)	t-value(1) (6)
126	0.0141	0.0048	-0.0024	1.396	0.4752	-0.2376
127	-0.0013	-0.0016	0.0011	-0.1066	-0.1311	0.0902
128		0.0098	-0.0036		1.0103	-0.3711
129	0.0078	0.0045	0.0135	0.6903	0.3982	1.1947
131	0.0077	-0.002	-0.0139	0.6754	-0.1754	-1.2193
132	-0.0066	-0.0004	-0.0106	-0.5789	-0.0351	-0.9298
133	-0.0028	0.0066	0.0095	-0.2188	0.5156	0.7422
134	-0.0042	-0.0106	0.0005	-0.3853	-0.9725	0.0459
135	-0.0107	0.0187	0.0042	-1.049	1.8333	0.4118
137	0.0087	0.005	-0.0037	0.8788	0.5051	-0.3737
138	-0.0106	0.0058	-0.0007	-0.7852	0.4296	-0.0519
139	0.0087	-0.0122	0.0085	0.8447	-1.1845	0.8252
140	-0.0005	-0.0007	-0.0112	-0.0379	-0.053	-0.8485
141	0.0214	-0.0225	0.0015	1.609	-1.6917	0.1128
142	-0.0044	-0.0015	-0.0016	-0.3259	-0.1111	-0.1185
143	0.018	0.0081	0.0228	1.3636	0.6136	1.7273
145	0.0098	-0.0204	-0.0019	0.7	-1.4571	-0.1357
146	-0.0084	0.0153	0.0005	-0.785	1.4299	0.0467
147	-0.0058	0.0275	0.0224	-0.6374	3.022	2.4615
148	-0.0116	-0.0151	0.0004	-1.3182	-1.7159	0.0455
149	-0.0014	-0.0099	-0.0092	-0.1045	-0.7388	-0.6866
151	-0.0123	0.0223	-0.011	-0.8542	1.5486	-0.7639
152	0.001	-0.0044	-0.001	0.0885	-0.3894	-0.0885
153	0.0004	-0.0027	0.007	0.0345	-0.2328	0.6034
154	-0.0274	0.001	-0.0074	-2.3621	0.0862	-0.6379
155	-0.007	0.0211	-0.0087	-0.4023	1.2126	-0.5
157	-0.0028	0.0105	-0.0054	-0.1854	0.6954	-0.3576
158	-0.0007	0.0139	-0.0215	-0.0609	1.2087	-1.8696
159	-0.0028	0.0105	-0.0054	-0.1854	0.6954	-0.3576
160	-0.0007	0.0139	-0.0215	-0.0609	1.2087	-1.8696
161	0.0041	0.007	-0.0129	0.306	0.5224	-0.9627
162	-0.0037	0.0233	-0.0113	-0.3083	1.9417	-0.9417
163	-0.007	0.0211	-0.0087	-0.4023	1.2126	-0.5
165	-0.0028	0.0105	-0.0054	-0.1854	0.6954	-0.3576
166	0.0015	-0.0191	-0.0076	0.1282	-1.6325	-0.6496
167	-0.0082	-0.013	-0.0021	-0.6457	-1.0236	-0.1654
168	-0.0093	-0.0032	0.0134	-0.8774	-0.3019	1.2642
169	-0.0129	-0.0022	0.0195	-0.8487	-0.1447	1.2829
171	0.0083	0.022	-0.017	0.7155	1.8966	-1.4655
172	0.0016	-0.0036	0.0039	0.1356	-0.3051	0.3305
173	0.0045	-0.0072	0.012	0.4091	-0.6545	1.0909
174	0.0045	-0.0072	0.012	0.4091	-0.6545	1.0909
175	0.0083	-0.0179	-0.0097	0.5646	-1.2177	-0.6599
177	0.0056	0.0017	-0.0086	0.487	0.1478	-0.7478
178	0.0003	-0.0123	-0.0214	0.0244	-1	-1.7398
179	-0.0125	0.0085	-0.0232	-0.7911	0.538	-1.4684
180	-0.0154	-0.0067	-0.0161	-0.9935	-0.4323	-1.0387
181	-0.0155	0.0068	-0.0179	-0.8757	0.3842	-1.0113
182	-0.0099	-0.0036	0.0197	-0.476	-0.1731	0.9471
183	-0.0117	-0.0169	0.0061	-0.6724	-0.9713	0.3506
185	0.0199	0.0026	0.0093	1.1307	0.1477	0.5284
186	0.0175	-0.0064	0.0133	1.0802	-0.3951	0.821
187	0.0361	-0.0069	0.0341	2.0629	-0.3943	1.9486
188	-0.0301	-0.0057	0.0327	-1.4131	-0.2676	1.5352
189	0.0144	-0.0155	0.0053	0.5647	-0.6078	0.2078
191	0.005	-0.0016	0.0004	0.2092	-0.0669	0.0167
192	0.0022	-0.015	0.0061	0.1152	-0.7853	0.3194
193	0.0001	0.0143	-0.0214	0.0052	0.7409	-1.1088
194	-0.0371	-0.0276	0.0066	-1.5991	-1.1897	0.2845
195	-0.0004	0.0146	4.64E-06	-0.0187	0.6822	0.0002
197	0.0081	0.0164	-0.0051	0.3403	0.6891	-0.2143
198	-0.0075	-0.0214	-0.0143	-0.4438	-1.2663	-0.8462

(Continued)

**Table 11:** Continued.

Event ID	AR(-1) (1)	AR(0) (2)	AR(1) (3)	t-value(-1) (4)	t-value(0) (5)	t-value(1) (6)
199	0.0053	0.0109	0.0047	0.2637	0.5423	0.2338
200	-0.0208	0.0125	-0.0074	-1.2308	0.7396	-0.4379
201	-0.0248	0.0168	0.0018	-1.1222	0.7602	0.0814
202	-0.0156	0.0163	0.0032	-0.7685	0.803	0.1576
203	-0.0408	0.0047	-0.0277	-2.1361	0.2461	-1.4503
205	0.0053	0.0109	0.0047	0.2637	0.5423	0.2338
206	-0.0334	-0.0213	0.0128	-1.9647	-1.2529	0.7529
207	-0.0358	-0.0253	0.0174	-1.6054	-1.1345	0.7803
208	-0.0147	-0.0153	0.0163	-0.7277	-0.7574	0.8069
209	-0.0102	-0.0408	0.0048	-0.534	-2.1361	0.2513
211	-0.0042	0.0041	0.0117	-0.2019	0.1971	0.5625
212	-0.0145	-0.0334	-0.0211	-0.8529	-1.9647	-1.2412
213	-0.044	-0.0362	-0.0254	-1.9469	-1.6018	-1.1239
214	0.0015	-0.0035	0.0084	0.0718	-0.1675	0.4019
215	-0.008	-0.003	-0.0095	-0.4255	-0.1596	-0.5053
217	-0.0098	-0.0049	0.0034	-0.4579	-0.229	0.1589
218	-0.0142	-0.0327	-0.0196	-0.8304	-1.9123	-1.1462
219	-0.0003	0.0186	-0.0142	-0.014	0.8692	-0.6636
220	-0.0027	0.0154	-0.0078	-0.1579	0.9006	-0.4561
221	0.014	0.018	0.0129	0.6114	0.786	0.5633
222	0.0494	-0.0157	0.0019	2.2661	-0.7202	0.0872
223	0.0268	-0.0098	-0.0057	1.3137	-0.4804	-0.2794
225	0.0028	-0.0144	-0.017	0.0966	-0.4966	-0.5862
226	0.0006	0.0031	-0.0028	0.0267	0.1378	-0.1244
227	-0.0212	-0.0085	0.0301	-1.0144	-0.4067	1.4402
228	-0.0073	-0.013	0.0375	-0.4771	-0.8497	2.451
229	-0.0102	0.0161	-0.0193	-0.51	0.805	-0.965
231	-0.0131	-0.0013	0.0022	-0.9704	-0.0963	0.163
232	0.0042	0.0187	-0.0019	0.3158	1.406	-0.1429
233	0.0142	0.0004	0.0491	1.2793	0.036	4.4234
234	-0.0074	0.0012	-0.0133	-0.6491	0.1053	-1.1667
235	0.0064	-0.008	-0.0289	0.2415	-0.3019	-1.0906

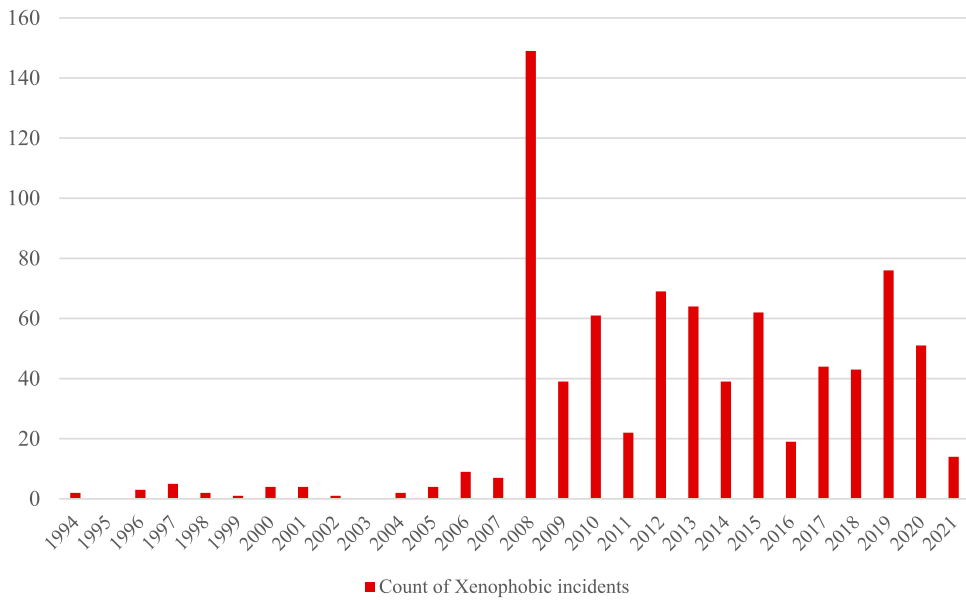
The table shows least squares regression results. Standard errors reported in parentheses have been corrected for heteroskedasticity and clustering of the residuals at the firm level.

**Table 12:** Supermarket groups ranked by JSE market capitalization as at March 3, 2016

	Market capitalisation as reported in annual reports (ZAR billions)
Woolworths Holdings	74.2
Shoprite Holdings	109.9
SPAR Group	34.5
Pick n Pay Stores	34.4
Massmart Holdings	32.6
Choppies Limited	4.3

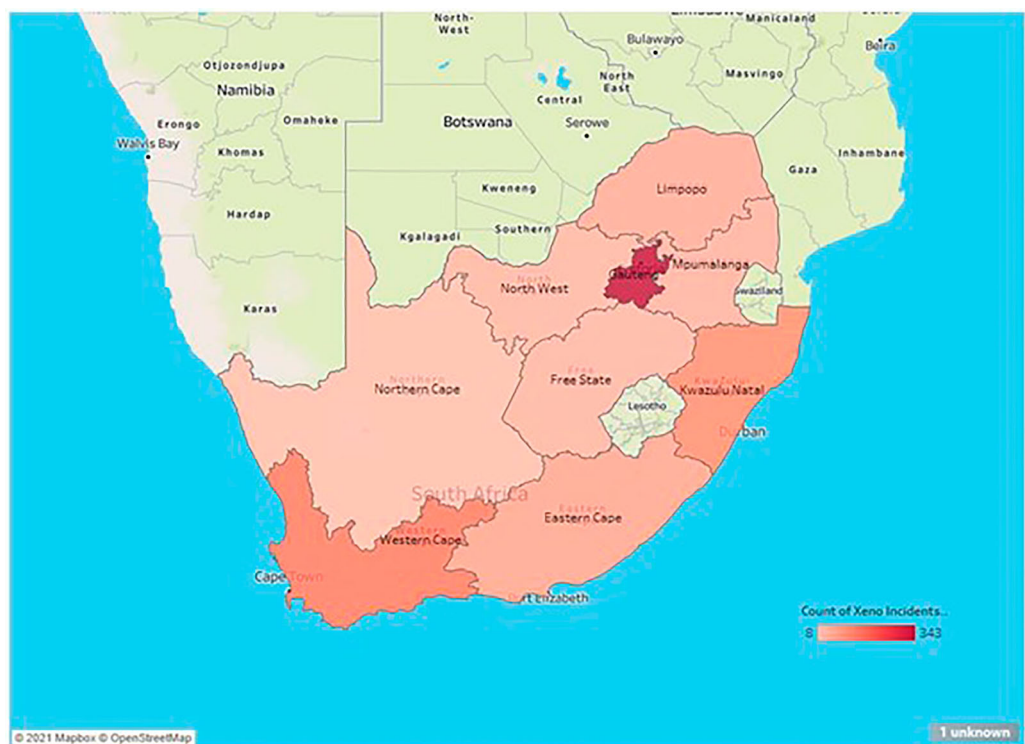
Source: INETBFA

## Appendix B

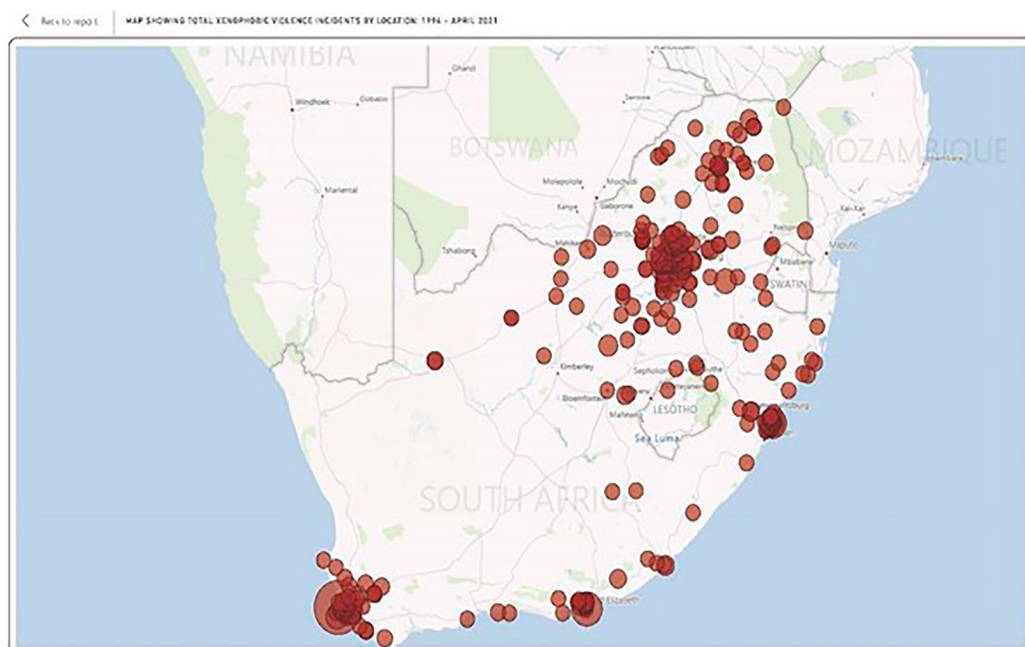


**Figure 1:** Incidents of xenophobic violence in South Africa by year: 1994 – April 2021

**Appendix C**



**Map 1:** Incidents of xenophobic violence in South Africa by province: 1994 – April 2021



**Map 2:** Incidents of xenophobic violence in South Africa by location 1994 – April 2021