

IMPACT OF STRIKES ON INVESTORS' CONFIDENCE IN THE SOUTH AFRICAN MINING SECTOR

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DECLARATION

I, Cicilia Chabalala declare that IMPACT OF STRIKES ON INVESTORS CONFIDENCE IN THE SOUTH AFRICAN MINING SECTOR is my own work; that all sources used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation was not previously submitted by me or any other person for degree purposes at this or any other university.

Signature: _____

Date: _____

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ABSTRACT

IMPACT OF STRIKES ON INVESTORS' CONFIDENCE IN THE SOUTH AFRICAN MINING SECTOR

Keywords: Strike, Investors' Confidence, risk, Investment Returns, South African mining sector, Platinum, Share price volatility and Profitability.

The impact of strikes in the South African mining industry has created a controversy, nationally and internationally by affecting investors' confidence. Shares in the platinum mines were sold and were disinvested from South African platinum mines to offshore countries. The situation has tarnished the reputation of South Africa, which is known as a supplier of 80% of the world's platinum. Platinum has massively transformed the economy of South Africa through exports, high employment and infrastructure development. The present study intends to investigate the impact of strikes on investors' confidence in the South African mining industry. The primary objective has been achieved by primarily focusing on share price volatility and the profitability ratios of platinum mines, using a sample period from 2008 until 25 July 2014.

Mining employees strike for several reasons: low wages, poor living conditions, sanitation and disagreements with management. The literature indicated that strikes are routine in the South African mining industry. It is recommended that investors approach the impact of strikes from a global point of view and not only within the South African context. The broader perspective regarding the impact of strikes in South Africa is that it can lead to a recession. However, the South African mining industry is not alone in experiencing strikes. Other resource-rich countries face the same challenges.

The study was analysed using event study methodology, developed by Ball and Brown in 1968. The share price volatility of each platinum company was investigated and analysed according to market capitalisation. The empirical findings indicated that the share price reacts on the day of the announcement of the strike and becomes very volatile during certain periods of the strikes. The share price volatility also increased in line with the duration of a strike. Profitability ratios recorded during the period of a major strike are negative. A negative ratio indicates poor performance which, in turn, affects investors' confidence, because investors prefer to invest in highly profitable mines. The profitability ratios of Anglo American, Impala Platinum, Lonmin, Northam Platinum and

Aquarius declined significantly from 2012. This is the year that the platinum sector started experiencing major strikes compared to other years.

As a result of declining profits, Anglo American Platinum, Impala Platinum and Lonmin have issued *force majeure* to the suppliers because companies were not able to fulfil contractual obligations. Another challenge facing the platinum sector is that companies sold assets due to the impact of the strike on operations and unprofitable mines were closed. The structure of the platinum companies would possibly change as the platinum companies merge with other companies. This would change the capital structure of the companies.

Based on the literature study and the empirical research performed and the results obtained, it can be concluded that this study complied with its primary and secondary objectives.

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS.....	ii
ABSTRACT	iii
TABLE OF CONTENTS	v
LIST OF TABLES	x
LIST OF FIGURES	xiii
LIST OF ABBREVIATIONS	xiv
CHAPTER 1: INTRODUCTION AND BACKGROUND	1
1.1 INTRODUCTION	1
1.2 COMMENCEMENT OF STRIKES	2
1.3 THE IMPACT OF STRIKES ON INVESTMENTS	2
1.4 THE OUTCOMES OF STRIKES IN THE MINING SECTOR	4
1.5 PROBLEM STATEMENT	4
1.6 OBJECTIVES OF THE STUDY	5
1.6.1 Primary objectives.....	6
1.6.2 Secondary objectives.....	6
1.7 RESEARCH DESIGN AND METHODOLOGY	6
1.7.1 Literature review	6
1.7.2 Population and sample	6
1.7.3 Measuring instrument and data collection method.....	7
1.8 ETHICAL CONSIDERATIONS.....	7
1.9 CHAPTER CLASSIFICATIONS	7
CHAPTER 2: BACKGROUND TO THE MINING SECTOR, INVESTOR CONFIDENCE INSTABILITY DUE TO IMPOSITION OF STRIKES	9
2.1 INTRODUCTION	9

2.2	THE ENGAGEMENT OF THE LABOUR RELATIONS ACT ON STRIKES	9
2.3	DEFINITION OF A STRIKE	10
2.4	DEFINITION OF THE MINING SECTOR.....	11
2.5	BACKGROUND FROM THE PERSPECTIVE OF AN INVESTOR	12
2.6	SIGNIFICANCE OF STRIKES IN SOUTH AFRICAN MINING companies	13
2.7	REASONS FOR THE STRIKES	18
2.8	MINING INDUSTRY PERFORMANCE HAS BEEN AFFECTED BY STRIKES	22
2.9	THE COST STRUCTURE OF THE MINING INDUSTRY	23
2.10	ANGLO AMERICAN PLATINUM PERFORMANCE.....	24
2.11	INVESTOR CONFIDENCE	28
2.11.1	Description of investors' confidence.....	28
2.11.2	Investors' confidence in South African mining companies	29
2.11.3	Investors' confidence influenced by behaviour	30
2.12	VOLATILITY OF FINANCIAL MARKETS DURING THE PERIOD OF STRIKE.....	32
2.13	VOLATILITY OF PLATINUM SECTOR ON THE JSE.....	33
2.14	CONCLUSION.....	37
CHAPTER 3: SHARE PRICE VOLATILITY AND PROFITABILITY		39
3.1	INTRODUCTION	39
3.2	RESEARCH PROCESS	39
3.3	RESEARCH DESIGN	40
3.4	METHODOLOGY.....	41
3.4.1	The event study methodology	41
3.4.2	Population.....	42
3.4.3	Sample.....	42
3.4.4	Market capitalisation	44

3.5	INTERPRETATION OF VOLATILE SHARE PRICE MOVEMENTS DURING the STRIKE.....	45
3.6	IMPORTANCE OF PROFITABILITY RATIOS TO INVESTORS.....	49
3.7	CONCLUSION.....	51
CHAPTER 4: ANALYSIS OF SHARE PRICE VOLATILITY AND PROFITABILITY RATIOS.....		
		52
4.1	INTRODUCTION.....	52
4.2	SHARE PRICE VOLATILITY FROM 2008 TO 2014.....	54
4.2.1	Anglo American Platinum (AMS) share price volatility.....	55
4.2.1.1	Strike in 2008.....	55
4.2.1.2	Strike in 2009.....	56
4.2.1.3	Strike in 2010.....	58
4.2.1.4	Strike in 2012.....	59
4.2.1.5	Strike in 2013.....	60
4.2.1.6	Strike in 2014.....	62
4.2.2	Impala Platinum Holdings (IMP).....	63
4.2.2.1	Strike in 2008.....	63
4.2.2.2	Strike in 2009.....	65
4.2.2.3	Strike in 2010.....	66
4.2.2.4	Strike in 2012.....	67
4.2.2.5	Strike in 2013.....	69
4.2.2.6	Strike in 2014.....	70
4.2.3	Lonmin PLC (LON) share price volatility.....	71
4.2.3.1	Lonmin PLC: Strike in 2008.....	72
4.2.3.2	Strike in 2009.....	73
4.2.3.3	Strike in 2010.....	74
4.2.3.4	Strike in 2012.....	75
4.2.3.5	Strike in 2013.....	77

4.2.3.6	Strike in 2014.....	78
4.2.4	Northam Platinum (NHM) share price volatility	79
4.2.4.1	Strike in 2008.....	79
4.2.4.2	Strike in 2009.....	81
4.2.4.3	Strike in 2010.....	82
4.2.4.4	Strike in 2012.....	83
4.2.4.5	Strike in 2013.....	84
4.2.4.6	Strike in 2014.....	85
4.2.5	Aquarius Limited (AQP) share price volatility.....	87
4.2.5.1	Strike in 2008.....	87
4.2.5.2	Strike in 2009.....	89
4.2.5.3	Strike in 2010.....	90
4.2.5.4	Strike in 2012.....	91
4.2.5.5	Strike in 2013.....	92
4.2.5.6	Strike in 2014.....	94
4.2.5.7	Total return on investment	95
4.3	CONCLUSION.....	96
4.4	SECTION 2: ANALYSIS OF PROFITABILITY RATIOS OF PLATINUM COMPANIES	97
4.4.1	Profitability Ratios of Anglo American Platinum from 2008 to 2013	99
4.4.2	Profitability Ratios of Impala Platinum Holdings from 2008 to 2013 by using line items in the financial statements of Impala Platinum	102
4.4.3	Profitability Ratios of Lonmin PLC from 2008 to 2014 based on the line items available in the financial statements of Lonmin	105
4.4.4	Profitability Ratios of Northam Platinum from 2008 to 2013 using line items from the financial statements of Northam Platinum.....	108
4.4.5	Profitability Ratios of Aquarius Limited based on the line items in the financial statements from 2008 to 2013	111

4.5	CONCLUSION	114
4.5.1	Gross Profit Percentage.....	115
4.5.2	Net profit percentage	115
4.5.3	Return on Assets	115
4.5.4	Return on Equity	116
4.6	THE REACTION OF RATING AGENCIES IN MEASURING INVESTORS CONFIDENCE DURING THE PERIOD OF THE STRIKE	116
4.7	INTERPRETATION OF CREDIT RATINGS	117
4.8	CONCLUSION	119
CHAPTER 5: CHALLENGES FACING the SOUTH AFRICAN MINING industry		121
5.1	INTRODUCTION	121
5.2	THE IMPLICATIONS OF STRIKES IN THE HISTORY OF SOUTH AFRICA.....	121
5.3	SHORT-COMINGS IN THE MINING SECTOR.....	122
5.4	FACTORS TO BE ADDRESSED BY THE MINING SECTOR	124
5.5	TRANSFORMATION OF THE MINING SECTOR	125
5.6	SUSTAINABILITY OF THE PLATINUM SECTOR.....	125
5.7	CHANGING THE STRUCTURE OF THE MINING COMPANIES.....	127
5.8	CONCLUSION	129
CHAPTER 6: RECOMMENDATIONS AND CONCLUSION		131
6.1	INTRODUCTION	131
6.2	SUMMARY	131
6.3	LIMITATION OF THE STUDY.....	134
6.4	RECOMMENDATIONS.....	134
6.5	AREAS OF FURTHER RESEARCH.....	136
6.6	CONCLUSION	136
REFERENCES.....		138

LIST OF TABLES

Table 2.1:	Average market prices of platinum products	16
Table 2.2:	Summary of major causes of strikes in the mining industry.....	18
Table 2.3:	Analysis of Anglo American platinum earnings	26
Table 3.1:	Ratios to determine the financial implications of strikes	50
Table 4.1:	The announcement dates of strikes in the platinum sector	52
Table 4.2:	Market capitalisation of platinum companies.....	53
Table 4.3:	Anglo American: Strike 2008.....	55
Table 4.4:	Anglo American: Strike 2009.....	56
Table 4.5:	Anglo American: Strike 2010.....	58
Table 4.6:	Anglo American: Strike 2012.....	59
Table 4.7:	Anglo American: Strike 2013.....	61
Table 4.8:	Anglo American: Strike 2014.....	62
Table 4.9:	Return on investment for Anglo American Platinum from 2008 to 2014	63
Table 4.10:	Impala Platinum Holdings: Strike 2008.....	64
Table 4.11:	Impala Platinum Holdings:Strike 2009.....	65
Table 4.12:	Impala Platinum Holdings:Strike 2010.....	66
Table 4.13:	Impala Platinum Holdings:Strike 2012.....	68
Table 4.14:	Impala Platinum Holdings:Strike 2013.....	69
Table 4.15:	Impala Platinum Holdings:Strike 2014.....	70
Table 4.16:	Return on investment for Impala Platinum Holdings from2008 till 2014	71

Table 4.17:	Strike 2008	72
Table 4.18:	Lonmin PLC: Strike 2009	73
Table 4.19:	Lonmin PLC: Strike 2010	74
Table 4.20:	Lonmin PLC: Strike 2012	76
Table 4.21:	Lonmin PLC: Strike 2013	77
Table 4.22:	Lonmin PLC: Strike 2014	78
Table 4.23:	Return on investment for Lonmin from 2008 to 2013	79
Table 4.24:	Northam Platinum: Strike 2008	80
Table 4.25:	Northam Platinum: Strike 2009	81
Table 4.26:	Northam Platinum: Strike 2010	82
Table 4.27:	Northam Platinum: Strike 2012	83
Table 4.28:	Northam Platinum: Strike 2013	84
Table 4.29:	Northam Platinum: Strike 2014	86
Table 4.30:	Return on investment for Northam Platinum from 2008 to 2014	87
Table 4.31:	Aquarius: Strike 2008	88
Table 4.32:	Aquarius: Strike 2009	89
Table 4.33:	Aquarius: Strike 2010	90
Table 4.34:	Aquarius: Strike 2012	91
Table 4.35:	Aquarius: Strike 2013	93
Table 4.36:	Aquarius: Strike 2014	94
Table 4.37:	Return on investment for Aquarius Limited from 2008 to 2013	95
Table 4.38:	Platinum companies affected by strikes from 2008 to 2014	96

Table 4.39:	Benchmarks for profitability ratios from 2004 to 2007	98
Table 4.40:	Average platinum price from 2008 to 2013 in US dollars per ounce of platinum.....	99
Table 4.41:	Profitability Ratios of Anglo American Platinum from 2008 to 2013 ..	100
Table 4.42:	Profitability ratios of Impala Platinum Holdings from 2008 to 2013 ...	103
Table 4.43:	Profitability Ratios of Lonmin PLC from 2008 to 2013.....	106
Table 4.44:	Profitability Ratios of Northam Platinum from 2008 to 2013	109
Table 4.45:	Profitability Ratios of Aquarius Limited from 2008 to 2013	112
Table 4.46:	Summary of profitability ratios of platinum companies	114
Table 4.47:	South Africa's ratings history	117
Table 5.1:	Risks faced by Platinum companies.....	126

LIST OF FIGURES

Figure 2.1:	Platinum Price compared with copper price	15
Figure 2.2:	South African Industrial Production Index from October 2011 to October 2012	17
Figure 2.3:	Rate of fatal injuries (per 100 000 workers) by age group in the mining industry and in all industries, 1992-1995	21
Figure 2.4:	Profit Maximising Equilibrium and Initial Marginal Cost Level	25
Figure 2.5:	Platinum and palladium prices outlook during the period of strikes (2013).....	35
Figure 3.1:	Platinum mining companies listed on the JSE.....	43
Figure 3.2:	Share prices over a period of five years	49

LIST OF ABBREVIATIONS

AMS	Anglo American Platinum
AQP	Aquarius Limited
BRICS	Brazil, Russia, India, China and South Africa
CDS	Credit Default Swaps
COM	Chamber of Mines
FOREX	Foreign Exchange
IFRS	International Financial Reporting Standards
ILO	International Labour Relations
IMP	Impala Platinum Holdings
IPI	Industrial Production Index
J177	JSE Mining Index
J203	JSE ALL SHARE INDEX
LON	Lonmin
MPRDA	Mineral and Petroleum Resources and Development Act
NHM	Northam Platinum Holdings
PMGs	Platinum Group Metals
ROA	Return on Assets
ROE	Return on Equity

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

According to Tholana (2012: iii), South Africa is the home of some of the world's largest mining companies and to a host of minerals that are of strategic importance to the global and national economy. It holds the world largest reserves of 13% gold, 88% platinum, 72% chrome, 80% manganese and 12% diamonds. But among all these minerals, platinum, gold and coal are the major economic contributors in terms of sales revenue, export earnings and job creation. The mining sector is not always operating effectively. Tholana (2012: iii) indicated that the productivity and profitability of mining companies have declined.

However the Department of Labour (2012:3) continues to regard South Africa as an emerging market despite challenges facing the mining sector. The rapid growth in the mining sector as an emerging market is associated with challenges, such as income inequalities of mining employees, persisting vulnerabilities, rising expectations in pursued of improved education and access to opportunities.

Johannesburg Stock Exchange (JSE) is the cornerstone of the South African Therefore Zoghby (2013:17) reveals that mining among all the sectors trading on the economy, with strong support from the industry. It is the largest contributor to corporate tax and a substantial direct and indirect source of economic activity. Du Vanage (2013:39) regards the South African platinum mining sector as the world's major platinum supplier, with around 80% of the world's platinum reserves vested in the country. The mining industry in the history of South Africa has been a major source of financial security for the South African government and for the mining sector itself.

Baxter (2013:15) states that the role of mining is often underestimated. Mining, according to Baxter (2013:15), is a key foundation industry that is enabling South Africa to become the most industrialised country in Africa. It is a large employer of semi-skilled and skilled workers and, critically, an important contributor of FOREX. Equally important, mining is the source of foreign investments and it assists the country in funding the current account deficit. It is also a significant contributor to transformation as the sector contributed R468 billion to the GDP and created 1 353 383 jobs.

The purpose of the present study is to determine the impact of strikes on investors' confidence. The study focuses objectively on the listed mining companies on the JSE. Volatility of share prices during periods of strikes will be investigated, in close proximity to the degree of investors' confidence.

1.2 COMMENCEMENT OF STRIKES

Twala (2012:63) maintains that South Africa labour movement has taken years to gain recognition but after 1994, the country managed to put in place clear guidelines relating to labour relations. Working conditions in the mines were improved, but the edifice seemed to collapse when the mineworkers downed tools in the mining industry demanding better wages. The strike started in the mining industry despite the fact that the industry has the highest value of resources and large commodities such as platinum, manganese and chromite Zoghby (2013:2).

Therefore Bhana (1997:43) states that industrial relations practitioners and economists have devoted much attention to strikes, as a classic example of collective bargaining. Strikes are viewed as a good investment for the unions as unions gain money from mine workers during the period of strike but it is a poor investment for companies because during the period of strike production is disrupted. In line with trends in many developing countries, it has been discovered that South Africa mines have witnessed a sharp rise of industrial strikes.

1.3 THE IMPACT OF STRIKES ON INVESTMENTS

According to Ncube (2013:2), during the period of strikes, capital outflows increased significantly, indicating loss of confidence among investors due to lower investment returns. The study undertaken by Burke (2011: 373) states that if there is inconsistency on investment returns, the legitimate expectations of investors cannot be achieved.

Mcnally (2013:1) points out that investor confidence can be measured in relation to indexes used by other developed countries. State street investor confidence measures investor confidence or risk appetite quantitatively, by analysing the actual buying and selling patterns of institutional investors. The index assigns a precise meaning to changes in investors' risk appetite. The greater the percentage of allocations to equities, the higher the risk appetite or confidence. The index differs from survey-based

measures, as it is based on the actual trades as opposed to the opinions of institutional investors.

The study undertaken by Lion (2013) on the Fraser Institute Annual Survey reveals that Moody's investor service, Standard and Poor and Fitch Ratings, have downgraded South Africa's credit ratings due to the surging mining strikes.

The South African mining sector is regarded as a mature industry that is undoubtedly continuing to create opportunities for foreign direct investment and technological development (Sorensen 2011:626). Reuters (2014) brings in an analogy that strikes have affected growth and export earnings and people affected by strikes have sold their most valuable possessions.

The South African Reserve Bank (2014:5) recorded that 70 000 platinum workers downed tools in the Rustenburg mine. Findings indicate that workers have lost R9.6 billion in wages while companies incurred a loss of R 21.5 billion in earnings. Therefore to rebuilt investors' confidence, it is important to reduce the negative impact that strikes have on the economy.

Du Vanage (2013:38) emphasised that the salary demand of R12 500 per month for workers will never be feasible to the mining companies. Conversely, Stuart (2007) has a different point of view. Although investors demand returns on investments, they also have a moral duty to participate in the wage negotiations of low-paid mining employees.

In addition Seedat (2013: i) found that the strike has shocked investors. This is despite the claim that South Africa mining is of significance, historically and economically. When comparing the impact of protected and unprotected strikes on investments, Seedat (2013: i) claims that both strikes have a negative impact and states that protected strikes have less impact than unprotected strikes.

However Du Vanage (2013:39) emphasised that without investment in the mining sector, the mining industry would not survive at all. Strikes have cost the mining industry US\$ 1.5 billion and a loss of more than 300 000 ounces of platinum. There was a possibility of retrenchments and shaft closures, indicating that production could not proceed as usual in the mining companies during the duration of the strike.

1.4 THE OUTCOMES OF STRIKES IN THE MINING SECTOR

Vickers (2002:5) argues that the cost of labour is partly influenced by laws and market forces, though such laws are considered to be unclear to other employees. Sorensen (2011:642), however, raised the inescapable fact that mining contributes to tax revenue, royalties and equities. The amount of tax revenue creates benefits such as economic growth, job opportunities and foreign exchange earnings. The South African Chamber of Mines (2013:1) indicated that, although investors may be patient, at certain times South Africa lost its attractiveness because of disinvestments.

The International Monetary Fund (2013:28) indicates that in order to improve investor confidence and competitiveness of the mining sector, it is important for the rand to appreciate, simplify the monetary policy and to provide finance in the mining industry. The mining sector would be able to satisfy workers needs and satisfy investment returns.

Olsson (2002:3) feels strongly that over the centuries, the perception of risk has changed as the level of commercial activity increased and people started to explore different investment opportunities by investing their wealth in different portfolios. People have started to understand that risk is associated with human actions such as strikes, meaning they could exert some control over their investments during strikes. The phenomenon of risk-taking on investments requires flexibility and an approach of effective control.

1.5 PROBLEM STATEMENT

The impact of strikes in the South African platinum sector is a dominant feature that has affected financial performance of platinum companies. The main impact resulted in that Platinum Group Metals produced and sold declined while fixed costs and overheads continued to be incurred during strikes. Strikes have affected profitability of the group and the ability to generate cash flow (Lonmin 2014 Interim Results, 2014:14).

Despite extensive literature and media coverage, the mining industry is continuing to experience strikes. The strikes are affecting mining performance which, in return, has caused work stoppages, retrenchments, shaft closures, high operating costs, failure to declare dividends and has reduced investors' confidence. It is therefore imperative to obtain an understanding of the impact of strikes on investor confidence.

According to Du Vanage (2013:39) foreign investments in the South African mining sector fell during 2012 and that Anglo Platinum as one of the companies affected by the strike announced that it was planning to cut 14 000 jobs to save costs. The situation raised concerns on the industry and on foreign investors who invested capital in the South African mining industry with the intention of gaining high returns through dividends and capital appreciation.

The South African Reserve Bank (2012) pointed out that volatile performance in the mining sector has been protracted by unrest and shut down operations. The sector has, as a result experienced escalating cost pressures such as fixed costs incurred during the period of strike, subdued global demand and lower international commodity prices.

In an interview conducted by Wild and Cohen (2012), the Governor of The Reserve Bank, Marcus has contested that the economic outlook of South Africa deteriorated rapidly in 2012 and capital outflow was an indicator of loss of confidence by investors. As reported by Wild and Cohen (2012), President Zuma stated that, as a result of the unrest in the mining sector, the country faces a challenge of lower investments and job creation, causing the country's cost of borrowing to increase.

Sprague (2013:62) states that the cost and execution challenges have created a very different environment in the sector and has affected risk-adverse investors. But what matters is the confidence level of investors. Yang, Hsu and Tu (2008:24) observed that decisions made with great confidence are more likely to result in favourable results than those made with little confidence. The implication of investors' confidence is that viable investment opportunities can only be made if investors are confident enough about the positive performance of investments and the country.

1.6 OBJECTIVES OF THE STUDY

The study is carried out to determine whether strikes in the South African mining industry affected investor's confidence. Share price volatility will be investigated during the period of strikes to determine whether the share price dropped or improved during strikes. The impact of strikes on profitability ratios of platinum companies is investigated to determine whether investor confidence was affected by declining profits. Therefore the results of the study will indicate whether the mining industry needs to take substantive measures to improve its performance as an initiative for improving investor's confidence.

1.6.1 Primary objectives

The primary objective of the study is to determine the impact of strikes on investors' confidence in the South African mining sector.

1.6.2 Secondary objectives

- To reveal reasons for the strikes in the mining sector.
- To determine the significance of outcomes of the strikes, mainly on investors' confidence and on share price.
- To determine what the literature reveals, with regard to strikes in the mining sector.
- To determine the degree of volatility of the share prices in the mining sector, resulting from labour strikes.
- To determine the impact of strikes on profitability ratios based on the financial statements of South African platinum mining companies listed on the Johannesburg Stock Exchange.
- To address challenges facing the South African Mining industry.

1.7 RESEARCH DESIGN AND METHODOLOGY

The study will commence with a review of the literature. The analysis of share price volatility of platinum mining listed companies is documentary research analysed using qualitative and quantitative research. Share prices will be selected for 20 days before a strike, day of strike and 20 days after strike and the degree of volatility during the period of strike will be determined by standard deviation. The findings obtained from tables and graphs will be discussed for each company to assist on concluding on whether the strike has affected platinum companies.

1.7.1 Literature review

A literature review will be conducted through secondary data sources such as textbooks, journal articles, newspaper articles and the Internet.

1.7.2 Population and sample

Target population: JSE listed mining companies.

Sample: This was JSE listed platinum mining companies that were targeted by strikes from the year 2008 to the year 2014 and the companies have the highest market capitalisation. Du Vanage (2013:39) reveals that foreign investment in the South African mining industry fell in 2012. These companies included are Anglo American Platinum, Aquarius, Impala Platinum Holdings Limited, Lonmin, Northam Platinum and Aquarius Limited.

1.7.3 Measuring instrument and data collection method

This study is intended to gather data regarding the impact of labour strikes on investors' confidence by examining share price volatility and profitability ratios. It encompasses mining companies listed on the JSE that have been affected by strikes during the period 2008 to 2014. Information from secondary sources regarding share prices and profitability ratios will be analysed.

Foreign investments in the South African mining industry before and after major strikes will be investigated, by using secondary sources to determine periods of strikes. The inflow and outflow of investments during strikes will be discussed, considering whether or not such a significant movement has affected investors' confidence and share prices.

Method: The research is intended to add value to the existing knowledge that deals with the impact of strikes on the mining industry. The methodology applied is an event study methodology and it is a mixed methodology consisting of qualitative and quantitative analysis.

1.8 ETHICAL CONSIDERATIONS

All information is public knowledge and obtained mainly from secondary sources.

1.9 CHAPTER CLASSIFICATIONS

Chapter 1: Introduction and background to the study: The chapter addresses the primary and secondary objectives set in order to address the research problem. The chapter further shows the layout of the study.

Chapter 2: Literature review: An extensive literature review regarding the impact of strikes on investors' confidence and on share price will be presented. Definitions of different elements of the study are provided, together with the significant contribution of the mining sector to the economy of South Africa. The Labour Relations Act (Act No. 66,

1995) and the profile of mining companies listed on the JSE will be discussed. The volatility of share prices during strikes is investigated in comparison to prior periods, when the mining sector was not affected by strikes.

Chapter 3: Research design and methodology: The methodology of the study is described. Data from documentary sources relating to the companies chosen that have been targeted by strikes will be gathered from the year 2008 to the year 2014 using event study methodology.

Chapter 4: Findings: The empirical findings from information collected, discussed in Chapter 3 will be discussed in detail, by using graphs and tables to demonstrate the degree of share price volatility during the period of strikes. Profitability ratios will be analysed as the basis for assessing the impact of strikes on profits of platinum companies. The results will assist in concluding whether or not the strikes in the platinum mines have affected share prices and profitability ratios as determinants of investors' confidence.

Chapter 5: Challenges facing the mining sector: The consequences of strikes in the South African mining sector have far-reaching outcomes. Chapter 5 focuses on the challenges that arose in individual mining companies, particularly platinum companies, as a result of strikes.

Chapter 6: Summary, conclusions and recommendations: An extensive summary for every chapter is presented as well as recommendations for further study. The conclusion will be based on the empirical findings obtained in the study.

CHAPTER 2: BACKGROUND TO THE MINING SECTOR, INVESTOR CONFIDENCE INSTABILITY DUE TO IMPOSITION OF STRIKES

2.1 INTRODUCTION

The purpose of Chapter 2 is to provide a background regarding strikes in South Africa and their impact in the mining sector. This chapter is intended to provide literature on the mining sector in South Africa and to reveal why the sector plays a pivotal role in the economy both in South Africa and internationally. The chapter also aims to determine why investors' confidence plays a significant role in the success of the mining companies.

Due to the strikes, the South African mining industry has a negative impact on the South African economy that is already struggling to cope with the euro area debt crisis and a decline in global commodity prices. This crisis is weakening investor's sentiment and confidence in the South African economy. Ncube (2013:1) who attended the market brief to discuss mining problems states that strikes have caused the Gross Domestic Product (GDP) to fall from 2.1% in the last quarter of 2012 to 0.9% in the first quarter of 2013. Clare (2012:58) adds that, as a result of declining GDP, inflationary pressures are high in South Africa. However, historically the South African mining sector has contributed enormously to the GDP since the early 1980s. More than other sectors, the mining sector promoted capital growth by increasing profitability and seizing valuable investment opportunities (Economics Department, the Chamber of Mines of South Africa 1994:51).

The literature started with two issues: The first issue relates to whether or not strikes have an impact on investors' confidence on listed mining companies and the second issue relates to the degree of share price volatility during the period of the strike. The next section describes strikes in accordance with the labour law applied in South Africa.

2.2 THE ENGAGEMENT OF THE LABOUR RELATIONS ACT ON STRIKES

Erasmus *et al.* (2005:493) describe strikes as a partial refusal to work, or the retardation or obstruction of work for the purpose of defending the socio-economic interest of workers. Manamela and Budeli (2013:308) state that employee's right to strike is an essential component of the freedom of association and strike action is regarded as the

most important means of collective bargaining. According to Brett and Goldberg (1979:466), frequent strikes demonstrate characteristics within the sector that cannot be changed even if initiatives are taken.

Sayles (2009:42) describes another type of strike as a wildcat strike. This is work stoppage called by a local union, without the authorisation of national unions. Such a strike can be in the form of cessation of work during the contract period, evidenced by distinct types of collective bargaining. It symbolises a struggle for power where employees report to be ill and are not treated fairly in accordance with labour law. Brett and Goldberg (1979:466) explain that there are two forms of strike, being a local strike and a sympathy strike: A local strike occurs when there is dispute between striking employees and the employer and a sympathy strike happens when the miners at one mine strike to assist miners at other mines. According to Manamela and Budeli (2013:308), the right to strike is protected by international, regional and domestic laws, but it is not certain. Therefore it is important to define strikes in terms of the Constitution of South Africa.

2.3 DEFINITION OF A STRIKE

Strike is defined by Brown and Zmikewski (1987:61) “as a *significant economic event that affects earnings and, on average decreases the market value of shareholders’ equity*”. However, the Constitution of South Africa, under the Bill of Rights Act No 23 (1) 2 C of 1995, states that every employee has the right to strike, to inform and to join trade unions. It further stipulates according to Finnemore and Van Resburg (2002:42) that every employee has the right to participate in the activities and programmes of trade unions. However, Keyser (1999:13) disagrees with labour relations Act by stating that conditions in South Africa are not yet conducive to employees although certain measures have been implemented. The reason for Keyser’s disagreement is that labour unions are not decreasing the frequency of strikes. This justifies the fact that employers’ organisations have a history of fragmentation, indicating that South Africa’s move to democracy is still at an early stage.

However Sayles (2009:42) reveals that, without strikes, employees would not earn enough salaries as expected from companies. The suggestions indicated that the strike is a tactic of last resort and a primary weapon for solving mineworkers problems. From the economic perspective, Bhana (1997:43) proposes that the exact cost of the strikes

cannot be precisely determined, as it includes pre-strike inventory costs, shutdown and start-up costs. However, Brett and Goldberg (1979:466) state that, at certain times, strikes result in a resolution to the problem and provide an opportunity for the initiation of a grievance procedure to solve the problem.

Geraghty and Wiseman (2008:305) regard strikes as a source of inefficiency that brings success, failures and compromises to the company. Myers and Sarotto (2010:21) reason that the strike affects the rates of unions, employment rates and capital structure, which is a strategic variable comprised of debt and equity. If companies lower financial leverage before contract negotiations of strikes, it causes an increase in the duration of the strike. Brett and Goldberg (1979:468) proves that mines with better working conditions have lower strike-rates than mines with higher strike-rates.

Bhana (1997:43) classifies strikes in the mining industry as an investment, being the giving up of resources in order to achieve higher returns in the future. However, strikes are a viable investment for unions and a poor investment for companies as they result in a reduction in the company's value during the period of the strike. Srnastava (2007:2) regards employees' substantive issues as being perennial in nature, as they have no absolute solution. Brett and Goldberg (1979:468) reveal that if a mine manager is always conveniently available to solve issues relating to strikes and responds quickly and appropriately to employees' problems, as they arise, there will be fewer wildcat strikes and grievances. The next section defines mining according to perspective of different authors and highlights the significant importance of mining in the economy of South Africa.

2.4 DEFINITION OF THE MINING SECTOR

Mining is defined by Han Onn and Woodley (2014:1) "as an industry that deals with the extraction of finite natural resources and has significant environmental and social impacts. Ruiz Martin (2014:25) defines mining as an extraction industry that does not relate to the final consumer. Mining is defined by Landen *et al.* (2000) as an industry that deals with the exploration and development of mineral properties. Ruiz Martin (2014:25) further states that mining activities encompass exploration, feasibility design, construction, operation, closure and rehabilitation".

According to Bryceson and Mackinnon (2012:513), mining was established to attract investments and to provide high employment opportunities, by offering high returns on

investments and remunerating employees with high wages. Han Onn and Woodley (2014:1) stated that mining contributes to corporate tax and royalties. It provides employees with a platform for training opportunities. However, according to Morantz (2013:90), the mining industry has uncontrollable risks that have attracted a significant portion of scholarly attention.

Despite the risks faced by the mining industry, Harrison and Zack (2012:551) indicates that the city of Johannesburg has developed because of the achievements of the mining industry. Mining on the Witwatersrand started with small developments. It became an independent sustainable sector until the late 1990s and started contributing to the South African national economy by creating employment. Bryceson and Mackinnon (2012:514) state that mining creates synergies, increases urbanisation and helps in promoting the racial system of South Africa. The mining industry has helped in the development of the manufacturing sector and financial services.

Therefore it can be stated that mining brought developments despite frequent strikes that have dominated the industry. Firstly between 1980 and 1983 the mining industry has experienced ten strikes annually. During 1984, there were 26 strikes and by, 1986, there were 89 strikes, involving 200 000 employees. In 1987, strikes dropped to 59, but the number of man days lost due to strikes increased considerably (Economic Department, the Chamber of Mines of South Africa, 1994:63). The next section is intended to provide literature regarding the definition of an investor.

2.5 BACKGROUND FROM THE PERSPECTIVE OF AN INVESTOR

The present study intends to determine the degree of confidence on investments held by investors during the period of strike. It is therefore important to give a brief explanation of an investor, as, among all stakeholders, engaged in the mining sector, investors' securities are the most affected by strike.

Annacker (2011:533) defines "*an investor as a legal person, constituted under the laws of a contracting party, with the capacity to invest*". Oberholster et al. (2011:27) also explained an investor as *the supplier of capital exposed to inherent risk*". Investors' decisions are therefore based on the company's ability to generate cash flows and to pay dividends at the agreed time.

International Financial Reporting Standards (“IFRS”) 10 (2012:A399) outlines that “*an investors as the owner of the company being a stakeholder who has control over the company*”. In the case of the mining companies, investors refer to corporations, institutions and individuals who have interest in the mining companies. Corporate investors are defined by Beckett (2000:155) as export-oriented companies trading at prices that are mostly competitive. The major participants examples of corporate investors include relatively large multinational companies in Africa.

Collier and Pattillo (2000:27) demonstrate that “*Africa, in which South Africa is included, has so far not attracted sufficient private investments. The major impediment to private investment is probably the perceived high level of risk. Beckett and Sadarkasa (2000:22) justify that to choose the right investment opportunity is associated with looking for the proverbial needle in the haystack*”. Olsson (2002: xiii) proposes that life is all about seizing opportunities as benefits can only be attained if investors accept exposure to risk. The next section provided literature that showed the significance of strikes in the South African mining industry.

2.6 SIGNIFICANCE OF STRIKES IN SOUTH AFRICAN MINING COMPANIES

Vivoda (2010:49) hypothesises that, in the ideal world, investments flow to nations that have the most abundant and richest mineral deposits. In fact, many other factors besides mineral endowment influence investment decisions and assurance on the securities. A report from PriceWaterhouseCoopers (2012:3) indicated that market capitalisation of mining companies, being companies with primary and secondary listing on the JSE with their main operations in Africa, decreased by five percent between June and September 2012.

African Research Bulletin (2012:19694) further explained that the rand fell to R8.97, which is more than 1.9%, against the U.S. dollar on 8 October 2012. This degree of volatility of the rand has been at the weakest level since April 2009. Leon (2013:177) reports that during the period of the strike, the rand was outperformed by the currencies of Namibia and Botswana as countries situated close to South Africa. Bonney (2013:12) warns that the longer the strike occurs the more far-reaching is its impact. A two-day strike irritates and a four- day strike becomes much more critical as it increases costs of production.

Therefore Leon (2012:174) pointed out that the six-week strike on Impala Platinum mine in February 2012 led to the killing of three people and resulted in US\$322 million being lost in revenue. Leon (2012:176) further states that exports for platinum and gold sector estimated at US\$1.4 billion, reduced the South African GDP in 2012 by 0.5 of a percent. The consequences have been felt over other sectors of the economy with no connection to mining, such as agriculture.

Moody's Standard and Poor Index on 27 September 2012 downgraded the South African Government Bond Rating from A3 to Baa1 and portrays a negative outlook, as Lion (2012:173) stated. Isa (2012:1) explains that the credit ratings assist in determining the country's cost of borrowing and affect investors' confidence for local assets, such as equities, bonds and currencies. Standard and Poor's rating after the Marikana strike that happened in August 2012 was two notches above the bad level and this has perpetrated investors to have interest in government bonds that are considered speculative instead of buying bonds in mines that are affected by strikes.

The weaker rand has affected the average South Africans spending and has escalated the costs of the proposed infrastructure programme. The African Research Bulletin (2012:19694) shows that commodities like maize, wheat and oil were more expensive for South Africans during the period of the strike as they were priced in dollars. Donovan and Lukhele (2013:70) point out that the price of commodities has increased since 2008 and has continued to increase in 2013 and 2014 as the labour strike in 2014 has started on 23rd January and it affected the country of South Africa.

As a result of strikes, the Preliminary Results of Anglo American company obtained from the audited annual report in 2012 (2012:19), indicated that in 2011 the price of platinum was \$1 725 per ounce. The price significantly decreased in 2012, to \$1 555 per ounce, because of the strike at Marikana. The year 2011 achieved a rand basket price of R19 595 per ounce and, swiftly in 2012, the rand basket price rose slightly to R19 764/oz. Following the assessment of the carrying value of platinum projects with group capital priorities, an impairment charge of \$0.6 billion on a post-tax basis has been recorded.

Figure 2.1 obtained from Anglo American Platinum Preliminary Results (2013:19) is incorporated in the study to show the reaction of platinum and copper price during the period of strike from 2011 to 2012. On 16 August 2012, the platinum price fell

precipitously, below R18 000 per ounce. This is indicated by the declining part of the graph. However the graph representing copper did not decline significantly on the day the strike was announced. During the 2013 and 2014, the cost of producing each ounce of PGM included the adverse impact of strike as the cost escalated from R8, 960 in 2013 to R13, 058 per ounce 2014 causing the increase in the platinum price (Lonmin Interim Results, 2014:14).

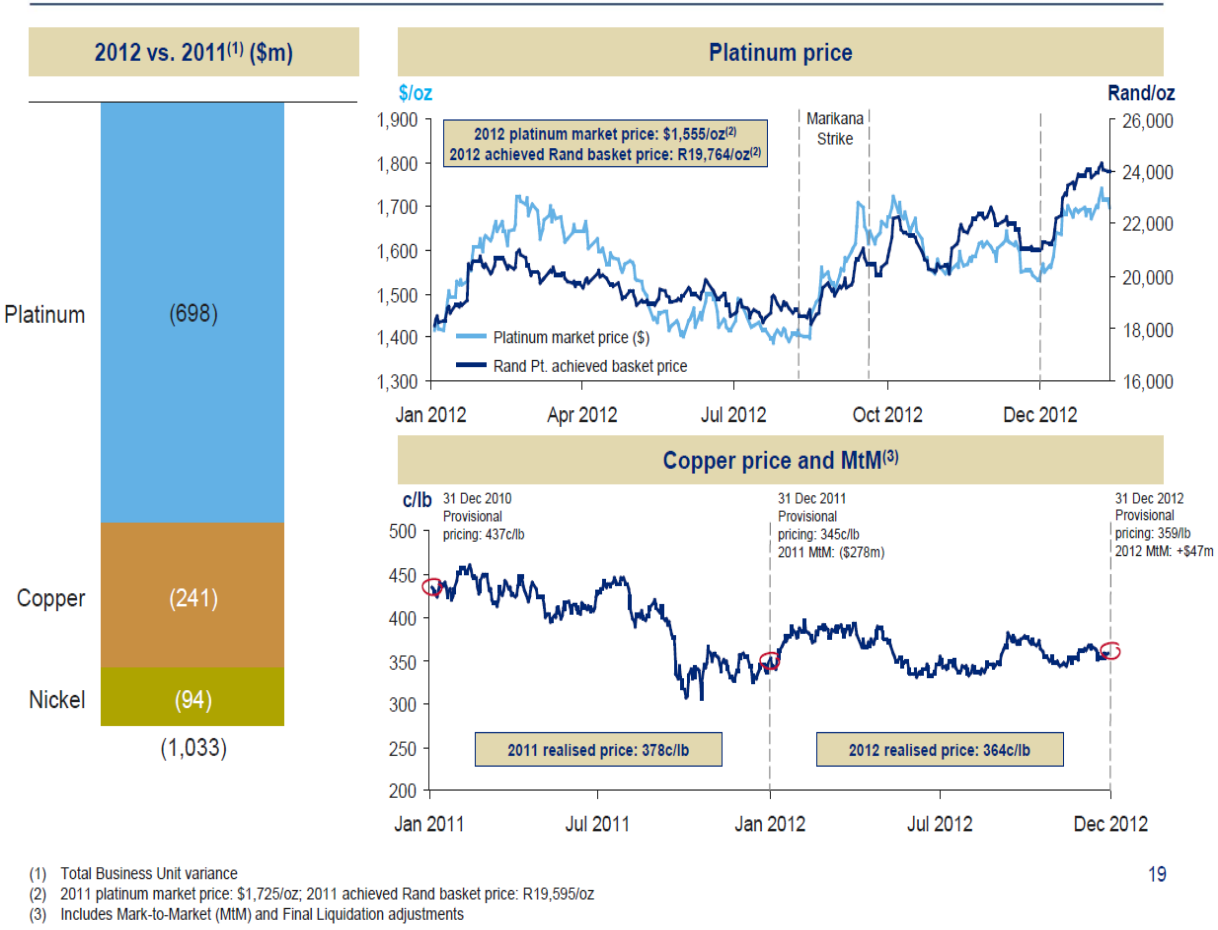


Figure 2.1: Platinum Price compared with copper price

Source: Anglo American Platinum Preliminary Results (2013:19).

When analysing the mineral market, prices during the years 2011 and 2012, as shown by the Preliminary Results of Anglo American Company for 2012 (2012:33), the average market price of mineral resources has declined. The first metal on the spectrum below is iron ore, with a decline of 23.7%, Thermal coal (FOB South Africa) declined by 19.2%, HCC (FOB Australia) by 27.3%, copper by 9.75%, nickel (LME) by 23%, platinum by 9.8%, palladium by 12% and rhodium by 12%. The platinum basket has been the only mineral showing a significant improvement, by 12.09% during the year 2012. Table 2.1

shows that during the period of the strike in 2012, the average platinum basket price improved in comparison with the average market price of other metals.

Table 2.1: Average market prices of platinum products

	2012		2011
Iron ore (FOB Australia) - \$/t	122	▼	160
Thermal coal (FOB South Africa) - \$/t	93	▼	116
Thermal coal (FOB Australia) - \$/t	94	▼	121
HCC (FOB Australia average quarterly benchmark) - \$/t	210	▼	289
Copper (LME) - cents/lb	361	▼	400
Nickel (LME) - cents/lb	794	▼	1,035
Platinum - \$/oz	1,555	▼	1,725
Platinum basket (realised) - ZAR/oz	19,764	▲	19,595
Palladium - \$/oz	647	▼	736
Rhodium - \$/oz	1,275	▼	2,022

Source: Anglo American Preliminary Results (2012: 35)

The African Research Bulletin (2012:19694) confirms that strikes put pressure on South African exports, while the country's imports become more expensive. These trends simply increased the country's trade deficit, as well as the current account deficit. Baxter (2014:5) indicated that platinum mines incurred a loss in foreign exchange earnings and this has happened at the time when the South African GDP was 6.5%. This reflects a deficit in the current account. When looking at the total opportunity cost of each day of the strike action, it is estimated that the economy of South Africa lost R408 million daily, which includes lost sales, wages forfeited, lost taxes, high capital expenditure and development costs.

Figure 2.2 shows the Industrial Production Index (IPI) for gold and platinum, from October 2011 to October 2012, as provided by the Global Database Team (2013). Since the onset of the mining strikes, the IPI shown by the Global Database Team 2013, for both gold and platinum, has been decreasing since August 2012. In October 2012 the IPI representing gold (2005=100) declined to 54.0 points and platinum to 82.9 points. Diminishing production volumes were exacerbated by weak employment trends in the mining and quarrying sector during the third quarter of 2012.

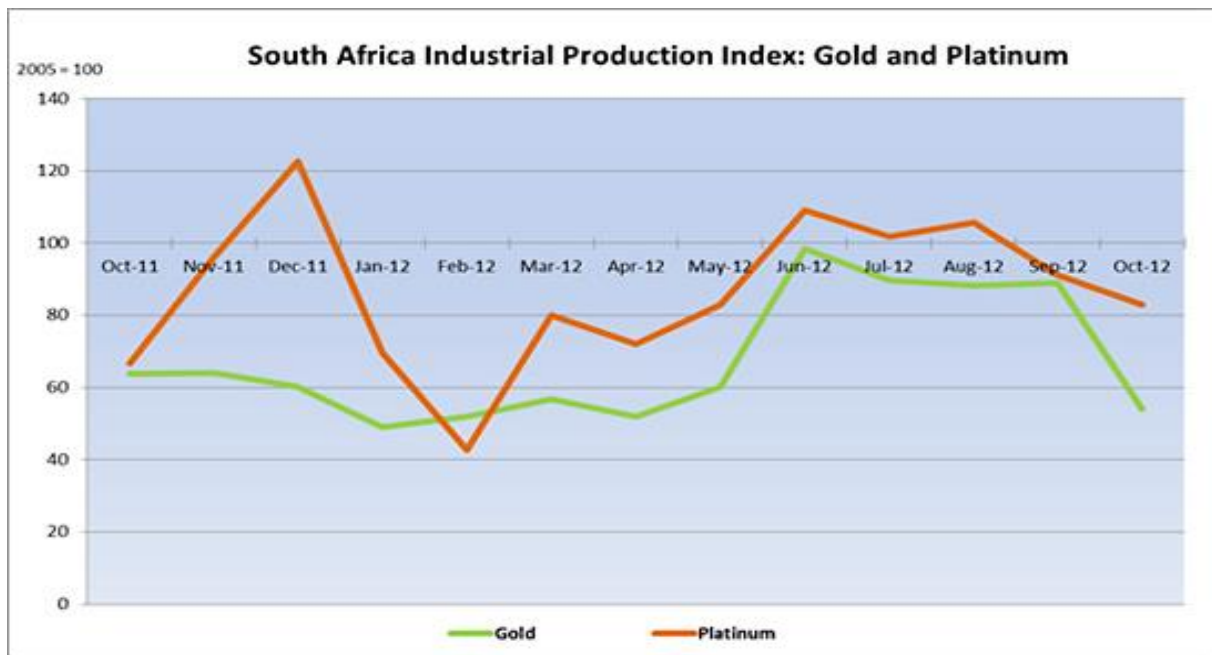


Figure 2.2: South African Industrial Production Index from October 2011 to October 2012

Source: Global Database Team 2013 *Chart provided by: CEIC*

Mthombothi (2012:6) recorded that widows after the Marikana tragedy were living in miserable conditions. Kani (2012:50) states that some of the children were hungry and the situation was associated with unstable political circumstances. The consequence of the Marikana strike has affected the cost of borrowing funds and Revenue earned on exports has decreased during the period of the strike.

Strikes have significantly affected the mining sector. Several studies have raised debate over the major reasons for the strikes in the mining sector. This debate indicated that there is an existing gap in the literature that needs to be addressed to help prevent strikes.

2.7 REASONS FOR THE STRIKES

The mining sector is faced with several challenges that affect the success of the industry. These challenges are affecting the sector each year, including the study period for this research, which was from 2008 until 2014. Schmitt (2002:282) states that it is important to understand factors that cause strikes and to know the duration of strikes. The results of Capel (2013:36), Mathew (2012:56), Buhlungu, Daniel and Southall (2007:248), Georgen (2013:49) and Moola (2012:12) were used to compile Table 2.2 showing reasons for strikes in the mining sector.

The purpose of Table 2.2 is to provide an understanding regarding the different causes of strikes in the mining industry. Authors mentioned associate the cause of the strike with poor health conditions. Other authors believe that the cause of the strike was related to management issues, as indicated in Table 2.2.

Table 2.2: Summary of major causes of strikes in the mining industry

1 Respiratory problems	<p>Capel (2013:36) indicates that, in the Rustenburg area, where platinum mining is dominant, nearly 60% of people reporting to the local clinic suffer respiratory problems.</p> <p>Migrant workers, according to Capel (2013:36), are living in shacks, despite the living allowances that are offered by mines. This indicates a shortage of housing and infrastructure. The situation is creating different perceptions to the miners.</p>
2 Lack of engagement at high managerial levels	<p>Mathew (2012:56) stresses that the mining leaders are not partnering with the government and labour to improve living conditions, but keep on blaming each other for the situation.</p>

<p>3 Promotion</p>	<p>3.1 Mining employees claim that when promotion is due, people are favoured on the basis of ethnicity (Buhlungu, Daniel and Southall 2007:248). This implies that some mine shaft stewards perform the work of recruitment agents and gatekeepers help in making new appointments and promoting workers.</p> <p>3.2 Many mineworkers feel that the treatment of black workers by black managers is still in the authoritative stage of racism and discrimination. Therefore workers should turn themselves into industrialised citizens, with rights and dignity.</p>
<p>4 Negative correlation</p>	<p>4.1 According to Georgen (2013:49), there is a negative correlation between workers concerning income, equality, trust and civic norms.</p> <p>4.2 Georgen (2013:49) indicates that investors are given more priority than workers, because their investments are associated with costs that will never be recovered once incurred.</p>
<p>5 Sanitation services, water and sewage.</p>	<p>5.1 Moola (2012:14) emphasises that even the provision of water, sewage and sanitation services in mining houses has been disgraceful. The quality of public education and health is also poor. Low income workers, representing the majority of the population in the mining area, are disenchanting.</p>

Source: Authors quoted above

Table 2.2 indicated that strikes occurred in the mining industry because of poor health conditions of workers and insufficient salaries earned by employees. Mining employees also strike because of a lack of engagement of employees and management at the higher level. The increases demanded by mine workers, according to Mathews (2012:65), is four times the inflation rate, meaning that the proposed wage increase is very high, at four times the rate of inflation in South Africa. The strike has happened,

coincidentally, at the time the mining companies were already planning to cut jobs. Muswaka (2014:66) regards companies as an integral part of society and states that companies have the responsibility of ensuring that workers are treated properly and receive fair and equitable wages.

According to Bar-yam *et al.* (2013:1), the strike in the platinum sector in 2012 coincided with increasing food prices since the democratic election in 1994. The increase in wages for workers has always dominated the debate in the mining industry, so its impact is seen on the prices of necessities such as food. Morgan (2014:31) stated that a strike is caused by the platform of inequality and poverty and these two factors are considered to be intolerable. Gary-Bobo *et al.* (2014:90) theorise that strikes could only come to an end at one particular point if they are replaced by other forms of conflict and therefore suggested that a strike is not a form of punishment, but a response to disappointing wage offers.

Wilson (2011:9) recalled that even in July 1913, there was a massive strike that strongly related to the problem of social and economic relationships between the mining industry and employees. Wilson (2011:21) declares that miners are doing a dreadful job that is almost superhuman and they work very hard. Srnastava (2007:2), however, generalises that the legislative task of balancing workers' issues is extremely difficult and that such issues are perennial in nature, as they have no absolute solution.

Keyness (1999:22) has postulated that Marx rejected the principle that stated that employees should bear the pain of the market system, which was described as leading to poverty and alienation. The statement explains that employees should not work hard in the interests of the mining companies, but should be paid well for their onerous work. Using the scenario of strikes in mines, the owners of mining companies have accumulated more profits, but employees were paid very low wages.

Baxter (2013:8) explained that there has been a less favourable global environment in South Africa. Domestic issues and illegal wildcat strike actions have dented the reputation of South Africa and a combination of different causes of the strikes has affected production and caused employment levels to be reduced. The effect of strikes had both transitory and long-term effect on earnings. Strikes resulted in lost sales, increased labour costs and ultimately affected future economic earnings. Companies also incurred expenses relating to strikes (Brown and Zmikewski, 1987:63).

According to Muswaka (2014:63), the Minister for of Trade and Industry describes the conditions in the mining industry as appalling and states that the mining companies have questions to answer. Muswaka (2014:63) adds that the International Labour Organisation (ILO) criticises the working conditions of miners, saying that such conditions expose employees to a variety of safety hazards, such as falling rocks, exposure to dust, intensive noise, fumes and high temperatures. However, Metcaff (2003:1) points out that increased productivity is the key to growth, as it assists in improving the living conditions of employees, increases profits and lowers prices for customers. The company prioritising the needs of employees improves its productivity, financial performance, investments and an aggregate economy.

Figure 2.3 illustrates the rates of fatal injuries in the mining industry, in comparison with other industries, that increases from 1992 to 1995, according to the age of workers. Based on Figure 2.3, provided by Landen *et al.* (2000:2), it can be seen that the fatality rates in other industries are very low for workers aged between 15 and 65. The fatality rate is very high in the mining industry for workers aged 15 to 24 and the rate of fatality injuries is high for the people aged above 65 years.

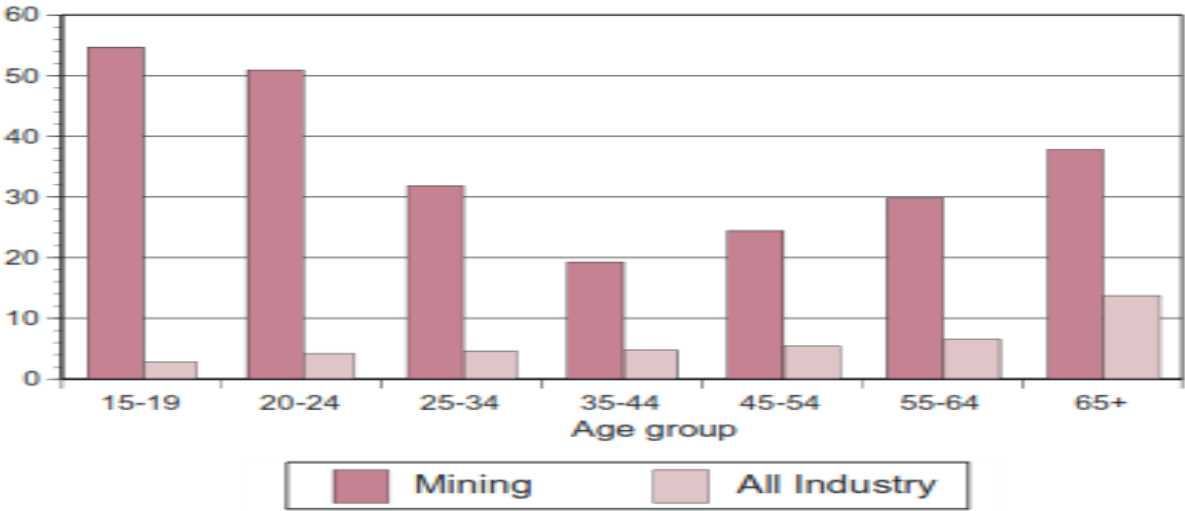


Figure 2.3: Rate of fatal injuries (per 100 000 workers) by age group in the mining industry and in all industries, 1992-1995

Source: CFOI data-BLS

Historically, the mining sector has been the primary source of South African economic development. According to Antin (2013:1) the South African mining industry is playing a key role in attracting foreign investment and creating leading global enterprises. The

industry has undergone major turmoil since the 2008 global financial crisis. In conclusion to the literature discussed above, the South African mining industry has been the leading supplier of platinum, but its performance has declined because of several reasons that perpetrated strikes. The next section of the study will examine the way strikes have affected the performance of the South African mining sector.

2.8 MINING INDUSTRY PERFORMANCE HAS BEEN AFFECTED BY STRIKES

The negative consequences of strikes on some mines, such as Impala Platinum Holdings, led to the decision by the company to propose closing some of its operations. According to Dippenaar (2012:61), such closures means a loss of jobs. A closure not only harms workers, but all stakeholders lose as a result of closure. Mathews (2012:78), found that platinum prices have increased because of high costs. Mathews (2012:45) states that investors have been concerned when gold and platinum shares were sold during the period of strikes.

Claire (2012:58) conducted a study on behalf of the Stellenbosch-based Bureau for Economic Research (BER) where it was found that consumer spending of mine workers declined because of low wages. Household tax has been increasing and this has indicated that, as long as the strike in the mining sector continues, unemployment would increase. Mathew (2012:53) insisted that workers' salaries are too low, to the extent that workers have borrowed money from moneylenders and the indebtedness has caused a serious problem, as the credit rating has increased from 9% in 2009 to 17% in 2012.

Mathew (2012:53) and Leon (2013:179) indicated that 60% of the base cost of the South African mining industry relates to labour costs. The average cash costs of the platinum industry have risen by 20% per annum over the decade, which would only be acceptable if the platinum price was to increase concomitantly. But it has not. The price of a platinum group metals basket has only risen by 10% annually over the past 10 years and has dropped in 2012 from US\$ 1 900 per ounce to US\$ 1 400 per ounce.

Even before strikes, Leon (2013:179) indicated that Anglo American Platinum had proposed to cut its capital expenditure for 2012 by more than 10%, warning that the sector would lose investments if the platinum prices failed to recover. Mathews (2012:65) shows that the capital expenditure for the year 2013 to 2014 has been deferred, because of the strike that caused the increase in the platinum price.

Mathews (2012:65) insists that Lonmin, which was affected by the six-months strike, lost 110 000 ounces of platinum production. The company has relied on the inventory from stockpiles to reduce the drop in annual sales to 701 831 ounces of platinum. However, Emerging Markets Monitor (2014:4) indicates that, despite the intensity of the strike, South African producers fulfilled their contractual supply agreements in 2014. This is because there were high platinum stockpiles in platinum companies, as well as in government reserves.

Due to the negative impact of strikes, there was a proposed dilution and rights issue of shares held by investors. Dilution of shares, as Oberholster *et al.* (2011:762) explains, is an increase in the number of shares and a decrease in earnings. It takes place at the least favourable terms of the investor and the mining industry has chosen to dilute shares in order to reduce the debt of the mining companies.

2.9 THE COST STRUCTURE OF THE MINING INDUSTRY

Baxter (2014:3) shows that, over the past five years, from 2007 to 2012, the average cost of producing an ounce of platinum has increased by 18%, which is regarded as unsustainable. This is affecting future viability of the platinum mines in the short run and it is likely to affect the long-term capability of the platinum sector. The unsustainable cost structure includes:

- 1 The average remuneration paid to each worker in the mining sector has grown by 60% in total. This is 12% per annum. This average is five percent higher than producer inflation.
- 2 Electricity has risen by 238%, from 18 cents per kilowatt hour in 2007, to 61 cents per kilowatt hour beyond 2012.
- 3 Diesel costs have increased by 69.32%. This is 15.7% per annum on the higher international oil prices.
- 4 Reinforcing steel prices have accelerated by 57.5% per annum on the higher international prices.

Besides these costs, the strike in 2012 has caused the industry to incur fixed costs during the period when no production was taking place to cover those costs. The next section examines the impact of strikes on the performance of Anglo American Platinum.

2.10 ANGLO AMERICAN PLATINUM PERFORMANCE

Anglo American Platinum is the leading company in the production of platinum in South Africa. Therefore it is important to examine the literature regarding how the performance of Anglo American Platinum was affected by the strike:

Anglo American News Release (2013:1) reported earnings before interest and tax, depreciation and amortisation (EBITDA), of \$8.7 billion. Anglo American operating profit decreased by 44% from 2011, to \$6.2 billion in 2012. The company's underlying earnings of \$2.8 billion represent a decrease by 54%, compared to 6.1 billion in 2011. Impairment loss attributable to equity investors was \$1.5 billion and net debt has improved significantly, from 9.3 billion in 2011 to 8.6\$ billion in 2012. However, despite the high impact of the strike, Anstey (2013:138) states that platinum employees in South Africa are paid better than employees in other countries, but employees are still dissatisfied.

During the industrial action, as indicated by the Anglo American News Release (2013:1), the company has recorded a high production performance that offset grade decline. Platinum decreased by 8% in equivalent refined production, mainly due to the illegal industrial strike. Copper has increased by 10%, due to the ramp up of the Los Bronces expansion, despite a disappointing performance at Collahuasi. Kumba iron ore recorded a production of 43.1 Mt, which is an increase of 4% during the unprotected strike at Sishen mine.

Despite the on-going strikes, there were recent developments on mining operations that increased production growth. As a result of high production, Anglo American News Release (2013:3) indicated that underlying profits increased by \$1.2 billion. Los Bronces expansion has contributed 196 kt of copper in 2012 and has achieved a ramp up since August 2012, while Kumba's Kolomela mine exceeded expectations by producing 8.5 Mt for the year 2012.

Blair and Morton (2014:23) stated that in order for companies to earn high profits, companies must produce goods until marginal cost is equal to marginal revenue. In the case of the strike in the platinum sector, doubling of wages would have no effect on the marginal cost if platinum produced could be doubled. Similarly, Schmitt (2002:283) indicated that when the strike duration increased, the marginal cost of the company increased. Schmitt (2002:283) further emphasised that only companies with high

willingness to pay high wages could avoid strikes but companies not willing to increase wages exposed themselves to industrial action.

Figure 2.4 shows graphs illustrating the capacity at which companies must produce goods in order to remain profitable.

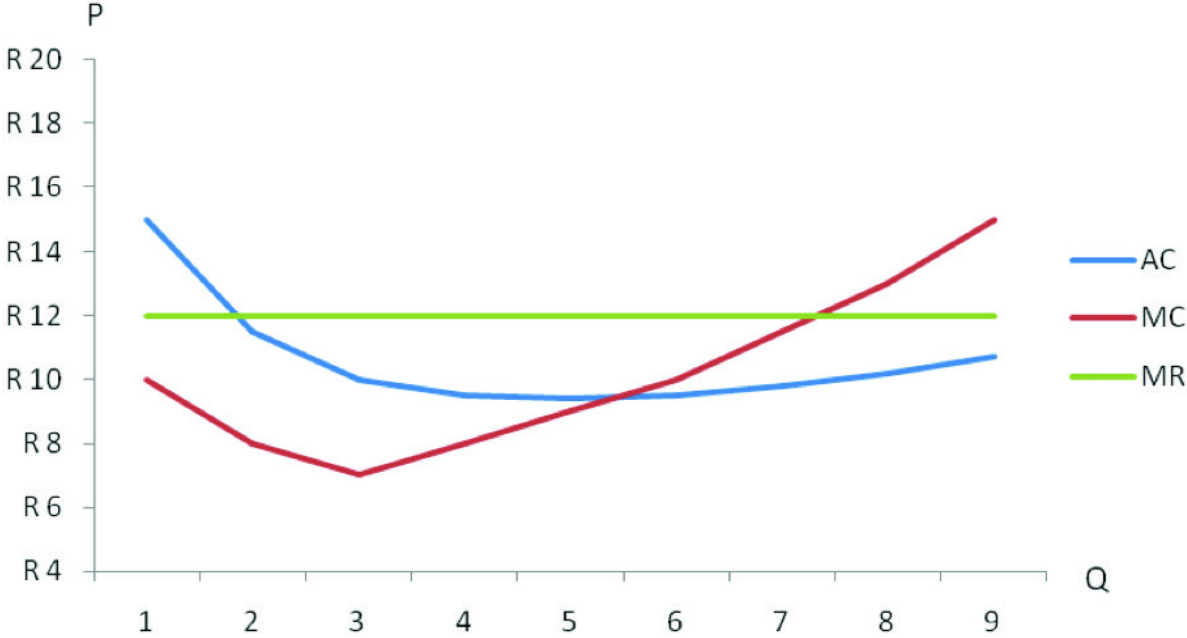


Figure 2.4: Profit Maximising Equilibrium and Initial Marginal Cost Level

Source: Blair and Morton (2014:22)

AC= Average Cost MC= Marginal Cost MR= Marginal Revenue

Marginal cost and marginal revenue are defined by Blair and Morton (2014:22) as being the points where average cost and average revenue are maximised and there is a high profit. According to Figure 2.4, Blair and Morton (2014:23) indicate that companies are only profitable at the point where marginal cost is equal to marginal revenue. However, Budd and Wang (2004:388) state that, as long as total revenue produced by the company exceeds the combined value of the company’s profitability, no strike would occur and the company and employees will bargain over the surplus left after both parties have benefitted.

The Anglo American Platinum press release (2014:14) shows the statement where underlying earnings decreased from 2012 to 2013. Financial results given in the Anglo American press release (2012:1) reflected improved operational performance, with

gains offsetting weaker prices. The company has announced a 6% increase in group underlying operating profit, to \$6.6 million. EBITDA margin increased by 2%.

The Anglo American Press release (2014:5) shows that platinum production has increased by 5% to 2 320 400 ounces as the company recovered from the impact of the strike in the fourth quarter of 2012. However the decision to divide the company returns is dependent on the profitability of the company during the period of strike and on the capacity of production (Budd and Wang 2004:388).

Platinum investment demand in 2012 was at 460 000 ounces, as the Anglo American News Release (2013:33) disclosed, but Anglo American Platinum Company has maintained a very high performance. Japanese buyers of large investments were active when the price was lower than Yen 4000 per gram, which is \$1 550 per ounce.

According to Anglo American Platinum Preliminary Results (2013:34), the earnings of Anglo American mining have declined over the whole spectrum of minerals and the company has ended its financial year in 2012 with earnings of U.S.\$ 2 839 million compared to U.S.\$ 6,120 million in 2011. Table 2.3 depicts Anglo American earnings in the years 2011 and 2012.

Table 2.3: Analysis of Anglo American platinum earnings

\$m	2012		2011
Iron Ore and Manganese	1,037	▼	1,457
Metallurgical Coal	275	▼	844
Thermal Coal	523	▼	902
Copper	908	▼	1,610
Nickel	11	▼	23
Platinum	(225)	▼	410
Diamonds	312	▼	443
Other Mining and Industrial	229	▲	175
Exploration	(195)	▼	(118)
Corporate Activities and Unallocated Costs	(36)	▼	374
Total underlying earnings	2,839		6,120

Source: Anglo American Platinum Preliminary Results (2013:34)

PWC (2012:3) revealed that the only companies that have managed to survive during the year 2012 are diversified companies such as Kumba Iron Ore, Assore and Exxaro

Resources. The companies have increased their market capitalisation by R39 million, being 13% in aggregate, and this has enabled these companies to replace platinum producers as the dominant suppliers of platinum in the world. Kumba Iron Ore has replaced Anglo American Platinum as the largest company with the highest market capitalisation.

PWC (2012:13) indicates that, as a result of strikes, the availability of funds for capital expenditure has declined, because investors are reluctant to invest money in the South African mining industry. This insufficient capital expenditure is likely to hinder the mining companies' ability to improve production over time, in order to benefit from future commodity price.

In an interview, conducted by Gerson (2013:39), Mazibuko stated that mining companies produce more profits, but the income going to workers has been declining because the largest portion of profits is held by management. Macmillan (2012:540) argues that mining companies have managed to repay capital investments, provide return on investment and generate funds for development within a short time. Therefore, in order for mining industries to achieve higher returns on profits, they must employ few skilled workers and large numbers of unskilled workers.

Due to the impact of strikes, Mining News (2014:12) reports that China Long March Capital, which works in collaboration with Citic Group Corp, has decided to buy South African platinum assets, after the value of the assets was reduced due to strikes. However, Bartram and Casimir (2007:12) regard mining as a progressive organisation where competition is high and leaders are expected to influence employees to share common goals, attitudes and values. Investments continue to decline when new policies are set in favour of employees. This indicates that strikes affect capital invested and returns on capital invested (Budd and Wang 2004:387).

Baxter (2014:3) stated that, as the platinum sector continue to be affected by strikes, some of the platinum stock became obsolete and the other portion was manufactured again. If the strikes continued, platinum would be substituted by palladium. Dinardo and Hallock (2002:220) consider that if the strike becomes successful for the benefit of employees, it will cause an important change in the profits of companies and the strike would affect market value ratios.

Baxter (2014:5) explained that, if mining companies can increase wages, mines would be compensated by restructuring. This shows that mines that make a loss would be closed and employees will be retrenched. Gerson (2013:41) warns that, if retrenchments continue, marginal profit making mines will be closed and the mining companies will use technologically developed infrastructure in order to maintain high levels of profits.

Baxter (2014:5) revealed that, if restructuring could happen, it would be an advantage to the mining industry in the short term and in the long term. Mining companies, as a result of strikes, revised the viability of the mining sector and proposed to close shafts not making profits as an initiative to reduce costs. However, PWC (2013:2) points out that the balance sheet of platinum mines has been positive during the period of the strike and there were no liquidity problems, so, from the investors' perspective, a company with no liquidity problems has the opportunity to pay financial obligations in time. However, increased gearing was needed for platinum companies to fund capital expenditure and to decrease operating losses caused by the strike.

2.11 INVESTOR CONFIDENCE

2.11.1 Description of investors' confidence

PSC Wealth (2012:1) described investor's confidence *"as having confidence on investments that are liquid, pay expected investment returns, provide security for capital invested and provide assurance on the solvency of the company. Investor confidence is dependent on market specific risks associated with investing in South African financial markets. Investor confidence therefore declines when there is an outflow of capital in the markets and negative return on investments"*. Leon (2013:177) states that investors' confidence is essential as it increases capital needed in the South African mining industry.

Muswakana (2014:66) points out that the key priority for investors is to earn dividends from capital invested. Expectations of investors are legally valid and ethically justifiable, as they invest capital in the companies with an expectation of profits. However, while fulfilling the expectations of investors, Muswakana (2014:66) cautions that the same priority should be extended to all those who invest in the mining companies, being employees, creditors, customers and the community. If employee's needs are ignored,

employees will disassociate from the company, resulting in a loss of sustainable competence.

However, investors' confidence is hard to gauge with precision, as different signals of confidence bring different conclusions as Frankel (2006:25) points out. An instance given is that of State Street Investor's Confidence Index, based on the fluctuation of share prices. The index was based on a five-year history of investors' attitudes towards risk. It was found that changes in share prices are associated with shifts in investors' confidence. The survey also indicated a dramatic fall of confidence in 1998, when Russia defaulted on its debts and in 2000 when share price fell. The next section discusses how investors' confidence in the mining sector has been affected by strikes.

2.11.2 Investors' confidence in South African mining companies

The Lonmin strike has remained the cause of labour conflict (Mthombothi 2012:10). The strike at Lonmin has weakened the value of the rand. At some point the rand recovered, but investors' confidence remained affected. Weaknesses in the mining sector, according to Mthombothi (2012:10), have also affected confidence and activity level in other sectors, such as the manufacturing sector.

When applying the same principle from the perspective of South Africa, Nkuhlu (2012:18) warns that South Africa is losing its attractiveness as the gateway for investment because of the strikes in the mining sector. However, in terms of finance, accounting, regulation, capital markets, auditing and leadership, South Africa remains pre-eminent. The Political Risk Yearbook (2014:6) shows that if investors continue to leave the South African market, the country will continue to experience more financing challenges.

In contrast, Shiller's words as an authoritative leader on investors' confidence, have been used by Frankel (2006:26), who recalled that investors' confidence is driven up by an increase in share prices. When conducting a questionnaire with wealthy investors, findings have revealed that most of the investors prefer to invest in shares, in comparison with other markets. The next section of the study discusses how investors' confidence is affected by behaviour, as indicated by various authors.

2.11.3 Investors' confidence influenced by behaviour

Pirinsky (2013:139) explained investors' confidence as an aspect that increases in line with income and education and decreases in line with age. It also helps to build happiness. If strikes continue, as Myers and Saretto (2010:21) caution, financial variables such as cash balance, dividend policy, inventory and profitability are affected. Pirinsky (2013:140) shows that confidence improves morale, performance and promotes mental health. Confidence increases with high trading volumes of shares in the capital market and with willingness to take risk. Confidence is therefore regarded as a phenomenon that includes a set of attitudes that vary according to the situation in the financial markets.

According to Wolff (2013:1302), investors are considered as individuals that behave in a rational manner. Investors take into account all relevant information available when making decisions and respond appropriately to the available information that changes the performance of the stock market.

Yang *et.al* (2008:34) examined factors influencing investors' confidence and characterised them into observed and unobserved factors. Unobserved factors are those that are more difficult to detect, such as emotions, prior income and the broker's reputation. Observed factors encompass demographic characteristics and the personality of investors. Harris (2014:100) reasoned that the confidence that motivates investors to keep on investing is driven by investors' habits and emotions.

Investors are warned by Graham (2003:1) to invest intelligently in securities, by being forearmed in acquiring adequate knowledge of how different bonds and stocks behave under varying conditions. Vickers (2002:5) believed that the cost of a strike by employees is partly influenced by the laws and market forces that govern the South Africa.

A confidence curve developed by Huang (2010:134) gives an investor maximum tolerance towards the occurrence of risk. Findings revealed that each investor has his own confidence curve used to measure uncertainty in portfolio selection. It reveals that a common trend of the curve represents a loss of confidence. According to the findings of Huang (2010:134), a portfolio is very safe if its risk curve is below the investor's confidence curve. The inverse is also true, as a portfolio is very risky if any part in the risk curve is above the investor's confidence curve.

Authors such as Mathew (2012:56) and Claire (2012:56), who conducted studies at the Stellenbosch-based Bureau for Economic Research (BER) revealed that the decline of investors' confidence in the mining sector has been provoked by strikes resulting in lower capital inflows. BER therefore expects that, as long as a strike continues in the mining industry and the rand would remain weak and foreign investors will continue to sell shares. The perception developed by Mining Engineering (2013:219) is that investors react because large strikes have negative effects on industry share prices. Large strikes in which unions win, or strikes that lead to large wage increases, are associated with more negative share price reactions than other strikes.

Donovan and Lukhele (2013:71) opine that investment institutions are searching for alternative investment opportunities in the world as a result of strikes in the platinum sector. The investment opportunities explored in other parts of the world are considered to be mostly in the gold and diamond sectors. Pirinsky (2013:139) has a different perspective, that confident investors who take risks are creative and more likely to resist situations such as strikes. This means that if investors remain confident during the period of strikes, they will not leave the South African mining industry.

With increasing uncertainty in the mining industry, however, Donovan and Lukhele (2013:70) state that investors' confidence has been affected. This is because as a result of strikes, companies have decided to cease their operations in South Africa. Pirinsky (2013:154) similarly shows that confidence is an important factor that influences economic decisions and helps to build optimism. Based on these opinions, it can be said that investors leave the South African mining industry because they lack confidence due to the on-going strikes.

According to Claire (2012:58), mining output declined during the fourth quarter of 2012. It affected the manufacturing sector by 5% and GDP as a whole fell by 2% in the fourth quarter of 2012. During September, exports dropped by 8% compounded by labour unrest. Global growth remained tepid, due to declining mining exports. GDP growth forecast in 2012 dropped from 2.5% to 2.2%, making inflationary pressures high. The Political Risk Yearbook (2014:5) shows that strikes cause the mining industry to rely on substantial wage concessions and this increases inflation unless the monetary policy is improved.

South African mining is therefore a capital-intensive and high risk industry, according to Leon (2013:178). The industry is the centrality to the South African economy. A decline in investors' confidence is always a major concern to the survival of the industry. Although mining's direct contribution to GDP has declined to 5% from around 20% in 1970 and 9% in 1994, the mining industry still accounts for almost 60% of South African exports revenue, as well as the employment of about half a million people, directly, and another half a million indirectly.

Donova and Lukhele (2013:70) agree that the mining industry has been facing significant challenges from 2008 until 2013. Since 2008, platinum prices have declined from US\$2 048 an ounce in May 2008 to US\$834 in December 2008. Van Niekerk (2013:3) explains that even the strike that happened in 1913 caused a drop in commodity prices. Using the statistics of Van Niekerk (2013:3), the South African mining industry in 2009 had 1 000 mines and 483 212 employees; 168 888 of these employees worked in platinum, 148 832 in gold and 68 006 in coal and the remainder in other commodities.

Antin (2013:2) uses the words of the Presidency, Republic of South Africa 2012, that emphasised that the tragic incidence at Marikana was not a true reflection of the business environment in South Africa. The message was intended to reassure all stakeholders and the international community that mining operations will continue, as the government remains in control of the situation and law and order continues to prevail. The next section describes the volatility of financial markets during periods of strikes in the South African mining industry.

2.12 VOLATILITY OF FINANCIAL MARKETS DURING THE PERIOD OF STRIKE

Calvet and Fisher (2008:1) describe financial markets as uniquely complicated systems, combining the interaction of thousands of individuals and institutions. Such financial markets generate, at every instance, the price to buy and to sell stocks. Similarly, they offer exposure to future uncertain cash flows. Volatility of financial markets changes the time for payment of dividends to investors. Volatility primarily occurs because of the change in commodity prices and it can only be controlled by using foreign exchange (Espin and De La Torre 2013:45)

Mining strikes cause volatility of share prices. Strikes in the mining industry did not just happen in the 21st century. Jefferis and Smith (2004:118) proved that between 1942 and 1946 the strikes also occurred on the Witwatersrand and at Messina copper mine. As a result of the strike, the economy contracted. According to (Espin and De La Torre 2013:50) high volatility in the markets indicated a low risk position for certain projects and a possible high return on investments.

Williams (2006:33) states that researchers, in general, agree that volatility of share prices can have a negative effect on investors' confidence. The surveys and indexes of investors' confidence reviewed in 2002 did not indicate definitively whether investors' confidence increased or decreased. The hypothesis tested proved that investors' confidence remains difficult to quantify, because it cannot be measured directly and the next section discusses volatility of share prices on the JSE platinum sector.

2.13 VOLATILITY OF PLATINUM SECTOR ON THE JSE

According to Olivier (2011:4), the Platinum and precious metal sector on the JSE is notoriously known as the most volatile sector. The sector is subject to intense fluctuations in commodity prices and exchange rate influences. It includes listed companies such as Angloplat, Anooraq, Aquarius, Bauba, Eastplats, Implats, Jubilee, Lonmin, Northam, Platfield, Platmin, RBPlat, Village and Wesizwe. Lonmin constitute the highest percentage of the platinum sector, while Aquarius is an Australian-owned company. These companies differ in their prospects of creating value. Manson and Mbenga (2003:28) stated that Anglo American Platinum has been the major producer of platinum in the world and Impala Platinum has been a subsidiary of Gencor.

Platinum, according to Olivier (2011:11), is a strong, durable, anti-corrosive metal. It has a melting point of 3 215 degrees Celsius and it is useful in industrial and jewellery markets. Platinum is a vital component of catalytic converters, which control carbon emissions from vehicles. It is used in paints, pacemakers, fibre optic devices, medicine, gasoline, fertilizers and explosives. Platinum is also used in international markets, such as in Japan and China, to produce jewellery. However (Espin and De La Terre, 2013:46) indicate that the increase in the price of platinum is driven by company strategy, uncertainty, company policy and desire to take risks

The platinum share price, according to Smith (2013:17) has come under pressure in 2013, as many investors lost interest in precious metals and the supply of platinum has

been affected by strikes. Lonmin investors have contributed to a rights issue, amounting to US\$817m, in order to cover its debts covenants. Therefore, in order for platinum companies to become profitable, they should integrate risk and performance measures, to be able to predict potential losses in the future (PWC, 2013:2).

Mathew (2012:62) stated that investors have no confidence in the management of Lonmin after the strike and most investors wanted to make changes to the management structure. Lonmin original strategy, was to lower costs per unit in the long term and to invest \$450m per year over three years, to achieve 950 000 ounces of platinum production by 2015. However, since the strikes began, the programme scaled down reducing the forecast production to only 750 000 ounces of platinum in 2014 and 2015.

According to Leon (2013:180), Anglo platinum share prices initially declined by nearly 10% in 2012, while the rand first weakened by two percent and ultimately by six percent in January 2013. This analysis of share price volatility will be discussed in detail in Chapter 4 where the impact of strikes will be analysed. For Chapter 2 it is imperative to provide the literature regarding the volatility of financial markets during periods of strikes.

According to Mantsantsa (2012:61), devaluation of the share price of Impala Platinum began shortly after the illegal strike action in February 2012 and has ended at a price of R94.62, compared to R73.50 in November 2012. The earnings of the company were expected to be 80% lower than for the financial year ending in December 2012.

Marcus (2013:52) stated that business confidence recorded since 2012 declined, mainly as shown by 15 companies delisting on the JSE. The gain in the resource index was hampered by strikes and the prolonged decline in international commodity prices. However, Mathew (2012:65) suggested that it is the value of the share price of Anglo Platinum, Impala Platinum and Lonmin that represents an opportunity to invest cheaply in high-quality platinum producers. Anglo American Platinum, Impala Platinum, Lonmin and Aquarius are the big Platinum Group Metals (PGMs) miners that account for 75% of global output (Morgan 2012:72)

Mining companies require a degree of political stability, a favourable investment climate and adequate infrastructure to operate successfully. A favourable investment climate would enhance productivity and profitability as well as ensuring that foreign investors

are treated fairly (Deloitte 2013:4). Despite the labour problems, the weaker rand has made the JSE look attractive to foreign investors holding stocks in the mining industry. Leon (2013:178) stated that investment inflows would happen in spite of high prices and rising production costs that caused retrenchments and closure of shafts.

Vivoda (2010:50), stated that, in an ideal world, investments flow to nations that have the most abundant and richest deposits. Therefore it is in the commercial interest of any mining investor to take due diligence when considering making any major investment in the mining sector. Figure 2.5 illustrates the price volatility of platinum and palladium per ounce, denominated in US\$, from May 2011 to May 2013.



Figure 2.5: Platinum and palladium prices outlook during the period of strikes (2013)

Source: DataStream, Barclays, 2013:6

The report of Barclays, prepared by Tanya (2013:6), during the period of strikes in 2012 shows a decline in the supply of platinum and palladium. The price of these metals has increased precedent to wage negotiations, which remain a risk to the output levels. Platinum producers have been forced to reduce the output, as well as retrenching staff, following restructuring proposals.

Investors can only participate in capital markets as long as they have confidence in the quality, reliability and transparency of financial information disseminated to the market. Rezaee and Riley (2010:4) asserted that high quality of financial information contained in financial statements, and audited by independent auditors, has a positive influence on investors' confidence. Mining companies are therefore forced to comply with ethical principles, even during periods of strikes, in order to retain investors. Rauch and Fatoki (2013:1), enthused that South Africa remains a resource-rich country, endowed with minerals that are not available in other parts of the world.

Transparency of information based on policies would, according to Vivoda (2011:53), reduce uncertainty and increase commercial confidence. It is through access to relevant information that investors will be willing to invest in the mining sector. The platinum sector on the JSE, according to Olivier (2011:16) faces a challenge due to several factors, including strikes. Therefore to continue investing in the mining sector, investors need directive guidance when choosing shares in platinum companies.

Leon (2013:180) warns that a lack of certainty and maladministration exists in mineral regulation. It is well known that in resource-rich countries, such as South Africa, transformation and development goals require regulatory certainty and administrative efficiency. This phenomenon requires laws and policies to be clear, definitive and consistently applied.

According to the United Nations (2007:3), it is important that companies should develop due diligence on workers' rights. The initiative can be achieved if business activities take place in line with human rights. However, Farrel *et al.* (2011:196) show that the conflict between employees and companies serve as the basis for promoting a company cultural norms where negotiations should be made.

According to Vermeulen (2002: ii), mines require a large amount of capital which is exposed to risks such as fluctuating metal prices, exchange rates, raising costs and labour unrest. However, in order for mining companies to become profitable, McMaster (2013:26) suggested that studies conducted by Catalyst and Credit Suisse Research on mining have found that mining companies' senior positions should be dominated by women. This is because women would assist companies to have high sales returns, returns on capital employed and high return on equity. This implies that investors require companies to maximize profits for the interest of investors. Muswakana

(2014:65) cautions that mining companies operated under pressure, as they had to take into account not only investors' interests when managing mining companies but also the interests of all stakeholders. Therefore Mc Master (2013:27) indicated that transformation in the mining sector can only be achieved if mines implement mechanisms such as training technicians and artisans at lower levels.

Muswakana (2014:66) insists that mining companies should operate together and should focus not only on profits but also on people and the environment. The initiative would help directors to make cost effective decisions by taking into account the social and environmental issues affecting the mining industry. Workers demands should take into consideration the economic situation, as companies also operate in a weak economic environment. Matthews (2014:2) shows that during the interim period of the strike in 2014, South Africans' disposable income declined, especially in the North West province. The contagion effect has further affected retail and manufacturing companies that use platinum products. Such companies have experienced liquidity problems.

The challenge facing the mining industry, according to Lane and Kamp (2013:165) is that workers want a share in the mining wealth by means of fringe benefits and expansion, but the mining industry's ability to share wealth is limited. Government wanted to maximise revenue for the state, provide infrastructure and social services, but the mining policy implemented was unclear though the government is seeing mining companies as a source of income that helps the government to achieve its objectives.

2.14 CONCLUSION

Chapter two started by describing strikes in terms of the South African Labour Relations Act No 23 of 1995, and referred to the literature that indicated that employees went on strike in the mining companies. The literature has described the mining industry and provided a definition of an investor, in accordance with International Financial Reporting Standards (IFRS). The significance of strikes in the South African mining industry has been explained by different authors, who indicated that strikes have affected investors' confidence by causing large production losses and low earnings. As a result of strikes, platinum companies incurred high unsustainable costs which increased according to the duration of the strike and deferred capital expenditure due to high platinum price. Platinum shares were sold during the period of strikes and mining companies such as Lonmin proposed rights issue to increase liquidity of companies. Anglo American

performance improved drastically as the company maximised production during the period of strikes. The effect of strikes also affected exports and created an unfavourable environment in the economy of South Africa.

The literature has analysed the causes of strikes in the mining companies, which was attributed to low salaries, poor working conditions, management misconduct and the situation has resulted in declining consumer spending and perpetrated mining workers to borrow money from money lenders. However, the literature revealed that the supply of platinum, continued during the period of strikes because of high platinum stockpiles and the other inventory of platinum that was kept in government reserves. Investors' confidence was explained in relation to how it was affected by strikes in the South African mining industry and the literature revealed that investor's confidence could only increase if investments remained liquid and pay expected returns by means of dividends and capital appreciation. The literature has provided a description of the impact of strikes on the volatility of financial markets and it was found that investor's confidence increases according to the situation in the financial markets therefore an in-depth analysis of share price volatility is described in the next chapter.

CHAPTER 3: SHARE PRICE VOLATILITY AND PROFITABILITY

3.1 INTRODUCTION

The performance of the South African mining industry declined due to strikes. Previous literature, presented in Chapter 2, has shown that during the period of strikes, there was a high degree of share price volatility and profits of companies declined. There were shaft closures, production stoppages and retrenchments.

Based on the objectives set in Chapter 1, the purpose of this chapter is intended to provide a methodology that will assist in determining the impact of strikes on investors' confidence in the South African mining industry, using share price volatility as a determinant of investors' confidence during the period of the strike. The study will determine the impact of strikes on profitability ratios of platinum mining companies listed on the JSE. The exploratory study is a quantitative research methodology, complemented by a qualitative approach, from the year 2008 until the end of 2014. This type of research methodology is called mixed methodology because the method integrates qualitative and quantitative data (Burgess and Chilvers, 2006: 713) and (Van Griensven, 2012:368).

Information provided in Chapter 1 under research design and methodology, indicated that JSE-listed mining companies have been affected by strikes. The mining industry consists of sectors such as coal, diamond and gemstones, gold and platinum and precious metals. The mining industry has been chosen as an area of the study among all the industries, because it plays a significant role in the economy of South Africa.

3.2 RESEARCH PROCESS

The mining sector lost investors during the period of the strike, due to the volatility of share prices. Based on the literature, foreign investments declined in South Africa and jobs have been cut, in order to save costs. This indicates that the performance of the mining sector has been affected because of cost pressures, global demand and low international commodity prices.

Researchers such as Harrison and Zack (2012:551) stated that the South African mining industry is the source of growth that promotes the independence of the country and creates employment. Bond (2014:3) adds that 80% of platinum reserves are found in South Africa. A strike in the platinum sector has caused work stoppages,

retrenchments and shaft closures. In order to obtain unbiased outcomes and to judge the impact of strikes on the mining industry appropriately, it is important to focus only on the platinum companies, as they play a significant role in the economy.

3.3 RESEARCH DESIGN

An adverse occurrence such as a strike can have a devastating effect on the performance of a company. From an investor's viewpoint, it could result in a decline in the share price and a decline in profitability resulting in lower dividends. In order to determine the impact of strike on investor perceptions, the research will be conducted by examining the effect that the strike had on share prices and on the profitability of companies.

The sample period is from 2008 to 28 July 2014. The data for this study was sourced from the McGregor BFA online database. I-Ne BFA McGregor offers data for many years. Some of the achievements of BFA McGregor are that it provides data from the early 1980s to the current data available. To precisely map the significance of strikes in the mining industry, share price volatility was analysed on the daily basis.

The daily share prices have been obtained from the McGregor BFA online database, under Price Data sections, from the year 2008 until 28 July 2014. Daily share prices have been chosen, instead of weekly or monthly, to investigate clearly how investors responded to the share price volatility during the days that the strike was in force. The sample period for this methodology is 20 days before the commencement of the strike. Day 0 represents the day on which the strike was announced. The number of 20 days after the commencement of the strike was chosen to assess the reaction of investors towards changes in the share price movement and the period is chosen because it is short. According to Morse *et al* (2011:266) a short event window such as 20 days is more reliable than a longer event window and it allows investors to absorb the impact of a new event precisely. Golebiewska (2014:252) states that in the previous studies conducted, long periods were used and there were too many other events that influenced share prices and such a situation disturbed information from one company to another. The control group, chosen to help in comparing the share price volatility of platinum companies for the same period of the strike is the JSE Mining Index (J177) and the JSE All Share Index (J203).

The profitability ratios of platinum mining companies have been chosen from the expert section of McGregor BFA from the year 2004 until the year 2013, as it is the latest data available at the time of the research paper. The ratios for the years 2004 to 2007 were aggregated and used as benchmarks for comparing profitability from the year 2008 to 2013.

3.4 METHODOLOGY

Data gathered for this research is analysed a combination of quantitative and qualitative techniques. Leedy and Ormrod (2014:98) and Welman *et al.* (2005:9) state that quantitative data deals with large numbers that are used to analyse statistical records and help in predicting and explaining the theory tested. The qualitative method provides chronological order on the outcomes of events and the method assists in explaining quantitative data.

However Vankatesh *et al.* (2013:26) recommend that mixed methods should be used because the method offers complementarity, completeness, developmental, expansion, corroboration, compensation and diversity, when analysing information. Complementarity means that the method is used to obtain views about the same phenomena. Completeness indicates an assurance of completing the study and developmental means that the method guarantees the inference to the previous studies. Expansion means that the study provides an opportunity to expand findings from previous work. Corroboration assesses the credibility of inferences obtained from one approach and diversity shows that mixed method is used to obtain divergent views of the phenomenal. Mixed methods investigate the general nature of the variable under investigation (Leedy and Ormrod 2014:100). Therefore event study methodology as a mixed method, provides an opportunity to analyse share price volatility qualitatively and quantitatively and the methodology is discussed in the next section.

3.4.1 The event study methodology

Event study methodology was developed by Ball and Brown in 1968. It has been used by most of the researchers in the financial management discipline to assess the effect of events on share prices. According to Dinardo and Hallock (2002:219), several studies conducted by researchers such as Becker and Olson (1986), Neumann (1980), Kramer and Vasconcellos (1996) and Persons (1995) have investigated the link between strike and stock price. In order to carry out this research, event study methodology is used to

determine the impact of strikes on share price volatility. Mackinlay (1997) described event study methodology as a credible way to capture the extent to which investors value the company when the assessment of a company changes. This change in investors' assessment is due to an inflow of new information into the market and, for this analysis, the information available into the market that influences investors' confidence is strike action.

If an event, such as the announcement of a strike in the platinum and precious metal mining sector, has no effect on the share price volatility, investors' confidence will be reflected by positive returns on investment. The opposite happens if there are negative returns caused by the impact of strikes on share prices.

3.4.2 Population

The JSE reflects different industries that contribute to the economy. The population subject to investigation, among all the industries on the JSE, is the South African mining industry, which is subdivided into basic materials and chemicals. Basic materials are chosen for this analysis instead of chemicals. These basic materials, under the Mining Index, are divided into five sectors. Each sector is made up of companies listed under its name. These sectors are made up of coal, diamond and gemstones, general mining, gold mining and platinum and precious metals. It is possible to conduct the study using the whole population, but because of time and cost constraints, it is important to use a sample (De Vos *et al.* 2011:224). The population represents all companies under investigation. Yates (2004:25) points out that it is very rare to find all the members of the population, for various reasons. Therefore a sample was taken and the next section discusses the sample.

3.4.3 Sample

The mining sector is a broad industry, consisting of holding mining companies, subsidiaries and conglomerates and has rich deposits of platinum, gold, diamond and coal (Curtis, 2009:4). Some of the mining companies are foreign owned and some are locally owned. If the analysis of the study was to be based on the whole mining industry, there would be biased results because the strike did not affect all the listed mining companies. Therefore, in order to precisely determine the impact of the strike on the mining industry, platinum and precious metals sector is chosen, as being representative of the whole mining industry. It is compared with the JSE Mining Index

(J177) and JSE All Share Index (J203), as the control group. A control group is defined by Welman *et al* (2005:79) “as the group that creates an opportunity to exercise control over variables under investigation. It is a group that does not change easily”.

According to the spectrum provided by I-Net McGregor BFA below, there are 13 companies listed under the platinum and precious metals sector. Anglo America Platinum is the leading company, contributing 46.79% to the precious metals, Implala Platinum Holdings 26.36%, Lonmin 9.62%, Northam Platinum 6.75%, RBPLAT 5.22%, Aquarius 2.35%, Atlatsa 0.96%, Wesizwe 0.67%, Eastplats 0.31%, Sablemetl 0.03%, Bauba 0.02% and Plat 0.01% and 0.91% represented by other interests. Among all these platinum companies, Anglo American Platinum, Impala Platinum, Lonmin, Northam Platinum and Aquarius Limited are chosen as the sample of the study. Chandra and Sharma (2013:31) and Zikmund *et al.* (2013:385) describe a sample as a subdivision of the whole population and it is used to estimate the unknown characteristics of the population.

The Pie Chart in Figure 3.1 indicates the percentage of platinum mining companies as listed in the paragraph above.

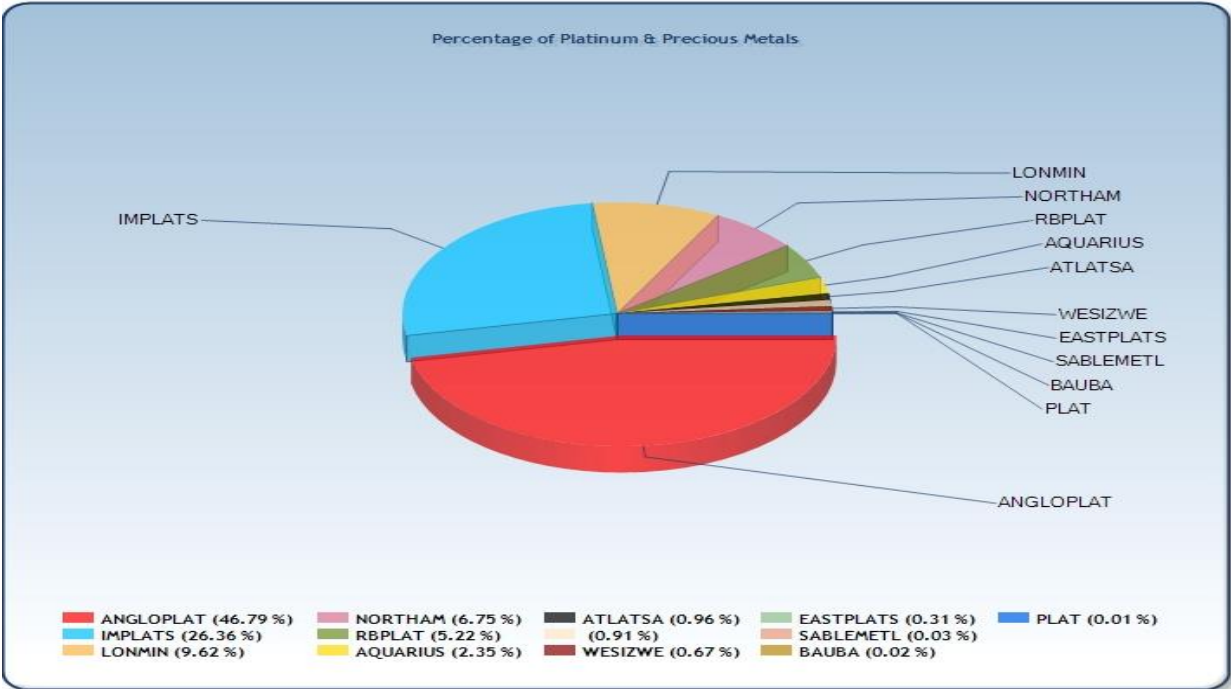


Figure 3.1: Platinum mining companies listed on the JSE

Source: McGregor BFA

The impact of strikes on the South African mining industry would be based on the results obtained from Anglo American platinum, Impala platinum, Lonmin, Northm platinum and Aquarius. The companies contribute the highest percentage to the platinum sector and according to the literature the five companies were severely affected by strikes. The companies also have the highest market capitalisation on the JSE and the next section discusses the market capitalisation of each company chosen because the impact of strike on investor's confidence would be based on the results obtained from each of the companies.

3.4.4 Market capitalisation

The first four platinum mining companies have been chosen because they have the highest market capitalisation and contribute the highest percentage to the platinum and precious metals sector. RBPLAT contributes 5.22% to the platinum and precious metals sector. This is a fairly large percentage, but it is ignored because it was not affected by strikes. The other four companies were chosen because they were significantly affected by strikes and they have the highest market capitalisation, with the highest contribution to the overall market on the JSE. Market capitalisation assists in determining market valuation of companies listed on the stock exchange and it determines the size of the company to the investors (Private Company Knowledge Bank, 2011:67).

The strike in the South African platinum sector perpetuates the likelihood of recession in the economy. South African Reserve Bank (2014:4) describes recession, technically, as two successive quarters of negative growth. Using the scenario of the strike in 2014, it can be stated that recession cannot take place, if zero growth is recorded for the last three quarters of the year and the economy still achieves positive growth rate of 0.8%. However, the possibility is that recession could happen if the economy continues to contract and the rest of the economy continues to grow at the rate of 2%.

Wolmarans (2000:235) explains that market capitalisation is based on share prices, which may change from day to day, whereas the total value of the assets of a company is not likely to change over the short term. The present research determined the degree of share price volatility during the period of the strike and how the return on investments was affected.

3.5 INTERPRETATION OF VOLATILE SHARE PRICE MOVEMENTS DURING THE STRIKE

During the period of the strike, the share prices increase or decrease and this volatile movement influences return on investments and dividends. In the chapter 4, the total return on investment will be analysed, using the opening share price at the beginning of the year and the closing share price at the end of the year. Researchers in the discipline of financial management, such as Van Zyl *et al.* (2008:335), propose that the total return on investment in the industries such as mining should be measured as capital growth, plus dividend income. Growth in the share price is called capital appreciation and negative growth is capital depreciation. Any discrepancy on the expected and actual returns on investment due to strikes results in abnormal returns. If the strike has no impact on the share price, the company will maintain positive returns. In order to draw reasonable conclusions from the results, it is assumed that markets are efficient, meaning that there are no confounding effects during the event window.

According to (Wu *et al.* 2014:74) an upward trend in share price often suggests market safety and leads to lower share price volatility, while declining share price shows lack of safety in the market and represents high share price volatility. Previous studies conducted indicated that the impact of strike on companies is mostly reflected by movement of the share prices. The results have shown that markets anticipate the strike and share prices dropped before the strike action and after the strike (Seedat 2013:10)

The literature states that, historically, the market for mineral commodities has been volatile. Davis and Tilton (2005:236) explain that volatility increases because of shift in demand over the business cycle. In other words, volatility of the share price increases in line with business conditions. The empirical study conducted by Fernandez (2009:279) also indicated that the return on investment for most of the mining companies declines during the time of declaration of war and, in the present study, the focused area relates to strikes.

Using the law of demand adopted by Davis and Tilton (2005:236), it can be reasoned that, when output increases, the price of mineral commodities decreases. The inverse is also true, as it holds that when output decreases, the price increases. Fernandez (2009:278) explains that investments and share price volatility do not move in the same

direction. This means that investment does not increase in line with volatile share price movements during the period of a strike.

Davis and Tilton (2005:236) state that volatility of the share prices in the platinum sector affects other sectors, such as construction, capital equipment and transportation. It affects the ability of the country to collect revenue and it affects effective planning for development. It also affects tax collected by government. Atilgan (2014:205) explains that volatility spread is measured using implied volatility differences. Therefore the extent at which investors predict returns depends on the volatility spread and this is mostly measured using liquid options.

Researchers such as Hammoudeh *et al.* (2010:5) and Davis and Tilton (2005:236) agree that share price volatility affects the exchange rate and stands a high chance of influencing the other metals. If platinum becomes more volatile, it causes reliance on other metals such as palladium, as they are substitutes in the same industrial production. The stock markets often fall when investors worry about economic issues such as strikes, so the following variables will be used to determine the impact of share price volatility on investments during the period of the strike:

R: the trading share price of the platinum company.

R₀= the initial share price when the investment is initially made at the beginning of a particular year in the platinum company.

R₁= closing share price at the end of the year in which the strike happened in the platinum company.

Dividend yields (DY): indicate the return that investors obtain on their investments in the form of dividends during a particular year.

Therefore, total return on investment (CP) = $R_1 - R_0 / R_0 + DY$

Forty one days is the event window chosen for this analysis. The period is chosen because it is an uninterrupted time period selected to analyse any unusual observation on share price occurring because of strike. The event window can include the event day, event day plus or minus number of certain days, weeks and months under investigation (Choi, 2014:88).

-20= represents a period of 20 days before the commencement of a strike in a particular year.

Day 0 = the day on which the strike was announced in the platinum companies.

+20= represents 20 days after the commencement of strike in the platinum sector. The period of 20 days is chosen to create consistency on the number of days used as recommended by event study methodology.

Standard deviation: This variable will be used to determine the degree of share price volatility in each company. Dunn (2013:256) defines "*standard deviation as the most useful indicator of variance. It is an index that shows how close the observations are around the mean*". During the period of the strike, the variance of stock market reaction on the earnings increases more than during a non-strike period. This shows that a strike affects forecasting and earnings of the company (Brown and Zmikewski 1987:71).

Information analysis:

The investment growth during the period of the strike is reflected by the movement in share price. This will be examined in detail in the next chapter. The positive movement from the initial share price, R0 to R1, indicate that investment returns increased during the period of strike. If there is no change in movement from R0 to R1, it indicates that there is no investment return during the period of the strike. On the other hand, if there is a negative movement from R0 to R1, it indicates that the investment returns have decreased more than expected.

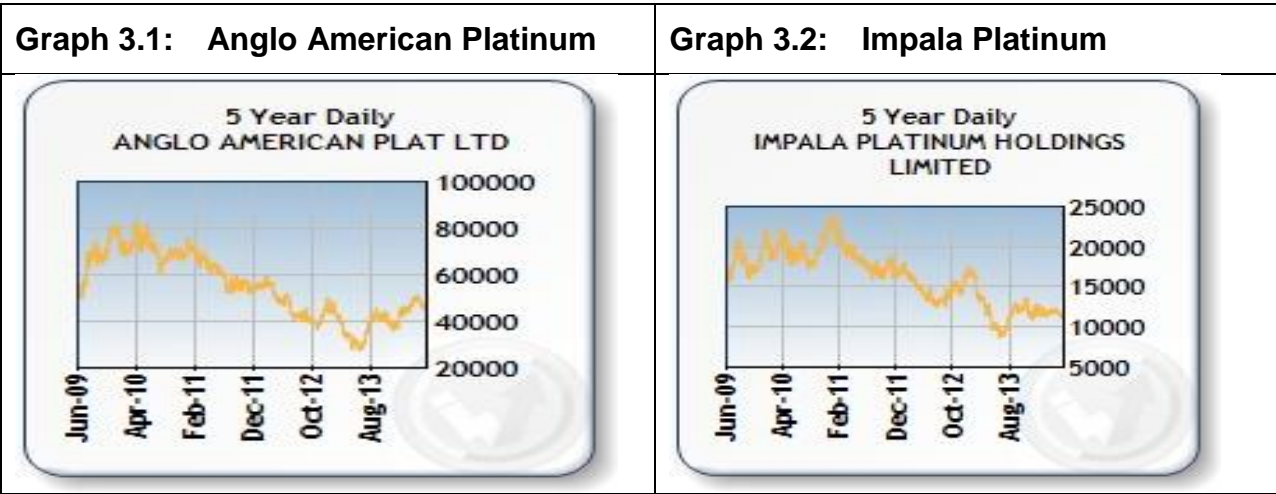
Investors with various portfolios are also usually challenged by the uncertainty in the financial markets. Even with the occurrence of strikes in the mining sector, investors are not certain about the return on investments. Therefore portfolio selection, as Huang (2007:351) explained, addresses the problem that investors face in allocating capital to a large number of securities in order to maximise return during the period of the strike in the platinum sector.

Return on investment will be determined on an annual basis, to provide adequate information that is not biased. Most of the strikes in the mining industry have occurred during the month of August, so daily share price movement will show the degree of volatility during the period of the strike. Share price volatility will be investigated for the

20 days before the strike, followed by day 0 being the date of the announcement of strike. The trend will continue until 20 days after the commencement of the strike to investigate the degree of share price volatility.

If for a particular period of the strike, investment returns increase above a particular level, this indicates that strikes have no impact on investment returns. If investment returns decrease during a particular period of the strike, this shows that strikes have an adverse impact on investments and this causes deterioration of investor confidence. Companies for which no observations could be found regarding the impact of the strike have been ignored.

Figure 3.1 highlights share price volatility of platinum companies over a period of five years, from 2009 until 2013. According to the trend of each graph, the share price of platinum companies has been very volatile during the period of the strike, so more detailed graphical analysis will be provided in the next chapter for each company. Figure 3.1, depicts share price volatility of Anglo American Platinum, Impala Platinum Holdings, Lonmin, Northam Platinum and Aquarius from June 2009 to 2014.



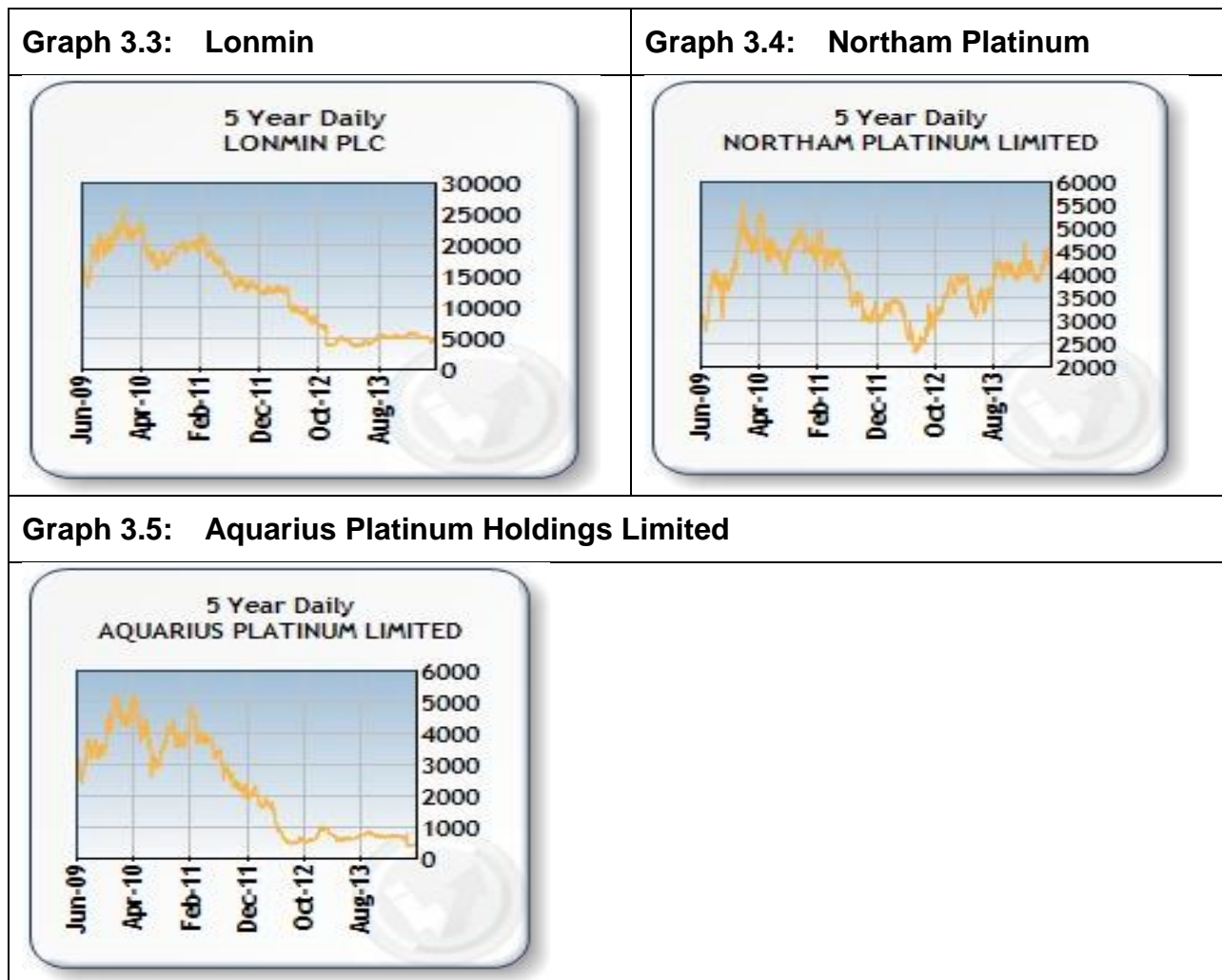


Figure 3.2: Share prices over a period of five years

Source: McGregor BFA

3.6 IMPORTANCE OF PROFITABILITY RATIOS TO INVESTORS

Strikes do not only affect share price volatility, but also profitability ratios of platinum companies. This section discusses profitability ratios as an indication of the performance of platinum companies during the period of a strike.

As strikes impact on production and possibly also raise various additional costs, the financial effects of a strike should be noticed in the profitability ratios of a company. This research will involve the analysis of profitability ratios during the period under research.

The following ratios will be employed in order to determine the financial implications of strikes:

Table 3.1: Ratios to determine the financial implications of strikes

No	Profitability Ratios
1	Operating Profit Margin
2	Net Operating Profit Margin
3	Return on Assets (ROA)
4	Return on Equity (ROE)

Source: Correia (2011: 5-17)

Gross profit percentage is calculated as gross profit divided by sales. Net profit percentage is net profit expressed as percentage of sales. Return on assets is computed by net profit including interest after tax divided by the total value of the assets and return on equity is calculated as net profit for the year divided by total equity of the company (Correia, 2011: 5-17).

According to Du Toit *et al.* (2010:62), profitability determines the value of the company and its shares. Profit generated is determined by margins and efficiency by capital. Return on Assets indicates the extent to which a company is using its assets efficiently so when ROA increases, it shows that the company is using its assets efficiently. Return of shareholders' equity (ROE), on the other hand includes ordinary shareholders' equity, preference share capital and non-controlling interests and it also indicates shareholders' value.

Investors use ratios to analyse the financial performance of the companies and most researchers recommend that ratios offer a true reflection of the company's performance. The literature discussed below shows the importance of ratios.

Service (2013:1071) explained the use of ratios as a very useful technique that analyses financial statements of the company, in order to show its profitability, efficiency, liquidity and solvency. Ratios provide inter-relationships between different line items presented in the financial statements. Skae and Vigario (2012:266) regard ratio analysis as an informative method that is capable of analysing every aspect of the company's financial position. Researchers such as Correia (2008:5-12) and Service (2013:1069) emphasised that, in order for ratios to be effectively interpreted, they must be compared with historic ratios, industry averages and accepted standards, to identify

trends. In the present analysis, profitability ratios for platinum companies are compared with historical ratios provided from 2004 until 2007.

Ratio analysis includes computation of ratios, using line-items available in the financial statements. It provides an indication of whether or not management is effectively using the funds available in the business. Investors will assess profitability ratios of platinum companies by referring to line-items in the financial statements during the period of strike.

3.7 CONCLUSION

The methodology adopted in analysing share prices of platinum mining companies is an event study methodology. The impact of strikes as an event on share price volatility would be examined for the window period of 41 days to allow investors to have sufficient time in absorbing the impact of strike on the share prices. In order to determine whether the volatility in share prices did not result from the volatility in the overall market, the JSE All Share Index (J203) and JSE Mining Index (J177) were used as a control group. Data representing profitability ratios have been collected from 2004 until 2013 and the first four years represent benchmarks for comparing profitability ratios of companies. The research findings based on the methodology outlined in this chapter will be presented in Chapter 4.

CHAPTER 4: ANALYSIS OF SHARE PRICE VOLATILITY AND PROFITABILITY RATIOS

4.1 INTRODUCTION

This chapter discusses the empirical findings regarding share price volatility and the profitability ratios as mentioned in Chapter 3. Share price volatility were analysed using event study methodology from 2008 until 28 July 2014, based on platinum mining companies' statistical records populated on Excel. Profitability ratios are analysed from 2008 until 2013, because the audited annual financial statements of companies for the year 2014 were not available at the time the research paper was completed.

The strike in the South African mining industry is affecting platinum mining companies more than other industries therefore share prices for each platinum companies were observed and chosen for the first 20 days before strike, the date of the strike and 20 days after the strike. The strike in the platinum sector has occurred on the 6th August 2008, 24 August 2009, 27th August 2012, 16th August 2012, 27th September 2013 and 23 January 2014. Table 4.1 shows the dates on which strikes occurred in the platinum mining companies:

Table 4.1: The announcement dates of strikes in the platinum sector

2008	6 August 2008
2009	24 August 2009 to 8 September 2009
2010	27 August 2010
2012	16 August 2012 to 23 September 2012
2013	27 September 2013 to 7 October 2013
2014	23 January 2014 to 25 June 2014

Source: Anglo American Press release (2008-2014)

Companies selected for this analysis have been adversely affected by strikes. They have the highest market capitalisation in the platinum and precious metals sector. The market capitalisation of these leading companies is as follows: Anglo America Platinum

is the first company, with market capitalisation of R126 820 603 710, Impala Platinum Holdings R71 440 213 188, Lonmin R26 085 271 834, Northam Platinum R18 288 960 140 and Aquarius has market capitalization of R6 369 750 061. Engelbrecht (2014:12) suggested that the three big platinum companies in South Africa being Anglo American Platinum, Impala Platinum and Lonmin have lost revenue worth R10 billion and R4.4billion in earnings during the period of strike in 2014.

Table 4.2 below indicates the market capitalisation of the big five platinum companies representing the South African mining industry and the empirical findings of each company is discussed according to market capitalisation of each platinum company.

Table 4.2: Market capitalisation of platinum companies

Company name	JSE CODE	Market capitalisation (R)	% sub-sector	% industry	% JSE	Number of shares
Anglo American	AMS	126 820 603 710	46.69	4.721	1.284	269 681 886
Impala Platinum	IMP	71 440 231 188	26.36	2.655	0.723	632 214 276
Lonmin	LON	26 085 271 834	9.625	0.969	0.264	568 554 312
Northam Platinum	NHM	18 288 960 140	6.748	0.68	0.185	397 586 090
Aquarius Ltd	AQP	6 369 750 061	2.35	0.237	0.064	1 464 310 359

Source: BFA McGregor 2014

Investors react to the share price volatility on the day of the announcement of the strike, being day 0 by predicting the impact of an event on their returns. During the announcement of the strike, investors' confidence is affected, as investors became concerned about the possible volatility of share price. According to Scholtens and Steensma (2012:360), most of the effect of an event occurs on day 0 and the effect can also exist on day 1. Even 20 days before the strike commenced, investors were already concerned about the volatility of the share prices.

PWC (2012:3) recorded that, during the year 2012, 39 mining companies lost market capitalisation by 9%, from R910 billion in 2011 to R833 billion in 2012. This is a 3% decrease in market capitalisation from R862 billion in 2010. At the end of September

2012, being the period after the Marikana strike, the market capitalisation of the top 39 mining companies declined to R792 billion. Anglo American platinum, Implala Platinum Holdings, Lonmin, Northam Platinum, Royal Bafokeng and Aquarius Limited lost R86 billion being 25% of the total market capitalisation of mining companies. Mo (2013:256) supported PWC, by stating that the mining sector in South Africa was already experiencing negative returns due to weak prices and lower demands from international markets.

The first section of this chapter discusses share price volatility from 2008 until 28 July 2014. The interim part of the year 2014 was included in this analysis, because the platinum sector was adversely affected by a strike for a period of five months in 2014. The next section analyses profitability ratios of platinum companies from 2008 until 2013. The primary intention for choosing this period is that profitability ratios are computed on a yearly basis and, at the time data was gathered, I-Net BFA McGregor only provided profitability ratios from the year 2008 until the year 2013.

Lonmin Interim Results (2014:14) proposed that the profitability of platinum group metals has been adversely affected by strike but fixed production costs were incurred even though there was no production. The ratios affected include profitability ratios, market values, debt management and liquidity ratios. However in analysing the present study, profitability ratios of platinum companies are used to investigate the impact of strikes on the returns of the companies. Davies *et al.* (2008:314) views the use of ratios as a fundamental area for performance review that provides subjective assessment of the company. Ratios further provide an objective aid for decision-making and help to predict corporate failure. Ratios also assist in equity valuation models for valuing the shares of a company. An in-depth analysis regarding the impact of strikes on profitability ratios will be provided later in this chapter. The next section below discusses the impact of strikes on share price volatility, from 2008 until 28 July 2014.

4.2 SHARE PRICE VOLATILITY FROM 2008 TO 2014

In this section, the volatility in the share prices of the companies selected for this study are discussed, using tables and graphs from 2008 until 2014. The control group used is the JSE All Share index and JSE Mining index. The intervals used are 20 days before the strike, the date of the announcement (0 strike days) and 20 days after the commencement of strike.

4.2.1 Anglo American Platinum (AMS) share price volatility

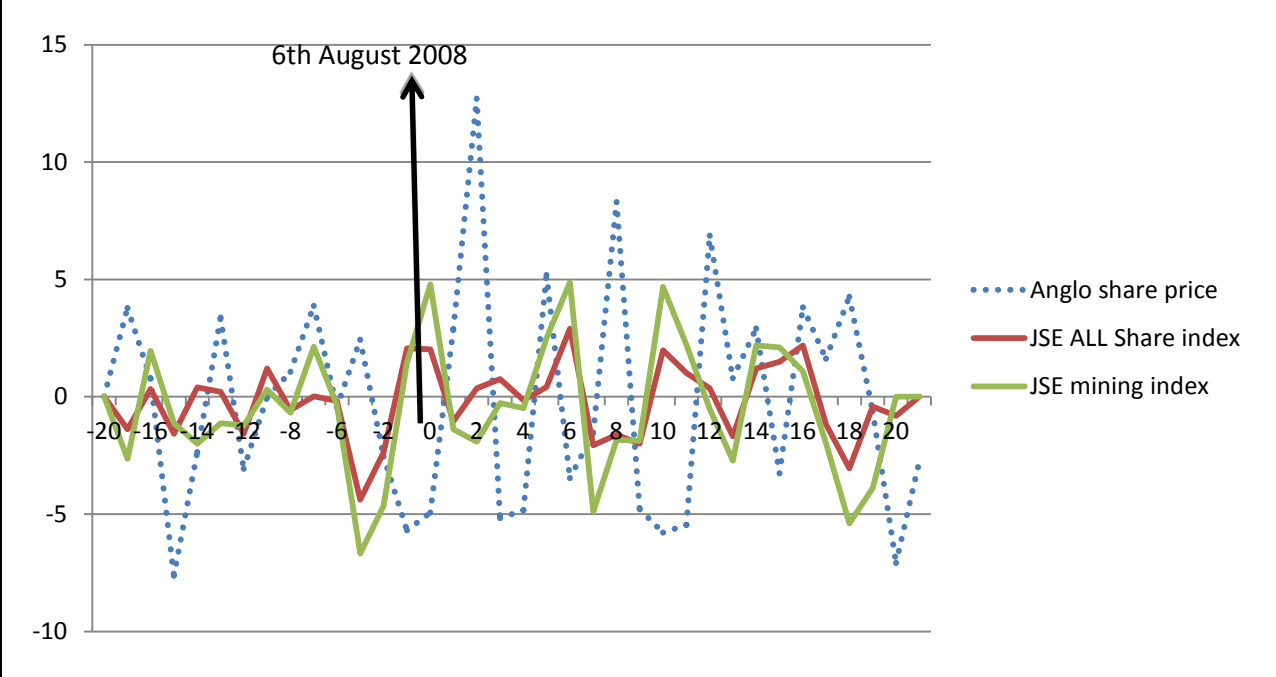
The impact of strikes on the share price of Anglo American Platinum is discussed in this section. The JSE all-share index, as well as the mining index for the same period, will be reported for comparison purposes. Each one of the strikes, as indicated in Table 4.1, will be separately reported on.

4.2.1.1 Strike in 2008

Table 4.3 represents the share price of Anglo American, JSE All Share index and Mining index during the 20 days before the strike, on day 0 and 20 days after the commencement of strike.

Table 4.3: Anglo American: Strike 2008

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Anglo share price	104 100	100 300	61 800	-3.65%	-38.38%	4959.28	4326.50
JSE ALL Share	26 876.95	26 945.35	26 532.11	0.25%	-1.53%	582.74	428.33
Mining index	38 698.67	36 380.76	25 796.05	-5.99%	29.09%	1555.32	1206.14



Source: McGregor BFA

On 6 August 2008 (day 0), the strike was announced in the platinum sector (Anglo American Press Releases 2008-2014). Twenty days before the strike, the share price of Anglo American Platinum and the Mining index fell significantly, by 3.65% and 5.99%, respectively. Anglo American Platinum share price has declined significantly on day 0 as indicated by the declining part of the graph. The JSE All Share index has increased by 0.14%. This indicates that share prices and the mining index were affected by the strike.

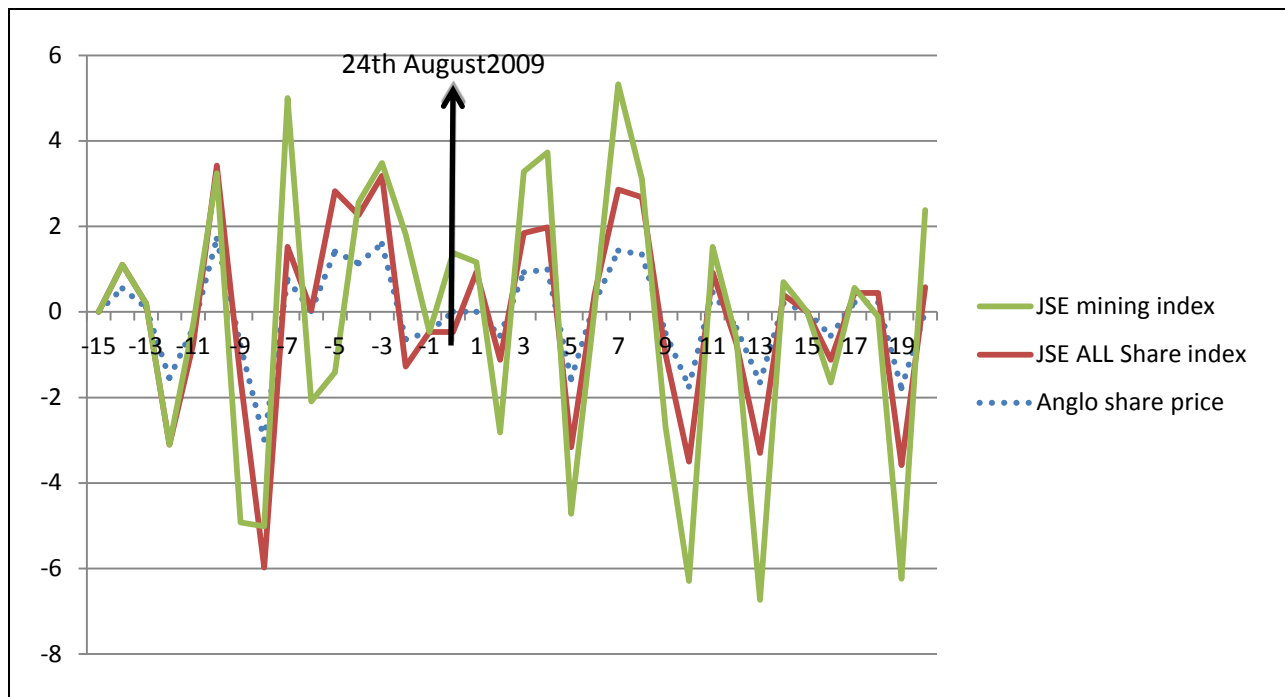
However, the Mining index improved by 29.09% after the strike. The share price of Anglo American Platinum continued to deteriorate during the 20 days after commencement of the strike, from -3.65% to -38.38%. The standard deviation of Anglo American Platinum is 4326.50, whereas the standard deviation of the JSE All Share index is 428.33 and the mining index is 1206.14. This indicates that the share price of Anglo American Platinum was more volatile than the market, because of the strike.

4.2.1.2 Strike in 2009

Table 4.4 below illustrates share price of Anglo American in relation to JSE ALL Share Index and Mining index during 2009 strike.

Table 4.4: Anglo American: Strike 2009

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Anglo share price	61 790	68 000	74 000	10.05%	8.82%	2684.52	2731.09
JSE ALL Share	24 908.79	25 274.69	24 944.83	1.47%	-1.31%	361.42	687.52
Mining index	35 300	33 800	36 000	-4.25%	6.51%	293.36	756.66



Source: McGregor BFA

During the year 2009, the strike started on 24 August. The share price of Anglo American Platinum improved by 10.05% during the 20 days before the strike and the declining part of the graph on day 0 demonstrates the effect of strike on the share price. The mining index, however, declined by 4.25% lower than 20 days before the strike. The JSE All Share Index remained high and improved by 1.47% from 20 days before the strike. Based on these results, it can be stated that the share prices of Anglo American Platinum behaved positively.

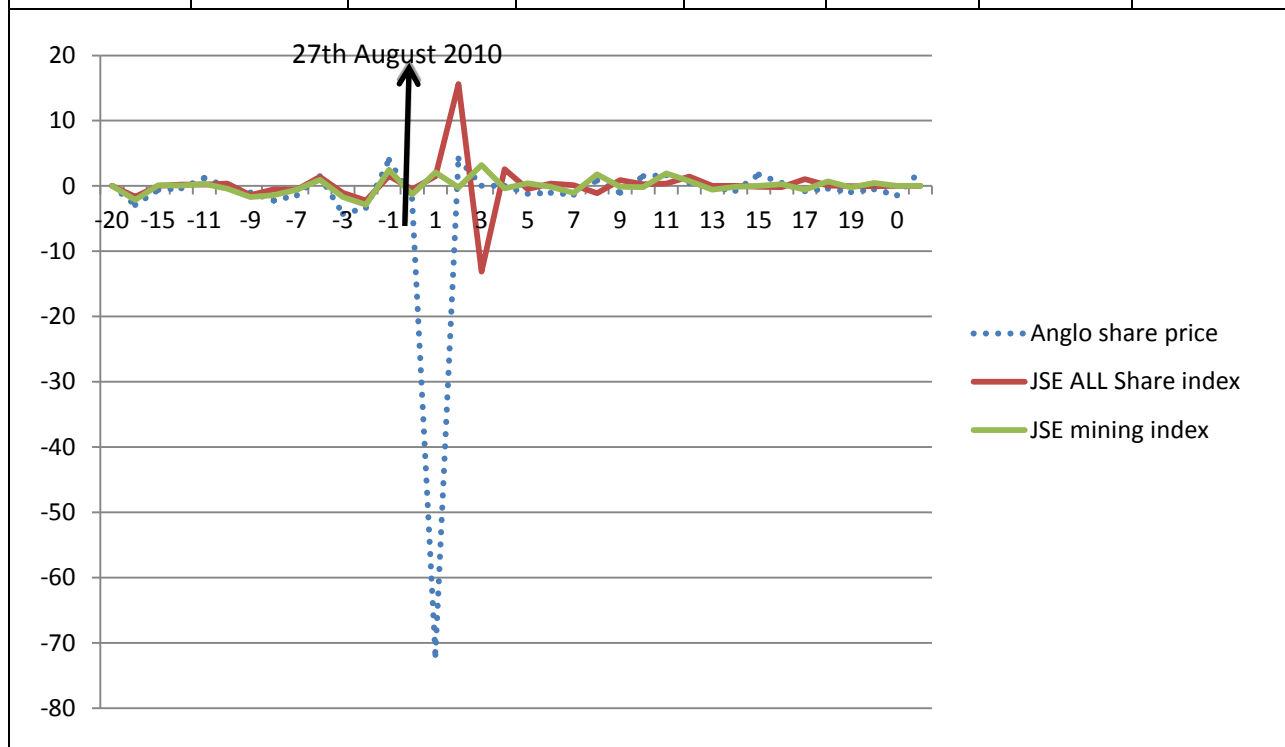
During the period of 20 days after the commencement of strike, the share price of Anglo American Platinum continued to gain momentum, by 8.82%. The Mining Index improved by 6.51%. However, the JSE All Share Index decreased by 1.31%, 20 days after commencement of the strike and the market remained positive regarding Anglo American. However, the standard deviation indicated that the market price was very volatile. The standard deviation for Anglo American was 4% of the value on the date of the strike against the JSE standard deviation of 2.7% of the value at the date of the strike. The 2009 strike apparently was expected to be for a short period only, as the market did not expect it to have a material effect on the operations of Anglo American.

4.2.1.3 Strike in 2010

Table 4.5 illustrates the share price of Anglo American platinum during 20 days before the strike in 2010, the date of announcement and 20 days after the commencement of strike.

Table 4.5: Anglo American: Strike 2010

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Anglo share price	69 700	61 800	18 000	-11.33%	-70.87%	2669.79	267.05
JSE ALL Share	27 917.7	26 738.91	28 714.77	-4.22%	7.39%	396.67	831.43
Mining index	35 500	33 200	36 588.66	-7.97	7.15%	851.47	558.65



Source: McGregor BFA

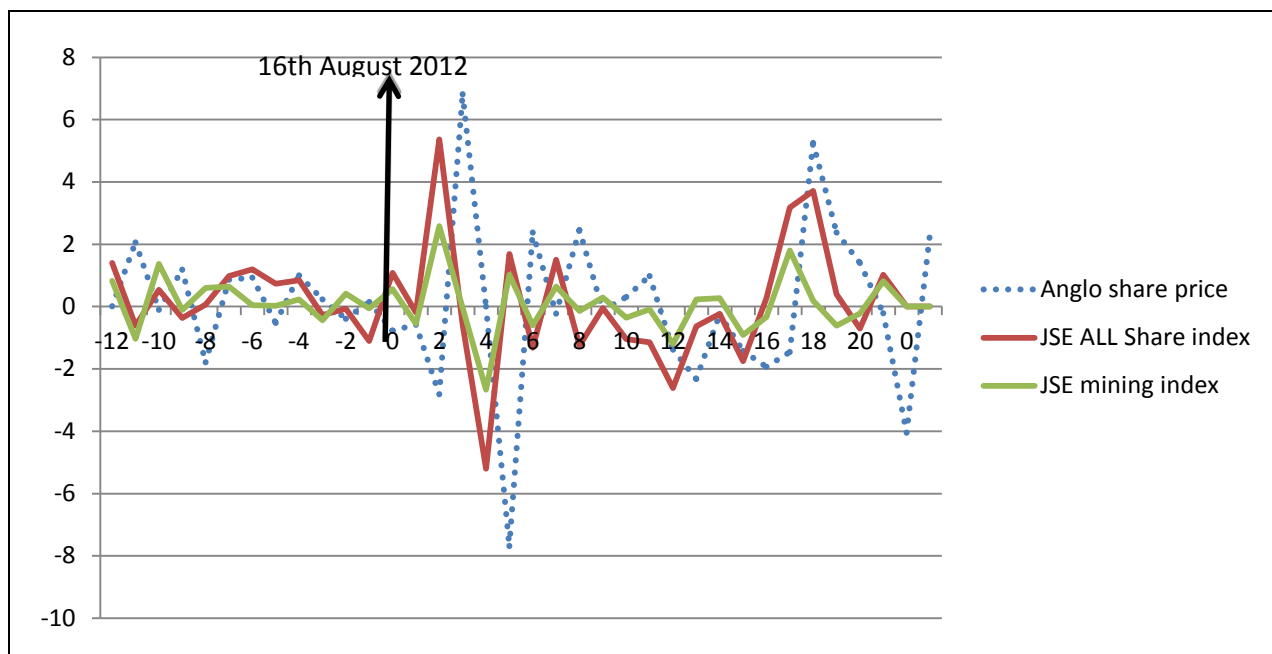
According to Table 4.5, the share price of Anglo American Platinum on the 27 August, being day 0, has declined by 11.33% from 20 days before the strike. The mining index declined by 7.97%. However, the JSE All Share Index only declined by 4.22%. During 20 days after the strike began, the Anglo American share price deteriorated by 70.87% and the mining index increased by 7.15%. The JSE All Share index increased significantly, by 7.39%, during the 20 days after the commencement of strike. This shows that the strike in 2010 did affect the share price of Anglo American Platinum, with a decline on the day of the strike as indicated by the declining part of the graph on day 0 and 20 days after the strike commenced. With both the mining index and the JSE All-share index showing positive returns after the strike commenced, the market reacted adversely towards Anglo American Platinum, as reflected by the decline in its share price. The standard deviation of Anglo American Platinum did not indicate high volatility. It appears as if the market adopted a cautious approach.

4.2.1.4 Strike in 2012

Table 4.6 describes the share price volatility of Anglo American Platinum during the year 2012, in comparison with the JSE ALL Share index and Mining index for 20 days before the announcement of the strike and 20 days after the strike began.

Table 4.6: Anglo American: Strike 2012

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Anglo share price	41 690	42 600	42 740	2.18%	0.33%	439.38	976.41
JSE ALL Share	34 671	35 743.23	35 885.23	3.09%	0.40%	355.44	431.58
Mining index	29 609.84	30 943.69	31 058.81	4.47%	0.14%	505.31	692.51



Source: McGregor BFA

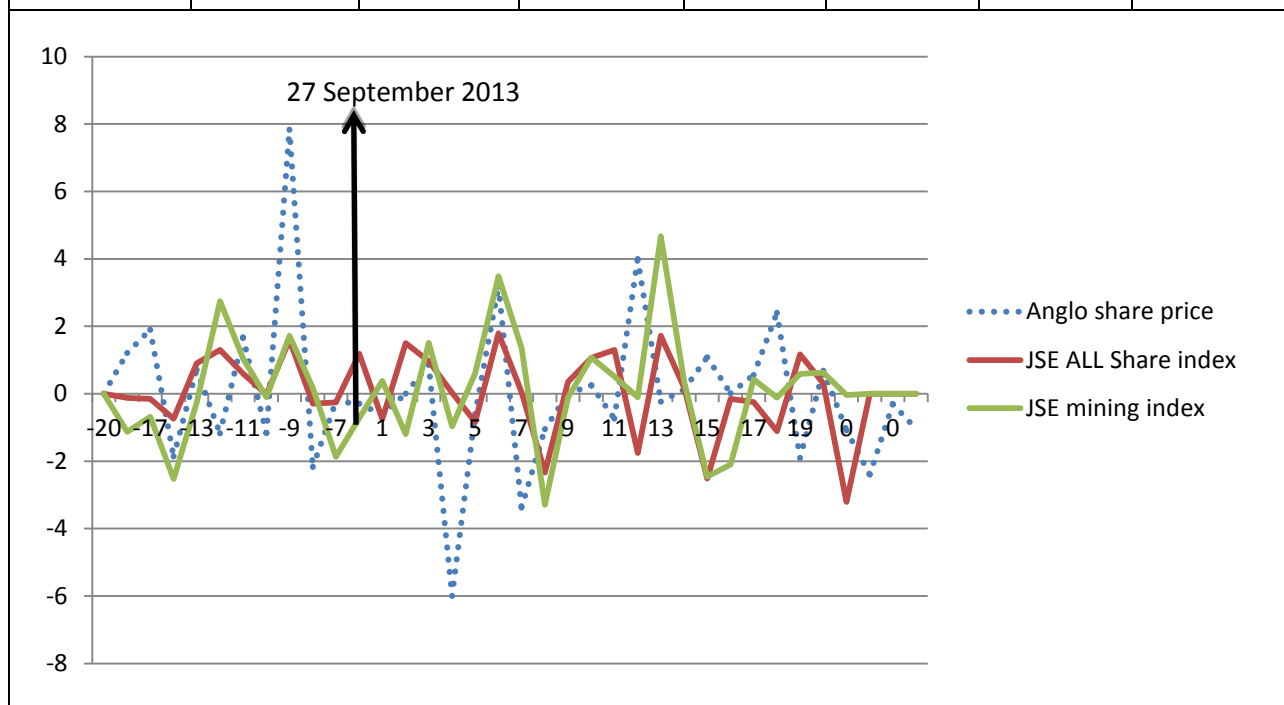
Based on Table 4.6, the share price of Anglo American platinum on the 16 August 2012, being day 0, increased by 2.18% from 20 days before the announcement of the strike. On the day of announcement as the graph for Anglo American indicates, the share price declined slightly. The mining index increased by 4.47% and the JSE All Share index increased by 3.09%. The strike lasted 21 days and Figure 4.6 indicates a constant increasing movement of the share price of Anglo American Platinum. During 20 days after the strike began, the JSE All Share index increased by 0.40%, as indicated by the declining part of the graph. The share price of Anglo American Platinum and the mining index remained unchanged. It does not appear as if the impact of the strike was considered a serious matter by investors. The standard deviation of Anglo American is 976.41 and the JSE All Share index is 431.58, while the mining index is 692.51. This indicates that the share price of Anglo American platinum was more volatile than the market, probably because of the strike.

4.2.1.5 Strike in 2013

Table 4.7 illustrates the share price volatility of Anglo American Platinum in relation to the JSE All Share Index and Mining Index during the period of the strike in 2013.

Table 4.7: Anglo American: Strike 2013

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Anglo share price	41 694	44 000	41 067	5.53%	-6.67%	1190.97	1104.97
JSE ALL Share	42 769.62	44 358.74	45 124.04	3.72%	1.73%	477.68	722.19
Mining index	29 609.84	31 058.81	29 517.42	4.89%	-4.96%	516.69	908.35



Source: McGregor BFA

Table 4.7 above indicates that the JSE All Share index has increased by 3.72% from 20 days before the strike in 2013. After the strike began, the share price continued to increase by 1.35%. However, on the day of the announcement of the strike, Anglo American share price decreased by 5.53%, from 20 days before the strike and the mining index increased by 4.89%. Immediately after the announcement of the strike, the mining index deteriorated by 4.96%. The share price of Anglo American Platinum has decreased by 6.67% and the JSE All Share index by 1.73%. This declining trend is also indicated by the declining parts of the graphs, representing Anglo American Platinum and the JSE Mining index. Although the overall JSE All-share index showed positive results, Anglo American Platinum and the mining sector were affected by the strike. The

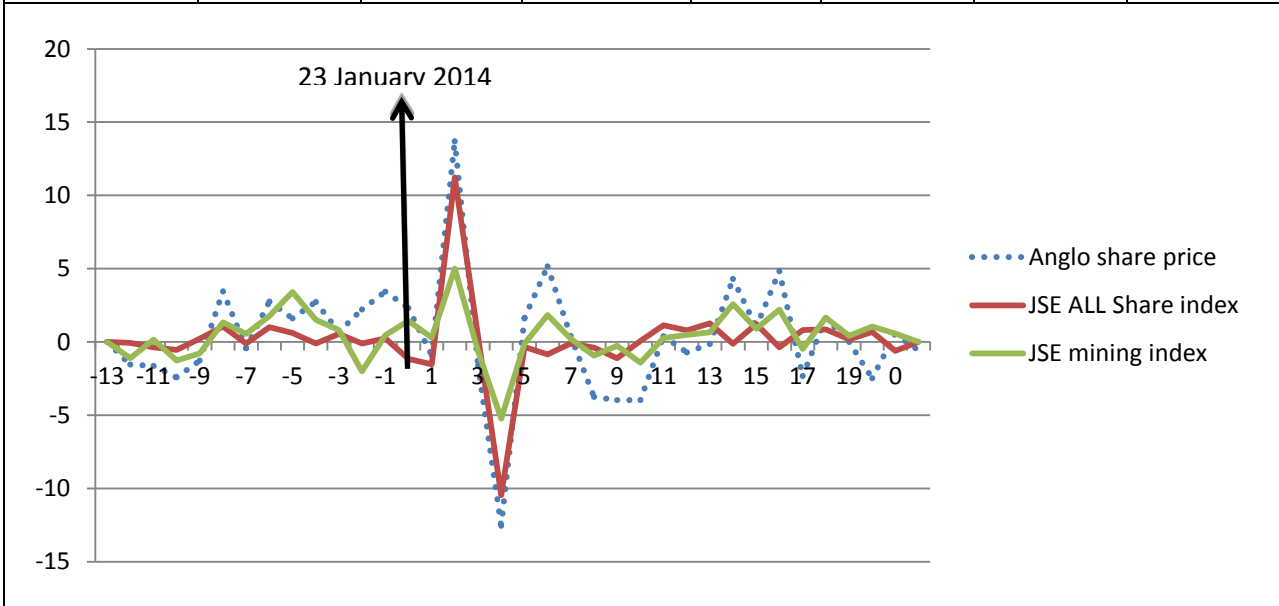
standard deviation of Anglo, Mining index and the JSE All Share index are high and this indicates high share price volatility.

4.2.1.6 Strike in 2014

Table 4.8 show the movement of share prices during the period of the strike in 2014, from 23 January 2014 to 25 July 2014:

Table 4.8: Anglo American: Strike 2014

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Anglo share price	39 372	44 201	45 037	12.27%	1.89%	2225.7	2024.288
JSE ALL Share	46 206.08	47 045	47 149.35	1.82%	0.22%	538.5994	1738.648
Mining index	30 510.41	32 436.1	35 405.58	6.31%	9.15%	1059.4	1197.174



Source: McGregor BFA

Table 4.8 depicted that the share price of Anglo American Platinum increased by 12.27% from 20 days before the strike. The JSE All Share index increased by 1.82% from 20 days before the strike. Immediately after the commencement day, the JSE All Share index has increased significantly by 0.22% and this is indicated by the declining part of the graphs representing Anglo American, JSE All share index and mining index.

The mining index increased by only 6.31% during 20 days before the strike and it increased further by 9.15% during the 20 days after the strike began. This indicates that the strike, which lasted 151 days during the year 2014, did not affect Anglo American Platinum and the Mining index.

The total return on investment in Table 4.9 shows that as the strike reached a climax in 2012 and 2013, the total return on investment in Anglo American Platinum was affected.

Table 4.9: Return on investment for Anglo American Platinum from 2008 to 2014

Year	R1	R0	CP %
2008	46502	104865	10.56
2009	78687	46502	0.69
2010	68751	78687	-0.13
2011	53481	68751	2.00
2012	42617	53481	0.25
2013	37932	42617	-0.11

Source: McGregor BFA

4.2.2 Impala Platinum Holdings (IMP)

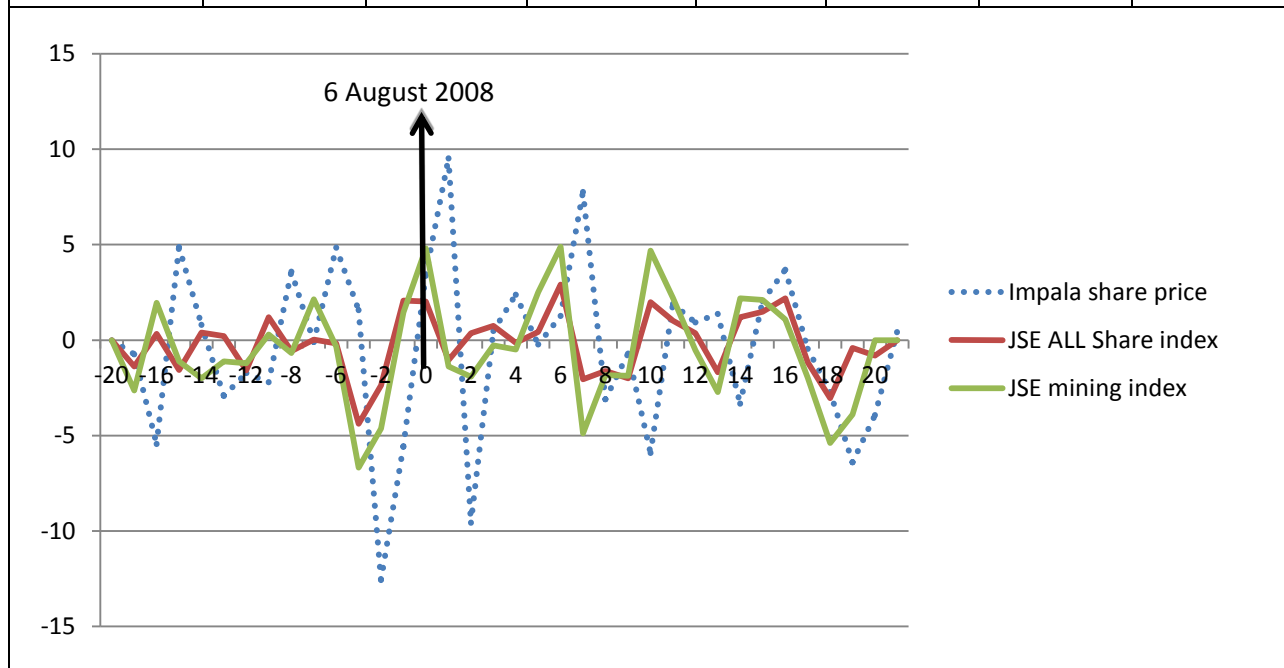
The impact of strikes on the share price of Impala Platinum Holdings is discussed in this section. The JSE all-share index, as well as the mining index for the same period, will be reported, for comparison purposes. Each one of the strikes as indicated in Table 4.1 will be separately reported on.

4.2.2.1 Strike in 2008

Table 4.10 represents share price volatility of Impala Platinum holdings during 20 days before the strike, day 0 and 20 days after commencement of strike, in relation to the JSE All Share index and Mining index in 2008.

Table 4.10: Impala Platinum Holdings: Strike 2008

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Impala share price	24 075	23 000	19 696	-4.47%	-14.37%	1257.49	936.90
JSE ALL Share	26 876.95	26 945.35	26 532.11	0.25%	-1.53%	582.74	428.33
Mining index	38 698.67	36 380.76	25 796.05	-5.99%	-29.09%	1555.32	1206.14



Source: McGregor BFA

During 2008, the strike started on 6 August. 20 days precedent to the announcement of the strike, the share price of Impala Platinum Holdings decreased by 4.47%. The JSE mining index declined by 5.99% and the JSE All Share index increased by 0.25%. Immediately after day 0, the share price of Impala Platinum Holdings continued to decline significantly, by 14.37%. This is represented by the declining part of the graph representing Impala Platinum holdings. The JSE All Share index decreased by 1.53%.

The mining index decreased by 5.99% during the days before the announcement of the strike and it further declined by 29.09% after the announcement of the strike. By referring to the graph above and the table provided above, it can be seen that the share price of Impala Platinum Holdings and the mining index were affected by the strike

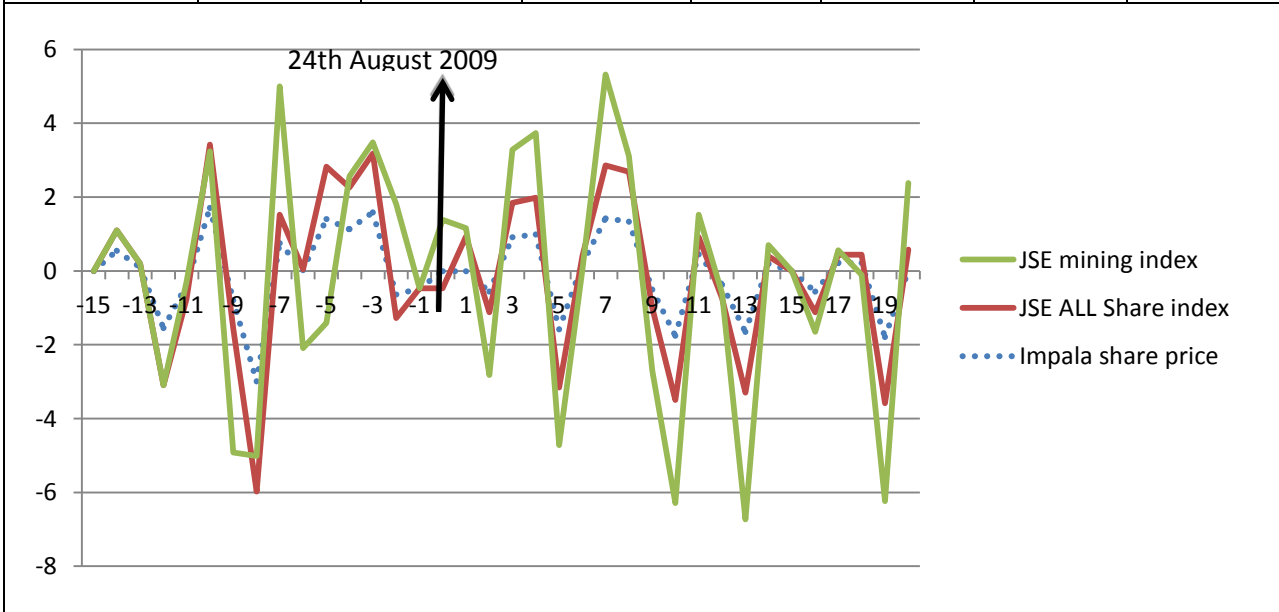
during 2008. The standard deviation of Impala Platinum was 936.90. This is 4% of the value at the date of the strike. The standard deviation of the JSE All Share index was 428.33, representing 1.5% of the value at the date of the strike. This indicates that the company’s share price was more volatile than the JSE All Share index. It appears as if Impala Platinum Holdings were severely affected by the strike.

4.2.2.2 Strike in 2009

Table 4.11 indicates the share price of Impala Platinum Holdings during 20 days before the strike, the date of announcement and 20 days after the strike commenced, in relation to JSE All Share index and Mining index.

Table 4.11: Impala Platinum Holdings: Strike 2009

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Impala share price	18 975	20 410	18 598	7.56%	-8.88%	433.00	747.24
JSE ALL Share	24 908.79	25 274.69	24 944.83	1.47%	-1.31%	361.42	687.52
Mining index	35 300	33 800	36 000	-4.25%	6.51%	293.36	756.66



Source: McGregor BFA

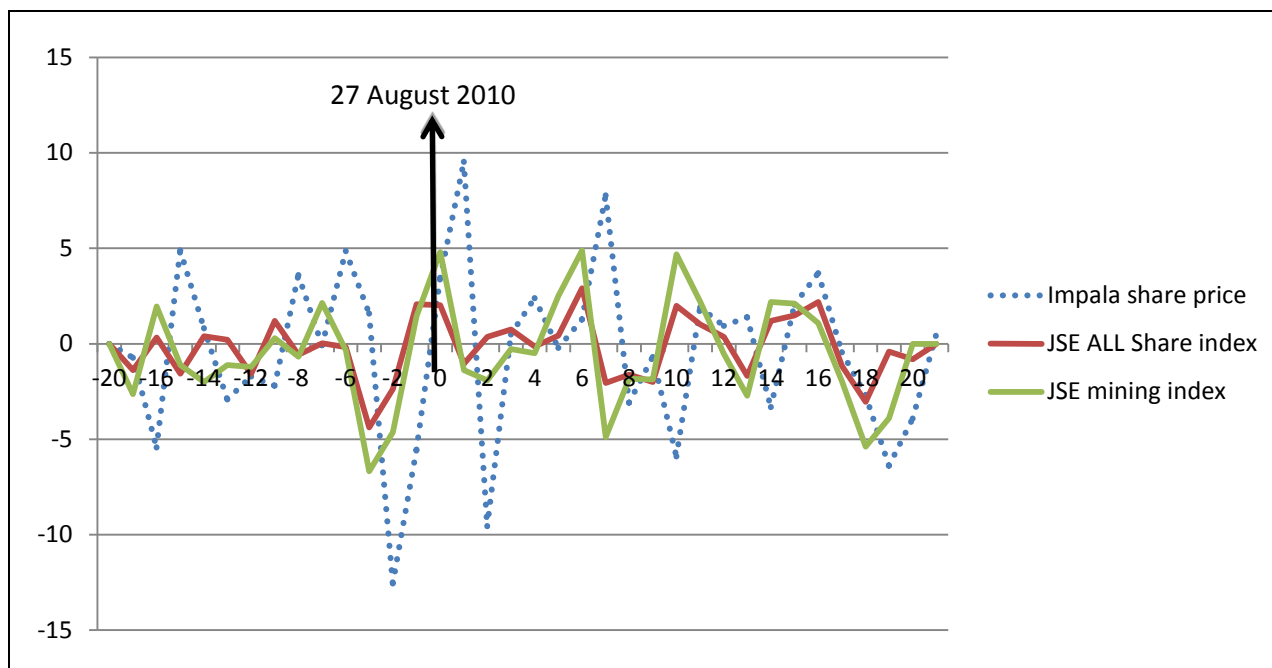
The strike during the year 2009 spread in the platinum sector on 24 August. During 20 days before the strike, the share price of Impala Platinum increased constantly by 7.56%. The JSE mining index declined by 4.25%, but JSE All Share index increased by 1.47%. During the 20 days after the strike began, the mining index improved by 6.51%. The JSE All Share index has declined by 1.31%. The share price of Impala Platinum decreased drastically by 8.88%. The graphs above show that the share price of Impala Platinum fell precipitously after the announcement of the strike. The standard deviation of Impala Platinum is 747.24, but the JSE All Share index and mining index figures are 687.52 and 756.66, respectively. This shows that the Impala Platinum share price was more volatile than the JSE All Share index, but it is still less volatile than the mining index, probably because the strike did not affect other companies.

4.2.2.3 Strike in 2010

Table 4.10 shows the share price volatility of Impala Platinum holdings during 20 days before the strike, day 0 and 20 days after the strike commenced, in relation to the JSE All Share index and Mining index in 2008.

Table 4.12: Impala Platinum Holdings: Strike 2010

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Impala share price	18 800	17 250	17 857	-8.24%	3.52%	571.22	267.10
JSE ALL Share	27 917.7	26 738.91	28 714.77	-4.22%	7.39%	396.67	831.43
Mining index	35 500	33 200	36 588.66	-7.97%	7.15%	851.47	558.65



Source: McGregor BFA

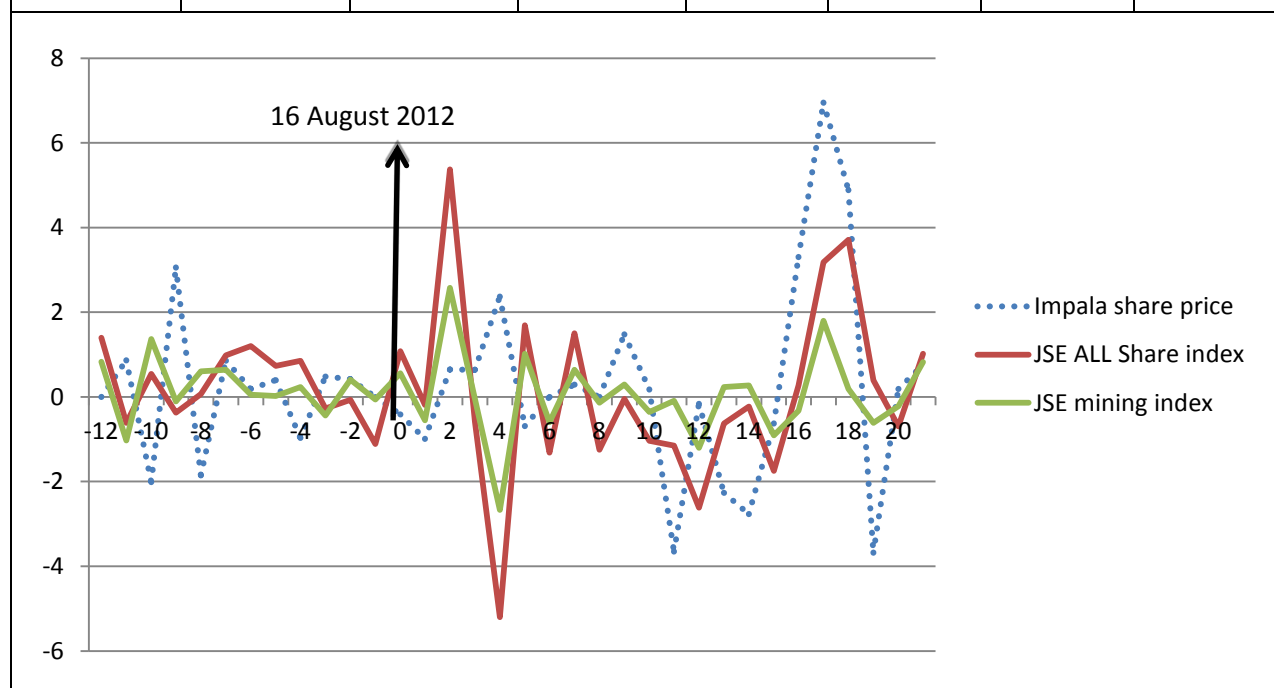
The strike commenced on 27 August 2010. Twenty days prior to day 0, JSE All Share index was volatile and decreased by 4.22%. The Impala platinum share price dropped by 8.24% as indicated by the declining part of the graph. Immediately after the announcement of the strike, the JSE All Share index increased by 7.39%. The mining index decreased by 7.97% during the 20 days before the strike. The mining index improved by 7.15% during the 20 days. The share price of Impala Platinum increased by 3.52% during the 20 days after the strike. It appears as if the 2010 strike did not have a material effect on the perceived performance of the company.

4.2.2.4 Strike in 2012

Table 4.13 shows the share price volatility of Impala Platinum holdings during 20 days before the strike, day 0 and 20 days after the strike commenced, in relation to the JSE All Share index and Mining index in 2012.

Table 4.13: Impala Platinum Holdings: Strike 2012

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Impala share price	13 152	13 115	13 939	-0.28%	6.28%	103.30	492.15
JSE ALL Share	34 671	35 743.23	35 885.23	3.09%	0.40%	355.44	431.58
Mining index	29 609.84	30 943.69	31 058.81	4.47%	0.14%	505.31	692.51



Source: McGregor BFA

The strike started on 16 August 2012. During 20 days before the strike, the Impala Platinum share price decreased by 0.28%. Fourteen days after the strike began the share price of Impala Platinum increased by 6.28% as indicated by the increasing part of the graph. The JSE All Share index during 20 days before the strike increased by 3.09% and by a further 0.40% 20 days after the strike commenced. The mining index increased by 4.47% during the 20 days before the strike. During the 20 days after the strike commenced, the mining index declined by 0.14%. The strike had very little effect on the company. The standard deviation of Impala Platinum is 3.7% of the value on the date of the strike, whereas the mining index and the JSE All Share index figures were

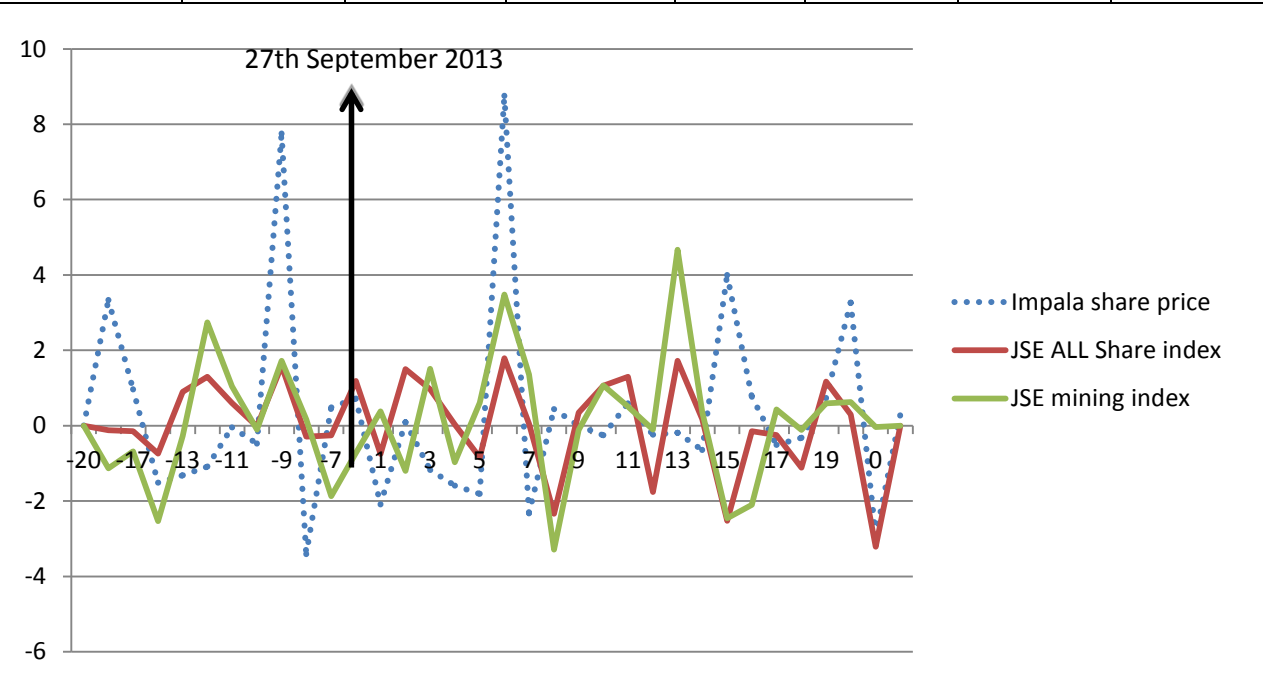
2.2% and 1.2%, respectively. This shows that the share price of Impala Platinum was more volatile than the mining index and the JSE ALL Share index.

4.2.2.5 Strike in 2013

Table 4.14 shows the share price of Impala Platinum 20 days before the strike, day 0 and 20 days after the strike in 2013.

Table 4.14: Impala Platinum Holdings:Strike 2013

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Impala share price	12 570	12 525	12 315	-0.36%	-4.14%	264.57	279.14
JSE ALL Share	42 769.62	44 358.74	45 124.04	3.72%	1.73%	477.68	722.19
Mining index	29 609.84	31 058.81	29 517.42	3.44%	-2.67%	516.69	908.35



Source: McGregor BFA

The aggregate share price of Impala Platinum Holdings during 20 days before the strike rose by 0.36%. The mining index increased by 4.89%. The JSE All Share index has increased by 4.96%. During the 20 days after the commencement of strike, the mining index declined by 2.67%. The share price of Impala Platinum declined by 4.14%. The

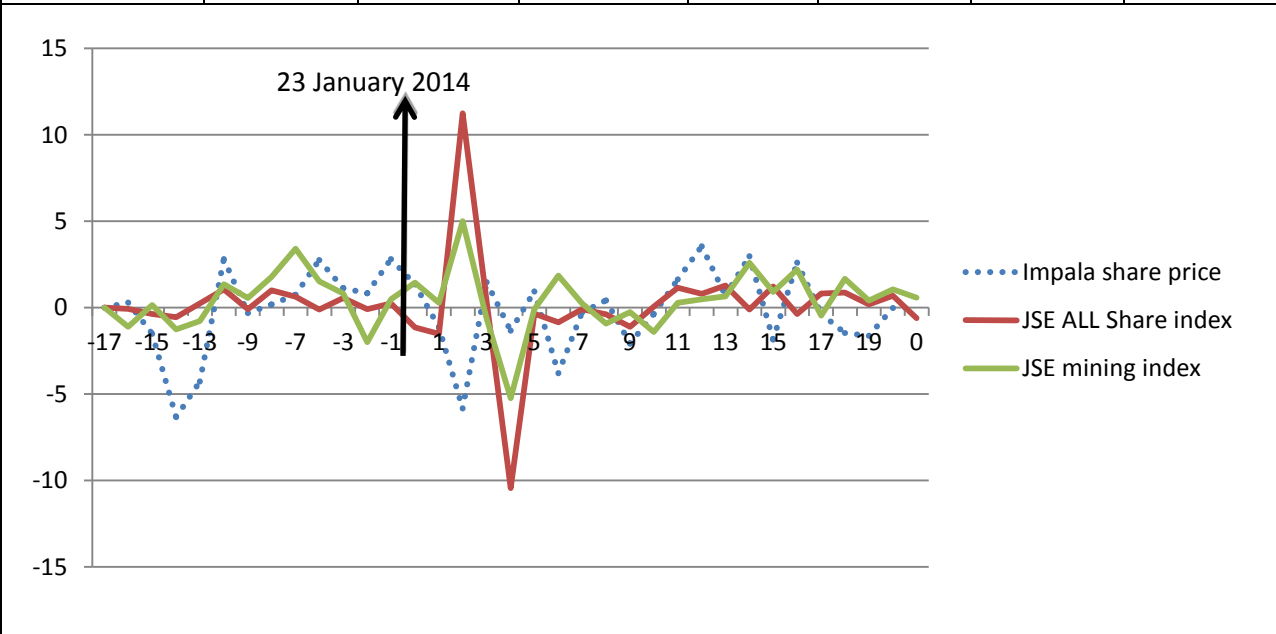
JSE All Share index increased by 1.73% during the 20 days after the strike began. This shows that the strike had a negative effect on the share price of the company as indicated by the declining part of the graph. The standard deviation figures for Impala Platinum, the mining index and the JSE All Share index are 2.2%, 2.9% and 1.6% of the value at the date of the strike, respectively. This indicates that the share price of Impala Platinum and the mining index were more volatile than the market. The market regarded the company and the sector as being a riskier investment than the rest of the market

4.2.2.6 Strike in 2014

Table 4.15 shows the share price of Impala Platinum Holdings 20 days before the strike, on the date of the announcement and 20 days after the strike began in 2014.

Table 4.15: Impala Platinum Holdings:Strike 2014

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Impala share price	12 755	12 755	11 010	0.00%	-13.68%	520.23	367.75
JSE ALL Share	46 206.08	47 045	47 149.35	1.82%	0.22%	538.60	1738.65
Mining index	30 510.41	32 436.1	35 405.58	6.31%	9.15%	1059.4	1197.17



Source: McGregor BFA

The share price of Impala Platinum did not change during the first 20 days before the strike, but it was very volatile. The mining index increased by 6.31% and the JSE ALL Share index increased by 1.82%. The strike lasted for 151 days during the year 2014. The mining index increase by 9.15% for 20 days after the strike commenced and the JSE ALL Share index gained momentum by 0.22%. In the 20-day period after the announcement of the strike, the share price of Impala Platinum declined by 13.68%, in reaction to the strike. Impala Platinum was severely affected by the strike, in contrast to Anglo American Platinum. The mining index increased after the strike, due to the positive effect of Anglo American.

The total return on investment of Impala Platinum Holdings Limited is recorded in Table 4.16.

Table 4.16: Return on investment for Impala Platinum Holdings from 2008 till 2014

Year	R1	R0	CP %
2008	12264	24871	10.42
2009	19066	12264	2.13
2010	22594	19066	1.86
2011	16813	22594	2.88
2012	15808	16813	1.05
2013	11571	15808	0.84

Source: McGregor BFA

Impala Platinum Holdings kept a record of positive investment returns from 2008 to 2013. From the year 2012 when the platinum sector started experiencing major strikes, the total return on investment declined from 1.05 to 0.84.

4.2.3 Lonmin PLC (LON) share price volatility

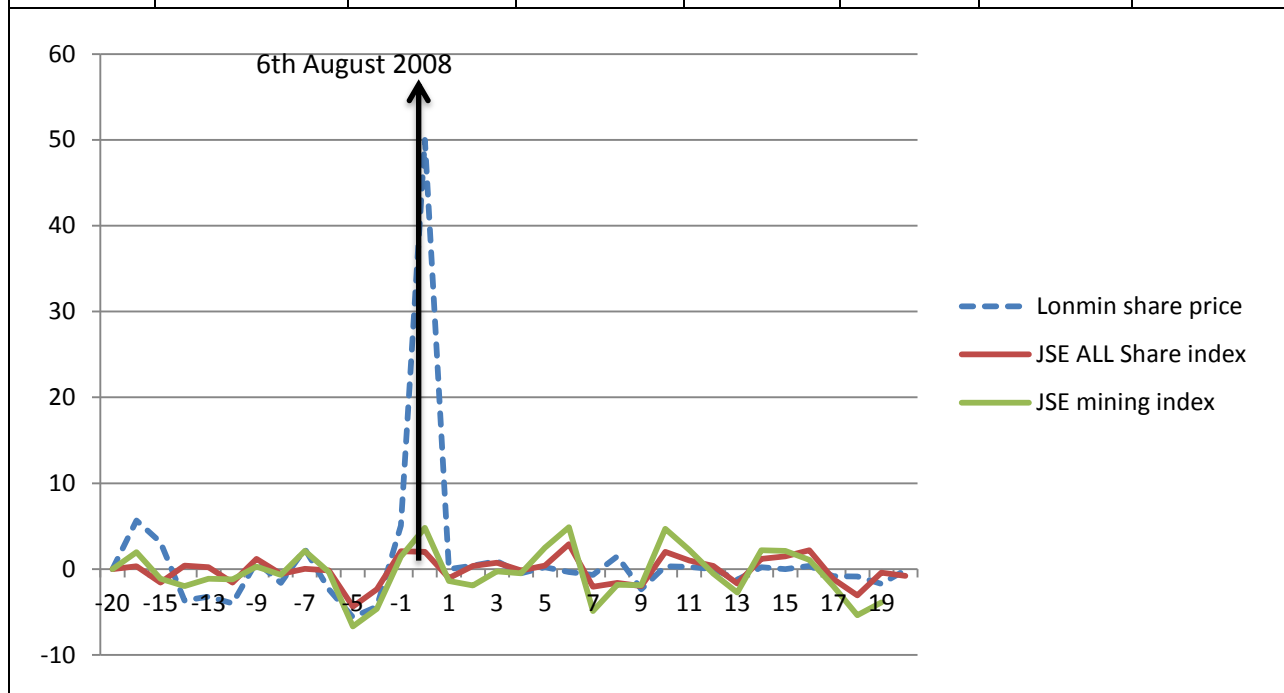
The impact of strikes on the share price of Lonmin PLC is discussed in this section. The JSE all-share index, as well as the mining index for the same period, will be reported for comparison purposes. Each one of the strikes as shown in Table 4.1 at the beginning of the chapter will be separately reported on.

4.2.3.1 Lonmin PLC: Strike in 2008

Table 4.17 shows the share price of Lonmin during 20 days before the strike, on the date of the announcement and 20 days after the strike, in 2008.

Table 4.17: Strike 2008

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Lonmin share price	37 872	49 800	47 550	31.50%	-4.52%	2202.82	908.42
JSE ALL Share	26 876.95	26 945.35	26 532.11	0.25%	-1.53%	582.74	428.33
Mining index	38 698.67	36 380.76	25 796.05	-5.99%	29.09%	1555.32	1206.14



Source: McGregor BFA

The Lonmin share price increased by 31.50% before the strike. The JSE All Share index increased by 0.25% during the 20 days before the strike and the mining index declined by 5.99%. Lonmin share price recorded -4.52% during the 20 days after 6 August. The JSE ALL Share index deteriorated by 1.53%. The mining index decreased by -29.09%. The graph above shows that, after the date of the announcement of strike in 2008, the

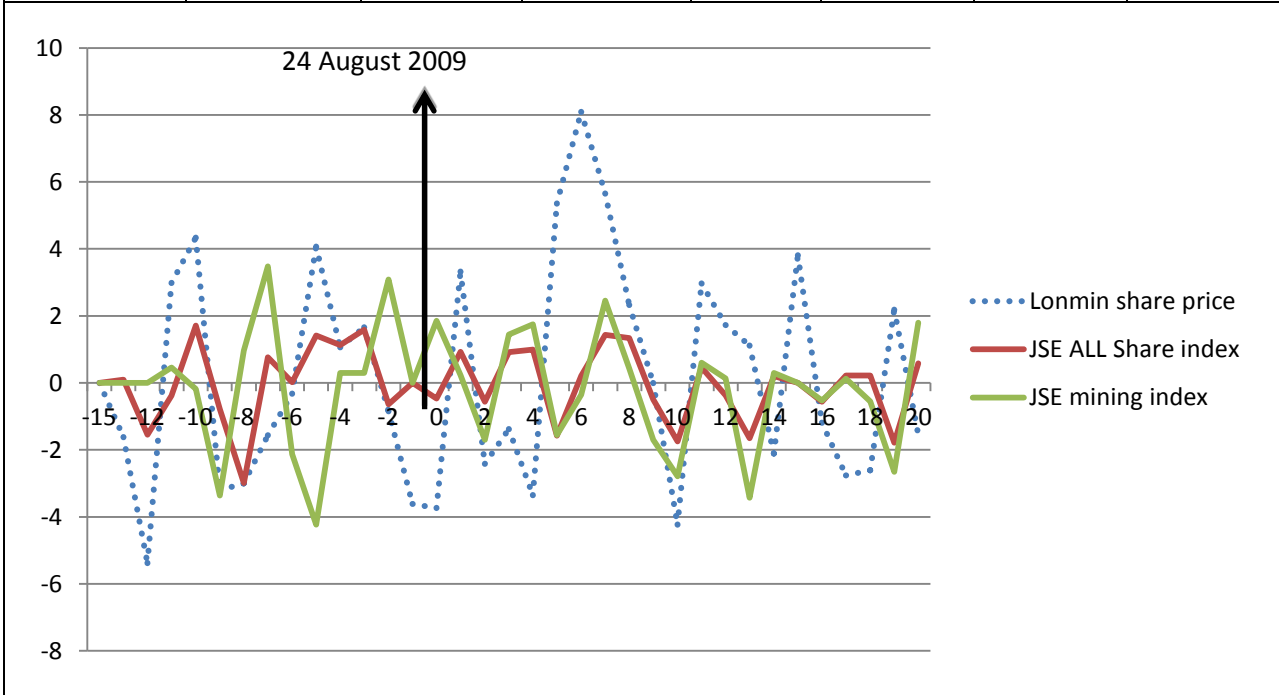
Lonmin share price and the mining index continued to decline. The standard deviation of Lonmin is 1.8% of the value at the date of the strike and for the JSE All Share index and mining index, the standard deviations is 1.6% and 3.3%, respectively. This implies that Lonmin was not considered riskier than the rest of the share market.

4.2.3.2 Strike in 2009

Table 4.18 shows the share price of Lonmin during 20 days before the strike, on the date of the announcement and during 20 days after the strike, in 2009.

Table 4.18: Lonmin PLC: Strike 2009

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Lonmin share price	19 330	19 564	20 675	1.21%	5.68%	526.59	1544.53
JSE ALL Share	24 908.79	25 274.69	24 944.83	1.47%	-1.31%	361.42	687.52
Mining index	35 300	33 800	36 000	-4.25%	6.51%	293.36	756.66



Source: McGregor BFA

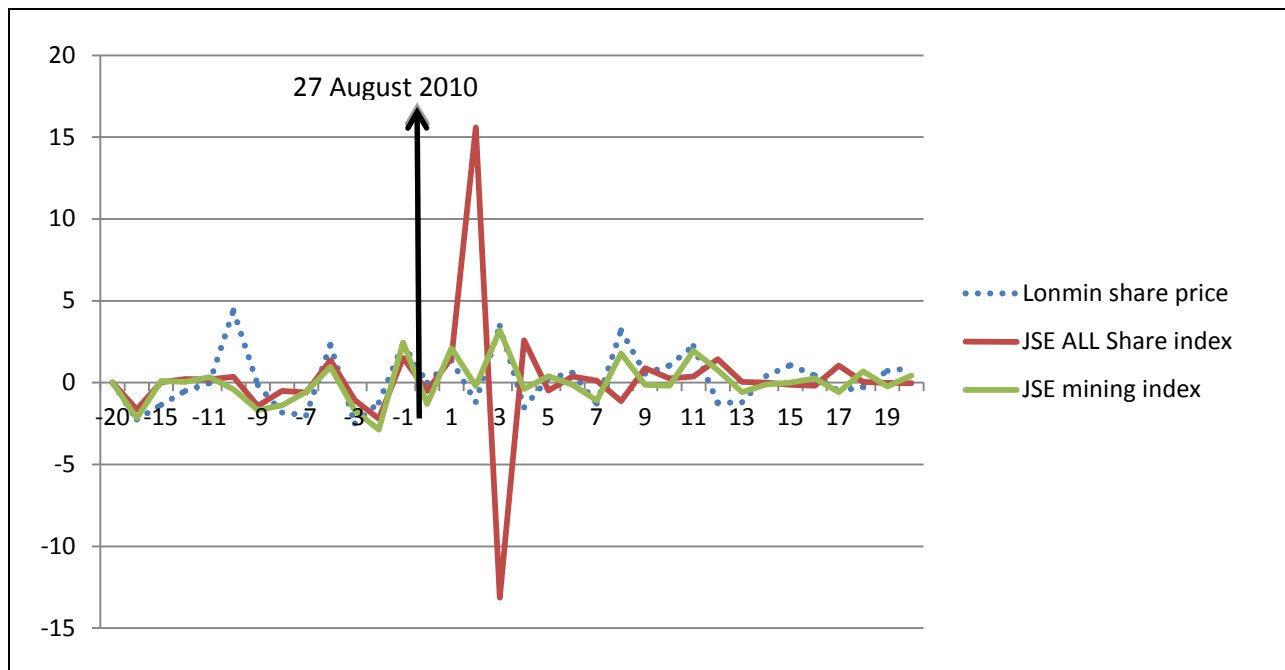
The Lonmin share price increased constantly by 1.21% during the 20 days before the strike. During the 20 day period after the strike began, the share price of Lonmin increased by 5.68%. The mining index and the JSE All Share index, during the 20 days before the strike, recorded -4.25% and 1.47%, respectively. Immediately after the announcement of the strike, the mining index increased by 6.51%. The JSE All Share index decreased by 1.31% during the 20 days after the announcement of strike. The statistics show that the strike that commenced on 24 August 2009 did not affect Lonmin, but it did affect other companies in the mining sector, as indicated by the decline in the mining index.

4.2.3.3 Strike in 2010

Table 4.19 shows the share price of Lonmin 20 days before the strike, on day 0 and 20 days after the strike.

Table 4.19: Lonmin PLC: Strike 2010

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Lonmin share price	17 735	17 100	18 850	-3.58%	10.23%	309.99	505.20
JSE ALL Share	27 917.7	26 738.74	28 714.77	-4.22%	7.39%	396.67	831.43
Mining index	35 500	33 200	36 588.66	-7.97%	7.15%	851.47	558.65



Source: McGregor BFA

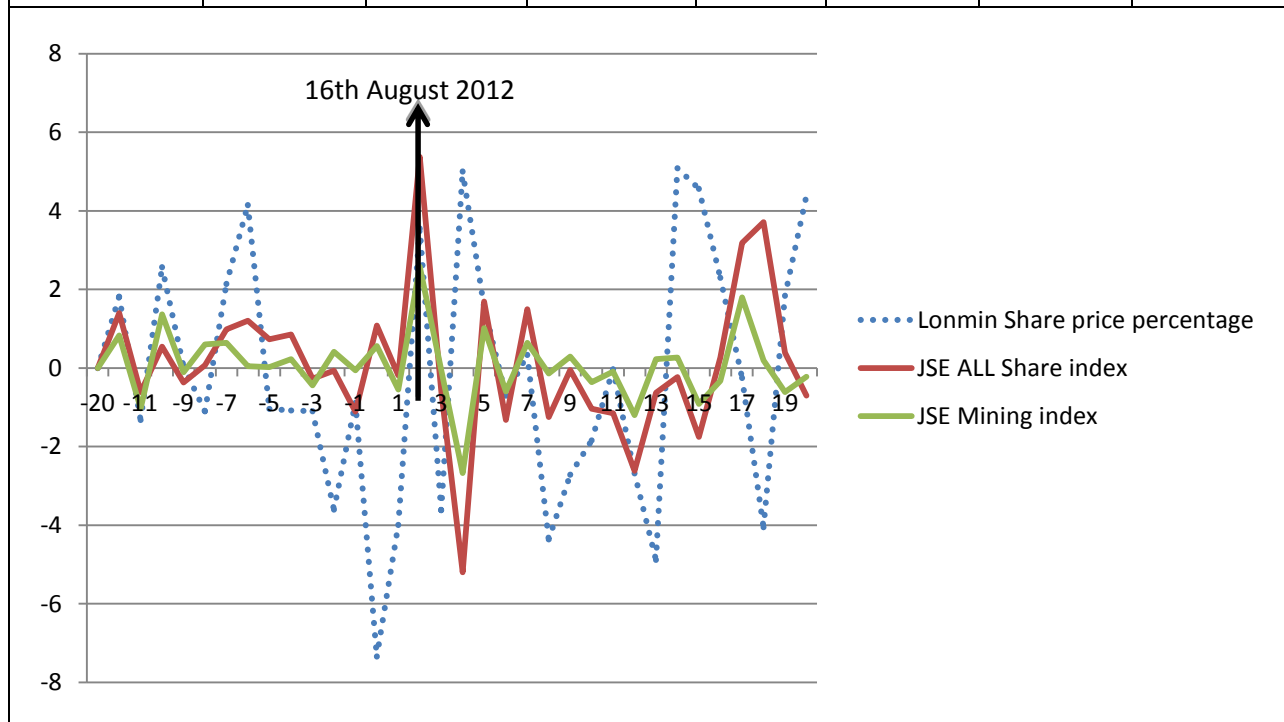
The strike has started on 27 August 2010. During the twenty days prior to the announcement of the strike, the share price of Lonmin has declined by 3.58% and the mining index deteriorated by 7.97%. The JSE All Share index declined by 4.22%. Immediately after the announcement of the strike, the share price of Lonmin increased by 10.23% as indicated by the increasing part of the graph. The mining index increased by 7.15% and the JSE All Share index has increased by 7.39%. The graph shows that the share price of Lonmin and the mining index quickly recovered after the commencement of the strike in 2010. There is no indication that the strike affected the share price of Lonmin.

4.2.3.4 Strike in 2012

Table 4.20 shows the share price of Lonmin 20 days before the strike in 2012, on the date of the announcement and 20 days after the strike began.

Table 4.20: Lonmin PLC: Strike 2012

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Lonmin share price	9 000	8 370	7 856	-7.00%	-6.14%	344.03	357.89
JSE ALL Share	34 671	35 743.23	35 885.23	3.09%	0.40%	355.44	431.58
Mining index	29 609.84	30 943.69	31 058.81	4.47%	0.14%	505.31	692.51



Source: McGregor BFA

The share price of Lonmin decreased by 7% during the 20 days before the strike. The mining index increased by 4.47% and the JSE All Share index increased by 3.09%. From the date of the announcement of the strike, until 20 days after commencement of the strike, the share price of Lonmin deteriorated by 6.14%. The mining index rose by 0.14% and JSE All Share index increased by 0.40%. It appears as if the 2012 strike had an effect on the performance of Lonmin as shown by the declining part of the graph above. The standard deviation of Lonmin is 4.3% of the value at the date of the strike and the JSE All Share index and mining index figures are 1.2% and 2.2%, respectively. This implies that the Lonmin share price was more volatile than the market and

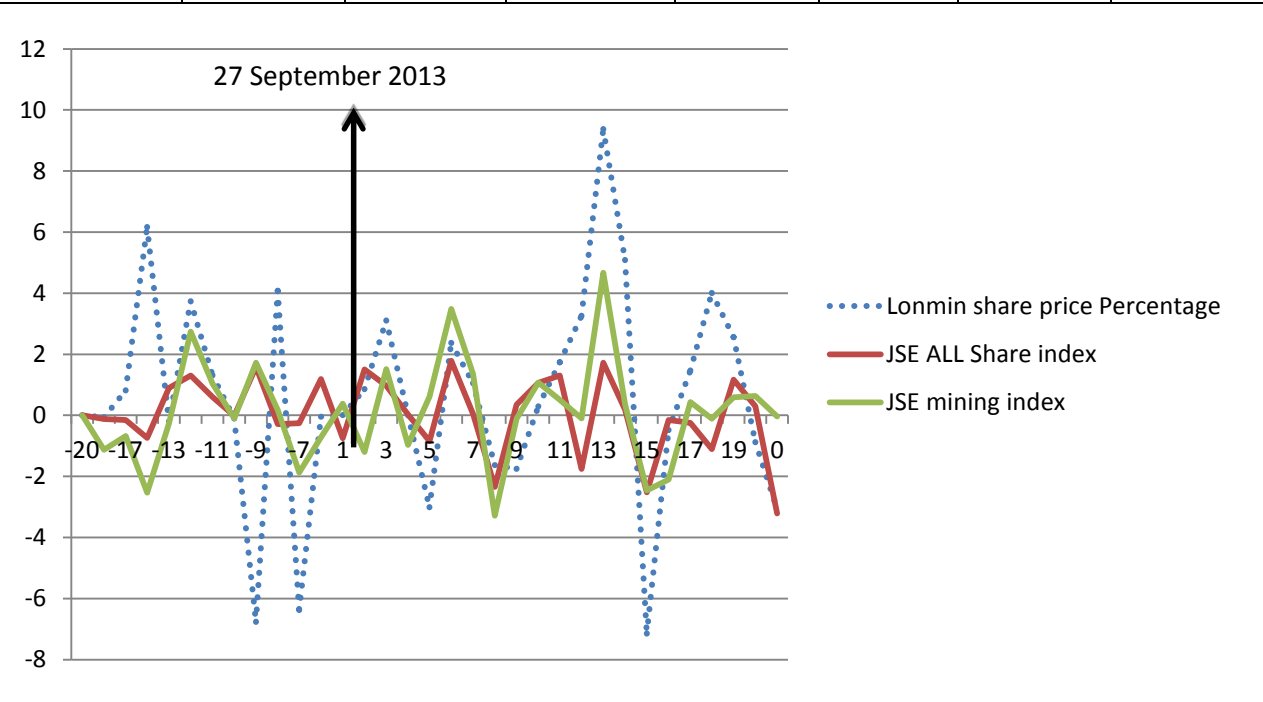
therefore considered to be a more risky investment than other sectors of the market for the duration of the 2012 strike.

4.2.3.5 Strike in 2013

Table 4.21 shows the share price of Lonmin during 20 days before the strike, on the date of the announcement and 20 days after the strike commenced, in 2008.

Table 4.21: Lonmin PLC: Strike 2013

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Lonmin share price	3 999	3 768	4 420	-5.78%	17.30%	162.78	304.34
JSE ALL Share	42 769.62	44 358.74	45 124.04	3.72%	1.73%	477.68	722.19
Mining index	29 609.84	31 058.81	29 517.42	4.89%	-4.96%	516.69	908.35



Source: McGregor BFA

The share price of Lonmin during the 20 days before the strike that commenced on 27 September 2013 recorded -5.78%. The JSE mining index increased by 4.89% and the JSE All Share index increased by 3.72%. Immediately after 27 September until 20 days after the strike commenced, the Lonmin share price increased by 17.30%. The mining

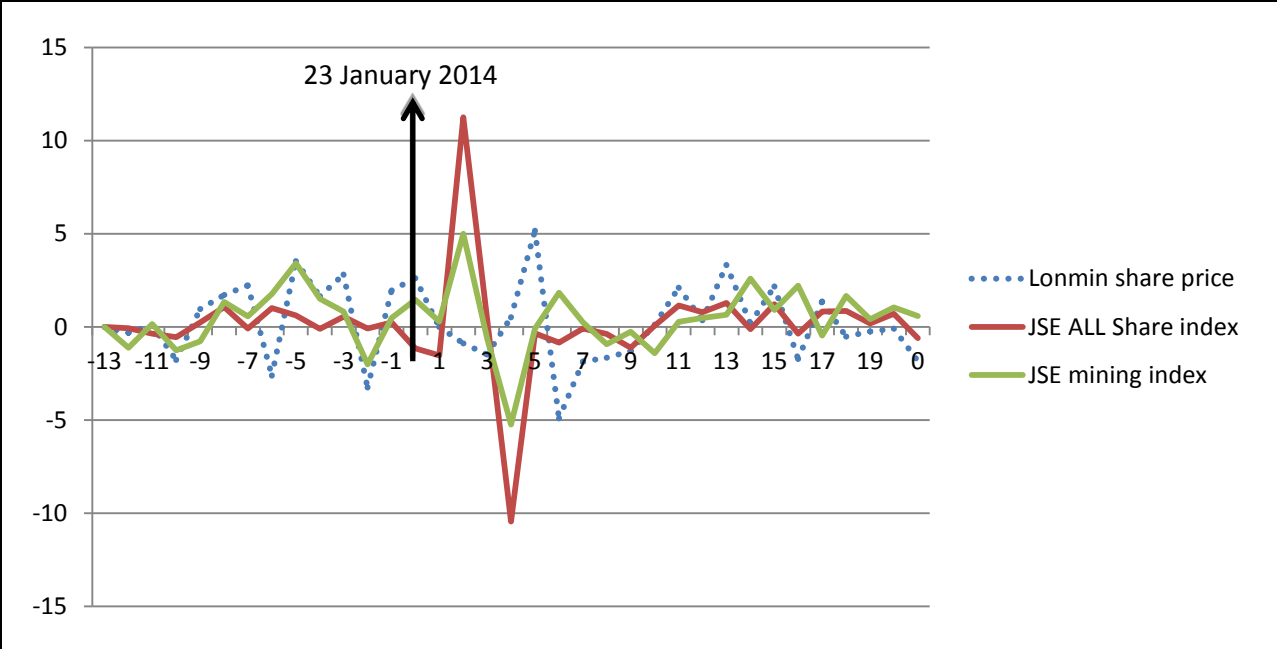
index decreased by 4.96% and the JSE All Share index increased by 1.73%. Both the Lonmin share price and the mining index declined during the period up to the date of the strike as illustrated by the declining part of the graph, while the JSE All Share Index increased. With the share price of Lonmin increasing after the date of the strike, it appeared that the strike had no adverse effect on the company.

4.2.3.6 Strike in 2014

Table 4.22 shows the share price of Lonmin 20 days before the strike, on the date of the announcement and 20 days after the start of the strike in 2014.

Table 4.22: Lonmin PLC: Strike 2014

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Lonmin share price	5 341	5 859	5 763	9.70%	-26.95%	200.96	155.51
JSE ALL Share	46 206.08	47 045	47 149.35	1.82%	0.22%	538.60	1738.65
Mining index	30 510.41	32 436.1	35 405.58	6.31%	9.15%	1059.4	1197.17



Source: McGregor BFA

During the year 2014, strike commenced on 23 January. During the 20 days prior to the announcement of the strike, the share price of Lonmin increased by 9.70%. The mining

index increased by 6.31%. The JSE All Share index gained momentum by 1.82%. During the 20 days after the strike began, that lasted for 151 days, the share price of Lonmin deteriorated by 26.95% as demonstrated by the declining part of the graph. The mining index increased by 9.15%. The JSE All Share index increased by 0.22%. The standard deviation for Lonmin is 2.6% of the value at the date of the strike. The JSE All Share index and mining index figures are 3.6% and 3.7%, respectively. Surprisingly, Lonmin was less volatile than the rest of the market. It appears as if the market lost interest in the company. Table 4.23 below depicts the return on investment for Lonmin from 2008 to 2013 based on the opening share price at the beginning of the year, closing share price at the end of the year and dividend yield.

Table 4.23: Return on investment for Lonmin from 2008 to 2013

Year	R1	R0	CP
2008	11168	43631	2.86
2009	22402	11168	1.01
2010	20116	22402	0.39
2011	12763	20116	0.63
2012	3948	12763	-0.69
2013	5096	3948	0.29

Source: McGregor BFA

Lonmin return on investment noted as CP has been declining from 2008 until 2013, but the worst returns were recorded in 2012, at -0.69 when the Marikana mine was affected by the major strike as it caused production stoppages for more than 21 days.

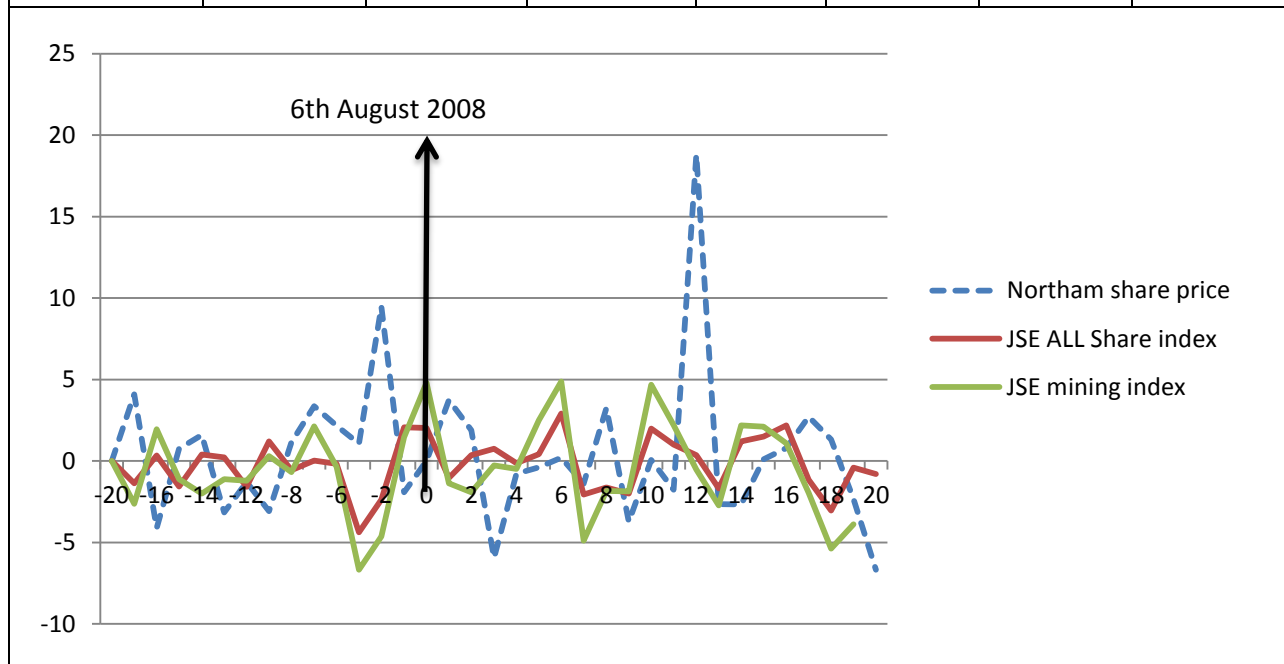
4.2.4 Northam Platinum (NHM) share price volatility

4.2.4.1 Strike in 2008

Table 4.24 shows the share price of Northam Platinum 20 days before the strike in 2008, date of the announcement and 20 days after the commencement of the strike.

Table 4.24: Northam Platinum: Strike 2008

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Northam share price	4650	5100	2 095	9.68%	-58.92%	279.21	378.44
JSE ALL Share	26 876.95	26 945.35	26 532.11	0.25%	-1.53%	582.74	428.33
Mining index	38 698.67	36 380.76	25 796.05	-5.99%	-29.09%	1555.32	1206.14



Source: McGregor BFA

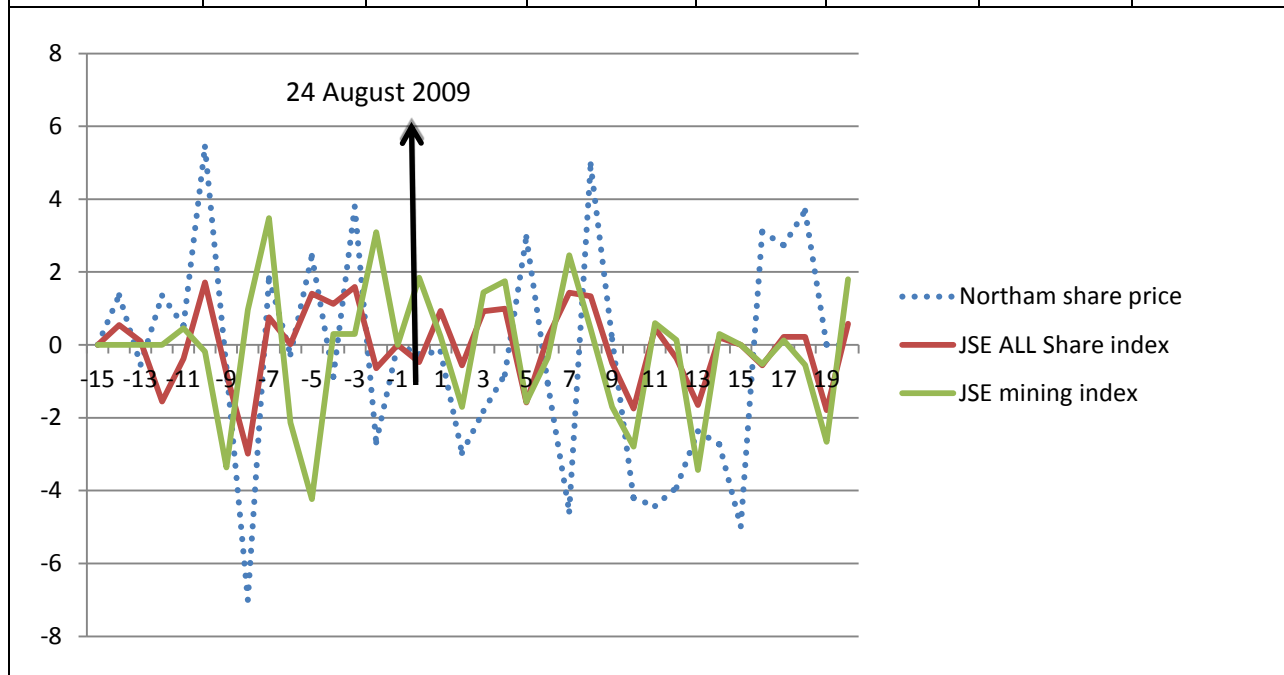
The Northam Platinum share price, during the 20 days before the strike started on the 6 August 2008, increased by 9.68%. The mining index declined by 5.99% and the JSE All Share index increased by 0.25%. After the strike was announced in the platinum sector, the share price of Northam Platinum decreased precipitously, by 58.92%, and the mining index declined by 29.09%. The JSE All Share index increased by 1.53%. The strike had a devastating effect on the share price as indicated by the graph. The standard deviation of Northam Platinum is 7.4% of the value at the date of the strike. The JSE ALL Share index and mining index standard deviations are 1.6% and 3.3%, respectively. This implies that the share price of Northam Platinum was a lot more volatile than the market. There was a much uncertainty regarding the value of Northam Platinum shares.

4.2.4.2 Strike in 2009

Table 4.25 shows the share price of Northam Platinum 20 days before the strike, on the date of the announcement and 20 days after the strike began.

Table 4.25: Northam Platinum: Strike 2009

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Northam share price	3 670	4 100	3 350	11,72%	-18.29%	131.51	311.22
JSE ALL Share	24 908.79	25 274.69	24 944.83	1.47%	-1.31%	361.42	687.52
Mining index	35 300	33 800	36 000	-4.53%	6.51%	293.36	756.66



Source: McGregor BFA

The strike commenced on 24 August 2009. From 20 days until the date of the announcement of the strike, the share price of Northam Platinum increased by 11.72%. JSE mining index dropped by 4.25% and the JSE All Share index has increased by 1.47%. Immediately after the announcement of the strike, the Northam Platinum share price declined by 18.29% and the mining index rose by 6.51% and the decline is demonstrated by the declining graphs. The JSE All Share index dropped by 1.31%. As with the 2008 strike, the 2009 strike had a drastic effect on the share price of Northam

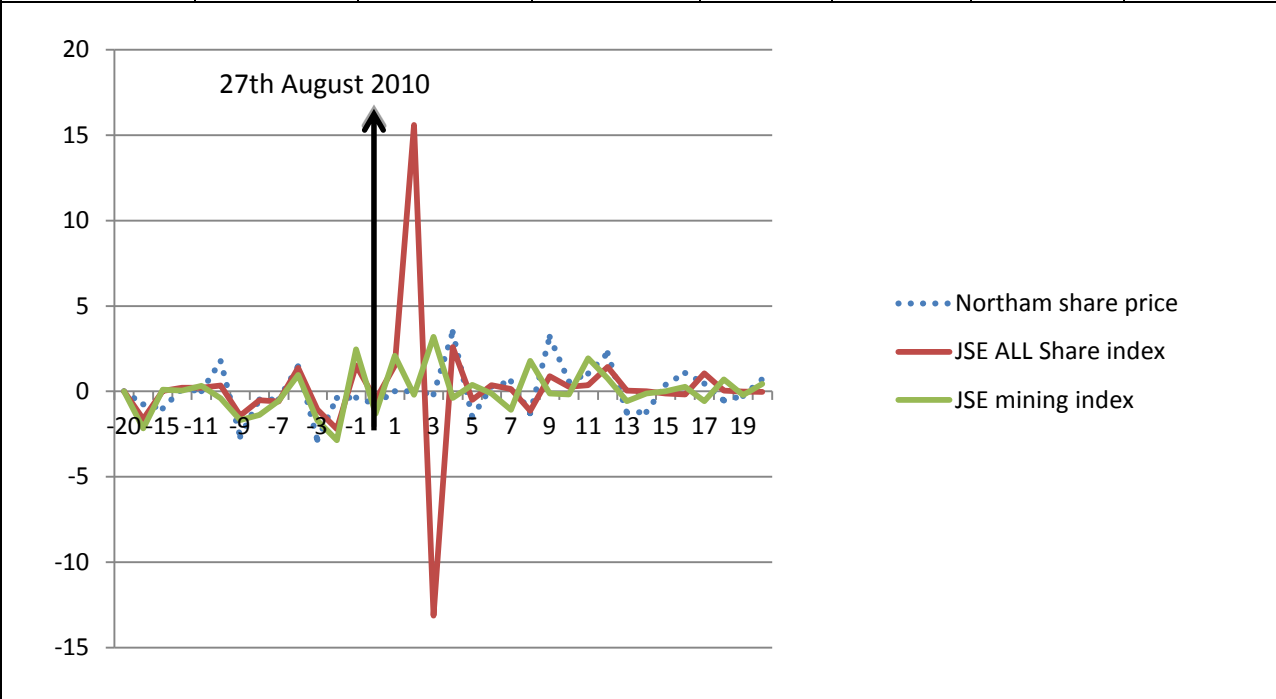
Platinum. The standard deviation of Northam Platinum after the date of the strike was 7.6% of the value at the date of the strike. The mining index is 2.6% and JSE ALL Share index is 2.7%. This indicates that the share price of Northam platinum was more volatile than the market and uncertainty remained regarding the value of the company's shares.

4.2.4.3 Strike in 2010

Table 4.26 shows the share price of Northam Platinum 20 days before the strike, day 0 and 20 days after the announcement of the strike in 2010.

Table 4.26: Northam Platinum: Strike 2010

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Northam share price	4,320	4 050	18 850	-6.25%	3.65%	88.76	505.20
JSE ALL Share	27,917.7	26 738.91	28 714.77	-4.22%	7.39%	396.67	831.43
Mining index	35,500	33 200	36 588.66	-7.97%	7.15%	851.47	558.65



Source: McGregor BFA

During the year 2010, the strike started on 27 August. Twenty days prior to the announcement of the strike, until day 0, the share price of Northam Platinum decreased

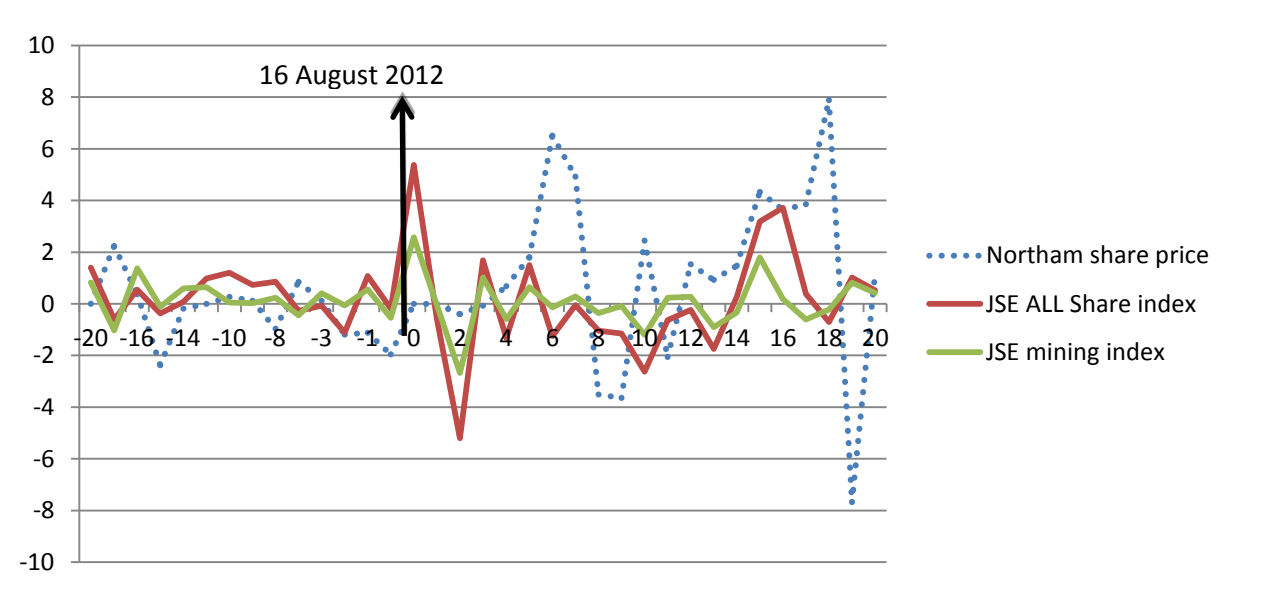
by 6.25% and the mining index dropped by 7.97%. The JSE All share index decreased tumultuously, by 4.22%. Immediately after the strike commenced, the share price of Northam Platinum increased by 3.65% and the mining index has followed the same increasing trend by 7.15%. The JSE All Share index increased by 7.39%. The 2010 strike did not appear to have had an effect on the company.

4.2.4.4 Strike in 2012

Table 4.27 shows share price volatility 20 days before the strike in 2012, on the date of the announcement of the strike and 20 days after the announcement of strike.

Table 4.27: Northam Platinum: Strike 2012

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	standard deviation 20 days after strike
Northam share price	2 590	2500	2 990	-3.47%	19.60%	35.71	239.58
JSE ALL Share	34 671	35 743.23	35 885.23	3.09%	0.40%	355.44	431.58
Mining index	29 609.84	30 943.69	31 058.81	4.47%	0.14%	505.31	692.51



Source: McGregor BFA

During the year 2012, the strike commenced on 16 August. 20 days prior to the announcement date, the share price of Northam Platinum decreased by 3.47%. The

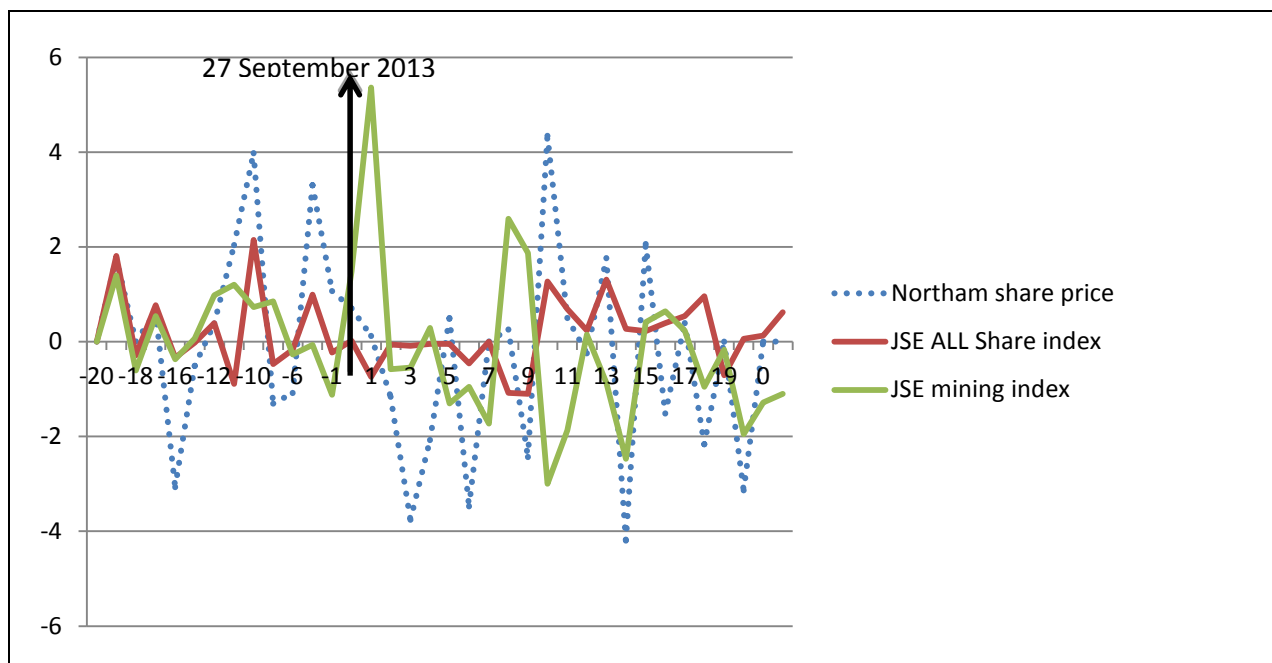
JSE mining index increased by 4.47% and the JSE All Share index rose by 3.09%. Immediately after the strike, the share price of Northam platinum rose constantly, by 19.6% and the increase is demonstrated by the increasing part of the graph, but the mining index only increased by 0.14%. The JSE All Share index increased by 0.40%. The standard deviation after the period of the strike at Northam is 9.6% of the value at the date of the strike. The JSE ALL Share index and mining index figures are 1.2% and 1.9%, respectively. This shows that the share price of Northam Platinum was less volatile than the market. Although the strike did not adversely affect the share price, the perceived risk of investing in the company increased.

4.2.4.5 Strike in 2013

Table 4.28 shows the share price of Northam Platinum 20 days before the strike, on the date of the announcement and 20 days after the strike, in 2013.

Table 4.28: Northam Platinum: Strike 2013

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Northam share price	4 107	4 119	4 611	0.29%	11.94%	65.35	101.18
JSE ALL Share	42 769.62	44 358.74	45 124.04	3.72%	1.73%	477.68	722.19
Mining index	29 609.84	31 058.81	29 517.42	4.89%	-4.96%	516.69	908.35



Source: McGregor BFA

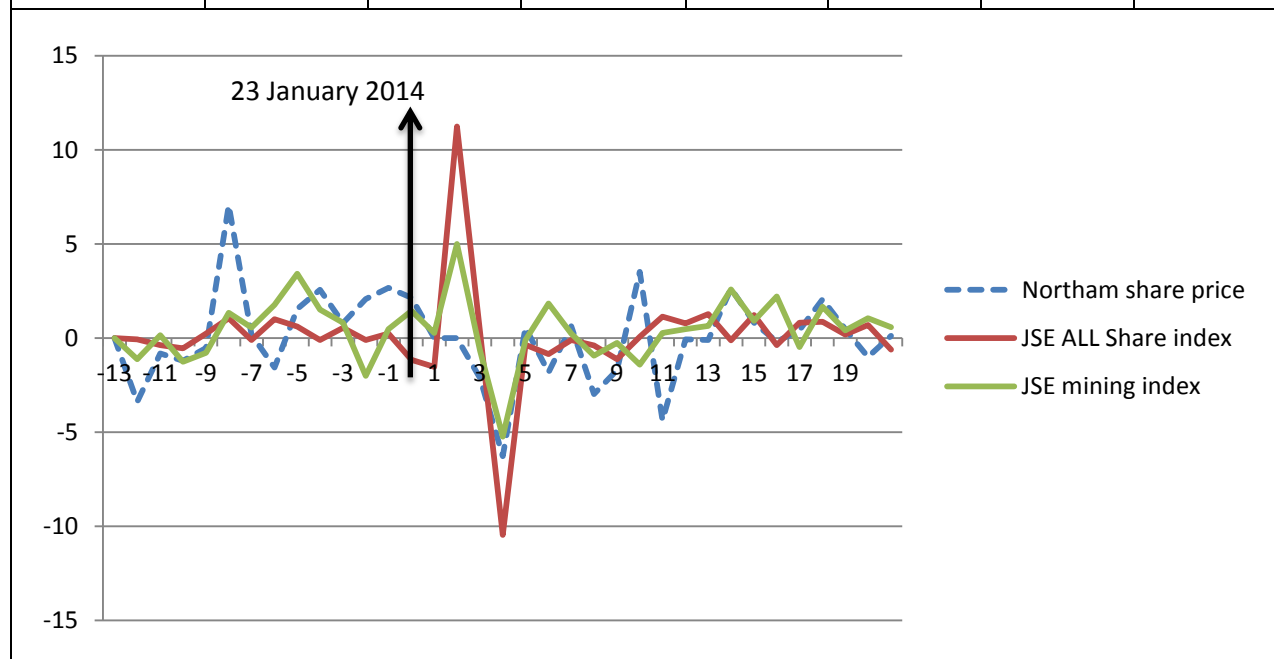
The 2013 strike commenced on 27 September. Northam Platinum share price, 20 days before the strike increased by 0.29%. The JSE All Share index increased by 3.72% and the mining index rose by 4.89%. Immediately after the strike began, the share price of Northam Platinum continued to increase by 11.94%. The mining index recorded -4.96% and the JSE All Share index increased by 1.73%. The share price performed positively after the strike. The strike did not have an adverse effect on the share price of the company.

4.2.4.6 Strike in 2014

Table 4.29 shows the share price of Northam Platinum 20 days before the strike in 2008, date of the announcement and 20 days after the announcement of the strike.

Table 4.29: Northam Platinum: Strike 2014

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Northam share price	4 216	4 710	4 525	11.72%	-3.93%	224.29	126.14
JSE ALL Share	46 206.08	47 045	47 149.35	1.82%	0.22%	538.60	1738.65
Mining index	30 510.41	32 436.1	35 405.58	6.31%	9.15%	1059.4	1197.17



Source: McGregor BFA

During the year 2014, the strike started on the 23 January. Twenty days before the strike, the share price of Northam Platinum increased by 11.72%. The mining index increased by 6.31% and the JSE All Share index by 1.82%. Immediately after the announcement of the strike, the share price of Northam Platinum decreased slightly by 3.93%, but the mining index increased by 9.15%. The JSE All Share index increase by 0.22% during the 20 days after the strike was announced. The strike appears to have had an effect on the share price of the company as shown by the decreasing part of the graph. The standard deviation of Northam Platinum after the date of the strike was 2.6% of the value on the date of the strike. The JSE All Share index and mining index figures are 3.6% and 3.9%, respectively. The volatility of the share price of Lonmin is materially different from the rest of the market.

Northam Platinum returns on investment during the period of the major strike in 2012 and 2013 declined by 0.27 and 0.10 respectively.

Table 4.30: Return on investment for Northam Platinum from 2008 to 2014

Year	R1	R0	CP
2008	1997	4325	15.48
2009	4428	1997	2.84
2010	4622	4428	0.92
2011	3190	4622	0.19
2012	3637	3190	0.27
2013	4012	3637	0.10

Source: McGregor BFA

4.2.5 Aquarius Limited (AQP) share price volatility

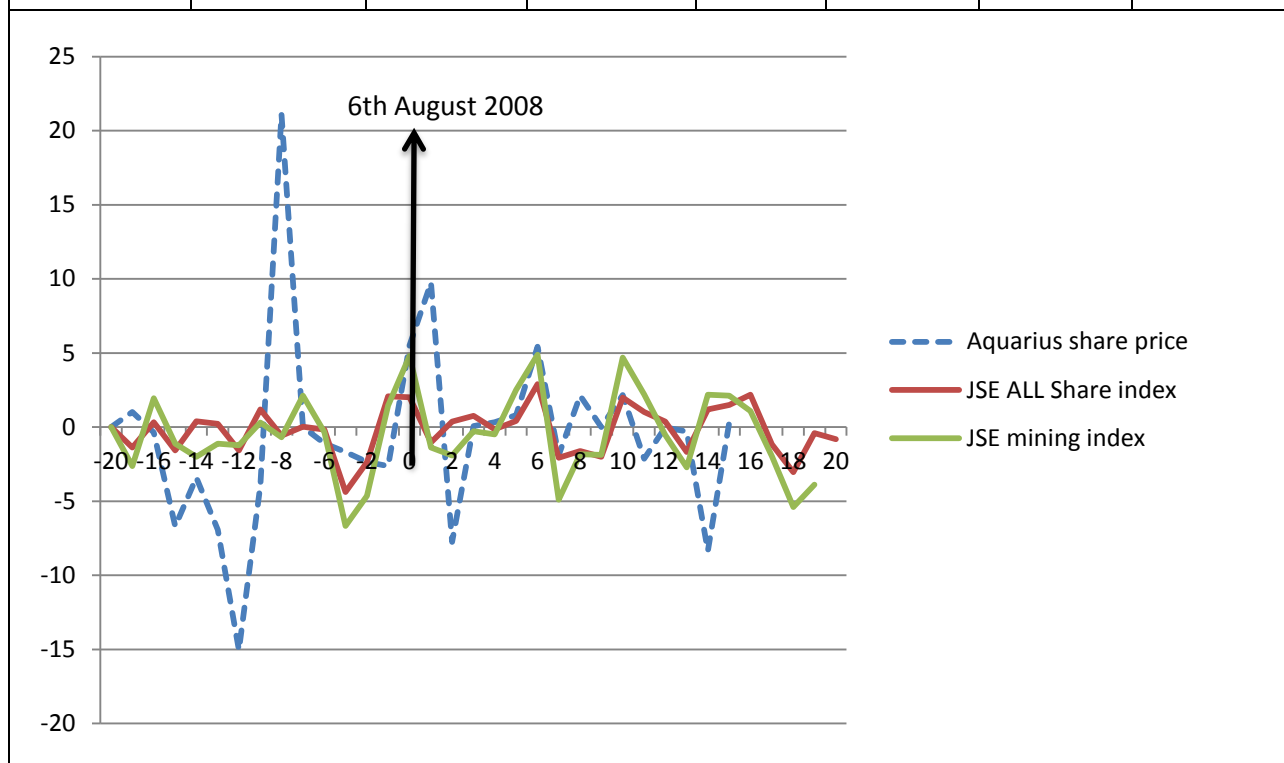
The impact of strikes on the share price of Aquarius is discussed in this section. The JSE all-share index, as well as the mining index for the same period, will be reported for comparison purposes. Each one of the strikes shown in Table 4.1 will be separately reported on.

4.2.5.1 Strike in 2008

Table 4.31 shows the share price of Aquarius Limited during the 20 days before the strike, on the date of the announcement and 20 days after the announcement of the strike.

Table 4.31: Aquarius: Strike 2008

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Aquarius share price	7 950	6 633	6 298	-16.57%	-5.05%	964.74	300.85
JSE ALL Share	26 876.95	26 945.35	26 532.11	0.25%	-1.53%	582.74	428.33
Mining index	38 698.67	36 380.76	25 796.05	-5.99%	-29.09%	1555.32	1206.14



Source: McGregor BFA

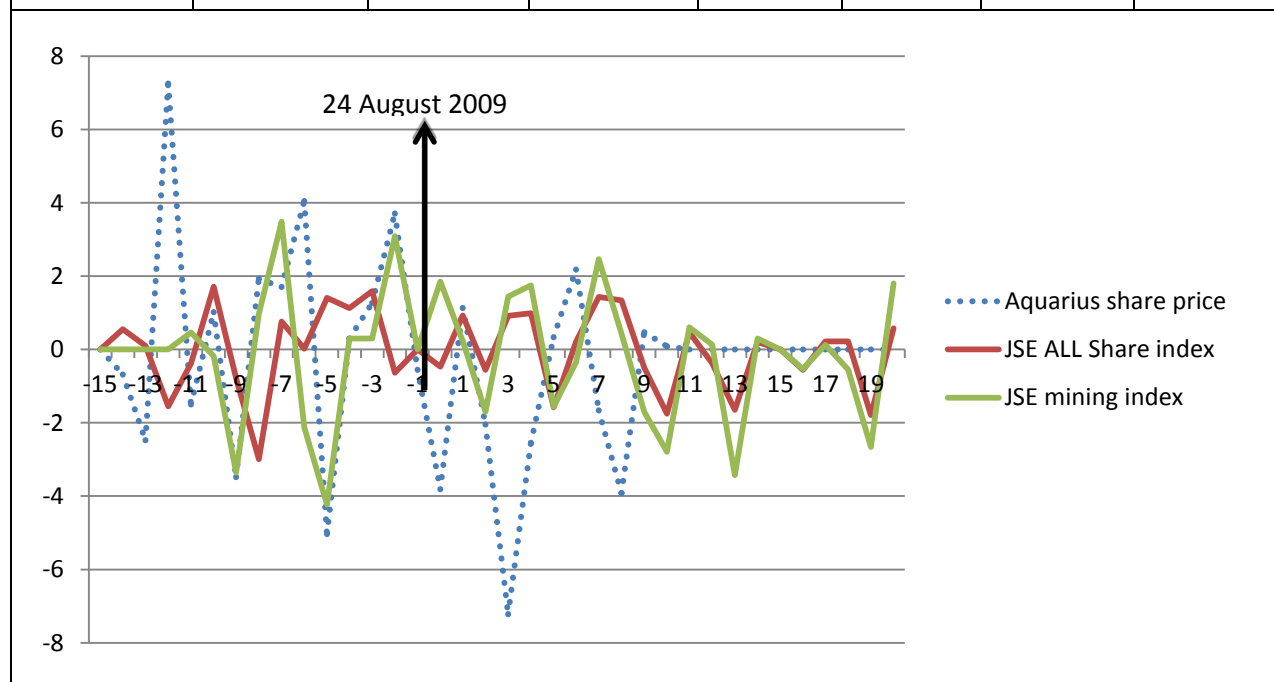
Aquarius limited share price continued to decline. During the 20 days before the strike, the share price of Aquarius limited declined by 16.51% and the mining index recorded - 5.99%. The JSE All Share index has increased by 0.25%. During the 20 days after the announcement of the strike, the share price of Aquarius decreased by 5.05% as indicated by the declining part of the graph. The JSE All Share index decreased by 1.53% and the mining index dropped by 29.09%. Based on this analysis, it can be stated that the share price of Aquarius and the JSE Mining index have declined because of the strike.

4.2.5.2 Strike in 2009

Table 4.32 shows the share price of Aquarius Limited 20 days before the strike, on the date of the announcement and 20 days after the announcement of strike.

Table 4.32: Aquarius: Strike 2009

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Aquarius share price	3 698	3 650	3 207	3.37%	-12.14%	95.59	211.90
JSE ALL Share	24 908.79	25 274.69	24 944.83	1.47%	-1.31%	361.42	687.52
Mining index	35 300	33 800	36 000	-4.25%	6.51%	293.36	756.66



Source: McGregor BFA

The JSE All Share index started with a positive trend during the 20 days before the strike, as it increased by 1.47%. The share price of Aquarius Limited increased by 3.37% and the mining index declined by 4.25%. Immediately after the announcement of the strike, the share price of Aquarius decreased constantly by 12.14% and the mining index increased by 6.51%. The JSE All Share index decreased by 1.31%. This indicates that the strike that happened in 2009 materially affected the share price

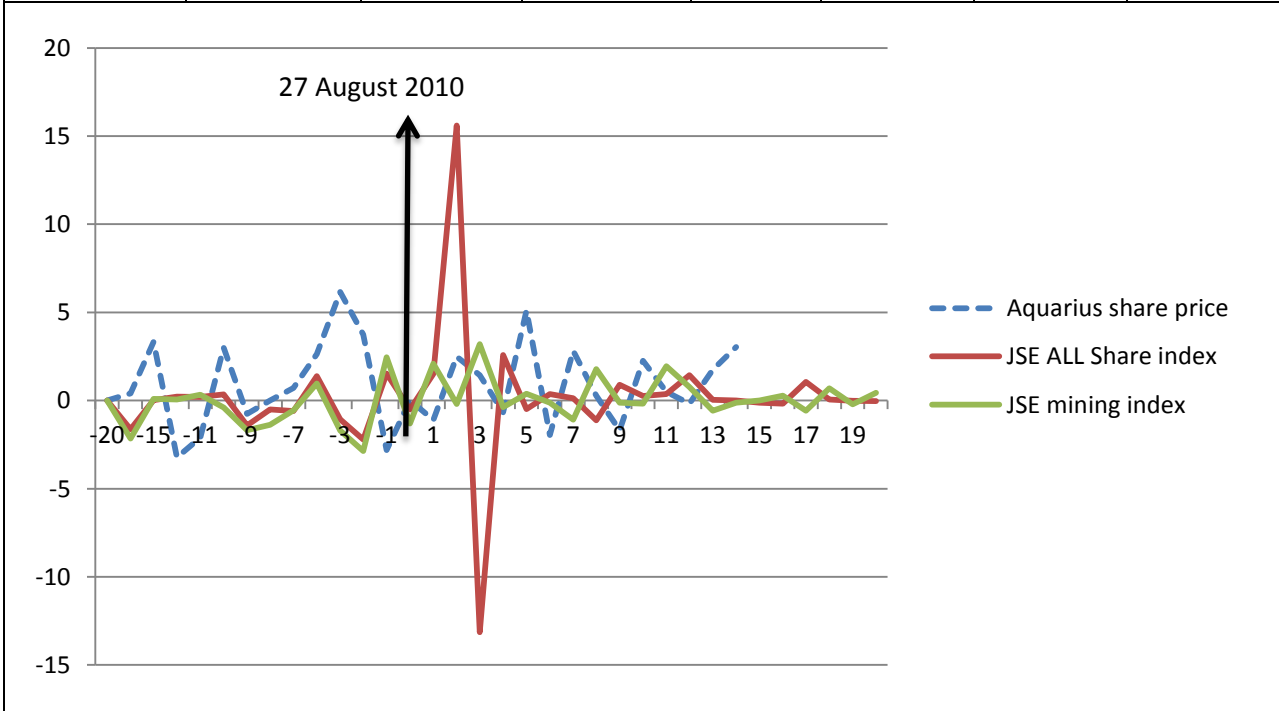
Aquarius Limited. The standard deviation of Aquarius is 5.8% of the value on the date of the strike. The JSE All Share index standard deviation is 2.7% and the mining index is 2.6%. The figures indicate that the share price of Aquarius was more volatile than the market and was considered to be a risky investment.

4.2.5.3 Strike in 2010

Table 4.33 shows the share price of Aquarius Limited 20 days before the strike, on the date of the announcement and 20 days after the announcement of strike, in 2010.

Table 4.33: Aquarius: Strike 2010

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Aquarius share price	3 012	3 048	3 765	1.20%	23.52%	49.86	190.44
JSE ALL Share	27 917.7	26 738.91	28 714.77	-4.22%	7.39%	396.67	831.43
Mining index	35 500	33 200	36 588.66	-7.97%	7.15%	851.47	558.65



Source: McGregor BFA

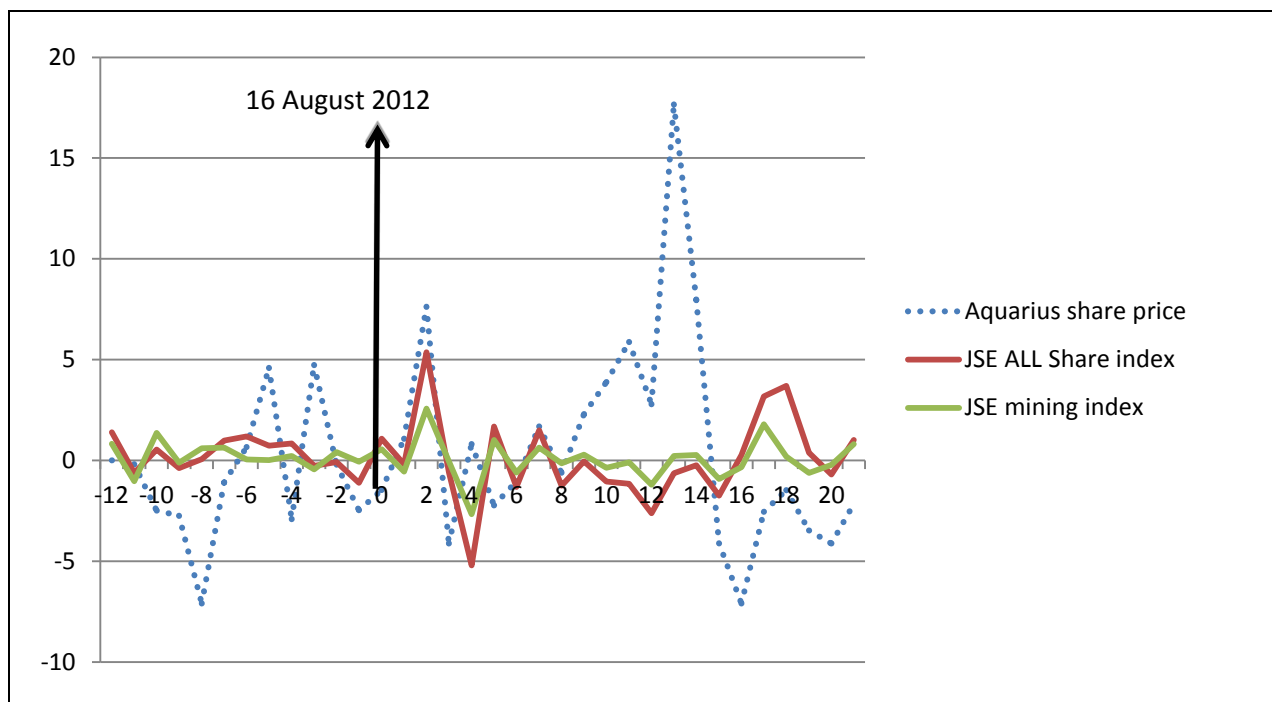
Twenty days prior to the announcement of the strike in 2010, the share price of Aquarius Limited has increased by 1.20%. The mining index declined by 7.97% and the JSE All Share index decreased by 4.22%. After the announcement of the strike, the share price of Aquarius limited increased by 23.52% and the mining index rose by 7.15%. The JSE All Share index has improved by 7.39% during the 20 days after the strike. The strike did not appear to have had an effect on the share price of the company as shown by constant growth after the commencement of the strike.

4.2.5.4 Strike in 2012

Table 4.34 shows the share price of Aquarius Limited 20 days before the strike, on the date of the announcement and 20 days after the strike.

Table 4.34: Aquarius: Strike 2012

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Aquarius share price	523	472	456	-9.75%	-3.39%	8.67	25.47
JSE ALL Share	34 671	35 743.23	35 885.23	3.09%	0.40%	355.44	431.58
Mining index	29 609.84	30 934.69	31 058.81	4.47%	0.14%	505.31	692.51



Source: McGregor BFA

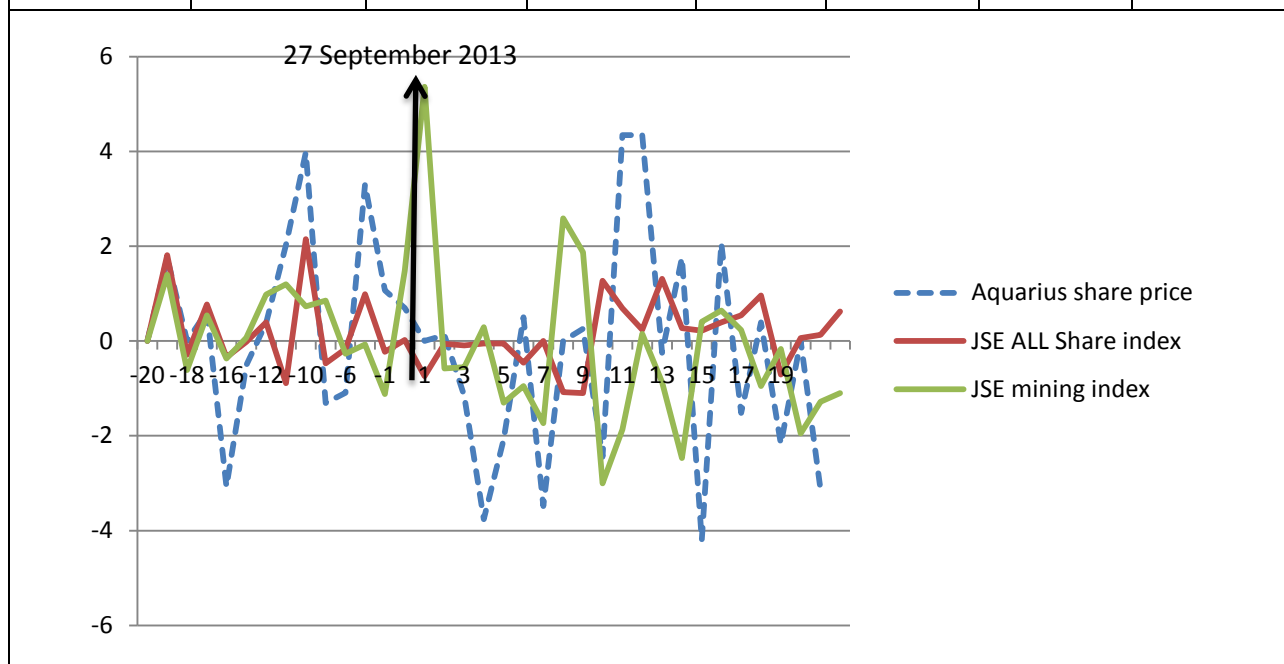
During the 20 days before the strike commenced on 16 August, the share price of Aquarius declined by 9.75% and after the announcement of the strike the share price of Aquarius decreased by 3.39%. The mining index increased by 4.47% during the 20 days before the strike and the JSE All Share index increased by 3.09%. It is uncertain whether or not the decline in share price resulted from the strike. Immediately after the day of the announcement, the JSE mining index increased by 0.14% and the JSE All Share index deteriorated by 32.83%. The standard deviation of Aquarius is 5.4% of the value on the date of the strike. The JSE All Share index and mining index standard deviation are 1.2% and 2.2%, respectively. This indicates that the share price of Aquarius was more volatile than the market. Although the strike did not have a material effect on the share price, Aquarius is still considered a risky investment.

4.2.5.5 Strike in 2013

Table 4.35 shows the share price of Aquarius Limited 20 days before the strike, on the date of the announcement and 20 days after the strike.

Table 4.35: Aquarius: Strike 2013

Details	20 days before strike (R)	Day 0 of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	Standard deviation 20 days after strike
Aquarius share price	796	859	720	7.91%	-16.18%	19.53	28.54
JSE ALL Share	42 769.62	44 358.74	45 124.04	3.72%	1.73%	477.68	722.19
Mining index	29 609.84	31 058.81	29 517.42	4.89%	-4.96%	516.69	908.35



Source: McGregor BFA

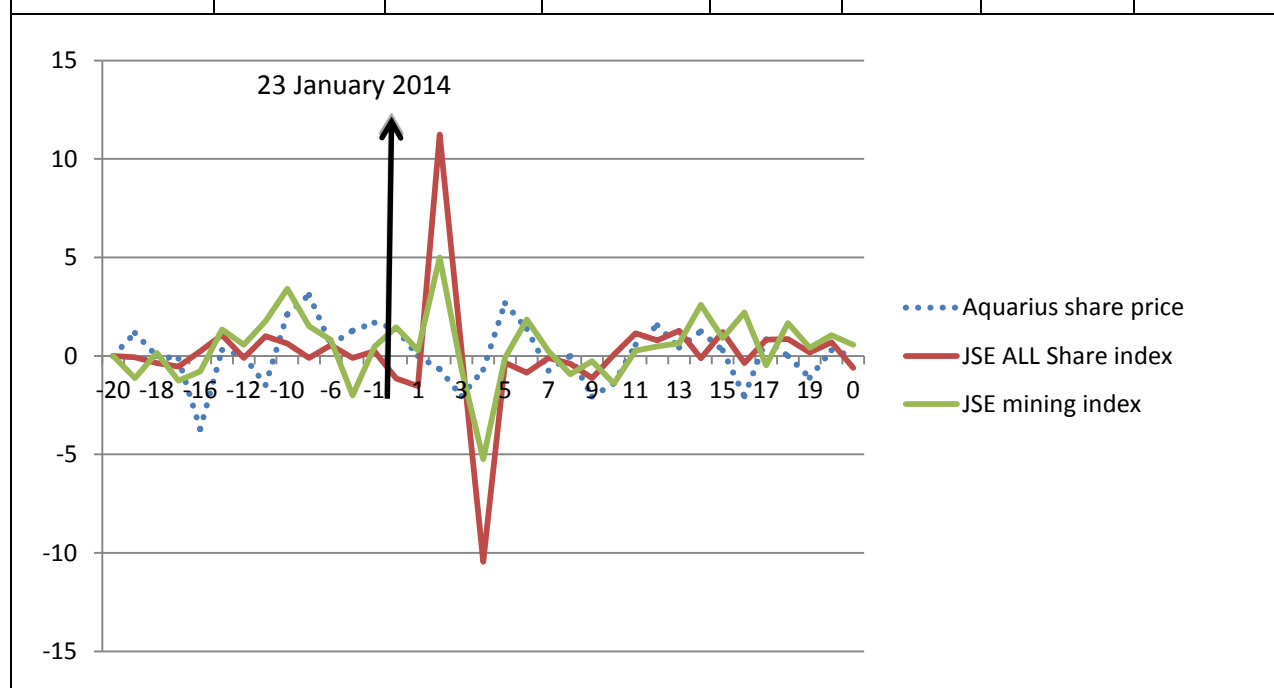
During the year 2013, A strike commenced on 27 September. Twenty days before date of announcement of the strike, the share price of Aquarius Limited increased by 7.91%. The mining index increased by 4.89%, while the JSE All Share index increased by 3.72%. During the 20 days after the announcement of the strike, the share price of Aquarius deteriorated by 16.18% and the mining index recorded -4.96%. The JSE All Share index increased by 1.73%. The period after the strike resulted in a drop in the share price. The effect of the strike on the perceived value of the company's shares is evident.

4.2.5.6 Strike in 2014

Table 4.36 shows the share price of Aquarius Limited 20 days before the strike, on the date of the announcement and 20 days after the strike in 2013.

Table 4.36: Aquarius: Strike 2014

Details	20 days before strike (R)	0 Day of strike (R)	20 days after strike (R)	% change 20-0	% change 0-20	Standard deviation 20 days before strike	standard deviation 20 days after strike
Aquarius share price	692	859	715	24.13%	-16.76%	20.46	9.49
JSE Share ALL	46 206.08	47 045	47 149.35	1.82%	0.22%	538.60	1738.65
Mining index	30 510.41	32 436.1	35 405.58	6.31%	9.15%	1059.40	1197.17



Source: McGregor BFA

The share price of Aquarius Limited increased by 24.13% during the 20-day period before the strike. The mining index increased by 6.31%, while the JSE All Share index increased by 1.82%. During the 20 days after the announcement of the strike, the share price of Aquarius declined by 16.76%. The mining index increased by 9.15% and the JSE All Share index increased by 0.22%. The standard deviation of Aquarius is 1.1% of the value on the date of the strike. The JSE All Share index and mining index standard deviations are 3.7% and 3.7%, respectively. With a decline in the share price, resulting

from the strike and a lower volatility, it appears as if the market has lost interest in the company.

4.2.5.7 Total return on investment

Based on the share price movement, the total return on investment over six consecutive years is summarised as follows:

Table 4.37: Return on investment for Aquarius Limited from 2008 to 2013

Year	R1	R0	CP %
2008	1997	4325	15.48
2009	4475	1997	1.24
2010	3754	4475	1.05
2011	2110	3754	2.51
2012	672	2110	-0.68
2013	682	672	-0.28

Source: McGregor BFA

During the major strike in 2012 and 2013, the total return on investment for Aquarius declined significantly to -0.68 and -0.28, respectively.

Koradia and Soni (2014:15) indicate that the JSE Mining index lost 4% in 2013, compared to an 11.7% gain on the JSE All Share index. This has caused a loss of confidence, which cannot be avoided if unrealistic policies are still used. Donovan and Lukhele (2013:72) show that, as a result of strikes, Impala Platinum Holdings made a decision to close two mines and to sell another unprofitable mine. It seems as if strike did not affect the JSE All Share index.

The Johannesburg All Share Index rose 20% from the year 2011 and some of the South African companies were still making profits, by maintaining high levels of exploration. Alexander (2013:612) states that much of the cash retained in the platinum mines has been moved offshore. This means that investments in South African platinum mines have been taken to foreign countries because of strikes.

4.3 CONCLUSION

The share price of Anglo American Platinum was more volatile than the market during the period of strikes. This is based on the standard deviation of Anglo American that remained at a high level from 2008 until 2014. The share price of Impala Platinum followed a very unstable trend as it increased during certain years and it decreased during other years. The Lonmin share price has followed an unstable, volatile trend as its standard deviation for most of the years is lower than the JSE All Share index and mining index. Northam Platinum and Aquarius have followed an unstable trend of volatility and, for most of the years, the standard deviation of these companies is lower than the JSE All Share index and mining index. Based on the empirical findings provided above, it can be stated that a strike causes volatility in the financial markets. The degree of volatility varies according to the duration of the strike.

Table 4.38: Platinum companies affected by strikes from 2008 to 2014

Company name	2008	2009	2010	2012	2013	2014
Anglo American Platinum	Yes	No	Yes	Yes	Yes	No
Impala Platinum Holdings	Yes	Yes	No	Yes	Yes	Yes
Lonmin	No	No	No	Yes	No	Yes
Northam Platinum	Yes	Yes	No	Yes	No	No
Aquarius	Yes	Yes	No	Yes	Yes	Yes

Source: Author's own research

The strike in 2008 affected Anglo American Platinum, Impala Platinum, Northam Platinum and Aquarius limited. Lonmin was affected by strikes only in 2012 and 2014, but during 2008, 2009, 2010 and 2013 the company was not severely affected by strike. The strike in 2012 remains eminent in the platinum sector, as its impact affected all platinum companies. During 2014, strikes adversely affected Impala Platinum Holdings, Lonmin and Aquarius. Anglo American Platinum was not affected by strike as it increased the price of platinum during the period of strike in 2014.

The next section discusses profitability ratios of platinum companies from 2008 until 2013.

4.4 SECTION 2: ANALYSIS OF PROFITABILITY RATIOS OF PLATINUM COMPANIES

The purpose of this section is to investigate the impact of strikes on profitability ratios of platinum mining companies. Profitability ratios are used in this analysis, because investors assess the performance of the company by using profitability ratios. Profitability ratios are defined by Du Toit *et al.* (2010:61-62) as measures of efficiency which indicate the ability of the company to use its capital to generate turnover. They determine the value of the shares and are influenced by profit margins, turnover and capital invested. If a large amount of income can be generated from a small amount of capital invested in assets, this indicates that a company is profitable.

Correia (2011:5-17) states that profitability ratios indicate the combined effect of liquidity, asset management and debt management of the company. Profitability ratios provide a true reflection of the performance of other ratios. Morgan (2014:30) states that, during the period of the strikes, Anglo American Platinum, Impala Platinum and Lonmin lost approximately 50% to 60% of output. This is possibly attributed to the strikes. The profitability ratios of platinum companies are analysed according to the degree of market capitalisation of each platinum company, as was done in the first section on share price volatility.

As indicated in Chapter 3, the profitability ratios of platinum companies from 2004 to 2007 have been used to compute benchmarks for the five platinum mining companies. Table 4.39 depicts benchmarks for profitability ratios from 2004 to 2007. The profitability ratios for the years 2002 to 2007 are chosen because there were no rapid strikes.

The benchmarks in table 4.39 are calculated using profitability ratios from the year 2002 until the year 2007 because there were no rapid strikes. The average of each ratio has been calculated as the average ratio for each company from 2004 to 2007. The purpose of the table is to provide profitability ratios aggregated over a period of 4 years that is aimed to indicate whether the profits declined due to strike during these four years in comparison to the 2008 to 2013.

Table 4.39: Benchmarks for profitability ratios from 2004 to 2007

Profitability Ratios (%)	Anglo American Platinum (AMS)	Impala Platinum Holdings (IMP)	Lonmin Plc (LON)	Northam Platinum (NHM)	Aquarius Limited (AQP)
Gross Profit (%)	34.06%	40.48%	40.87%	37.87%	41.19%
Net profit (%)	22.35	30.07%	21.60%	26.97%	28.95%
Return on assets	17.81%	19.72%	15.05%	25.52%	19.56%
Return on equity	30.48%	29.70%	24.67%	35.49%	27.49%

Source: McGregor BFA: Financial statements of Anglo American Platinum, Impala Platinum, Lonmin, Northam Platinum and Aquarius Limited.

The platinum industry however has been affected by massive strikes from 2008 until the year 2013 and this is the period that the study intends to examine. The researcher focuses on the profitability ratio among all the ratios as a key measure for assessing efficiency in platinum companies during the period of strikes. An in-depth analysis regarding profitability ratios is now discussed in this chapter.

Damodaran (2002:47) outlines that historically ratios have been used to measure profitability, risk and financial leverage of the company. Davies *et al.* (2008:314) views ratio analyses is an important area for performance review as it provides subjective assessment of the company and its constituents. It is an objective aid for decision making and helps to predict corporate failure. It also assists in equity valuation models and helps to value the shares of the company. Therefore in this section, profitability ratios are used to analyse the performance of platinum companies during the period of strike.

Table 4.40 below illustrates the annual average platinum price from the year 2008 until 2013.

Table 4.40: Average platinum price from 2008 to 2013 in US dollars per ounce of platinum

Year	Average platinum price per ounce (US\$)
2008	1576
2009	1205
2010	1611
2011	1721
2012	1552
2013	1516

Source: Statista 2014

The average platinum price over the period of six years from 2008 to 2013, was as \$1530.17. The price per ounce of platinum in 2009 was below \$1530.17 because companies were affected by the recession that started in 2008. During 2010, the price of platinum rose to \$1611 and it improved again in 2011 to 1721 because there was no evidence of strikes in 2011. During 2012, the platinum price increased to \$1552, but the value is above the average platinum price of \$1530.17 because the platinum sector experienced a major strike and the company was forced to sell reserved platinum. During 2013, the platinum price decreased to \$1516, due to the market that reacted to the strike that took place in 2012. Each platinum price is discussed in the section on profitability ratios, which follows.

4.4.1 Profitability Ratios of Anglo American Platinum

Table 4.4.1 depicts line items taken from financial statements of Anglo American platinum from 2008 to 2013 to determine the impact of strike on profitability ratio.

Table 4.41: Profitability Ratios of Anglo American Platinum from 2008 to 2013

Description	2013 (R)	2012 (R)	2011 (R)	2010 (R)	2009 (R)	2008 (R)	Benchmarks
Revenue	52,822,000	43,148,000	51,484,000	46,352,000	36,947,000	51,118,000	
Cost of sales	46,208,000	41,948,000	42,562,000	37,991,000	34,715,000	33,682,000	
Gross profit	6,614,000	1,200,000	8,922,000	8,361,000	2,232,000	17,436,000	
Gross profit %	12.52%	2.78%	17.33%	18.04%	6.04%	34.11%	34.06%
Expenses	3,579,000	3,826,000	3,774,000	297,000	442,000	290,000	
Net profit after tax	1,767,000	-9,335,000	8,445,000	15,836,000	6,778,000	20,681,000	
Net profit %	3.35%	-21.63%	16.40%	34.16%	18.35%	40.46%	22.35%
Interest (1-28)	486,000	313,200	180,720	228,960	383,040	114,480	
Net profit + interest	2,253,000	-,9021,800	8,625,720	16,064,960	7,161,040	20,795,480	
Total assets	69,416,000	71,853,000	73,881,000	29,654,000	22,848,000	22,492,000	
Return on assets	3.25%	-12.56%	11.68%	54.17%	31.34%	92.46%	17.81%
Equity	41,017,000	46,837,000	55,815,000	10,699,000	-9,662,000	-5,579,000	
Return on equity	4.31%	-19.93%	15.13%	148.01%	-70.15%	-370.69%	30.48%

Anglo American Platinum financial statements 2008-2013

The gross profit percentage of Anglo American Platinum for 2008 was 34.11%, slightly above the benchmark of 34.06% because profit per unit of platinum increased slightly. The strike in 2008, did not affect the selling price of platinum, as it increased to \$1576, resulting into high revenue. Net profit percentage was 40.46%, because the company did not incur more expenses. ROA increased by 92.46%, higher than the benchmark of 17.81% due to high net profit. ROE declined to -370.69% below the benchmark of 30.48%, because equity is negative. Due to a negative equity, the ROE is meaningless.

During the year 2009, gross profit percentage decreased to 6.04% from 2008, because the cost of sales was high but revenue declined as a result of the low average price per unit of platinum. The price decreased to \$1205 from 2008, making the profit per unit of platinum low. Net profit percentage deteriorated to 18.35%, because of lower profits resulting from strike. ROA declined to 31.34% from 2008, probably because of lower profits, but the total fixed assets increased by 1.58%. ROE increased to -70.15% from -370.67% below the benchmark of 30.48% because equity remained negative.

As a result of a lower impact of the strikes in 2010, gross profit percentage increased to 18.04%, because sales revenue was high, as a result of the average platinum price that improved to \$1611 per ounce of platinum from 2009, making the profit of Anglo American Platinum remain high. Net profit percentage escalated to 34.16% and the ratio is above the benchmark of 22.95% because of low expenses and high profits. ROA increased to 54.17%, because of high asset value and high profits. The ratio is above the benchmark of 17.81%. ROE increased drastically to 148.01% from -70.15% in 2009, as a result of the high profits.

During the major strike in 2012, gross profit percentage of Anglo American decreased severely to 2.78%, from 17.33% in 2011, and the ratio is below the benchmark of 34.06%. The gross profit percentage decreased because of revenue that declined, due to the average selling price per ounce of platinum that declined from \$1721 in 2011 to \$1552. The increase in the cost of sales indicates that the cost of producing each unit of platinum remained high. Net profit percentage has deteriorated to -21.63%, from 16.40% in 2011, because the company has incurred more operating expenses such as salaries, and the profit remained negative. Due to the net loss, ROA deteriorated to -12.56%, from 11.68% in 2011. ROE similarly went down to -19.93% due to the net loss.

Due to the lower impact of strike in 2013, the gross profit percentage improved by 12.52% from 2012. The ratio is however still below the benchmark of 34.06%, although revenue increased due to the average platinum price that remained high, at \$1516. Net profit margin increased by 3.35% from 2012 due to higher profits. ROA improved by 3.25% from 2012, due to high profits. ROE has increased to 4.31% due to higher profits.

The strike has adversely affected the gross profit percentage of Anglo American Platinum and net profit percentage in 2012. ROA and ROE of Anglo American were affected by the major strike in 2012, as indicated by negative ratios. The strike that took place during 2013 did not significantly affect the operations of Anglo American, shown by positive profitability ratios. The assets of Anglo American Platinum were not kept idle during the period of strike in 2008, 2009, 2010 and 2011 but in 2012 and 2013, the assets were kept idle during the period of strike, as indicated by declining value of assets.

4.4.2 Profitability Ratios of Impala Platinum Holdings from 2008 to 2013 by using line items in the financial statements of Impala Platinum

The table below provides profitability ratios of Impala Platinum Holdings calculated based on the line items obtained from financial statements of the company in comparison with the benchmarks.

Table 4.42: Profitability ratios of Impala Platinum Holdings from 2008 to 2013

Year	2013 (R)	2012 (R)	2011 (R)	2010 (R)	2009 (R)	2008 (R)	Benchmark
Revenue (R)	30,032,000	27,593,000	33,132,000	25,446,000	26,121,000	37,619,000	
COS	24,980,000	2,0641,000	21,490,000	17,294,000	16,359,000	19,888,000	
Gross profit	5,052,000	6,952,000	11,642,000	8,152,000	9,762,000	17,731,000	
Gross profit (%)	16.82%	25.19%	35.14%	32.04%	37.37%	47.13%	40.48%
Expenses	62,8000	502,000	382,000	42,3000	538,200	409,000	
Net profit After tax	4,492,000	6,047,000	8,421,000	6,519,000	8,155,000	17,374,000	
Net profit (%)	14.96%	21.91%	25.42%	25.62%	31.22%	46.18%	30.07%
Interest (1-0.28)	326,160	219,600	381,600	229,680	121,680	111,600	
Net profit + interest	4,816,160	6,266,600	8,802,600	6,748,680	8,276,680	17,485,600	
Assets	34,817,000	31,585,000	32,748,000	30,577,000	28,765,000	38,634,000	
Equity	19,484,000	20,870,000	20,788,000	19,910,000	19,597,000	19,966,000	
ROA	13.84%	19.84%	26.88%	22.07%	28.77%	45.26%	19.72%
ROE	23.05%	28.97%	40.51%	32.74%	41.61%	87.02%	29.70%

Impala Platinum Financial statements 2008-2013

Gross profit percentage in 2008 remained high at 47.13%, above the benchmark of 40.48%, because the selling price of platinum per ounce was \$1576, in spite of the strike that affected Impala Platinum. The net profit percentage was 46.18%, which was more than the benchmark of 30.07%, because Impala Platinum did not incur many expenses such as salaries. ROA was recorded at 45.26%, which was higher than 19.72%, because of the high book value of assets. ROE was 87.02% above the benchmark 29.70%.

As a result of the strike in 2009, the gross profit percentage decreased to 37.37% from 2008 and the ratio was below 40.48%. The gross profit percentage went down because revenue and cost of sales coincidentally declined, due to the average price of platinum that declined to \$1205 per ounce from \$1576 in 2008. Net profit percentage decreased to 31.22% from 2008 and the ratio is slightly higher than the benchmark of 30.07%, because Impala Platinum incurred more expenses resulting into lower profits. ROA increased by 28.77%, because the profit and total assets value for the year 2009 decreased simultaneously and the ratio is above the benchmark of 19.72% due to the high value of assets. ROE increased by 41.61% above the benchmark of 29.70% from 2008, because the profit and Equity of Impala Platinum decreased at the same time.

The strike in 2010 caused the gross profit percentage of Impala Platinum Holdings to continue declining to 32.04%, which was below the benchmark of 40.48%. Profit declined due to low revenue, but cost of sales increased, and the average selling price of platinum was high at \$1611 per ounce from 2009 indicating that platinum was not affordable to some of the buyers. Net profit percentage declined to 25.62%, which was below the benchmark of 30.07% due to low profits. ROA similarly declined to 22.07% from 2009, due to lower profits but the value of the assets remained high. ROE decreased to 32.74%, which was more than the benchmark of 29.70%, because equity increased by 1.6% but net profit after tax decreased by 20.06% from 2009.

Impala Platinum was more vulnerable during the major strike in 2012: Gross profit percentage decline to 25.19%, from 35.14% in 2011, because the average selling price per ounce of platinum declined from \$1721 to \$1552. This decreased revenue and the cost of sales. Net profit has declined to 21.91% from 2011, because of high operating expenses, such as salaries. ROA was 19.84% from 2011, because the net profit adjusted with interest after tax and assets declined. The ratio however is slightly above

the benchmark of 19.72%. ROE declined to 28.97% from 2011 below the benchmark of 29.70%, because profit declined but the value of equity increased drastically by 0.39%.

Gross profit percentage during 2013 continued to decline to 16.82% below the benchmark of 40.48% from 2012, primarily because the strikes increased the cost of sales. The profit per unit remained high, as the selling price per unit of platinum decreased to \$1516 from 2012. The declining price attracted customers to purchase a lot of platinum. Net profit percentage declined to 14.96%, below 30.07%, due to low profits. ROA deteriorated to 13.84%, below 19.72%, as a result of low profits. ROE was recorded at 23.05% below the benchmark of 33.68%, also resulting from lower profits and equity.

Impala Platinum was affected by the strikes. The gross profit margin and net profit margin declined significantly during two consecutive years of 2012 and 2013, due to the low platinum price per ounce. As the result of the strike, the assets and equity of the company decreased, resulting in high ROA and ROE.

4.4.3 Profitability Ratios of Lonmin PLC from 2008 to 2014 based on the line items available in the financial statements of Lonmin

The table below provides profitability ratios of Lonmin PLC calculated based on the line items obtained from financial statements of the company in comparison with the benchmarks.

Table 4.43: Profitability Ratios of Lonmin PLC from 2008 to 2013

Year	2013 (R)	2012 (R)	2011(R)	2010 (R)	2009 (R)	2008 (R)	Benchmark
Revenue	1,520,000	1,614,000	1,992,000	1,585,000	1,062,000	2,231,000	
COS	0	0	0	1,236,000	,1088,000	1,121,000	
Gross profit	1,520,000	1,614,000	1,992,000	349,000	-26,000	1,110,000	
Gross profit margin	100%	100%	100%	22.02%	-2.45%	49.75%	40.87%
Net profit	284,000	22,000	385,000	320,000	-167,000	774,000	
Net profit %	18.68%	1.36%	19.33%	20.19%	-15.73%	34.69%	21.60%
Interest(1-28)	31,680	17,280	7,000	10,080	3,600	2,880	
Net profit + interest	315,680	39,280	392,000	330,080	-163,400	776,880	
Assets	1,320,000	1,364,000	1,298,000	1,596,000	1,180,000	1,252,000	
Equity	815,000	30,000	464,000	575,000	349,000	256,000	
ROA	23.92%	2.92%	30.20%	20.68%	-13.85%	62.05%	15.05%
ROE	34.85%	73.33%	82.97%	55.65%	-47.85%	302.34%	24.67%

Lonmin Financial Statements 2008-2013

Guerrero (2012:16) describes Lonmin as a company controlled by a United Kingdom group. Lonmin PLC SWOT Analysis (2008:4) indicates that Lonmin is the third largest producer of platinum in the world. It is engaged in the mining, refining and marketing of platinum group metals (PGMs). Lonmin operations are found in Marikana, Limpopo and also in Pandora joint venture.

The gross profit percentage of Lonmin in 2008 was recorded as 49.75%, which is above the benchmark of 40.87%. The net profit margin was recorded as 34.69%, above the benchmark of 21.60%. ROA is 62.05% above 15.05%. ROE is 302.34% higher than the benchmark of 24.67%, despite the strike that took place in 2008. The price per unit of platinum was \$1576.

As a result of strike in the 2009, gross profit percentage deteriorated significantly to -2.45% below the benchmark of 40.87%, from 2008 because the selling price of platinum dropped to \$1205 per ounce making revenue to decrease. Net profit percentage declined adversely to -15.73% below 21.60%. This is because Lonmin incurred more operating expenses, such as salaries and management fees, and this has caused the profits to remain low. ROA deteriorated to -13.85% which deviates significantly from the benchmark of 15.05%, due to low profits. ROE declined to -47.85% because profits deteriorated to -121.58%.

The 2010 strike had less impact on profits. Gross profit percentage improved by 22.02%, because platinum price increased to \$1611 per ounce from 2009, increasing revenue. Net profit percentage increased to 20.19%, and the increase is emanating from high profits. ROA increased to 20.68% because of high book value of the assets that increased by 35.25%, but the ratio is below the benchmark of 15.05% due to strike. ROE went up by 55.65%, because equity increased by 64.76% from 2009. During the year 2011, there was no evidence of strikes so the analysis is not performed for the year 2011.

As a result of the strike that took place in 2012, gross profit percentage remained high, from 2011, because the selling price of platinum remained high, at \$1552 per ounce making the profit per increase. The cost of sales was zero, because the company did not produce platinum during the period of the strike. The net profit decreased to 1.36% from 2011, below the benchmark of 21.60%, due to low profits. ROA decreased to

2.92% from 30.20% in 2011, above the benchmark of 15.05%, due to low profits. ROE declined to 73.33%, from 82.97% in 2011, because of lower profits.

During the year 2013, gross profit percentage remained unchanged but the price of platinum decreased to \$1516 per ounce, due to the strike in 2012. Profit increased from 2012 because the company did not incur higher cost of sales. Net profit margin increased to 18.68% above the benchmark of 30.07%, because of the high profits. ROA increased by 23.92% due to the high profits. ROE also declined to 34.85% from 73.33% in 2012, but the value of equity increased by 26.17%.

Guerrero (2012:16) indicated that the strike in Lonmin has affected investments and geological issues and caused policy uncertainty. According to Mo (2013:251), the strike at Lonmin has spread to other mining companies and across other sectors in South Africa, as it took six weeks before it came to an end. Mo (2013:255) stated that, as a result of the strike, the strategic, operational and financial decisions will not be taken easily, mainly due to declining productivity and profitability.

4.4.4 Profitability Ratios of Northam Platinum from 2008 to 2013 using line items from the financial statements of Northam Platinum

The table below provides profitability ratios of Northam Platinum calculated based on the line items obtained from financial statements of the company in comparison with the benchmarks.

Table 4.44: Profitability Ratios of Northam Platinum from 2008 to 2013

Year	2013 (R)	2012 (R)	2011 (R)	2010 (R)	2009 (R)	2008 (R)	Benchmark
Revenue	4,420,977	3,684,000	3,571,048	3,945,083	3,186,042	3,886,137	
COS	3,813,301	3,345,311	3,185,754	3,160,108	2,368,129	1,608,648	
Gross profit	607,676	338,689	385,294	784,975	817,913	2,277,489	
Gross profit %	13.75%	9.19%	10.79%	19.90%	25.67%	58.61	37.87%
Net profit	528,001	310,512	349,209	641,026	630,482	1,492,811	
Net profit %	11.94%	8.43%	9.78%	16.25%	19.79%	38.41%	26.97%
Interest(1-28)	12921.12	0	0	0	0	0	
Assets	2,427,780	1,931,035	3,437,135	2,982,230	1,900,676	2,443,361	
Equity	-628,551	617,966	2,074,614	1,564,656	1,174,189	565,327	
ROA	22.28%	16.08%	10.16%	21.49%	33.17%	61.10%	25.52%
ROE	-84%	50.25%	16.83%	40.97%	53.92%	127.14%	35.49%

Northam Platinum financial statements 2008-2013

The gross profit percentage of Northam Platinum increased by 58.61%. The price of platinum was trading at an average of \$1576 per ounce in 2008. Net profit margin was recorded at 38.41% which is above the benchmark of 23.97%, because the company incurred few expenses. ROA is 61.10%, above the benchmark of 25.52%, because Northam has maintained a high book value of assets. ROE has increased by 127.14% above the benchmark of 29.70%.

As a result of the strike that happened in 2009, gross profit percentage of Northam Platinum declined to 25.67%, below the benchmark of 37.87%, from 2008. Profit declined because of low revenue caused by the platinum price that decreased to \$1205 per ounce from 2008 and the cost of sales has increased from 2008. Net profit percentage declined to 19.79% because of low profits. ROA declined to 33.17%, because the assets and profit of the company declined. ROE decreased to 53.92% because profits decreased.

During 2010, gross profit percentage continued to decrease, to 19.90%, from 2009 but the selling price per ounce of platinum rose to \$1611, from \$1205 in 2009. Net profit percentage decreased to 16.25%, below the benchmark of 26.97% due to profit that declined. ROA declined to 21.49%, below the benchmark of 25.52% from 2009, and the decline is caused by high profits and high book value of assets. ROE was 40.97%, due to high profit and decreasing value of equity.

As a result of the strike in 2012, operating profit percentage deteriorated to 9.19% from 10.79% in 2011, because the platinum price went down to \$1552 per ounce and the cost of sales increased drastically from 2011. The net profit percentage declined to 8.43%, due to low profit. ROA has improved to 16.08%, below 25.52%, because of lower value of assets. ROE increased by 50.25% because of lower equity. Equity decreased dramatically due to investors that hold shares in Northam declined.

The strike in 2013 had less impact on Northam Platinum. Gross profit margin in 2013 increased by 13.75%, due to high revenue, but the platinum price was trading very low, at \$1516 per ounce. Net profit margin increased by 11.94%, due to high profits but the ratio is below the benchmark of 26.97%. ROA improved to 22.28%, resulting from the higher profit. The negative value of equity makes ROE meaningless.

Gross profit percentage of Northam Platinum deteriorated significantly from 2008 until 2012 but during 2013, the ratio improved because of less impact of the strike in the company. Net profit coincidentally declined in 2008 until 2012 but in 2013, the ratio improved slightly. The ROE of Northam Platinum has decreased from 2008 until 2011. During 2012, equity increased and swiftly declined in 2013 due to disinvestment from the company.

4.4.5 Profitability Ratios of Aquarius Limited based on the line items in the financial statements from 2008 to 2013

The table below provides profitability ratios of Aquarius Limited calculated based on the line items obtained from financial statements of the company in comparison with the benchmarks.

Table 4.45: Profitability Ratios of Aquarius Limited from 2008 to 2013

Year	2013	2012	2011	2010	2009	2008	Benchmark
Revenue	364,187	476,599	682,859	457,898	298,875	890,917	
COS	357,810	531,169	507,728	352,029	334,327	307,485	
Gross profit	6,377	-54,570	175,131	105,869	-35,452	583,432	
Gross profit %	1.75%	-11.45%	25.65%	23.12%	-11.86%	65.49%	41.19%
Net profit	-287,913	-158,287	-10,396	27,773	-81,584	363,593	
Net profit %	-79.06%	-33.21%	-1.52%	6.07%	-27.30%	40.81%	28.95%
interest	22,188.24	24,965.28	22,280.40	18,540	25,687	383,940.20	
Net profit + interest	-265.725	133,321.72	11,884.40	46,313	-55,687	383,940.20	
Assets	764,921	1,201,190	1,457,346	1,379,200	917,003	966,908	
Equity	295,942	676,645	851,337	837,033	608,170	544,514	
ROA	-34.74%	-11.10%	0.82%	3.36%	-6.07%	39.71%	19.56%
ROE	-97.29%	-23.39%	-1.22%	3.32%	-13.41%	66.77%	27.49%

Aquarius Financial statement 2008-2013

The gross profit percentage of Aquarius Limited, as a result of the strike in 2008, is 65.49% above the benchmark of 41.19%. Net profit margin is 40.81%, above 28.95%, because of low operating expenses. ROA remained at 39.71% and ROE was 66.77%, above 27.49%.

The gross profit percentage of Aquarius Limited as a result of the strike in 2009 declined to -11.86%, because the average price of platinum decreased to \$1205 per ounce. Revenue has declined from 2008 but cost of sale remained high. Net profit decreased to -27.30%, due to declining profit. Due to the loss, both ROA and ROE are negative.

The gross profit percentage, as a result of a lower impact of the strike in 2010, improved by 23.12% from 2009 and the ratio is above the benchmark of 41.19%. The gross profit percentage increased because the price per ounce of platinum increased to \$1611. Net profit percentage rose by 6.07% because of high profits. ROA improved by 3.36%, due to high profit and ROE increased by 3.32% because of a higher profits and equity.

As the result of the strike that occurred in 2012, gross profit percentage of Aquarius Limited deteriorated to -11.45%, because of low revenue and high cost of sales. Net profit margin declined to -33.21% below the benchmark of 28.95% due to low profit. Both ROA and ROE are negative resulting from the net loss.

The strike in 2013 had less impact on the profits of Aquarius. The gross profit percentage increased to 1.75%, because of the high selling price of platinum and high revenue. The low gross profit and high operating expenses resulted in a net loss. Net profit percentage, ROA and ROE are therefore negative.

The net profit of Aquarius Limited declined significantly, due to the adverse impact of the strikes in 2009, 2012 and 2013. Profits declined, primarily because the price of platinum decreased significantly. The strike has, coincidentally affected the asset values of Aquarius Limited, but equity was not severely affected by strikes. This implies that most of the investors in Aquarius limited did not lose confidence in the investments.

4.5 CONCLUSION

Table 4.46: Summary of profitability ratios of platinum companies

Gross profit						
Company Name	2013	2012	2011	2010	2009	2008
Anglo American	9.74%	-14.55%	-0.71%	12.00%	-28.07%	0
Impala Platinum	-8.37%	-9.95%	3.10%	-5.33%	-9.76%	0
Lonmin	0.00%	0.00%	77.98%	24.47%	-52.20%	0
Northam Platinum	4.56%	-1.60%	-9.11%	-5.77%	-32.94%	0
Aquarius	13.20%	-37.10%	2.53%	34.98%	-77.35%	0
Net profit						
Anglo American	24.98%	-38.03%	-17.76%	15.91%	-22.11%	0
Impala Platinum	-6.95%	-3.51%	-0.20%	-5.60%	-14.96%	0
Lonmin	17.32%	-17.97%	-0.86%	35.92%	-50.42%	0
Northam Platinum	3.51%	-1.35%	-6.47%	-3.54%	-18.64%	0
Aquarius	-45.85%	-31.69%	-7.59%	33.37%	-68.11%	0
ROA						
Anglo American	15.81%	-24.24%	-39.49%	22.83%	-61.12%	0
Impala Platinum	-6.00%	-7.04%	4.81%	-6.70%	-16.49%	0
Lonmin	21.00%	-27.28%	9.52%	34.53%	-75.90%	0
Northam Platinum	6.20%	5.92%	-11.33%	-11.68%	-27.93%	0
Aquarius	-73.90%	-22.17%	-4.54%	16.73%	-80.18%	0
ROE						
Anglo American	24.24%	-35.06%	-132.88%	218.16%	300.54%	0
Impala Platinum	-5.92%	-11.54%	7.77%	-8.87%	-45.41%	0
Lonmin	-38.48%	-9.64%	27.32%	103.50%	-350.19%	0
Northam Platinum	-134.25%	33.42%	-24.14%	-12.95%	-73.32%	0
Aquarius	-73.90%	-22.17%	-4.54%	16.73%	-80.18%	0

Source: Own source

4.5.1 Gross Profit Percentage

The results indicate that the gross profit percentage of Aquarius Limited declined significantly from 2008 to 2009. The gross profit percentage from 2008 to 2009 for companies declined as follows: Aquarius has experiences the highest decline with -77.35, Lonmin -52.20%, Northam Platinum by -32.94%, Anglo American -28.07% and Impala Platinum -9.76%. These findings seek to conclude that the gross profit of Aquarius has declined significantly in 2009 and Impala Platinum only experienced less impact of strike.

During 2010, Impala Platinum and Northam Platinum gross profit declined, but Aquarius Limited, Lonmin and Anglo American gross profit increased drastically as the companies were not affected by strike in 2010. However, the gross profit of Aquarius limited in 2012 declined drastically followed by Anglo American Platinum, Impala Platinum and Northam Platinum. Lonmin has gross profit of zero because no platinum was produced during the period of strike. During 2013, only Impala Platinum and Lonmin gross profits were affected by strike but Anglo American, Northam Platinum and Aquarius remained unaffected.

4.5.2 Net profit percentage

The net profit during 2009 which depends on gross profit, has declined as follows: Aquarius Limited was affected mostly by the strike, followed by Lonmin. Anglo American Platinum, Northam Platinum and Impala Platinum were not affected by the strike severely. During 2010, the net profit percentage of Lonmin, Aquarius and Anglo American have increased in spite of the strike that took place in 2010 but the profit of Impala Platinum increased. During 2012, all platinum companies have made a net loss but in 2013, Implala Platinum and Aquarius, have continued to make a net loss. Anglo American Platinum, Lonmin and Aquarius experienced a decline in profit.

4.5.3 Return on Assets

ROA for all five companies declined from 2008 to 2009. During 2010, only Impala Platinum and Northam Platinum profits decreased significantly. In addition to that, during 2012 Northam Platinum is the only company that managed to sustain its profits as ROA of all other companies declined significantly. During 2013, ROA for Lonmin,

Anglo American and Northam Platinum has improved but ROA of Anglo Platinum and Aquarius, has declined.

4.5.4 Return on Equity

ROE of all platinum companies in 2009 decreased except for Anglo American. During 2010, ROE of Impala has continued to decline but Anglo American and Lonmin remained unaffected. During 2012, ROE of platinum companies has declined but in 2013, it is only Impala Platinum that made a positive ROE.

Marais (2014:4) states that the results have shown that only Impala Platinum which has subsidiaries in Zimbabwe has managed to make profits during the period of strike. However due to the increased base cost of the Impala Platinum Holdings, retrenchments have been proposed. Lonmin and Anglo American Platinum during the period of strike in 2014 which lasted for 6 months has lost R 2.2 billion rand and R2.6 billion respectively.

4.6 THE REACTION OF RATING AGENCIES IN MEASURING INVESTORS CONFIDENCE DURING THE PERIOD OF THE STRIKE

The strikes have affected 40 percent of platinum production in South Africa. Platinum is used to produce catalytic converters, in the motor industry so the production in the motor industry is mostly depended on the production capacity of the platinum sector. The contraction in the platinum output is 19 per cent points and the total mining sector contraction is 25% South African Reserve Bank (2014:5).

Statistical records found by Hope (2014:77) indicate that mining companies are pursuing operational excellence as a key strategy for declining productivity. Mining companies are focusing on improving efficiency, introducing new technology and using analytical approaches from other sectors, in order to improve the underlying cost drivers of the mining industry. However, it is not only labour that is increasing the costs of the mining sector, but there are also other areas of concern within the productivity equation that are increasing the cost of mining, such as overhead costs.

According to Du Toit *et al.* (2010:239), three leading rating agencies, being Moody's, Standard and Poor's and Fitch have different perceptions to strikes in the mining industry. The rating agencies are included in the present study because they have rated

South African bonds during the period of strikes. Bond rating is a very useful tool for investors, as it shows the capacity of the company for defaulting on payments. The coupon payment for each company is dependent on their ratings.

Maymin (2012:27) defines Standard and Poor 500 as an index of 500 for most traded and largest stocks in America. It is a well-known portfolio that trades daily and accounts for billions of dollars. De Wet (2012:3) states that Moody's Standard and Poor Index has downgraded South Africa, citing concerns about the negative effect of strikes on investments. Since 2002, Standard and Poor and Fitch have valued South African credit rating at BBB+ until 2012. Van Rensburg (2014:1) shows that during the period of major strikes in 2014, the rating declined from BBB+ to BBB- as shown in table 4.46. It was the first time since 2002 that the country lost its investment rating because of strikes in the platinum sector.

4.7 INTERPRETATION OF CREDIT RATINGS

Table 4.47: South Africa's ratings history

	Moody	Standard and Poor	Fitch
1994		BB	BB
1995	Baa3	BB+	BB
1996	Baa3	BB+	BB
1997	Baa3	BB+	BB
1998	Baa3	BB+	BB
1999	Baa3	BB+	BB
2000	Baa3	BBB-	BB+
2001	Baa3	BBB-	BB+
2002	Baa2	BBB-	BBB-
2003	Baa2	BBB	BBB
2004	Baa2	BBB	BBB
2005	Baa1	BBB+	BBB+
2006	Baa1	BBB+	BBB+
2007	Baa1	BBB+	BBB+

	Moody	Standard and Poor	Fitch
2008	Baa1	BBB+	BBB+
2009	A3	BBB+	BBB+
2010	A3	BBB+	BBB+
2011	A3	BBB+	BBB+
2012	Baa1	BBB	BBB+
2013	Baa1	BBB	BBB
2014		BBB-	BBB

Source: Citypress-Business (2014:4) Graphics

Du Toit explains that if the country has a rating of AAA, it means that there is no risk of defaulting on interest rates payments. It shows that, at AAA rating, there is a lower risk on investment, which also results in lower returns. If the country has a credit rating of BBB, it means that there is high risk of defaulting on payments and, because of the high risk, there will be a high coupon rate to compensate for the increased risk carried by the investor. The BB rating shows that bonds are not profitable and are regarded as speculative. Therefore the credit rating of BBB- in 2014 shows that South African interest rate payments will be defaulted as a result of strikes.

Kuang and Qin (2013:1524) describe credit ratings as important determinants of the creditworthiness of the country and, most importantly, a good credit rating facilitates flexibility in financing decisions. Ratings influence investors' confidence, as they move in line with debt and equities held. Sometimes ratings affect foreign direct investment in the country and the value of the rand. Fitch states that as long as strikes continue, business and investment will decrease. Mathew (2012:56) insisted that investors need to have confidence in the South African Mining industry and, in order to restore confidence in investment decisions should not be based on short-term instabilities affecting platinum companies, but should be based on the growth prospects of the mining industry.

Van Rensburg (2014:4) has used the findings of one researcher, who suggested that, as the strikes continue to affect the mining industry and the country being downgraded, investors can use alternative investment opportunities, such as the credit default swap

market (CDS). Credit default swap markets are defined as insurance contracts on government bonds that investors can buy from third parties.

Credit rating is used to measure the creditworthiness of the country. The study indicated that ever since the beginning of strike in 2014, South African credit rating was downgraded to BBB- and the situation happened for the first time since 2002. The decline in credit rating indicated that the country of South Africa is likely to default in paying interest and capital repayment.

4.8 CONCLUSION

Based on the results discussed in the share price volatility section, the principle developed is that there is a direct relationship between share price volatility and the announcement of strikes in the platinum mining industry. The degree of share price volatility moves in line with the duration of the strikes. Strikes influence the actual return on investment, by creating a variance that indicates the extent to which actual returns deviate from expected returns. If actual returns are more than the required returns during the period of the strike, investors' confidence increases. Similarly, if actual returns are lower than required returns during the period of the strike, investors' confidence decreases.

This shows that investor's confidence at some point during the period of a strike in the platinum sector was not affected, as investors have kept on buying platinum shares, despite high share price volatility. However, at certain times of the strike, particularly in 2012, 2013 and 2014, the share price decreased during the 20 days after the strike. It can be inferred, based on this analysis, that when the share price of platinum companies increases, investors gain confidence in the platinum market and buy more platinum shares, as they feel secure about the high share price.

Profitability ratios of platinum mining companies have been affected by strikes. Most of the platinum companies were performing well, before the announcement of strikes. However, as the strikes dominate the platinum sector, the financial performance of the companies decreased. During the strikes, companies recorded negative ratios, which implied bad performance of the companies. Investors base their investment decisions on financial ratios, so if the company maintains a negative ratio, it indicates that

investors' confidence has decreased because the company is in a difficult position to maintain its operations.

Strikes in the platinum sector have also affected the economy of South Africa, as indicated by the major international rating agencies of Moody's, Standard and Poor's and Fitch. South African bonds have been rated BBB- for the first time since 2002, meaning that it was difficult for South Africa to pay its commitments, such as interest and capital, because of the strikes in the platinum sector. The rating of BBB- also indicated that it is becoming more difficult for the country of South Africa to increase its borrowings and this decreases money supply in the country.

CHAPTER 5: CHALLENGES FACING THE SOUTH AFRICAN MINING INDUSTRY

5.1 INTRODUCTION

Chapter 5 seeks to address challenges facing the South African mining industry that arose because of strikes. It addresses the need to amend the legislation of the mining sector. The first section focuses on the implications of strikes in the history of the South African platinum sector.

Krugel (2013) reveals that the influence of strikes on the South African mining industry has caused the Global Competitiveness Report to rank South Africa 142 out of 148 countries in terms of productivity. This indicates that the decline in productivity is likely to discourage investments in the South African mining industry. Investors will prefer to invest in other countries, where productivity in the mining sector is very high.

Engelbrecht (2014:13) and African Business (2014:51) explain that the strikes in the platinum sector were unprecedented and its impact has been irreparable. Lonmin has struggled to operate during the strikes, but Anglo American Platinum and Impala Platinum Holdings were still producing platinum, even though at the very low levels. Lonmin lost \$278 million during the first quarter of 2014, compared to a profit of \$54 million generated in 2013.

5.2 THE IMPLICATIONS OF STRIKES IN THE HISTORY OF SOUTH AFRICA

Wehmhoerner (2012:5) regards strikes in the platinum mines as routine. They are regarded as a way of enforcing solidarity and of addressing employees' problems. Some authors, such as Harvey (2013:5) and Wehmhoerner (2012:5), associate the strikes at Lonmin in the Makikana mine with the Sharpeville massacre, which took place earlier in 1996. At this incident, 96 protesters were killed by police. It took almost 34 years for people to adapt to the incident at Sharpeville and, coincidentally, Lonmin mine is anticipated to take a long time to transform South Africa into a peaceful country.

According to Yager (2012:5) South Africa remains an outstanding supplier of Platinum Group Metals. The decline in investments is explained by PWC (2012:4), who reveal

that market capitalisation of the mining industry has declined in comparison with the overall market capitalisation of the JSE.

In order to promote investment in new projects in the mining sector, Botha (2013:8) records that management of Anglo American Platinum, Impala Platinum and Lonmin have issued a joint statement that reveals that the strike has affected stakeholders such as: local businesses, owners and the communities. Botha (2013:8) suggests that the government, as one of the stakeholders involved in the mining sector, needs to create an environment where there is more certainty. It must be an environment where employees are recognised equally, in accordance with the Constitution, Mining Charter and other regulations.

Hope (2014:76) points out that the problem faced by the South African mining sector is not just happening in South Africa; South America and Australia are experiencing the same problem with strikes. Chile, Colombia and South East Asia face the same dilemma. Hope (2014:77) suggests that the mining industry should engage in embracing innovative skills to guarantee the viability and sustainability of the industry. International Monetary Fund (2013:28) shows that in order to improve investors confidence and the competitiveness of the mining industry, it is important for the rand to appreciate and to simplify the monetary policy.

5.3 SHORT-COMINGS IN THE MINING SECTOR

The policy regarding working conditions for miners has been increasingly uncertain and complex. Harvey (2013:7-13) and Diliza (2003:10), state that the Mineral Petroleum Resource and Development Act (MPRDA) should be amended, to improve the performance of the mining industry. The MPRDA was officially signed and implemented in June 2002, to address broad-based, socio-economic issues. It is argued that even if the MPRDA is amended, uncertainty regarding the future of the South African mining sector will not be reduced. Diliza (2003:10) warns that the critical issue facing the mining industry is to ensure that the mineral policies of South Africa comply with the highest standards of administration and justice, promote internationally accepted levels of security of tenure and ultimately promote competitiveness of the mining industry as an investment destination.

Hope (2014:77) points out that the average mining sector capitalisation fell by 21% in the last two years and this has caused a decline in production. Mining companies are pursuing operational excellence as a key mitigation strategy for declining productivity. There is a strong need for efficiency and advancing of technology in the mining sector. Another imperative technique is to adopt analytical approaches used in other sectors, to manage the costs-drivers of the mining industry. This will help to reduce share price volatility and improve profitability of platinum companies during periods of strikes.

Matsilele (2014) uses the words of the Finance Minister that the key challenge facing South Africa is that the country needs a more skilled and more capable labour force and recommends that investors should be taught about challenges facing the South African mining sector. However, Hope (2014:76) regards South African mining industry as a pervasive industry: it is a viable industry that is intended to make things better for the country. Hope (2014:76) states that the problems facing the industry need to be placed and viewed in the global context.

According to Pienaar (2014:5), the price for platinum has been set in such a way to compensate for the Euro zone debt crisis. Morgan (2014:32) explains that, if the price of platinum continues to increase, consumers will rely on palladium as a substitute used as auto-exhaust catalysts. The price of platinum has followed an unstable trend from 2008 until 2013. An illustration regarding the price of platinum, expressed in US dollars from 2008 until 2013, was provided in Chapter 4.

Most importantly, if the strike continues, Koradia and Soni (2014:15) indicate that the mining industry will continue to do poorly in attracting new investments, relative to emerging markets in Sub-Saharan Africa. For example, countries such as Mozambique, Botswana, Guinea, the Democratic Republic of Congo, Canada and Australia have mining jurisdictions that are not comprehensive compared to South Africa, so they will perform better than South Africa. Mo (2013:256) cautions that if the strike continues, government will not be able to affectively deliver some of its social responsibilities, such as the provision of education, health infrastructure, social grants and other welfare benefits.

Researchers such as Mahomedy (2014:47), Morgan (2014:32) and Engelbrecht (2014:13) propose that, in order to restore the reputation of the South African mining

industry, the platinum sector should be a modernised industry, in which machines are used instead employees. The Emerging Markets Monitor (2014:4) states that the demand for platinum will continue to increase in the world despite of high platinum prices.

Berlinger (2012) found that, even before the strike was announced, the mining sector was experiencing problems such as policy uncertainty and regressive mining business models. As strikes continue in the mining industry, the effects spread further into other sectors. When looking at international investors, Berlinger (2012) says that it seems as if investors are willing to give South Africa time to a solution to the strikes, but if strikes continue, most investments in platinum companies will be invested in other countries, where there are viable investment opportunities.

5.4 FACTORS TO BE ADDRESSED BY THE MINING SECTOR

Challenges that should be addressed according to Nevin (2013:86) are volatility of the rand and unemployment and they are discussed as follows: A volatile exchange rate restricts trade and most of the businesses are not finding an appropriate stable exchange rate. Declining growth from 2.7% to 2.5%. Growth promotes a positive investors' and consumer confidence. A decline in growth conversely promotes a negative investors confidence and consumer confidence which also affect the economy and society; increasing unemployment in the mining industry is exacerbated by a lack of global competitiveness. The mining industry should be sustainable enough to remain competitive.

PWC (2012:1) states that mining companies need to integrate risk and performance management, in order to be able to predict potential negative events. The evolving environment requires vision and leadership from the board of directors and executive management to be able to comply with corporate governance practices and reform processes. Industry collaboration is needed to address wider stakeholder expectations. This is a very important aspect, because all stakeholders involved in the mining industry are claiming benefits from industry returns.

There is a need for sustainable costs per unit, which can only be achieved through increased levels of productivity from all resources. PWC (2012:18) shows that investment in the mining sector can only be attracted if there is adequate infrastructure

in the sector, less policy and regulatory uncertainty and a skilled and flexible labour force. Investors' returns can only be improved if the number of profitable mines is increased.

5.5 TRANSFORMATION OF THE MINING SECTOR

Responsible Mining Report (2011:3) states that the mining industry needs massive transformation that can only be achieved through legislation. Legislation objectives need to be addressed in the mining business plans by restructuring mining operations. This will help mining companies to retain mining rights and substantially improve the stability of the operating environment. However, transformation is not something that will happen overnight in the mining sector, it is a long-term process which needs to be addressed at strategic level by management and by employees.

The Responsible mining report (2011:3) recommends three principles that are needed to achieve transformation in the mining sector: to focus on execution of plans, to use the correct capacity of resources and to comply with business standards. Mining companies should predict that, in the long term investments will improve in despite of strikes, but it will be difficult for companies to have sufficient cash flows to redeem debt and maintain equipment in the business (PWC 2012:13). The challenges likely to be faced by mining companies are impairments, corporate failure, poor investment returns and a possibility of disinvestment.

5.6 SUSTAINABILITY OF THE PLATINUM SECTOR

Baxter (2014:5) stresses that it is important that all stakeholders should collaborate and agree on challenges facing the platinum mines. Stakeholders should restore mining industry stability by promoting production and should assist the industry by promoting investment growth and sustainability. Stakeholders should focus on the competitiveness of the platinum sector and on improving the cost structures. This collaboration is essential so that the South Africa mining sector can continue to be a competitive supplier of Platinum Group Metals on global markets.

Table 5.1: Risks faced by Platinum companies

Risk	Mitigation strategy
3.1 Volatile commodity prices create uncertainty and affect profits, cash flow and asset values.	3.1 Identification and implementation of cost cutting and efficiency measures.
3.2 Transactions denominated in foreign currency expose mining companies to exchange rate fluctuations.	3.2 Extensive business review and restructuring. 3.3 Close monitoring of rand/US dollar exchange rate.

Source: PWC (2013:18)

Table 5.1 shows that commodity prices are volatile because of strikes. This affects profits, cash flows and asset values of companies. Another inherent risk is that prices are denominated in foreign currency and this creates exposure to exchange rate fluctuations. PWC (2013:8) emphasises that it is of vital importance to implement cost-cutting measures and to review businesses.

The Sustainable Development Report of Anglo American Platinum (2013:38) proposes mitigation measures, such as improving housing at Rustenburg mines, providing more training and workshops and enhancing platinum beneficiation initiatives.

One of the proposals to address the impact of strikes in the platinum mines according to Brits (2014:22-23), is that the wage structure should be revised and the government should look at poverty, unemployment and inequality, when addressing the living conditions of mining employees. Mining companies and municipalities should design a new plan for the mining industry, in order to improve confidence in the mining sector. Dixon (2014:33) states that the platinum mining industry needs a longer term overall sector strategy to improve its general health and safety performance. This strategy will address productivity, mechanisation and profitability.

According to Clarke (2014:5), a multi-lateral international approach is required to address the problem of strikes. This approach will engage major producing companies, relevant legal bodies, mining companies and investors, so that they can generate the best practice standards. Luiz stated, in an interview conducted by Berlinger (2012), that

in order to find a solution to the strikes, there is a need for a long-term social contract, which will engage business, government and labour in an attempt to address the structural deficiencies in the South African political economy. The engagement of these stakeholders will not be easy, because of the past history of apartheid in South Africa and unfavourable relations the stakeholders.

Hope (2014:76) points out that the problem faced by the South African mining industry is not just happening in South Africa. South America and Australia are experiencing the same problem with of-strikes. Chile, Colombia and South East Asia are facing the same dilemma. Hope (2014:77) states that the mining industry should engage in embracing innovative skills, to guarantee the viability and sustainability of the industry, by implementing short-term actions. Looking at the year 2014, it was expected that there would be high-cost inflation and supply and demand instability in the mining industry because of strikes.

Nevin (2013:8) emphasised that commitment is essential to formulate solutions that will restore confidence in the mining sector. Confidence is needed not only for international investors, who are important, but also among all the people on the continent. Matsilele (2014) states that there is a need for engagement between unions and the Department of Labour, so that the country can move forward. The private sector should help partner with the Minister of Labour to avoid loss of capital needed. The private sector should help in training people and supporting them, to avoid loss of investment in South Africa.

5.7 CHANGING THE STRUCTURE OF THE MINING COMPANIES

The Emerging Markets Monitor (2014:5) proposes that many consolidation transactions in the mining industry increased due to the effect of strikes. Consolidation transactions took place when mining companies sold assets because of weaker commodity prices and to satisfy the demand for investors in the form of shareholders' returns. The Emerging Markets Monitor also indicated that most of the mining companies with strong balance sheets will acquire companies with low valuations. Small mines were expected to have solvency problems in 2014, due to funding constraints, including low share prices.

As a result of the strike, Anglo American Platinum Interim Results (2014:41) indicate that the company has made a decision to disinvest mines sections of mines such as

three shafts in Rustenburg, Union and the Pandora joint venture. Anglo American Platinum has also made a decision to sell Lafarge Tarmac and to review the operation of Bokoni joint venture. Anglo American estimated to receive proceeds of £885m as minimum proceeds emanating from the sale transaction.

The impact of the strike at Impala Platinum has led to the decision by the company to restructure its operations. Donovan and Lukhele (2013:72) reveal that, as a result of the strikes, Impala Platinum Holdings has closed two mines and sold another unprofitable mine. Impala has planned to improve the existing assets and to increase production by 630 000 ounces of PGMs annually until 2014. In pursuit of the project, capital expenditure will be incurred in three new shafts. Impala entered into lease agreement as an initiative for recouping lost production resulting from strikes. Impala anticipates benefitting from the lease by increasing production by approximately 750 000 to 800,000 ounces of platinum, compared to the usual capacity of 1 500 000 ounces. Another challenge facing Impala Platinum is to improve its balance sheet, so that investors will continue to invest in Impala Platinum. Impala issued \$500 million in corporate bonds to support its operations. A bond is a liability, so Impala faced the challenge of meeting contractual obligations such as interest and capital repayments (Mckay 2013:25).

Harvey (2013:6) states that the South African mining industry has been profitable. In the current decade, the performance of the mining industry diminished because of decreasing quality of ore. It is also difficult and expensive to access ore. Sprague (2013:62) explains that it is difficult to find financing sources during strikes. Companies experiencing strikes are entitled to increase debt to strengthen negotiations and to limit the possibility of another strike. Debt increases financial leverage and this represents a risk to the platinum company.

Engelbrecht (2014:13) states that Glencore Xstrata has sold its shares in Lonmin due to scepticism over the platinum market. Other major companies, such as BHP Billiton, have disinvested their funds from South Africa. As a result of the strike, Morgan (2014:32) shows that Sibanye Gold has proposed to merge with Anglo American Platinum. The results of the merger would benefit the acquiring company, Sibanye. Koradia and Soni (2014:14) speculate that, as long as strikes continue to affect South Africa, which holds approximately \$2.5 trillion in mineral reserves, Russia will succeed

South Africa in the platinum market. Koradia and Soni (2014:14) cautioned that South Africa can only continue to dominate the platinum market in the world if the sector continues to be competitive and investments continue to flow to the mining sector.

According to the Emerging Markets Monitor (2014:5), mergers and acquisitions will continue to occur at a fast pace in the mining industry in 2014. This is caused by low valuations of mining companies, the drive for operational efficiency and the attractiveness of overseas assets. BHP Billiton, Rio Tinto and Anglo American Platinum have sold non-core assets and are focusing on the developments of non-green projects. The major reasons for selling the assets was to achieve economy of scale and synergy. For example Barrick Gold was in a position to acquire the Newmont mine, to achieve synergy estimated at one billion US dollars due to the company's complementary operations in the United States.

5.8 CONCLUSION

Looking at the economic point of view, South Africa is ranked at the lowest level in terms of productivity. Mining stakeholders such as the government, local business and communities face the adverse consequence of strikes.

The strike have adversely affected investment returns: Profits have declined and the share price of platinum companies decreased, causing market capitalisation of listed mining companies to decline. The challenge faced by South African mining companies is that some of the investments in the platinum mines have been disinvested and taken to offshore countries. One of the major reasons for the disinvestment is that mining companies affected by strikes have been operating close to break-even point. Mining companies have sold most of their assets and some of the unprofitable operations have been closed.

The strikes increased the rate of mergers and acquisitions in order to achieve economies of scales and synergistic benefits. In order to address challenges facing South African mining companies and to improve their sustainability, different authors suggest that there is a need to engage different stakeholders, such as the government, investors, local business owners and mining companies. The collaboration will improve employees' working conditions, profits and the reputation of the South African mining industry in the long term. Challenges faced by the South African mining industry should

therefore be addressed with an international approach, because countries such as Russia and China, which form part of BRICS, are facing the same problem.

CHAPTER 6: RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

The primary objective of this study was to determine the impact of strikes on share price volatility in the South African mining industry and the extent of its impact on investors' confidence. The secondary objectives of the study are to research the causes of the strikes in the mining sector and to determine what the literature reveals with regard to strikes in the mining industry. The third objective is to determine the impact of strikes on profitability ratios of platinum mining companies, as this is the sector that is significantly affected by strikes. The last objective was to address challenges facing the South African mining sector that are perpetrated by strikes.

In order to reach the primary and secondary objectives of the study, a literature review was conducted regarding the impact of strikes on the mining industry and the empirical observations that were typically conducted in the South African platinum mines.

6.2 SUMMARY

Chapter 2 provided sufficient and adequate literature regarding the definition of strikes in terms of the South African Labour Relations Act and investors' confidence in relation to the mining industry. The historical performance of the mining industry before it was affected by strikes was described. The literature also examined the impact of strikes on the performance of mining companies, focusing on the daily production units of ounces of platinum produced during the period of the strike, compared to normal production during the time there was no strike in the mining companies.

The literature also examined work stoppages, shaft closures and retrenchments during the strikes. The degree of investors' confidence during the strikes was investigated to determine whether or not some of the investors sold their shares in the mining companies during the strikes. It was concluded that some of the mining companies lost investors during the strikes, while other companies managed to sustain their operations during the strikes, by maintaining high production volumes. The literature indicated that the mining industry in South Africa supplies the world with 80% of its platinum. The mining industry and contributes more than 4.5% to the economy of South Africa.

The South African mining industry is a diversified industry consisting of the gold sector, diamond and gemstones, coal, platinum, precious metals and general mining. These sectors have companies made up of subsidiaries, joint ventures and conglomerates, listed under each sector. The five sectors form the population of the study, which is the South African mining industry.

The methodology on strikes regarding share price volatility and on profitability ratios was discussed in detail in Chapter 3. The platinum and precious metals sector was chosen as the sample of the study, to represent the mining industry, because it was significantly affected by strikes, compared to other sectors. The platinum and precious metals sector consists of thirteen companies and these companies are listed according to the highest market capitalisation. The first five companies have the highest market capitalisation and contribute the highest percentage to the JSE concerning mining, overall.

Data regarding share price volatility of the five platinum companies chosen as the sample of the study was collected on the McGregor BFA online database, under the Price Data section. In order to determine the significance of strikes in the platinum sector, the share price volatility of the five platinum companies, the JSE Mining Index (J177) and the JSE ALL Share Index (J203) was determined collected and populated to provide comparison of share price movements, so that reasonable conclusions could be attained. Share price volatility was analysed on a daily basis, by looking at the share price for the first 20 days before the strike (-20 days), the day of the announcement of the strike (day 0) and 20 days after the strike (+20 days).

Chapter 3 concluded that, at certain times, the share price becomes very volatile during the 20 days before the strike. Sometimes it became very volatile on the day of announcement of the strike (day 0) and the volatile movement continues during the period of 20 days after strike.

Profitability ratios of five platinum companies were calculated by using line items on the financial statements of each company from 2004 until 2013 and the first four years were used to compute benchmarks for comparison of profitability ratios during the strikes. Based on the data collected, profitability ratios of platinum companies are negative for

certain years of strikes and during years in which the strike did not affect platinum mines severely, the profitability of platinum companies remained positive.

Chapter 4 explored share price volatility and provided a detail discussion regarding the movement of share prices in each of the five platinum companies. Anglo American Platinum was discussed, first because it has the highest market capitalisation, compared to Impala Platinum Holdings, Lonmin, Northam Platinum and Aquarius Limited.

The share price of platinum companies was tremendously volatile during 2012, 2013 and 2014. The degree of volatility increased as the duration of the strikes increased. Empirical findings indicate that, during 2012, the strike in the platinum sector lasted for 37 days and this was the longest strike since 1994 in the transition of the economy of South Africa. During the year 2013, the strike lasted 11 days and this duration is less significant in comparison to the strike in 2014 that lasted for 151 days. During the period of these three years, Anglo American Platinum, Impala Platinum Holdings and Lonmin Plc, as the major suppliers of platinum in the world, experienced major share price volatility. As a result, the market capitalisation of Anglo American Platinum, Impala Platinum Holdings and Lonmin declined. Northam Platinum and Aquarius Limited experienced the highest share price volatility, but they were not severely affected by strikes compared with Anglo American Platinum, Impala Platinum Holdings and Lonmin.

Profitability ratios of the five platinum companies have remained positive for the year 2008 and for certain companies it declined in 2009 and 2010. As the strike dominated the mining industry in 2012, 2013 and 2014, operating profits, net profit, return on assets and return on shareholders' equity declined. Anglo American Platinum, Implala Platinum Holdings, Lonmin and Northam Platinum recorded negative profitability ratios during the period of these three consecutive years. A negative ratio indicates that the company is operating at high risk and this indicates that platinum companies have a high possibility of defaulting on paying dividends, interest payments and capital repayments. A negative ratio also indicates that platinum companies have incurred expenses during the strikes, even though companies experienced work stoppages, production losses and retrenchments as a result of strikes.

Chapter 5 has addressed challenges facing the mining sector emanating from strike: Firstly as a result of the strike, the internal challenge is that market capitalisation of platinum companies has declined. Consolidation transactions such as selling of assets, mergers and acquisitions and disposal of mines took place. The chapter therefore addressed the need to amend MPRDA and to engage different stakeholders in addressing issues relating to strike in order to improve investor confidence.

6.3 LIMITATION OF THE STUDY

The impact of the 2014 strike in the platinum sector was not subject to review in this study. The share prices available on McGregor at the time the research paper was completed, was only from 2008 until 28 July 2014 so no empirical findings were discussed regarding the impact of the 2014 strike for other days.

The audited annual financial statements at the time the research was completed were only available from 2008 to 2013. Therefore the study did not analyse the impact of strikes on profitability ratios for the year 2014, even though the major strike in the platinum sector happened in 2014. Future studies should address the impact of the strike on profitability ratios for the year 2014.

6.4 RECOMMENDATIONS

The following recommendations are made:

Investors' confidence is a psychological concept that is based on human behaviour, so it is important that investors should take into account external environmental factors, when assessing returns on investments. Returns are determined by the profitability of the company. Most of the profits in the platinum companies declined during the strikes. Therefore the major principle that platinum companies should adopt is to ensure that sustainable profits are produced during strikes, in order to enhance investors' confidence. Sustainable profits can only be maintained if the number of work stoppages can be reduced during the strike and the price of platinum does not increase to an extent that it affects the demand for platinum on South Africa and international markets.

Investors' confidence is a phenomenal concept, as it demonstrates whether investors should continue investing in the platinum companies or should invest funds in other sectors. The decision to invest in the platinum companies depends on the volatility of

the share price during the strikes. If the duration of the strike is long, the share price becomes significantly volatile and at some point it decreases. This affects investment returns, such as dividends. Therefore investors are encouraged to be patient during a period of high volatility in the platinum market.

Investors should consider strikes in the platinum mining companies in a global context, because the literature has shown that it is not merely South Africa that is experiencing strikes in the mines. BRICS countries are affected and other developing countries which produce platinum, such as Zimbabwe, are also affected. Chapter 5 has shown that strikes in the mining companies is a routine so investors should not lose confidence during strikes and they should understand that by investing in the platinum mines, they are exposing their investments to a business where there are high returns but also high risks.

The sustainability of the mining industry needs to be revised, to prioritise the needs of mining employees, but the literature indicated that the mining industry will not easily satisfy the needs of workers. However it is very important that the mining industry should priorities the needs of mining employees, in order to prevent strikes. If the strike continues, the mining industry will not produce platinum and other mineral reserves and investors' confidence will continue to be affected. It is further important to make all stakeholders aware of the importance of sustainability.

The literature has indicated that mining companies are making high profits, so the remuneration system of the mining companies should address the needs of workers. The salary of each mining employee should be increased, in such a way that employees will not be reluctant to work in risky areas in the mines. If employees' salaries are not increased, the strike will continue to affect the platinum sector and the investors' confidence will decrease.

Future research should address the need for mining companies to merge if they are affected by strikes rather than closing shafts. If mining companies merge, they will be able to achieve economies of scale and synergistic benefits will accrue. This indicates that mining companies will be able to produce and buy platinum materials in large quantities during strikes. Diversification will improve the return on investment in the platinum mines during the strikes.

6.5 AREAS OF FURTHER RESEARCH

The present study concentrated on investor confidence in the platinum sector as affected by labour strikes. Other consequences of strikes not investigated in this study can be the subject of further research.

The recommendations proposed for future research are as follows:

- 1 Comparison of the impact of strikes in the platinum and gold sectors.
- 2 The impact of strikes on platinum inventory.
- 3 Reaction of institutional investors in comparison to individual investors during the strikes.
- 4 Amendment of the South African Mining Charter and Mining and Petroleum Development Act, to accommodate the needs of mine-workers.
- 5 A comparative study, in which the impact of strikes will be investigated in the five mining sectors, gold, coal, diamonds and gemstones, general mining and the platinum and precious metals sector.
- 6 The impact of strikes on platinum mines on other industries that use platinum.

6.6 CONCLUSION

The primary objective of the study was to determine the impact of strikes on investors' confidence in the mining sector. The theoretical knowledge of different authors has shown that strikes in the mining industry have affected investors' confidence. During the period of the strikes in 2012, the share price of Anglo American platinum, Impala Platinum, Northam Platinum and Aquarius Limited were affected. The findings further revealed that the strikes in 2010 only affected Anglo American platinum and the strikes in 2008 and 2009 severely affected Anglo American Platinum, Impala Platinum, Northam Platinum and Aquarius. Lonmin was not affected by the strikes in 2008 and 2009. During 2013 and 2014, the strikes did not affect share price volatility of Northam Platinum but the strikes affected other platinum companies. Hence investor confidence decreased.

Most of the authors associate investors' confidence as a psychological concept that increases in relation to the income, the degree of happiness and emotions of investors but the results of the study indicated that investor's confidence increased when the share price was not too volatile and decreased when the share price was very volatile, based on the standard deviation values. Data was collected from McGregor and analysed using event study methodology developed by Ball and Brown in 1968 because the methodology is widely accepted as a research tool in finance and economic disciplines.

The profitability ratios were analysed based on the audited annual financial statements of the companies chosen. The results indicated that the profitability ratios of platinum companies declined significantly during the period of major strikes due to production stoppages. During the period of major strike, gross profit declined and a similar negative effect happened on net profit, return on assets and return on equity. Therefore it can be stated that there is an inverse relationship between strikes and profitability ratios of companies because during the period of major strike, profitability ratios declined but during period of no strikes, profitability ratios increased. Based on the literature and empirical research performed and the results obtained, it can be concluded that this study complied with its primary and secondary objectives.

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